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The Fiscal Pact with the Devil: A Positive Approach to Fiscal Federalism, Revenue Sharing, and Good Governance

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May 11, 2000

1. Introduction

What explains why some governments protect property rights, provide a stable macroeconomy, and have limited taxes and corruption; while others are corrupt kleptocracies that prey on their citizens? In short, why do some countries experience good governance while others do not?

In recent years, a new political economy literature has emerged that studies these questions by investigating the interaction of political institutions and economic performance (Alesina 19**, Besley and Coates 1998; Boulton and Roland 19**; Cremer and Palfrey 1999; Dixit and Londregan 1995, Drazen 2000, Inman and Rubinfeld 1997, Jin, Qian, and Weingast 1999; Knack and Keefer (1995); North 1990; Persson, Tabelini and Roland, 2000; Rodrik 19**,

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Stiglitz 1998; and Tabelini 19**). Focusing largely on the advanced industrial democracies, proponents of this approach provide a general answer to the above questions: A country's political and institutional framework determine whether government officials face incentives for good or bad governance. As Stiglitz (1998,5) suggests, "misaligned incentives can induce government officials to take actions that are not, in any sense, in the public interest."

We add to this literature by exploring the general question in the context of the global trend toward greater decentralization, particularly in the developing countries. Nearly all the large Latin American states have initiated some form of decentralization in the last decade, some beginning much earlier. China's transition from socialism intimately involves various aspects of decentralization. And recently India has begun to promote decentralization.

A long tradition in economics emphasizes the advantages of federalism for good governance (Hayek 1939, Tiebout 1956; for modern reviews, see Rubinfeld 1987 and McKinnon and Nechyba 1997). More recently, proponents of market-preserving federalism suggest that an appropriately structured decentralization fosters economic development (e.g., McKinnon 1997, Montinola, Qian and Weingast 1995, Weingast 1995).

Yet it is not obvious that decentralization promotes either good governance or growth. In contrast to the above noted arguments are both theory and evidence that cast doubt on the general assertions about federalism promoting political and economic development. Treisman (1999a1999b), for example, suggests that greater decentralization on average leads to higher inflation and more corruption (see also Prud'homme 1995). Several economists emphasize that spillovers, common pool problems, and problems from soft budget constraints result in efficiency losses associated with decentralization (see Inman and Rubinfeld 1997, McKinnon and Nechyba 1997, Sanguinetti 1994, Jones, Sanguinetti, and Tommasi 1999, Rodden 2000, Stein 1998, and Wildasin 1997). Dillinger and Webb (1999) argue that greater fiscal decentralization in Brazil underpinned the recent budgetary and financial crisis.

Following Shah (1997) our approach helps explain this puzzle about federalism by suggesting that there is not one kind of decentralization. Federal systems differ enormously in the ways they allocate power and authority across levels of government.Because different allocations have different implications for long term economic performance, it is not clear that federalism should exhibit any systematic tendencies with respect to growth: some types of federal systems are likely to foster growth, while others are likely to hinder it (Weingast 2000).

We explore variation in performance among different types of federal systems by studying how variations in the fiscal system affect subnational government (SNG) decisionmaking. In our model, we consider the decisions of a typical SNG that may choose among an array of policies, subject to its budget constraint. We distinguish between two categories of policies, those providing public goods that foster markets and those that reflect rent-seeking, the public provision of private benefits, and corruption. The SNG chooоses over the two categories to maximize its political support, which is positively related to each type of policy. The SNG□s choice to foster markets or to engage in corruption is therefore endogenous.

We study fiscal systems that vary in their distribution of locally raised taxes. At one extreme, the SNG captures 100% of locally generated revenue; at the other, the SNG captures 0% of the revenue and the central government captures 100%. Any proportion, α, in between these extremes is also possible.

Our main comparative statics result shows that an increase in the proportion α of locally generated taxes captured by the SNG increases the SNG's choice of public goods more than corruption. The reason is that choosing public goods has two benefits: directly, it provides constituency support; indirectly through increasing tax revenue, it pushes out the budget constraint. In contrast, choosing corruption has only one benefit, constituency support. As α increases, the indirect benefit of choosing more public goods grows, so the SNG substitutes for more of it. Put simply, the greater the proportion of locally generated taxes captured by the SNG, the greater the SNG's focus on providing market fostering public goods instead of corruption.

Our comparative statics result has an important implication for revenue sharing systems in which SNGs trade away their fiscal and policy autonomy in exchange for greater revenue: they are fiscal pacts with the devil. The reason is seen through the *fiscal law of 1/n:* the indirect effect of fostering greater SNG choice of public goods in a complete revenue sharing system is 1/n that of a fiscal system in which SNGs capture all locally generated revenue. The reason is that revenue sharing creates a common pool problem. When an SNG captures 100% of locally generated revenue, it bears all the costs but also captures all the benefits of providing the public good. Under complete revenue sharing, an SNG bears all the costs of the public good, but the capture only 1/nth of the benefits. The rest of the benefits are spread across all jurisdictions through the central government's division of the common pool. Complete revenue sharing systems therefore greatly diminish an SNG's incentive to provide market fostering public goods.

Revenue sharing agreements in which SNGs give up their policy and fiscal autonomy are thus fiscal pacts with the devil because they benefit politicians, who gain more revenue to distribute according to political criteria, but harm citizen welfare. These pacts induce SNGs to favor corruption and rent seeking over public goods that foster growth.

Our approach to revenue sharing contrasts with the traditional normative public finance perspective. Under the assumption of benevolent government that maximizes citizen welfare, the public finance approach argues for the appropriate assignment of public goods authority. On the tax side, this perspective often argue that the federal government should have greater tax authority so that it can effect redistribution through revenue sharing. Traditional public finance thus ignores the potential incentive problems when governments do not maximize citizen welfare. In this approach, the federal government would never create a national tax monopoly so it could extract taxes to spend revenue according to political criteria and to finance corruption.

We apply our approach to federalism in Mexico. Although Mexico has always had a federal structure, the institutional details have changed over time. Since 1940, the fiscal system has become increasingly centralized. By degrees, the central government has coaxed the states to join a revenue sharing system, in part by ensuring participating states obtained more revenue. This is an example of a fiscal pact with the devil: Mexican states give up their policy and fiscal autonomy in favor of greater revenue and favorable career opportunities for politicians. We argue that these pacts produce a range of efficiency losses, including that associated with the fiscal law of 1/n.

We also show that the local reforms taking place across Northern Mexico in part reflect our approach. Localities seeking to integrate into the United States economy face high opportunity costs of remaining under the traditional Mexican system. As these costs grew, some localities began to opt out of the system, facing fiscal punishments. Per our theory, reform governments under the opposition PAN governments discovered that if they eliminate corruption and provide valued services, their revenue goes up significantly. So too has their popularity.

Our approach has implications for the larger question about the political foundations of good government. Appropriately structured federalism helps improve the incentives for resource allocation, particularly when corruption throughout and bad central government economic policies represent major problems hindering economic performance. By decentralizing a range of decisions, federalism takes a series of allocation decisions away from the federal government. This can have efficiency gains when the federal government is a major source of inefficient policy (Jin, Qian, and Weingast 1999; see also Brennan and Buchanan 1980).

Our paper proceeds as follows. Section 2 develops our theoretical framework. Section 3 provides the background on federalism in Mexico. Section 4 turns to the analysis of the Mexican fiscal system, including the application of the fiscal law of 1/n. Section 5 discusses the rise of new governments in the Northern Mexican; it also contains a brief comparison of this case to reform in China and India. Our conclusions follow.

2. A Model of SNG Choice under Revenue Sharing

We begin by analyzing how fiscal incentives affect a subnational government□s (SNG) decisionmaking. We assume that government officials, whether elected or not, seek to advance their careers by remaining in office or, if they are part of a strong national party system, by enchancing their party□s local reputation. Government officials pursue these career goals by attempting to generate political support. Elected representatives must maintain the support of a majority of voters. For authoritarians, the percentage required to retain their office is undoubtedly lower than a majority, though it is also substantial portion of the population. Students of comparative politics again and again emphasize the need of authoritarian governments to maintain sufficient support to remain in power (cites).

We assume that government officials have two separate means of fostering political support. First, they may engage in corruption and provide politically generated rents to constituents. These rents may take a variety of forms, such as corrupt payments or various benefits derived from market intervention (e.g., local monopolies or anti-competitive regulations). Second, government officials may provide public goods that foster local economic growth, providing indirect benefits to constituents.

In what follows, we study how various fiscal arrangements affect political officials' tradeoff between pursuing rents or providing public goods. Assume that the government seeks to maximize the following political support function,

$$S = S(r,y), \tag{1}$$

where r represents the level of corruption and rents and y is the level of the (market-fostering) public good. We assume that S(r,y) is increasing but at a decreasing rate in each variable; that is, $S_r > 0$, $S_{rr} < 0$, $S_y > 0$, $S_{yy} < 0$. We will also assume that $S_{ry} \geq 0$, indicating that the two means of providing political support do not interfere with one another or actually help one another.

We also assume that the SNG faces a budget constraint. Its budget, B, is given by $B = T + \alpha\tau(y)$, where T represents the amount of fiscal transfers from the national government; $\tau(y)$ is the locally generated taxes as a function of the level of public good provided; and α is the proportion of locally generated taxes that the SNG may keep ($0 \leq \alpha \leq 1$). The public good, y, is assumed to affect positively the locally generated taxes; that is, $\tau_y > 0$.

Finally, we have the SNG's budget constraint, which allows the SNG to spend its budget on r and y:

$$r + ay \leq B \tag{2}$$

where a is the parameter representing the relative cost of a unit of y in terms of r (we normalize the price of r to 1). Substituting for B and rearranging terms yields $r = T + \alpha\tau(y) - ay$.

To study the government's behavior, we use expression (2) for r and substitute back into (1). This yields the following maximization problem:

$$\text{Max}_{\,y} \quad S(T + \alpha\tau(y) - ay, y), \tag{3}$$

with first order conditions:

$$S_r(\alpha\tau' - a) + P_y = 0. \tag{4}$$

The first order conditions imply that the government's marginal rate of substitution between r and y, S_r / S_y, is given by:

$$S_r / S_y \;=\; 1/(\alpha\tau' - a). \tag{5}$$

To interpret the first order conditions, suppose that y had no effect on taxes; i.e., $\tau' = 0$. Then we would obtain the standard result that at the optimum choice of r and y the marginal rate of substitution between S_r and S_y equals minus the ratio of the cost of r to the cost of y; that is, $S_r / S_y = -1/a$. In our problem, y affects the taxes, and hence the term in equation (5), $\alpha\tau'$, which adjusts the marginal rate of substitution. Intuitively, the adjustment term reflects y's positive effect on the budget, which leads the SNG to choose more y than otherwise. The specific amount of the adjustment in the marginal rate of substitution is given by $\alpha\tau'$.

To assure we have a maximum, we investigate the second order conditions. Under the assumption that $\partial^2 S/\partial r \partial y > 0$, these conditions hold. This ensures that an equilibrium exists and is characterized by a point.

We now turn to our principal question about how the SNG's behavior changes in response to the fiscal system. To begin, we investigate how a shift in α affects the SNG's choice r and y. To do this, we derive the comparative statics results of α on (r^*, y^*), the SNG's optimal choice of r and y. We start with y^*. The first order conditions (4) give y^* as an implicit function of the exogenous parameters (a, α, t). By the implicit function theorem, we have for any exogenous parameter, x_i, that:

$$\frac{\partial y}{\partial x_i} = -\frac{\frac{\partial F}{\partial x_i}}{\frac{\partial F}{\partial y}}, \qquad (6)$$

where F is the left hand side of the first order conditions (4).

To simplify, we know from the second order conditions that the denominator of (6) is negative for all x_i. Thus, to sign $\partial y/\partial x_i$, we have to sign the numerator; that is, sign($\partial y/\partial x_i$) = sign($\partial F/\partial x_i$). To calculate the effect of α on y*, we differentiate (4) with respect to α. This yields [a big mess], but which, given our assumptions, is positive. So increasing α, the SNG's share of locally generated taxes has the effect of increasing the SNG's optimal level of y*.

The effect of α on r* is more complicated. To calculate this, we first observe that the budget constraint yields $r^* = B(t,\tau(y,\alpha)) - ay^*$. Totally differentiating this equation and setting the other exogenous changes to 0 yields the following:

$$\partial r^*/\partial\alpha = (B_\tau\tau_y - a)\partial y^*/\partial\alpha + B_\tau\tau_\alpha. \qquad (7)$$

Equation (7) has an interesting interpretation. First, since the first term on the right hand side is negative and the second term is positive, $\partial r^*/\partial\alpha$ can either be positive or negative. Second, the response of r* to an increase in α is negatively related to the $\partial y^*/\partial\alpha$. That is, the larger is the effect of α on y*, the smaller is $\partial r^*/\partial\alpha$.

In sum, increasing α, the proportion of locally generated taxes retained by the SNG, increases the resources the SNG devotes to the market-fostering public good, y. The reason is straightforward: producing y has two benefits. As a direct benefit, more public goods make constituents better off and thus increases constituency support. As an indirect benefit, more y produces a healthier economy, thus more budget revenue, allowing the SNG to increase both r and y. The larger is α, the greater the SNG’s provision of the public goods and the lower is its reliance on rents to maintain political support.

We illustrate this effect in figure 2.1 which shows how $\tau(y)$ affects an SNG’s choice of r and y. To make the case simple, we let the parameter a, giving the cost of y relative to r, equal one. When $\alpha = 0$, indicating that the SNG captures none of the increase in locally generated taxes, $\tau(y)$, the SNG’s budget line is then given by the solid line in figure 2.1, $r + y \leq T$. In this case, the SNG choose the combination (r_o, y_o).

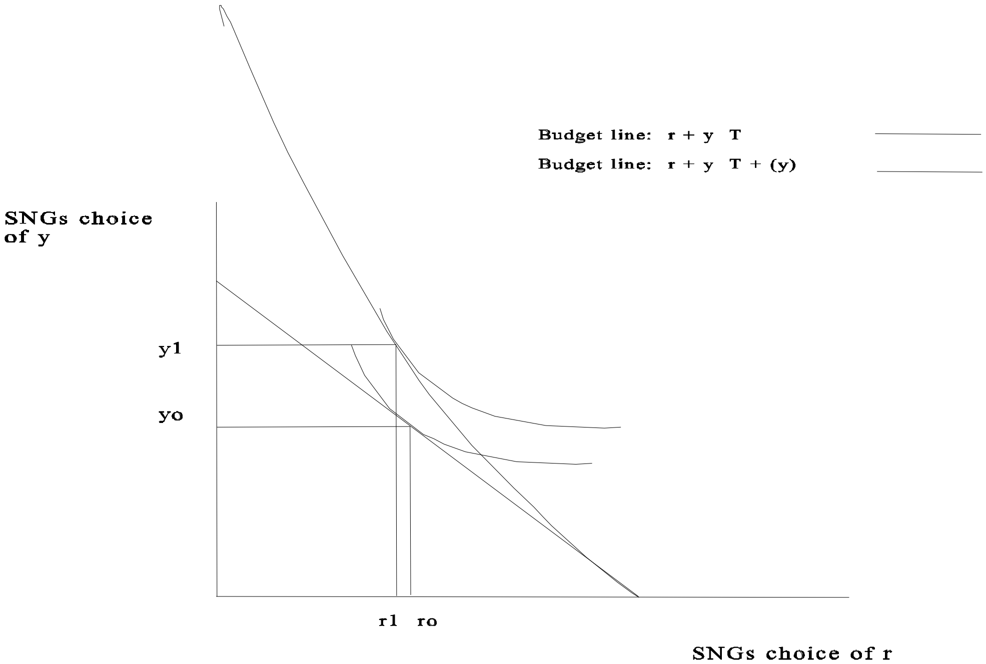
When the SNG captures a portion $\alpha > 0$ of $\tau(y)$, the budget curve shifts outward in a non-linear fashion, as indicated by the dashed budget line. The shift makes the SNG’s budget non-linear because the budget increase, $\alpha\tau(y)$, increases as the SNG chooses more y. When $y = 0$, $r = T$ and the budget shift is zero; when $r = 0$, $y = T$ and the budget shift is largest.

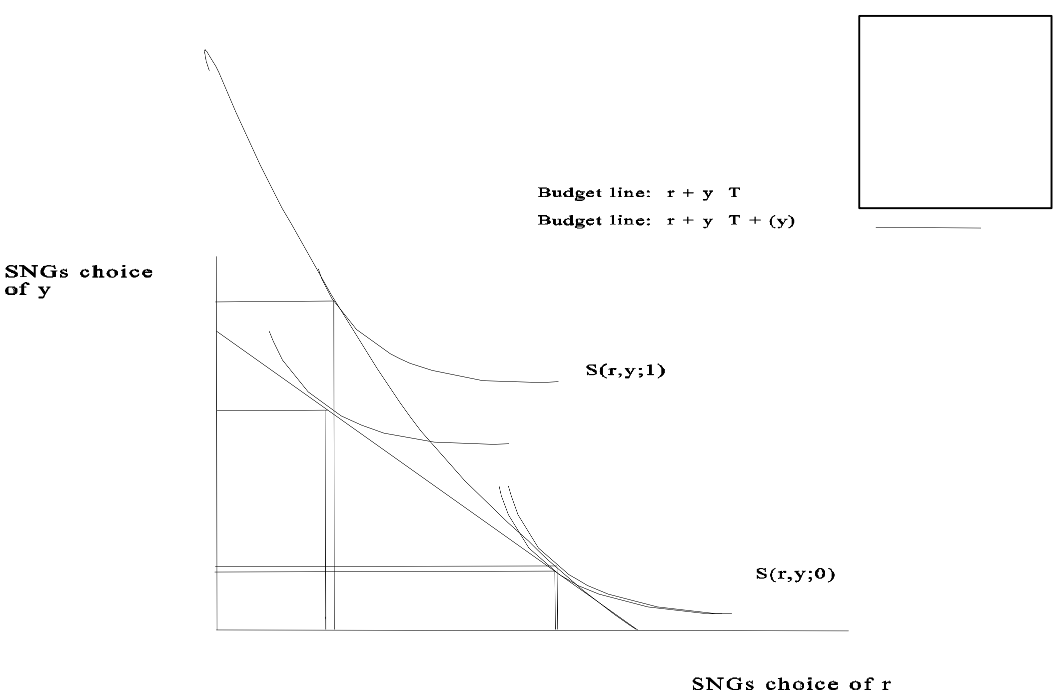
This example shows how the effect of y on its budget induces the SNG to substitute r for y. In the figure, r decreases somewhat — from r_0 to r_1 — while y increases — from y_0 to y_1. Per our comparative statics result, the effect of $\alpha\tau(y)$ on y is larger than the effect on r. This reflects the fact that y not only increases S directly but shifts out the budget line.

The economic and political effects of revenue sharing systems

Federal systems around the world employ a range of revenue sharing schemes. In what follows, we compare two tax and revenue schemes. In the first, the SNG raises all its own money, so that $T = T_0$ and $\alpha = 1$. In the second, the national government captures all locally generate revenue, possibly combining this with other revenue, and then divides the pool among all the SNGs. In the simplest scheme, the national government collects all the revenue from all SNGs and then divides this revenue among n SNGs so that each receives 1/n of the total common revenue pool. Because the government takes all locally generated revenue from all SNGs and then returns 1/n of the total to each, $\alpha = 1/n$.

Figures 2.1 and 2.2





We compare the effects of these two fiscal system using equation (5), $S_r / S_y = 1/(\alpha\tau' - a)$. The term in the denominator tells us how much the SNG□s choice of y shifts the marginal rate of substitution at the optimum toward y from the case where y has no effect on taxes. When the SNG keeps all locally generated revenue, $\alpha = 1$, so the shift in the marginal rate of substitution is the full τ'. Next we calculate the shift when the SNG keeps none of its locally generate revenue and receives all its revenue from the common pool, P, created by the revenue from all SNGs. In this case, the SNG□s budget is given by $B = T + 0*\tau(y)$, where $T = [P - \tau(y)]/n + \tau(y)/n$. The last equation says that the total transfer, T, can be divided into two portions, the SNG□s share of the revenue raised in all other SNGs plus its share of the tax revenue raised in its own jurisdiction, $\tau(y)/n$. This implies that, when revenue from all SNGs goes into a common pool P, $\alpha = 1/n$. This yields the shift is in the marginal rate of substitution as τ'/n.

The Fiscal Law of 1/n

The *fiscal law of 1/n* holds that the relative effect of an increase in political support due to a marginal increase in y* under complete revenue sharing scheme is 1/n the magnitude of the increase when the local governments get to keep all the locally generated revenue. The reason is that, in the complete revenue sharing scheme, nearly all the revenue increases (i.e., (n-1)/n of the increase) is shared with the other SNGs ☼ the SNG retains only 1/n of the revenue increase from increasing y. When an SNG retains all its locally generated taxes, however, it captures 100 percent of any increase in taxes from increasing y. For a country like Mexico with 32 states or the United States with 50 states, this effect can be large.

To illustrate the nature of the shift, we calculate an example. We let the relative cost parameter, a = 1, the number of SNGs be 32, and $\tau(y) = y/4$. If there were no shift due to $\tau(y)$ ☼ i.e., if $\alpha = 0$ ☼ then the marginal rate of substitution between r and y at the optimum (r*,y*) is given by S_r / S_y = -1. Under the fiscal arrangement where the SNG gets to keep all its revenue, α = 1, the shift in the marginal rate of substitution is given by $\alpha\tau'$, which equals 1/4 in this example. This implies that the SNG's marginal rate of substitution at the optimum is:

$$\frac{S_r}{S_y} = \frac{1}{1- 1/4} = \frac{4}{3}.$$

In this case, the shift in the marginal rate of substitution produced by the effect of y on local taxes accruing to the SNG is a full 1/3.

Under the fiscal arrangement where the SNG keeps none of its revenue, but the federal government shares all collected SNG revenue equally among n SNGs, α = 1/n. Given n = 32, then the SNG's marginal rate of substitution at the optimum is:

$$\frac{P}{P_y} = \frac{1}{1- (1/4)*(1/n)} = \frac{128}{127}.$$

In the common pool case, the shift toward y induced by $\tau(y)$ is just 1/127.

To summarize the effect in this example, consider the base case where y has no effect on the budget. Then the shift marginal rate of substitution away from the base case when α = 1 is a full 1/3 and is more than 42 times the shift when α = 1/n = 1/32.

Revenue sharing: the fiscal pact with the devil

Until recently, many parts of the world during the mid to late twentieth century exhibit a trend toward greater fiscal centralization. In Argentina and Mexico, for example, the national government made a political deal with its SNGs in which the SNGs gave up important aspect of their taxing authority in exchange for the national government providing greater revenue. National governments were able to offer this exchange in part because they gained monopoly authority over taxes. As Hayek (1939) and Tiebout (1956) noted long ago, competition among SNGs for tax base limits their ability to tax: too high a tax rate induces mobile factors to move to other jurisdictions. The national government faces no such constraint because it can impose the same tax laws across all SNG jurisdictions. Thus, when the SNGs give up their tax authority to the national government, the national government can set taxes at higher rates than allowed by SNGs facing competitive pressures.

We call these agreements *fiscal pacts with the devil* for two reasons. First, revenue sharing agreements typically require that SNGs give up their policy and fiscal autonomy. Second, these pacts induce the SNG to substitute corruption and rent-seeking for providing public goods. The tradeoff between r and y represents SNG□s tradeoff between corruption, rent-seeking and market intervention, on the one hand, and economically productive activities on the other. The simple model above shows that, holding constant for all other proclivities toward corruption and market intervention, the fiscal system affects an SNG□s incentives to foster markets. Put simply, the stronger an SNG□s fiscal incentives ☼ as measured in terms of the proportion of locally generated taxes it captures ☼ the less corrupt and more pro-market oriented the government. All this generated simply by government officials pursuing their rational goal of political survival.

The model predicts that countries whose fiscal system primarily finances SNGs through revenue sharing should have higher rates of corruption than countries whose SNGs are primarily self-financing.

Electoral competition

We end the theoretical section with an analysis of the effects of electoral competition. Competition systematically affects local leaders' preferences. Following Diaz-Cayeros (1997), we argue that jurisdictions without competition – where the PRI retains a monopoly on power, leaders should be less sensitive to constituent interests and more focused on corruption and the distribution of rents. In contrast, leaders from localities where the PRI competes with an opposition party should exhibit more responsiveness to citizen interests. Maintaining political support in these localities requires greater attention to public goods provision than areas where the PRI retains a monopoly.

We model this difference as a shift in the political support function. As shown in figure 2.2., the political support function for localities without competition, S(r,y;0), are systematically lower (prefer more r, ceteris paribus) than the political support function for localities facing competition, S(r,y;1). Along the flat budget line, $\alpha = 0$, the two types of leaders make different choices between r and y, with the SNG facing greater competition choosing more y and less r than the leader who does not face competition.

To study how the fiscal incentives work differently in these two localities, we examine the shift in SNG choice when we increase α a fixed amount from $\alpha = 0$. Preferences of SNGs without competition are in the lower right. In this region, the fiscal leverage associated with an increase in α from $\alpha = 0$. In the figure, this SNG provides a tiny increase in resources devoted to corruption and a slightly larger amount to public goods.

In contrast, the preferences of leaders from a locality with a high degree of competition are in the upper left. In this region, a shift in α affords the SNG significant leverage, and it uses the increase in fiscal resources to provide approximately forty percent more public goods. There is also a small increase in corruption and rent-seeking.

In sum, political competition makes SNG leaders more sensitive to constituent interests. This combines with the fiscal effect to given these leaders greater incentives to provide public goods.

3. Historical background on fiscal federalism in Mexico

Although the Mexican Constitution establishes a decentralized fiscal system, revenue collection and expenditure are very centralized. Mexico's Federal structure consists of 31 states, one Federal District, and 2,392 municipalities. Subject to some restrictions, the Constitution defines states as the residual claimants of taxing powers. In spite of the legal attributions, from 1947 to the late 1970s, Mexican states sequentially joined a revenue sharing contract with the federation, whereby they delegated most of their taxing powers to the federation in exchange of revenue transfers and investment projects.

Fiscal centralization in Mexico was part of a broader process of political centralization thatbegan in 1929 with the creation of the Revolutionary party (later, the PRI). Over the next several decades, the Federal government slowly but firmly reduced the autonomy of the states and the municipalities.

The victors of the Revolution (1910-1917) drafted a constitution with the aim (among others) of restoring financial stability. The constitution granted exclusive taxing powers over strategic areas to the federal government and forbid the states from levying taxes that would obstruct the emergence of a national market. Yet the constitution failed to achieve these objectives. Well into the 1940s, the fiscal system remained chaotically decentralized as the Mexican federal system exhibited significant common pool problems. The states levied unconstitutional and overlapping taxes; they also erected significant trade barriers; and the federal government proved unable to police the constitution or the common market (Margain, 1971; Islas 1997, Diaz Cayeros 1999). Moreover, political order remained problematic. Even though the Revolution officially ended in 1917, Mexico remained in a state of virtual civil war until the 1940s, suffering a ceaseless succession of power struggles among local strongmen, and between them and the centralizing interests in Mexico city (Weldon 1997).

In an effort to rationalize and centralize tax collection, the federal government held two National Tax Conventions, in 1925 and 1933. Neither convention resulted in major changes.

Table 1 displays the number of taxes levied per area of economic activity by the different levels of government. Notice that the three levels of government levied 80 separate taxes on industry and commerce and 32 on capital (highlighted in bold). Exacerbating these problems, "corruption was rampant in every tax administration," partly due to the sheer difficulty of compliance with tax regulations (Islas 1997).

Table 1. Multiplicity and Overlap of taxes in 1940

Area of economic activity	**# of taxes levied by the Federal Government**	**# of taxes levied by the States**	**# of taxes levied by the Municipalities**	**Total # of taxes levied**
Imports	5	-	-	5
Exports	4	-	-	4
Income	1	-	-	1
Property	-	3	3	6
Industry and Commerce	**19**	**40**	**21**	**80**
Agriculture	**-**	**28**	**20**	**48**
Livestock	-	14	2	16
Capital	**9**	**16**	**7**	**32**
Mining	5	4	-	9
Wages and Salaries	1	5	1	7

Additional	13	21	8	42
Total	57	131	62	250

Source: Presidencia de la Republica

The first major step toward fiscal centralization took place in 1947 when the federal government held the third National Tax Convention. It issued two main recommendations. First, the federal government should share revenues with the other levels of government. Second the taxes over industrial and commercial activities should be exclusively collected and administered by the federal government. Following this convention, the President created and regulated the tax over mercantile income (Impuesto sobre el Ingreso Mercantil, ISIM). It derogated all state sales taxes, and established a single federal tax of 3%. The federal government would receive the equivalent of 1.8% of sales in each state, and each state would keep the equivalent of 1.2% of the sales.

As created, the new tax coordination system was a contractual agreement between the federation and the states. It was therefore voluntary. The system had a carrot and a stick. States that joined would get more revenue in exchange for their authority to tax in the areas decreed "exclusively federal." States that did not join could continue levying taxes in these areas, but they bear the cost of the federal taxes without receiving any revenue.

Of the 32 states, in 1947 only the Federal District and the territories of Quintana Roo and North Baja California and South Baja California joined the new arrangement. All four states did so in part because they were under the direct control of the federal government. Over the next few years, seven other states entered the system: Agauascalientes in 1949; Morelos, Queretaro and Tlaxcala in1950; Michoacan and Sinaloa in1951; and San Luis Potosi in 1952.

The next step in the fiscal centralization occurred in 1953 when the federal government instituted the first general Law of Fiscal Coordination (LFC). As with the previous agreement, the LFC was a contractual arrangement between two levels of government, with no constitutional obligation for the states to comply. The main expressed objective of the LFC was to remove all restrictions to interstate commerce. But there was also a clear intent to coax the still reticent states to join the revenue sharing system. This law also declared the income tax exclusively federal; and the center committed to share a proportion of it with the states. This carrot was sufficiently attractive to induce seven more states to join: Colima, Yucatan, Hidalgo, Campeche, Tabasco, Puebla and Guerrero. Nonetheless, fourteen states remained outside the system

In 1972, after a failed attempt to create a value added tax, the federal government decided to increase the Sales Tax to 4% and to share the full extra percent with the states. This additional revenue induced even the most reticent states to comply with the voluntary tax coordination system (Presidencia de la Republica, 88).

Thirty-three years after the 1947 convention, the federal government completed its program of fiscal centralizatoin. In 1980, it issued a new Fiscal Coordination Law. In exchange for greater centralization of tax authority, states received increased and supposedly less arbitrary transfers, that would be regulated by a formula. The new law also introduced two big changes in the revenue sharing system. First, it created the value-added tax (impuesto al valor agregado, IVA), replacing a vast number of municipal and state taxes on production and services. Second, the law established the National System of Fiscal Coordination (SNCF). Under SNCF the federal government agreed to share with the states and municipalities a portion of the *Recaudacion Federal Participable* (RFP). The RFP was composed of all the taxes denominated “exclusive federal”: the income tax (on individuals and corporations), assets tax, value added tax (IVA), special production and service tax, new automobile tax, general taxes on imports and exports, and tax on vehicle ownership. Thus prior to 1980 the central government shared with the states a portion of two specific taxes (the sales tax, and income tax), since then it has shared a proportion of a larger set of taxes.

The 1980 law also markedly increased the proportion of revenue that the central government transferred to the states. SNCF also established that states were required to share twenty percent of the transfers with their municipalities (though this has not been systematically enforced). As before 1980, states enter the SNCF voluntarily, but once they did, they could no longer levy local taxes on the "exclusive federal areas."

4. Fiscal Pacts with the Devil: Incentives for Good Governance under the Mexican Revenue Sharing System

The literature on federalism establishes that all federalist systems face two dilemmas: First, a federal government too strong destroys federalism by compromising SNG autonomy (de Figueiredo and Weingast 2000, Ferejohn and Eskridge 19**, Riker 1964). Second, a federal government too weak to police common pool problems among SNGs risks several efficiency problems (Blanchard and Shleifer 2000, Inman and Rubinfeld 1997, Jones, Sanguinetti and Tommasi 1999, Sanguinetti 1994). Competitive and overlapping taxation place too big a burden on economic activity. Barriers to interstate trade burden national exchange and make all worse off. Finally, various types of policy spillovers have negative effects across jurisdictions. Preventing these problems requires that the federal government police state behavior. Yet, consistent with the two dilemmas of federalism, granting the national government sufficient power to police the states risks that it will use its power to place onerous restrictions on the states, compromising state autonomy. Too strong a center, limiting competition among states, also reduces efficiency. These dilemmas imply that maintaining federalism requires a delicate balance of power between the national government and the SNGs.

Following the discussion in section 3, we divide the evolution of the Mexican fiscal system into three periods. The first period covers the end of the Revolution to the late 1940s. The second period covers 1947 until end of the 1970s, during which the federal government centralized fiscal power by coaxing all the states to enter the revenue sharing pact. Finally the third period, covering 1980 to the present, began with the establishment of a formula to allocate federal revenue among the states.

Our hypothesis about federalism in Mexico is threefold. First, in the beginning, Mexico had too weak a center, thus suffering from common pool problems. Second, it made major efficiency improvements by mid-century, but also began encroaching on state autonomy. Third, since 1972 the center has continued to grow in strength at the expense of true federalism. We discuss these periods in turn.

Period 1: 1917-1947. Following the Revolution, Mexican Federalism exhibited standard common pool problems due to too weak a center. States retained fiscal and policy authority, but overgrazed the commons. The result was too many taxes, protectionism that hindered interstate commerce, and corruption. According to Diaz Cayeros (1999, 48),

> The constitution prohibited taxes that would hinder interstate trade, but this was systematically violated. Local governments relied on immobile assets or on transactions that were easily measured. Producers had few exit options due to the state of physical infrastructure and the financial system. This state of anarchy hindered economic growth but politicians were unable to solve the collective dilemma.

In the 1920s and 1930s leaders and interests in many states realized that there existed efficiency gains to improving cooperation among the states (Diaz Cayeros, 1999). Consistent with the two dilemmas of federalism, the states failed to cooperate in the construction of a national market for two reasons. First, it was hard for states to trust one another because they all had incentives to defect, and most states retained the necessary resources to re-start a war. This is evidenced by the smoldering civil war that persisted well into the 1930s. Second, it was hard for states to trust the federal government as a neutral enforcer of the national market (Diaz Cayeros, 1999). During the initial phase of centralization, the federal government reduced the ability of the states to overgraze the commons. The political result was a federal system resembling market-preserving federalism (Montinola, Qian, and Weingast 1995, Weingast 1995). The economic result was greater economic efficiency, as witnessed by sustained growth commonly known as the "Mexican Miracle" (1950-1970).

Period 2: 1947-1970s. After 1947, through centralization, the federal government progressively compromised the states' ability to exercise independent policy and fiscal autonomy. Our second hypothesis is that fiscal pacts with the devil during the second phase of Mexican federalism had significant political effects beyond their direct economic effects. By agreeing to pact, the states abdicated their right to tax several important areas of economic activity in exchangefor revenue transfers and investment projects from the federal government. Also, the states could cease to collect unpopular local taxes.[1] By centralizing tax collection and expenditure, the federal government increased its revenue. Increased power of the purse over the

1 According to Islas (1997), federal officers argue that states lack the political courage to raise their own taxes. "Appointments of tax collectors are often politically motivated and those selected are often not committed to the task or are strongly influenced by political pressures, such that relatives of the local authorities or powerful "*caciques*" do not pay their taxes at all" (Islas, 1997)

states combined with the hegemonic party's manipulation of politicians' career incentives allowed the center to exercise considerable political control over the states.

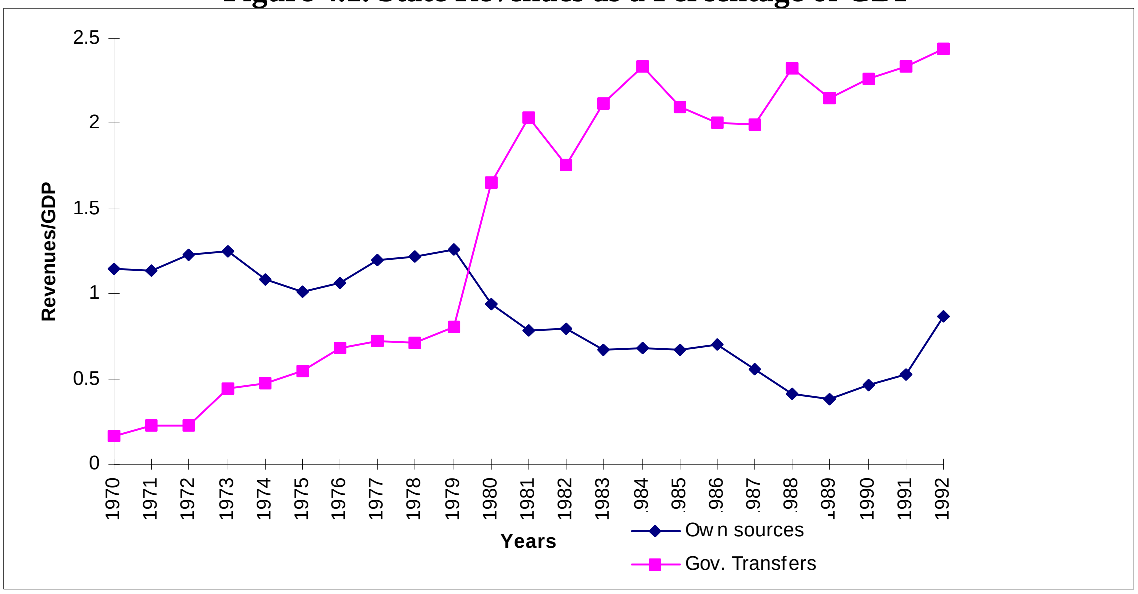
We call these agreements the fiscal pact with the devil because the federal government tempted state politicians with sufficiently attractive revenue packages that they could not refuse the deal. Although the deal had deleterious effects for a state's ability to improve citizen welfare, politicians were better off because of the additional revenue that could be spent on building constituency support – and on corruption. Because more and more decisions came to be made in Mexico City, citizens could no longer hold state and local officials accountable for poor performance (as emphasized by Fiorina and Noll 1978).

What induced the states to join a FPWD with the federal government? Economic and political carrots and sticks worked toward this goal. First, the federal government offered the carrots of additional revenue for states and exciting political careers to the state officials. Second, the federal government provided two sorts of sticks: it would collect federal taxes in the state used for the revenue sharing pool regardless of whether the state joined the pact, and the PRI's rotation system destroyed the ability of representatives to develop long term relationships with their constituents.

The center did not legally force states to join the pact. Nonetheless, this system came close to coercion. The two factors in combination meant that a state which refused to join the pact had higher taxes (both its own and the federal government's) and lower revenue. By joining, a state could reduce its taxes and raise its revenue.

Figure 4.1 shows the impact of the final piece of the FPWD. In the years prior to 1980, states on average raised approximately three-fifths to three-quarters of their own revenue. After 1980, the proportions reversed so that, during much of the 1980s, on the order of three-quarters of state revenue came from federal transfers. A recent econometric study, for example, claims that after 1980, for every peso given through transfers, state treasuries diminished by 17 cents their own tax revenue, (Gutierrez and Islas, 1995; 139).

Figure 4.1. State Revenues as a Percentage of GDP



Source: Islas (1997)

How did state government performance change after joining the FPWD? Our theory also makes a series of predictions. By breaking the relationship between the provision of local public goods (more broadly, good government) and state revenue, the pact greatly diminished state officials' interests in fostering a prosperous economy. Therefore, we predict that the changes to the fiscal system after 1950 reduced efficiency and increased corruption. These changes seem more about creating political power and rents at the center than of enhancing efficiency.

The following table shows some evidence of lack of accountability of local finances within the Mexican FPWD. Table 4.1 shows the reported expenditures of states from 1989 to 1993. Notice how the executive and the undefined category "other" make up almost 70% of local expenditure. Those two are also the most difficult expenditures to trace. These are also the most likely aspects of corruption, rent-seeking, and direct benefits to politically important groups. This analysis parallels Diaz-Cayeros's (1997) emphasis that "administrative expenses" represent corruption and rent-seeking.

Table 4.1Administrative expenditures

	1989	**1990**	**1991**	**1992**	**1993**
Executive	**33.17%**	**38.89%**	**41.01%**	**40.75%**	**36.50%**
Legislative	0.63%	0.82%	1.04%	1.04%	1.04%
Judicial	0.98%	1.55%	1.65%	1.47%	1.06%
Law enforcement	1.32%	0.51%	1.02%	1.49%	1.30%
Health	2.15%	2.39%	2.12%	1.97%	1.52%
Education	19.80%	18.61%	19.58%	20.21%	22.16%
Culture	1.18%	0.61%	1.06%	0.97%	0.96%
Social security	0.46%	0.32%	0.61%	0.50%	0.83%
Public registry	0.06%	0.06%	0.09%	0.06%	0.07%
Others	**40.24%**	**36.23%**	**31.81%**	**31.55%**	**34.55%**
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Source: INEGI 1997

Period 3: 1980-Present. The third period starts with the 1980 reforms. This new system completed the centralization of tax authority and established a formula to provide transparency to the assignation of the Transfers fund. Stability was not established, however, as the central government altered the formula frequently: in 1981, 1983, 1984, 1988 and 1990.[2] The following text box summarizes the various changes in the formula.

2 [The exact assignation formulas will be added in an annex.]

- In 1980 the Transfers fund was allocated among the states solely on the basis of the proportion of federal taxes raised in each state.

- In 1981, each state received the same nominal amount as in the previous year, and the increase in the Transfers fund (i.e. Transfers fund 1981- Transfers fund 1980) was distributed among the states taking into account the collection effort of each in the current year.

- In 1983 the formula again assigned each state the same nominal amount as the previous year, plus a proportion of the increase in the Transfers fund taking into account their collection efforts of the year with respect to the past two years.

- In 1984, the central government attempted to stimulate the collection of the Value Added Tax (IVA). Since the reform of 1980, states were responsible for collecting the IVA and for sending a portion to the federation. In this year, the formula allowed each state to keep 30% of the IVA it collected, plus an amount similar to that received by each the year before, modified a bit by general collection effort of the past year.

- In 1990 the federation took IVA collection away from the states and made transfers based on three criteria: population, tax collection effort, a small part inversely related to population. During the next four years, the federal government tinkered with the relative weight of the three criteria. Table 4.2 shows the percentage of the Transfers fund that was distributed by the three assignations criteria in the years 1991 to 1994.

- Since 1994, 45.17% of the Transfers fund is distributed according to state population, 9.66% is distributed in an inverse per capita relation, and 45.17% is distributed again according to a formula that awards the states the same nominal amount as the previous year, plus a proportion of the increase in the Transfers fund taking into account their collection efforts of the year with respect to the past two years.

Table 4.2. Weight of the distribution criteria of the of the Transfers fund by year

Year	% of the Transfers fund distributed by population	% of the Transfers fund distributed by formula	% of the Transfers fund distributed inverse to the other two criteria
1991	18.05	72.29	9.66
1992	27.10	63.24	9.66
1993	36.15	54.19	9.66
1994-	45.17	45.17	9.66

Source: *Presidencia de la Republica*

To give a sense of the high degree of state dependence on transfers from the federal government, we provide the table that shows the national average distribution of state revenues by source. Table 4.3 shows for the period 1989-94, transfers from the federal government averaged 65.7 percent of state revenue (see table 4.2). The proportion is even higher for the poorer states. Table 4.4 shows that the seven poorest states received on average almost 80 percent of their revenue from the federal government.

Table 4.3: Distribution of State Revenues

	1989	**1990**	**1991**	**1992**	**1993**	**1994**	**Avg 89-94**
Transfers	74.33%	75.45%	69.59%	68.98%	56.74%	48.96%	65.67%
State taxes	2.99%	3.49%	3.90%	4.33%	3.44%	2.88%	3.50%
User charges	10.32%	11.94%	11.71%	10.86%	26.08%	35.25%	17.69%
Debt	12.36%	9.12%	14.80%	15.83%	13.74%	12.91%	13.13%
Total Income	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Source: Islas 1997, from INEGI, 1994

Table 4.4: Distribution of Transfers to selected States as Percentage of total income

Income source (%)	Guerrero	Hidalgo	Michoacan	Oaxaca	Puebla	Veracruz	Zacatecas
Transfers	39.6	90.2	81.9	87.4	80.6	67.2	79.5
Own revenue	60.4	9.8	18.1	12.6	19.4	32.8	20.5

Source Rodriguez (1997,**)

Explaning when states joined the FPWD

Given that all the states faced the same carrots and sticks, what explains the differential willingness to enter the FPWD of Mexican states? Seventeen states and the Federal District joined in the 1940s and early 1950s. In contrast, fourteen states waited over two decades to join, in 1972.

The theory developed in section 2 provides a hypothesis that explains this differential pattern. States with the largest ability to raise their tax base through providing better public goods and services are more likely to favor retaining their revenue independence. In contrast, states with a relatively low margin of influence over their tax base are more likely to favor joining a revenue sharing system. The reason is that, ceteris paribus, the marginal effect of public goods on local tax revenues is likely to differ across states. For example, in states with poor infrastructure, more reliance on peasant agriculture and less dependence on market exchange, the local economy will be less responsive to market-enhancing public goods. For these states, the costs of moving to a revenue sharing system are lower than for richer states. As we argued in section 2, this reinforces a natural tendency in 1/n type of revenue systems: if the revenue is shared equally among the states, revenue poor states get more than their share of revenues while richer states get less than their share.

To test our hypothesis, we investigate the relationship between states when states joined the FPWD and various economic indicators. The analysis reveals that, per our predictions, the richer and more market oriented states on average joined later. For example, the average per capita state income of states joining in the 1940s and 50s was approximately 5,600 pesos in 1970, whereas it was approximately 16,000 pesos for those that joined in 1972, roughly three times higher. Similarly, states that joined later had far more exports. At present, we only have export figures for 1998, so this is only indicative. States that joined the FPWD early averaged exports of $1.2 billion in 1998, whereas those joining late averaged exports of $4.4 billion, a factor of roughly 3.7 times larger.

To obtain more systematic evidence in favor of our hypothesis, we used logit analysis. As the dependent variable, we divided states as noted above: whether they joined in the late 1940s and early 1950s, or whether they joined in 1972. We used two independent variables, state GDP per capita in 1970 and state exports in 1998.

The results are reported in Table 4.5. They show that GDP per capita is a statistically significant determinant of the decision to join. In contrast, exports in 1998 is not statistically significant (perhaps because our data for this variable is for a date so much later than when these states made their decisions to join). The overall performance of the logit is also good. For example, it correctly predicts 74.2 percent of the cases, which out performs the null model's correctly predicting 54.8 percent of the cases.

Table 4.5: Logit Analysis of When States Joined the FPWD

Independent Variable	Estimated Coefficient
	(t statistic)
Constant	-2.36*
	(2.47)
GDP/capita	0.25*
	(2.02)
Exports	-.075
	(.44)
No. observations	31
Percent Correctly Predicted	74.2
Log Likelihood	
Initial	-21.5
Convergence	-15.2

* Statistically significant at the .05 level.

In sum, the evidence supports our theory. More market-oriented states are likely to exhibit a greater responsiveness of their tax revenue to their public goods provision. For this reason, they are less likely to join the FPWD, all else being equal. The evidence is consistent with this prediction. On average, states with higher per capita income joined later.

Calculating the incentive effects in Mexico's revenue sharing formula

Our theory allows us to analyze the incentive effects of the various formula employed in Mexico's revenue sharing system after 1980. We begin with the formula used in 1980,

$$R_i = A_i / \Sigma A_j$$

where R_i is state i's revenue share of the common pool, P, where $P = \Sigma_j A_j$, and A_j is the amount of revenue raised in state j. The formula says that a state's revenue share, R_i, is the fraction of the total revenue pool represented by the share of taxes raised in its state.

Our theory yields several implications about this revenue sharing formula. First, the formula has very poor incentive effects because of the law of 1/n. The reason is that state i captures only a proportion R_i of any increase in its own revenue. Because the revenue sharing is not literally 1/n, but tied to a state's contribution to total revenue, this formula is biased against revenue poor states in favor of revenue rich ones. Second, when a state joins this system, revenue generated within the state that the state keeps should decline. The reason is that the theory predicts that the state will substitute away from y toward more r, lowering tax revenue and increasing corruption. Of course, due to the incentives to join the system, revenue transfers from the federal government will increase. Third, the negative effect on locally generated taxes is likely to be larger in the more market oriented states. The reason is that in these states the effect of public goods on locally generated revenue is likely to be larger in these states. Fourth, this formula involves no redistribution to poorer states. remarkably, each state puts in A_i and receives back $R_iP = (A_i / \sum_j A_j)P$. Substituting for P, yields that each state gets back A_i.

To see the effects of the formula, consider Aguascalientes, a poor state that produces only 1% of total revenue. This state's share of the common pool is R = .01. If this state makes a major effort to improve its economy, it captures only 1% of any increase in locally generated revenue; a full 99% of the increased revenue goes to other states through the common pool. The situation is not much better for a rich state like Nuevo Leon, which produces about 4.6% of total revenue. Efforts to improve the economy yield this state only 4.6% of the additional revenue, so that 95.4% goes into the common pool. Ironically, the Federal District yields the largest portion of total revenue at 15%. Yet its historic control by the non-market oriented national government makes it unlikely to respond to these relatively large incentives to foster market growth.

These results for the revenue sharing formula in used in 1980 demonstrate that the purpose of this FPWD and under this revenue scheme cannot be redistribution. Because each state gets back the same amount that it puts in, the purpose of revenue sharing must be political and not redistributive.

(B) Analysis of 1984 formula

In 1984, the central government created a complex formula, allowing the states to keep 30% of the value added tax. The 1984 formula was an interesting experiment because collection of the IVA decreased instead of increased ☼ the states were probably under reporting collection to use as rents**.**

(C). Analysis of current formula (1995-present).

Mexico's current formula for distributing revenue dates from 1995 and has three components. The formula allocates 45.17% of the revenue pool on the basis of population; 45.17% by a formula, analyzed below; and 9.66% in inverse proportion to the other two criteria.

The component based on population is simple to analyze. A state with a proportion, q_i, of the population receives $.4517q_i$ of the total pool. The formula entitles a state of average population (3.125% of the total) to receive $.4517{*}.03125P \approx .014P$. This also implies that, for an increase in revenue of x%, this component entitles the average state to .014x, or about 1.4% of the increase.

We now turn to analyze the 45.17% of total revenue allocated under by formula. It implies several different effects. After 1980 the federal government attempted to give states an incentive to improve their collection of tax revenue. The 1995 formula does this in a clever if complicated way.

Since 1995, Mexico has used the formula (F1) for distributing 45.17% of revenue from the common pool:

$$R_{it+1} = \frac{R_{it}(A_{it}/A_{it-1})}{\Sigma_j R_{jt}(A_{jt}/A_{jt-1})} \tag{F1}$$

where R_{it} is state i's share of the total revenue in time t; A_{it} is the proportion of revenue pool, P, raised in state i in time t; and the total revenue pool, P, is given by $P = \Sigma_j A_{jt}$.

To understand the effects of the formula, consider what happens when one state raises its tax collections by x% and all other states remain constant. The numerator becomes $(1+x){*}R_{it}$, and the denominator becomes $\Sigma_j R_{jt} + x{*}R_{it}$. In general, the second term of the denominator, $x{*}R_{it}$, is small, implying that the formula is approximately $(1+x){*}R_{it}/\Sigma_j R_{jt} = (1+x)A_{it}$. The last equation suggests that a state that increases its revenue by x percent receives nearly that percent additional transfers.

Consider an example. Suppose that state i produces 5 percent of all revenue and that it increases collections by 10 percent (i.e., x = .1). Then the numerator becomes 1.1*.05 = .055; and the denominator becomes 1 + .1*.05 = 1.005. So state i□s increase over last year is .055/1.005 = .0547, virtually .055. In other words, the formula grants state i 94 percent (47/50) of all local increases in revenue. Although the formula lowers the proportion going to all other states, the rise in the total pool slightly offsets this so that they are just marginally better off. To summarize, the formula says that, holding constant for the behavior of other states, if state i increases its revenue, this year over last year, then next year it will receive that nearly the full increase.

The public rationale for this formula is that it gives states an incentive to collect more revenue, and it accomplishes this to the extent that the state captures approximately 45% of any increase in collections. The formula accomplishes more than this, however, since the state captures any source of increase this way. Thus, to the extent that a state promotes economic development, the formula allows it to capture about 45% of the increased revenue from the taxes designated as going to the common pool.

Not all states will want to increase revenue. Some may well use their power to grant particular constituents tax relief by systematically failing to collection some types of taxes or taxes from specific individuals and groups. States that do want more revenue are likely to pursue both more public goods (y in the model) and greater tax compliance.

We now investigate the impact of the formula as a whole on a state□s marginal incentives. Thus, if state i increases its collections by x%, the overall formula grants it three components of an increase. First, by population, state i with population proportion qi receives back a portion of their gain from the common revenue pool of $.4517q_i$*x%. For a state with the average population of .03125, this implies that state i receives back 1.4% of the gain. The second component is by the complex formula, F1, which grants state it 45.17% of the gain. The third component, based on inverse of population, grants a state with the average population an additional 0.3% x.

Thus, for a state with the average population, an increase of x% translates into three components of gain are: .4517x, .014x, and .003x, for a total increase of .466x. Of course, this represents only half of all federal revenue spent in the states. This implies that, at the margin, each state keeps a little under one quarter (.233) of any increase in locally generated revenue.

Tax compliance. To analyze how Mexico's revenue sharing formula elicits greater tax collection efforts by the states, assume that each state can increase the revenues it collects with greater effort, e, (more bureaucracy, compliance officers, courts, etc.). Effort level e yields revenue R(e), but this effort is costly, c(e). We make the standard assumptions about these functions: R is increasing, but at a decreasing rate: $R' > 0$, $R'' < 0$; and c is increasing, at a (weakly) increasing rate: $c' > o$; $c'' \geq 0$.

Optimal effort by the state in tax compliance requires that the state choose the level of e that maximizes R(e) - C(e). Doing so implies that, at the optimal level of effort, e*, the marginal revenue generated R' just equals the additional marginal costs of the states's effort, c'.

We have seen, however, that the states do not capture 100% of the increase in their revenue. Since they bear 100% of the costs of their effort, but gain only 46.6% of the return, states maximize the formula, .466R(e) - c(e). The first order conditions for an optimum imply that at the maximum, the state will set $.466R' = c'$.

Figure 4.x illustrates the difference between a state's behavior given its incentives and the optimal level of tax compliance.

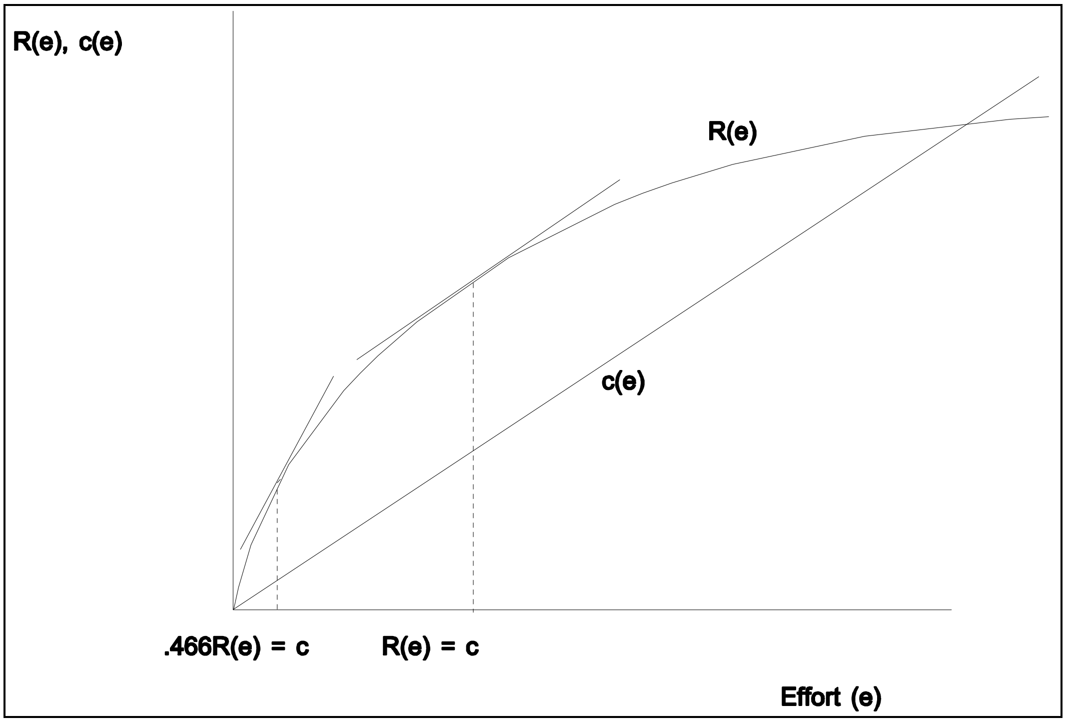


Figure 4.x: Optimal State Choice of Tax Compliance Effort (e).

Given our assumption that R is concave, the common pool aspects of revenue sharing system implies that 55.4% of the increase due to its effort go into the pool and thus to the rest of the states. Hence it will expend less than the optimal effort to increase tax compliance.

Implications. Over the 1980s and early 1990s, Mexico changed its formula for distributing revenue from the common pool. Throughout, the system has had very poor incentives for improving tax collection and promoting local growth, though they were worse in 1980 than under the current formula. In the beginning, states received roughly what they put in. Due to the common pool problem, however, they received very little of any increase in tax revenue they could generate. By 1995, the formula provided a medium level incentive: a marginal return of .466, of new revenue contributed to the common pool.

Unfortunately (from the incentive point of view), the revenue going into the pool ☼ and thus covered by the three-part formula just analyzed ☼ is only a portion of total funds spent by the central government in the states and localities. The amount of discretionary money given states under other categories — earmarked funds referred to as federal investment -- far exceeds that given in this category. In 1982 Federal investment on average exceeded transfers by a ratio of four to one.In the late 1990s, Federal investment approximately equaled transfers. Further, due to Mexico□s centralization, including the FPWD, states have many fewer policy options. States lack control over their tax system, except along the dimension of tax collection and compliance, to which we now turn.

In terms of the theory in section 2, a marginal factor of .466 on approximately 20 percent of all revenue raised spent in the states (in 1982) yields an α of just over .09. Given the comparative statics in section 2, this implies that states in Mexico face very low fiscal incentives to produce market fostering public goods. The marginal tax incentive of Mexican states – of just .09 -- is on the order magnitude of that faced by Russian cities with respect to their regions (estimated by Zhuravskaya, 2000). In recent years, this has improved a bit, so that the current marginal factor is .466*.5 = .233.

5. Incentives for economic reform: PAN administrations in northern Mexico.

In this section, we apply our approach to the recent changes in Mexican federalism, particularly the emergence of the PAN, an opposition party in Northern Mexico. We then contrast these changes with parallel reform process in India and China.

Predictions

The theory in section 2 focused largely on a state's decision to join the FPWD. The model also predicts the circumstances under which a state or locality will opt out of the system. As we suggested in section 4, states face high costs to exit the revenue sharing system. A state outside the system bears all the costs of the revenue sharing system -- the federal government collects its taxes in the state regardless of whether the state participates -- but it fails to obtain any of the benefits, that is, its share of these revenues. In part for this reason, no state has chosen to exit the system.

In contrast, large numbers of municipalities across Mexico have opted out of the PRI-dominated system. During most of the years of the PRI's hegemony (1930-1980), few municipalities elected opposition governments. At this time, a municipality faced a significant cost in electing an opposition party: although the PRI might not cut off funds that it was legally obliged to provide, it could withhold the discretionary funds, such as those financing public works. In the early 1980s, the discretionary funds were roughly four times the size of the revenue sharing system (these figures included revenue and expenditures at both the state and local levels).

When would a municipality be willing to pay this fiscal price? The traditional PRI system limited the tailoring of local public goods to the local environment. It also included rampant corruption. Our approach predicts that, as the opportunity costs of this system rise for particular municipalities, some will opt out. In particular, for many municipalities along the United States border, the value of the "outside" option -- of integrating with the U.S. economy -- grew over time. Yet the traditional PRI system constrained these localities' ability to provide complementary public goods to help foster this integration. As economists emphasize, a range of services are important for local economic development, such as the reliable delivery of electricity, police and fire services, garbage collection, and the provision of other infrastructure.

Applications

Northern Mexico contains one of the most vibrant parts of the Mexican economy, increasingly integrated with that of the United States. In this region, the economic opportunity costs of remaining under the traditional PRI system of market control are the highest. Similarly, this region places the highest value on public goods and services complementing market development. It is not a surprise, therefore, that municipalities in this region were the first to elect opposition governments in the 1980s. At the turn of the century, the PAN holds the lion's share of all the major cities in Mexico (Diaz-Cayeros and Magaloni 2000).

PAN arose in northern Mexico in part from the growth business class, particularly small and medium size enterprises (cite). Panistas drew many of their new officials from the business community who wanted to improve public services. Being an opposition party in a political system dominated by the PRI, panistas lacked the compelling career incentives that the central government offered local priistas in exchange of toeing the party line.

As the PAN first started to win control of a few municipalities in Northern Mexico, PRI officials threatened to cut off funds. PRI officials had often followed a rule of rewarding their friends and punishing their enemies (Bailey 1995,176). As it turned out, PRI officials did not cut off revenue transferred by formula (*participacion*), though many funds were significantly delayed in their delivery, especially before elections. Indeed, many fewer funds were given from the huge federal discretionary budget (Rodriguez 1995).

A principal PAN goal was to end corruption and focus on the delivery of public goods and services that helped foster their constituent□s interests, and their own careers (in the public and the private sector). Panista goals included improving the provision of a range of municipal services, such as garbage collection, police, and water.

So how did the PAN survive when municipalities depend on the state and federal government for so much of their funds? Because they sought to serve a constituency different from the PRI’s and because their political survival depended on improving public goods and services, PAN implemented very different policies from their priista predecessors. Rather than merely attempting to capture power to take away the rents from the PRI, panistas sought power to promotemarkets.

Our theory helps answer the question of how the PAN survived given the PRI’s fiscal punishment. It predicts that, as a market-oriented municipality opts out of the PRI-fiscal system and takes control of the provision of local public goods, its revenue increases along with the local economy. In combination with lowering levels of corruption, enhanced delivery of public goods and services greatly increased local citizens’ willingness to pay taxes. In short, for localities that elected PAN governments, local tax revenue grew quickly to replaces losses from the state and federal governments.

The PAN experience in the municipalities of Chihuahua and Ciudad Juarez with the police services and garbage collection illustrate our claims (Ward 1995). The PRI built the old system to suit their own goals. This involved considerable corruption, including large number of employees being paid without any real jobs and those nominally holding jobs having little incentives to act in accordance with police goals. By firing all these ♂employees,□ the PAN was able to hire a real police force, including a training academy. By cleaning up corruption and focusing on the agency’s goals, PAN officials simultaneously improved service while lowering costs. Ward (1995, 146) reports a similar story in Chihuahua for garbage collection. By eliminating corruption and making their labor force more efficient, PAN officials increased collection routes by one third, covering 95% instead of 60% of the population, while reducing total labor by 27%.

More important, in accord with the principles of public finance, citizens’ willingness to pay taxes varies with the delivery of valued goods and services. Raising the value to citizens of these goods and services raises their willingness to pay taxes. Hence the PAN strategy also secured citizens’ willingness to agree to pay new forms of taxes associated with the delivery of real services.

In several panista run cities, officials were able to shift markedly their sources of revenue. Rodriguez (1995,166) reports of Ciudad Juarez, for example, that “Over the course of only a few years, the ratio of state to local revenues… changed from around 70 percent *state* funding to over 70 percent *local* funding (ingresos propios).” Most of the increase in Ciudad Juarez reflected an increase in municipal funds. State contributions over the 1980s were constant in real terms while revenue from local sources increased by almost sixfold. In particular, during the first year of the panista government, 1984, local revenue increased 300%.

The theory in section 2 suggests that, as the panista governments capture control of municipal administration, they are able to focus on particular market enhancing public goods that both serve their constituencies but also help provide more tax revenue. Local sources of revenue have grown tremendously.

The theory suggests two separate effects underlying the provision of public goods. First, as the analysis surrounding figue 2.2 suggests, electoral competition and the panista desire to serve a different constituency provides the primary motivation for these munipalities to attempt to provide more public goods and lower corruption. Panista official's political future depended on generating visible results from reform.

Second, per our emphasis on fiscal incentives, the panista ability to generate substantial increases in local revenue reinforce their goals to induce them to provide higher levels of public goods and services. Delivering valued goods and services to citizens raises their willingness to pay taxes. And, indeed, local taxes and user fees constitute an important portion of revenue in panista municipalities. These two incentives work together to imply a markedly lower degree of corruption in the PAN held cities, much greater services, and much higher willingness of citizens to pay taxes.

A brief comparison of Mexico with China and India

In China, India, as in Mexico, there appears to be a region well-placed to enter international markets. In China, liberalization began with Guangdong Province. In India, liberalizing states include Andhra Pradesh, Gujarat, Maharashtra, and Tamil Nadu. In Mexico it is the northern tier of states, particularly Baja California North, Chihuahua, and Nuevo Leon.

In each case, the relevant region has been granted or has wrestled a degree of political freedom from the center to create the political underpinnings of marketization. Decentralization allowed a small area to adjust their political arrangements and public goods package to foster markets as part of developing an export economy. India is the least developed, with Mexico not far ahead. China is much further along. For this to work, the SNGs must be given true control over public goods and regulation relating to their economy; fiscal autonomy that includes floating on their own bottom, and a hard budget constraint.[3]

Further, in all three cases, these regions represent those baring the hightest opportunity cost of living under the traditional regime of tight and complex controls over markets. In each, a new constituency sought to break free of these traditional controls.

Following Parikh and Weingast's (1997) discussion of India, we suggest that economic and political reform in Mexico may well follow a two step process. In the first step, a few areas have been granted the political freedom to be "one-step ahead," to use the Chinese phrase referring to the Chinese central government's granting to Guangdong province the political freedom to reform. Guangdong used its political and economic freedom to foster local markets and an export economy, eventually becoming quite rich (see, e.g., Oi, 1999, Shirk 1993, and Montinola, Qian, and Weingast 1995). In particular, Guangdong developed the political foundations for fostering economic reform, including fiscal independence that gave it the resources to foster public and private investment.

In the second step, other SNGs begin to imitate the success of those jurisdictions moving one step ahead. In particular, groups of constituents and government officials begin to ask why the changes cannot happen here too. Cao, Qian, and Weingast (1997) and Montinola, Qian, and Weingast (1995) detail this process in China. When Guangdong freed prices in the late 1980s, many other provinces remained committed to the old system of price regulation and subsidization. In relatively short order, however, prices in Guangdong had fallen for a long list of subsidized items. Other localities, including those seemingly deeply committed to the traditional communist system, began to explore marketization as a means of lowering their budgetary

[3] These conditions correspond to meeting conditions F2-F5 of market-preserving federalism (see Weingast 1995, 2000).

commitments. In Hielongjaing province, for example, the communist finance minister initiated that province□s immitation of Guangdong (Montinola, Qian, and Weingast 1995). Similarly, once Guangdong had demonstrated that immensely profitable enterprises could be created and substantial sums of DFI could be captured, provinces all along the southeastern coast began to immitate and compete for these activities.

In this connection, we emphasize that reform has emerged in a small number of industrial and export oriented states. As in Mexico, India was once dominated by a the near hegemonic Congress Party. Recently, the once opposition BJP party won national elections and formed a government. From our perspective, an interesting feature about economic liberalization in India is twofold. First, the BJP is no less corrupt or desirious of rents and market control than their Congress predecessors. Second, their relatively weak electoral position has fostered them to grant some political freedom to several states with pivotal electorates. This allowed a small group of states, such as Andhra Pradesh, Gujarat, Maharashtra, and Tamil Nadu, to pursue liberalization. This also involves a series of reforms including the provision of local public goods. As Saez (1998) suggests, the striking rise in DFI in India is concentrated in just a few states ☼ the total newly contracted DFI for FY 1995-96 was a remarkable $11 billion.

In all three cases, the potential surplus to be earned by greater freedom to participate in international markets helped drive the coalition ruling the locality. As our theory emphasizes, the fiscal incentives have proved central to implementing new policies. Greater fiscal resources imply more funds for market-fostering public goods. Moreover, in both China and Mexico, the local success of the initial areas implementing reform helped create the demonstration projects that can be imitated elsewhere. Provinces throughout China have sought to imitate Guangdong' initial success. And hundreds of municipalities in northern Mexico have followed the pioneering munipalities of the mid-1980s by electing PAN governments. We predict the same thing is likely to happen in India if reform is allowed to continue.

This argument shows how federalism can help the process of economic liberalization. In many countries, national majorities oppose reform. They thus hold the power to prevent, sabotage, or reverse successful reform. Federalism provides one way around this political dilemma. Federalism allows a country to initiate reform by delegating authority to initiate reform to a few select subnational unit where the demand for reform is the highest. Although the pro-reform constituencies do not represent a national majority, they are often locals ones. This allows economic reform to proceed locally even if conditions prevent it from proceeding nationally. As we argue in this paper, the fiscal incentives provided by the ability to capture more revenue from market growth provides an important incentive for these governments.

Clearest and most advanced in the case of China. Our prediction is that, as long as the federal government in India and Mexico allows the states wanting to pursue market reform, they too will serve as clear demonstration cases to others. This seems to be happening in Mexico as the PRI has lost its hegemonic status.

6. Conclusions

In this paper, we examine how political institutions affect good governance. Our context is fiscal federalism. We show that different forms of decentralization have markedly different effects on governance.

The theory in section 2 examines how SNGs make tradeoffs between providing public goods that foster markets and pursuing rent-seeking and corruption. The analysis shows that revenue sharing greatly reduces a state's incentive to produce public goods. When a state keeps the lion's share of its revenue, it more than recoups the costs of providing market-fostering public goods through the increased revenue generated. The additional revenue can be used to build further support. When SNGs derive most of their funds from a revenue sharing system, increases in revenue from providing public goods go into the common pool, shared among all states. Because an SNG bears all the costs of providing public goods but receives only on the order of 1/n of the return, it will provide a much lower level of public goods.

In this context, we derived the fiscal law of 1/n. In comparison with engaging in corruption or rent seeking, providing public goods provides more political support for an SNG. Our model yields a comparative statics result. The greater the proportion of locally generated revenue captured by the SNG, the more the SNG substitutes public goods provision for corruption. The fiscal law of 1/n says that the indirect effect of fostering greater SNG choice of public goods in a complete revenue sharing system is 1/n that of a fiscal system in which SNGs capture all locally generated revenue. Put simply, revenue sharing systems greatly diminish an SNG's incentive to provide market fostering public goods and increases corruption and rent-seeking.

Consistent with this result is the following pattern among federal systems. During its rise from a small economy on the periphery of the developed world in the late eighteenth century to become the richest nation by early twentieth century, states in the United States depended almost entirely on their own sources of revenue. So too do provinces in modern China (see Jin, Qian, and Weingast 2000, although this has changed somewhat in the late 1990s). Iaryczower, Saiegh, and Tommasi (2000) suggest that this characteristic also held in Argentina during its high growth phase in the latter part of the nineteenth century and early twentieth centuries. In contrast, this condition fails for modern Argentina, Brazil, India, Russia, and Mexico.

We applied our framework to Mexico, whose federal system has gone through three different phases since the Revolution, each with different implications for efficiency and growth. In the first phase, the absence of central control fostered common pool problems as states over-grazed the commons. Too weak a center allowed competitive taxation of businesses, state corruption, and internal trade barriers, resulting in significant efficiency losses. In the second phase, beginning in 1940, the federal government rationalized taxation, removed burdensome taxes, and established the common market. States maintained several independent sources of revenue. High growth ensued for the next thirty years, resulting in a period known as the "Mexican Miracle."

The third phase of Mexican federalism emerged slowly out of the second as the central government worked in tandem with the PRI to central power, authority, and finances. Gradually, the central government coaxed the states into giving up their policy and taxation authority in exchange for revenue and attractive career alternatives for politicians. Completed in 1980, centralization ushered in the third phase of centralized federalism. During the third phase growth stalled substantially.[4]

Our analysis of the various revenue sharing formulas employed by the central government bear out the theory. The initial formula returned nearly the same revenue to the states as they put in. The purpose of this formula could not be redistribution -- there was none. Instead, we argue that the purpose of this system was to control state behavior as part of the

4 Of course, this third phase of Mexican federalism also coincided with the onset of the international debt crisis, which had deep effects on Mexico.

PRI□s securing its hegemonic position in Mexico□s electoral politics. All the formula employed by the central government since 1980 exhibit the fiscal law of 1/n.

This paper also analyzed the central government□s method of coaxing the states to join the fiscal pact with the devil. These pacts greatly diminished the states’ degrees of policy autonomy, forced them to toe party lines, and reduced their ability to strike independent policy positions. The central government accomplished this by a series of carrots and sticks. On the cost side, the federal government collected its tax revenue in each state regardless of whether they joined the revenue collection system. On the benefit side, states obtained greater revenue if they joined the federal system. This meant that keeping their own freedom forced them to have higher taxes and lower revenue.

Our approach has implications beyond the study of Mexico. Although revenue sharing systems differ across Latin America, nearly all the major federal systems use them in some form. This includes the two other large federal systems, Argentina and Brazil. Further, as we suggest in section 5, the emerging new PAN governments in several northern states parallels events in China and India. In all three cases, a small group of SNGs sought to break free of the constraints of the central government so they could engage in international markets. In all three, these SNGs provide a demonstration case to be imitated by others. This process is far along in China. Mexico may well be not very far behind.

The approach shows that good governance is in part the result of the appropriate political institutions. We showed how different fiscal institutions affect political officials’ tradeoff between the provision of public goods and corruption. In particular, greater fiscal reliance of SNGs on their own resources induces them to provide more public goods and less corruption.

Finally, given the prevalence of national corruption and inefficiency in most developing countries, the appropriate form of decentralization can have major efficiency gains. (Of course, hard budget constraint and common market.) The degree of corruption is in part endogenous to the fiscal system.

When the central government policymaking is a major impediment to economic growth, then the appropriately structured decentralization can enhance government performance. First, as is well known, decentralization creates competition among jurisdiction, forcing them to attend to the inefficiencies, rent seeking and corruption associated with their policymaking. Second, it diminishes the ♂one-size fits all problem observed by Hayek. Third, as we have shown in this paper, fiscal decentralization also provides SNGs with the incentive to foster local economic prosperity.

In this work, we join a growing group of scholars who emphasize that good governance is a function of political institutions. Our exploration of the effects of the fiscal system on SNG decisionmaking demonstrate how fiscal institutions affect their decisions to foster markets or engage in corruption. Put simply, greater revenue self-reliance allows SNGs the ability to capture greater revenue from enhancing markets and thus biases their choices in favor of market fostering public goods over corruption.

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