



## **Decentralization and corruption: Evidence from U.S. federal transfer programs\***

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Accepted 1 June 2001

**Abstract.** While some recent evidence suggests that more decentralization is associated with reduced corruption, no empirical work has examined whether different types of decentralization have differential effects on corruption. The theoretical literature has emphasized that expenditure decentralization will only be effective if accompanied by the devolution of revenue generation to local governments. In this paper we examine this hypothesis empirically, by studying the mismatch between revenue generation and expenditure in U.S. states. Larger federal transfers are associated with higher rates of conviction for abuse of public office, supporting the theory that soft-budget constraints created by federal transfers are potentially problematic.

### **1. Introduction**

In recent years, there has been considerable debate on the merits of government decentralization. While this discussion has, in the past, focused on the provision of the greater variety of public goods that may result from decentralization, more recently, greater emphasis has been placed on the role that decentralization may have in curtailing corruption. Recent empirical evidence (Fisman and Gatti, 2000), based on cross-country regressions, suggests that decentralization may in fact be effective in reducing corruption, thus lending support to conventional wisdom, as well as the position taken on this issue by such organizations as the World Bank (see, for example, Vergara, 2000). While this evidence is strongly suggestive of an overall effect of decentralization on corruption, many questions remain. In particular, the analysis in Fisman and Gatti does not distinguish among the *types* of decentralization that may be undertaken by governments. A number of theoretical models of decentralization make strong assertions in this regard: in particular, whether

\* We thank Shantayanan Devarajan for useful conversations, and Paolo Mauro, seminar participants at the IX Conference of the Italian Society of Public Economies and the World Bank for comments and feedback. The views expressed here do not necessarily reflect those of the World Bank or its member countries.

revenue generation and expenditure, or just expenditure, is decentralized, is predicted by some models to influence the extent of bureaucratic corruption.

Theories that predict a relationship between the revenue-expenditure mismatch and levels of corruption are primarily of two types: (i) interjurisdictional competition; and (ii) accountability and monitoring. The first of these, initially developed by Brennan and Buchanan (1980), emphasizes competition between local governments to attract residents. Analogous to the effect of competition in product markets, political competition reduces the ability of bureaucrats to extract rents in exchange for services. Thus, the basic model of interjurisdictional competition predicts a negative relationship between decentralization and corruption. More recently, a number of recent papers in this literature have developed more nuanced arguments that emphasize the importance of whether expenditure decentralization is accompanied by the devolution of revenue generation to local governments (Careaga and Weingast, 2000; Rodden, 2000). These papers focus on the importance of tying local revenue generation to local expenditures, since vertical fiscal transfers may allow local officials to ignore the financial consequences of mismanagement. Hence, expenditure decentralization without revenue decentralization is predicted to be of relatively little use in promoting good governance by these models.

Second, models that look at agency issues and the political economy of accountability also have implications for the decentralization-corruption relationship. In recent work, Persson and Tabellini (2000) consider the impact of decentralization where bureaucrats are agents trying to minimize effort and maximize the probability of re-election. Agents in a centralized bureaucracy are responsible for a multitude of tasks that affect many localities; by contrast, under decentralization, each politician is responsible for a specific task that is particular to a single jurisdiction. The intuition is that, under decentralization, politicians are held directly accountable for their actions. Instead, under centralization, all that matters is aggregate performance, which attenuates the link between effort and rewards. Thus, under decentralization, more direct accountability should improve politicians' performance. This class of models, too, suggests a positive relationship between the revenue-expenditure mismatch, and corruption. Similar to the intuition underlying this relationship in models of interjurisdictional competition, these accountability models find that transfers may attenuate the link between effort and performance that Persson and Tabellini emphasize, hence reducing the governance-enhancing effects of decentralization. In fact, in some cases, expenditure decentralization unaccompanied by revenue decentralization is even predicted to increase corruption, relative to the 'centralized' benchmark (see Bardhan and Mookherjee, 2000a). This is because, in their model, the effort-attenuating

effect of the soft budget constraint induced by federal transfers actually outweighs the direct effect of closer monitoring brought about by decentralized decision-making.

In this paper, we provide some initial empirical evidence on the effects of a mismatch between revenue generation and expenditure on corruption, by taking advantage of variation across US states in the extent of reliance on federal budgetary transfers. We find a strong positive relationship between the proportion of a state's expenditures derived from federal transfers, and corruption, as measured by the number convictions of public employees for abuse of public office. Hence, our results on federal transfers suggest that decentralizing government expenditures may not be beneficial unless accompanied by decentralization of revenue generation.

The rest of the paper is structured as follows: Section 2 describes the data used in our analyses. In Section 3, we present our basic results on the correlation between corruption and federal transfer rates across U.S. states. Section 4 concludes the paper.

## 2. Data description

While one might look at the effects of an expenditure-revenue mismatch using cross-country data, we focus on U.S. data.<sup>1</sup> The advantages of undertaking a within-country analysis are many. Most importantly, we may worry less about the vast unobservable differences in institutions and cultures that surely exist across countries: while many differences certainly exist across states, there is a much higher degree of homogeneity, and we are at least able to hold legal institutions more or less constant. A further advantage is simply that of data availability, quality, and comparability: several variables, such as bureaucratic wages, and proxies for enforcement, that are unavailable for cross-country data, are readily available within the U.S. Furthermore, with cross-country data, we have the further difficulty of interpreting the meaning of fiscal transfers, since there is no readily available information on whether these transfers are discretionary or block grants. Within the U.S., we have a better sense of the composition of transfers.

A description of the variables we utilize in our analyses follows below.

The number of public officials (federal-state-local) convicted in a state for abuse of public office is our measure of corruption (CONVICT). These data are drawn from the report to the *Congress on the Activities and Operations of the Public Integrity Section for 1987* published by the US Department of Justice and are available for the period 1976–87.<sup>2</sup> These data were first used by Goel and Rich (1989) to measure the extent of corruption at the state level.

In our regressions, we deflate this figure in a couple of basic ways: by state population, and by total government employment.

Higher convictions might indicate both more widespread corruption as well as a higher degree of enforcement of justice at the state level. To control for this important state characteristic, we include in the regression the share of police employment over state population (POLPC). To further try to control for enforcement, we also deflate the number of convictions by the number of prison inmates in the state. These data are drawn from the *Sourcebook of Criminal Justice Statistics*.<sup>3</sup>

We measure the extent of mismatch between revenue generation and revenue expenditure by the share of state and local expenditures that come from federal transfers (FEDERAL).<sup>4</sup> Since state budgets must balance in the long run (and in many cases, due to balanced budget amendments, in the short run as well), the revenue-expenditure mismatch is, by definition, given by the rate of federal transfers.

A few words on the nature of fiscal transfers in the U.S. are in order here. The literature on decentralization and governance differentiates between lump-sum transfers (block grants) and project-based transfers (essentially reimbursements for some percentage of the cost of providing a given service). This distinction is cited by Bardhan and Mookherjee (2000a) as being particularly important: they suggest that project-based transfers are more likely to be problematic, because of the incentive problems they create. In spite of the move towards block grants in the United States, the vast majority of federal transfers remain project-based (in particular, Medicaid; Social Services; Transportation). Thus, in what follows, we will take federal transfers to states to largely be a reflection of the level of project-based transfers. Table 1 reports averages for both FEDERAL and CONVICT by state, for the years 1976–87.

A number of controls will be included in the regression to minimize the omitted variable bias on the estimated coefficient on FEDERAL. These variables include analogues to the usual controls utilized in cross-country corruption regressions. To control for the possibility that poorer states might have both higher reliance on federal transfers and widespread corruption, we include the level of state gross product per capita in the regression ( $\ln(\text{GSPPC})$ ). We also control for the level of public expenditure, deflated by state income, to account for the association between government size and corruption (GOVEXP). Finally, as organizational size is often associated with both decentralization and corruption, we control for state population ( $\ln(\text{POP})$ ).

Some work suggests that low civil service wages might encourage corruption (Goel and Rich, 1989; Van Rijckeghem and Weder, 1997). To the extent that low remuneration of civil servants is correlated with FEDERAL, omitting it might give rise to an important bias. We therefore include in the regression

Table 1. Average of FEDERAL and CONVICT, by State, 1976–87

State	FEDERAL	CONVICT	State	FEDERAL	CONVICT
Alabama	0.27	4.98	Montana	0.29	1.87
Alaska	0.17	7.38	Nebraska	0.20	1.65
Arizona	0.18	0.95	Nevada	0.20	2.39
Arkansas	0.30	2.12	New Hampshire	0.23	2.04
California	0.17	1.43	New Jersey	0.19	1.89
Colorado	0.18	1.36	New Mexico	0.27	3.33
Connecticut	0.21	1.95	New York	0.22	3.46
Delaware	0.23	1.70	North Carolina	0.23	1.60
Florida	0.18	1.30	North Dakota	0.25	0.88
Georgia	0.26	3.09	Ohio	0.20	1.82
Hawaii	0.20	1.28	Oklahoma	0.22	7.62
Idaho	0.25	1.18	Oregon	0.22	0.77
Illinois	0.21	2.93	Pennsylvania	0.24	3.20
Indiana	0.21	1.39	Rhode Island	0.26	2.19
Iowa	0.18	0.86	South Carolina	0.25	4.78
Kansas	0.18	2.12	South Dakota	0.30	5.03
Kentucky	0.26	2.15	Tennessee	0.27	5.42
Louisiana	0.22	2.78	Texas	0.18	1.61
Maine	0.32	1.34	Utah	0.23	1.51
Maryland	0.21	2.07	Vermont	0.31	0.43
Massachusetts	0.25	1.95	Virginia	0.19	1.35
Michigan	0.19	1.79	Washington	0.17	0.61
Minnesota	0.19	0.55	West Virginia	0.27	2.57
Mississippi	0.30	3.51	Wisconsin	0.21	1.42
Missouri	0.24	1.23	Wyoming	0.26	0.83

FEDERAL = Share of federal transfers of total local and state expenditure

CONVICT = Share of abuse of public office convictions over state population (\* 1,000,000)

the average level of bureaucratic wages in each state, deflated by per capita gross state product (WAGE). Basic summary statistics of all variables are listed in Table 2.

### 3. Empirical results

Our basic specification is as follows:

Table 2. Summary statistics, cross state evidence, USA; 1976–87 averages

	Average	Observations	Std deviation	Minimum	Maximum
Share of abuse of public office convictions over state population (*1,000,000)	2.27	50	1.59	0.43	7.62
Share of abuse of public office convictions over total public employment (*1000)	0.03	50	0.02	0.01	0.11
Share of abuse of public office convictions over number of prison inmates (*1000)	0.07	50	0.09	0.00	0.47
Share of federal transfers of total local and state expenditure	0.23	50	0.04	0.17	0.32
Gross state product per capita (in 1987 dollars) <sup>a</sup>	16.51	50	4.85	11.70	44.83
Police employment per capita	61.29	50	23.47	32.87	175.17
State and local expenditure government over state product	0.08	50	0.016	0.04	0.14
State population <sup>a</sup>	4586.56	50	4827.00	452.64	24550.47
Average state employee's wage over gross state product per capita	1.36	50	0.16	1.00	1.66

<sup>a</sup>Geometric means over the period 1976–87.

$$\text{CONVICT}_i = \alpha + \beta_1^* \text{FEDERAL}_i + \beta_2^* \ln(\text{GSPPC}_i) + \beta_3^* (\text{POLICEPC}_i) + \beta_4^* \ln(\text{POPULATION}_i) + \beta_5^* \ln(\text{GOVEXP}_i) + \beta_6^* \text{WAGE}_i + \epsilon_i$$

where  $i$  is the state index. While there is considerable within-state variation in both the number of convictions (CONVICT) and federal transfers (FEDERAL), our analyses are carried out using averages over the entire period 1976–87. We discuss this specification choice further below.

Column 1 of Table 3 reports estimated coefficients for the equation where the dependent variable (CONVICT) is the number of public officials convicted for abuse of public office deflated by state population. The rate of transfers is positively and statistically significantly associated with our measure of corruption. The point estimate implies that a one standard deviation

increase in FEDERAL (0.04) is associated with an extra 40% of a standard deviation in convictions per capita (\*1,000,000), everything else being equal.

We report estimates of the model where the dependent variable is scaled by several different and plausible deflators: level of public (federal-state-local) employment (to net out the government size effect); and number of prison inmates (to directly deflate the effects of legal enforcement). A positive and very strong association between the degree of centralization and abuse of public office convictions emerges, regardless of the manner in which the latter is measured/deflated.

To ensure that our results are not being driven by a few outlying observations, we repeated the regressions with outliers, as identified by the method of Hadi (1992), dropped from the sample. The coefficient on FEDERAL increased in significance in all cases. Additionally, in the second column, we include the average of CONVICT for all neighboring states, to try to account for regional effects. This, too, alters the coefficient on FEDERAL only marginally.<sup>6</sup>

Federal transfers are largely determined by state income, demographics, and preferences for particular programs. We have controlled for the first of these factors, and have no compelling reason to expect the latter two to be correlated with corruption. However, a possible bias in our results could stem from a potential endogeneity problem: one could argue that states where corruption is higher are also those that devote more effort to lobby for federal transfers. One way to deal with this difficulty is to find an appropriate instrument for the rate of federal transfers; one possibility includes the frequency with which states are affected by natural disasters, such as storms and/or floods and/or earthquakes. These events would likely be correlated with federal transfer programs but would have no direct association with corruption. Identifying such variables is one of the next steps of our research.

As we noted at the beginning of this section, we have reported results from a cross-section of states, in spite of the fact that we have 11 years' worth of data. When our analyses were repeated, using random effects for this panel, we obtained very similar results. Furthermore, one might imagine that we could look at the timing of changes in federal transfers, to see if they seem to induce changes in bribery cases. Unfortunately, this is asking a little too much of the data, and our attempts at empirical implementation have not been successful. From a theoretical perspective, matching up social/economic conditions (causal factors) to bribery prosecutions is very hard, as there are (generally indeterminate) lags between the time of bribery offenses, and the time of prosecution. This adds considerable noise to a variable that undoubtedly already has significant measurement error associated with

Table 3. OLS estimates across states in the USA

	Share of abuse of public office convictions over state population (*1,000,000)	Share of abuse of public office convictions over state population (*1,000,000)	Share of abuse of public office convictions over total public employment (*1,000)	Share of abuse of public office convictions over number of prison inmates (*1,000)
Share of federal transfers in total state and local exp.	15.84 (2.51)	12.31 (2.45)	0.23 (2.81)	1.15 (3.11)
Log of state product per capita	0.14 (-0.05)	-2.18 (-1.38)	-0.012 (-0.37)	0.10 (1.20)
State and local expenditure government over state product	-24.77 (-1.27)	20.32 (0.76)	-0.33 (-1.47)	0.99 (1.16)
Total police employment over state population	0.02 (1.26)	0.00 (0.05)	0.0002 (1.06)	0.0008 (1.28)
Average government wage over GSP per cap.	-1.58 (-2.52)	-2.80 (-2.76)	-0.027 (-1.83)	0.015 (0.23)
Log of state population	0.25 (1.48)	0.52 (3.23)	0.0066 (2.89)	0.08 (5.12)
Average of CONVICT for neighboring states		-4.54 (-0.76)		
N	50.0	50.0	50.0	50.0
R <sup>2</sup>	0.20	0.21	0.21	0.60

t-statistics in parentheses. Robust standard errors are used in calculating these statistics.



it. As a result, after the data have been detrended, we find all of our measures of bribery prosecutions rates to be essentially noise.

#### 4. Conclusions

In this paper, we have made an initial empirical assessment of whether a mismatch between the decentralization of revenues and expenditures leads to greater corruption. Given the intense interest on the part of many countries and international organizations in the role of decentralization in promoting good governance, it is important to consider the differential impact of differing methods of decentralization. Consistent with theories emphasizing the importance of hardness of budget constraints, we find that the rate of prosecutions for abuse of public office is greater in states with higher rates of federal transfers.

These conclusions must be tempered by a further consideration: above, we highlighted the potential difference in the effect of block grants versus so-called program-based transfers. Theories of decentralization and corruption generally predict that program-based transfers will be more problematic; however, because so few transfers in the U.S. in the period under study consisted of block grants, we were unable to further analyze this question. Furthermore, it would be useful to study *changes* in the method of decentralization across time, and to study the effects of these changes on political governance. While our data do not allow for such an investigation at this point, it may be an avenue for future research, as governments increasingly shift from program-based financing to block grants. Such work would better inform both economists and policymakers as to the most effective means of providing effective governance in political organizations.

#### Data description

CORRUPT	Number of public officials (federal, state, and local) convicted of abuse of public office. Source: U.S. Department of Justice; obtained from Rajiv Goel.
FEDERAL	Federal transfers divided by total state government expenditure. Source: U.S. Bureau of the Census.
GSP	Gross state product per capita, in 1986 real dollars. Source: U.S. Bureau of the Census.
POLICE	Total number of policemen. Source: U.S. Department of Justice.

GOVEXP	State and local government expenditure. Source: U.S. Bureau of the Census.
WAGE	Average government wage, deflated by gross state product per capita. Source: U.S. Bureau of the Census.
POP	Total state population. Source: U.S. Bureau of the Census.

## Notes

1. We actually tried to examine issues of fiscal vertical imbalance by looking at the relationship between cross-country corruption measures and federal transfers as proxied by  $(\text{local expenditures} - \text{locally generated revenues})/(\text{local expenditures})$  and, alternatively, by  $(\text{local expenditures} - \text{locally generated revenues})/(\text{local revenues})$ . We do not find any correlation. Given the mismeasurement that exists in both the expenditure and revenue data, once we take the difference, we could very well be left with essentially noise. Hence, it is unclear whether this variable is uncorrelated with corruption because there does not exist any effect, or because of the aforementioned measurement issues. This is another reason for utilizing the cross-state approach.
2. Ideally, we would exclude federal employees from this figure, but the disaggregated data are unfortunately unavailable.
3. A more appropriate proxy for quality of enforcement would relate more directly to the quality and honesty of the judiciary. In particular, a measure of judicial corruption would be a more appropriate control; unfortunately, such data are not available, and we can only accept this as an area for future improvement.
4. All data are from the *Statistical Abstract of the U.S.*, unless otherwise noted.
5. Stata 5.0 reference manual provides further details on Hadi's methodology for detecting outliers in multivariate regressions.
6. Similarly, we added regional dummies (SOUTH, CENTRAL, WEST), and this had little effect on FEDERAL.

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