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OWN-PURPOSE EXPENDITURES

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ABSTRACT

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This paper examines the impact of intergovernmental grants on grantor government expenditures from the perspective of the grantor government politician. The theory and empirical evidence presented complement previous work that considered the impact of grants from the perspective of the voter/taxpayer. It is shown that the vote-maximizing objective of the grantor government politician will lead her to finance grants from both increased own-source taxation and reduced own-purpose expenditures. Empirical evidence suggests that an additional dollar of grants will reduce own-purpose expenditures by approximately \$0.25.

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I. Introduction

In three recent papers [Hammes and Wills (1987), Hewitt (1986), and Logan (1986)], the impact of intergovernmental grants on grantor government own-purpose expenditures was examined. Prior work on the theory of intergovernmental grants ignored the grantor side of the question, assuming grants were financed 100 percent by increased taxation [see Oates (1972) for example]. In each of these cases, the authors considered the effects of grants on taxpayer demand for both grantor and recipient government goods and services. Assuming the voter suffered from fiscal illusion, the grant has the effect of lowering the perceived tax price of recipient government goods and services while, at the same time, increasing the perceived tax price of grantor government goods and services. The response to this change in relative prices is an increase in own-purpose expenditures by the recipient government, an occurrence which has been well documented, and a decrease in own-purpose expenditures by the grantor government.

The purpose of this note is to examine the question of the impact of grants on grantor government expenditures from the perspective of the grantor government politician. A political explanation for an inverse relationship between grants and grantor government expenditures is offered. This explanation is complementary to that of Hammes and Wills, Hewitt, and Logan, as it considers the question from the supply side. It

is shown that, if the politician is going to make intergovernmental grants, her vote-maximizing objective will lead her to reduce own-purpose expenditures. Cross-sectional evidence for the forty-eight contiguous states in the United States, consistent with the time-series evidence presented by Hammes and Wills and Logan and the cross-sectional evidence presented by Hewitt, is reported.

In the next section, a simple theory of utility-maximizing politicians is developed and the hypothesis to be tested is derived. Section III offers an empirical test of the hypothesis and Section IV summarizes the paper.

II. Theory

It is assumed that the grantor politician is a Downsian, utility-maximizing individual operating in a political marketplace competing for the support of voters. Utility is assumed to be a function of the number of votes cast in the politician's favor. As such, the politician will employ the policy tools at her disposal to maximize votes received. The politician who offers the most attractive platform will attract the majority of votes and will be able to set the government agenda until the next election.

The three policy tools available to the politician are own-purpose expenditures (E), own-source taxation (T), and intergovernmental grants (G). It will be assumed that the grantor government operates under a balanced budget constraint and that all grants flow from higher to lower levels of government. Voters are assumed to respond favorably to E and G and unfavorably to T .¹ Voters cast their votes for the politician who

they believe will provide them the greatest net benefits.

Initially, assume that no intergovernmental grants are made. The politician will, in developing a budget, rank the various categories of expenditures and taxes according to their vote-gaining and vote-losing potential, respectively. The budget will be comprised of the most productive, in terms of votes gained, own-purpose expenditures and the least harmful, in terms of votes lost, own-source taxes. The optimal budget size will occur when the marginal vote gain from an additional dollar of own-purpose expenditures equals the marginal vote loss from the additional taxes levied.

The politician maximizes

$$(1) \quad V = V(E, T), \quad \partial V / \partial E > 0, \quad \partial V / \partial T < 0$$

subject to the budget constraint

$$(2) \quad E = T.$$

The first-order condition defining the optimal budget size is

$$(3) \quad \partial V / \partial E = - \partial V / \partial T$$

where the LHS of (3) is the marginal vote gain of the last dollar of own-purpose expenditures (MVG_E) and the RHS of (3) is the marginal vote loss of the last dollar of own-source taxation (MVL_T). Figure 1 depicts the determination of the optimal budget size, $E^* = T^*$.

Now let intergovernmental grants be introduced as a policy tool. The politician must now determine what is the optimal budget size and how to allocate tax revenues across the two vote-generating uses (own-purpose expenditures and grants) to maximize expected votes received. The optimal budget size is determined by ranking own-purpose expenditures along with grants according to their vote-gaining ability and adopting all

expenditures and grants until the votes generated from the last dollar spent on total expenditures (own-purpose expenditures plus grants) equals the votes lost from the last dollar of taxes collected. From basic consumer theory, the optimal distribution of tax revenues occurs when tax revenues are allocated between the two uses such that the marginal votes gained from the last dollar allocated to each are equal.

The politician maximizes the new vote function

$$(1') \quad V = V(E, G, T), \quad \partial V / \partial E, \partial V / \partial G > 0, \quad \partial V / \partial T < 0$$

subject to the new budget constraint

$$(2') \quad E + G = T.$$

The new first-order condition defining the optimal budget size, and the optimal allocation of tax revenues between own-purpose expenditures and intergovernmental grants, is

$$(3') \quad \partial V / \partial E = \partial V / \partial G = -\partial V / \partial T$$

where $\partial V / \partial G$ is the marginal vote gain of the last dollar spent on grants (MVGG).

In Figure 1, the new optimal budget occurs when $MVLT' = MVG(E+G)$ at $TE = T'$, with $MVG(E+G)$ being the horizontal summation of $MVGE$ and $MVGG$ and TE is total expenditures (own-purpose expenditures plus intergovernmental grants). The politician allocates total tax revenues, T' , between the two competing uses such that $MVGE = MVGG$. Own-purpose expenditures will total E' and grants will total G' .

It can be seen from Figure 1 that the introduction of grants as a policy tool has resulted in an increase in the total budget size of $T' - T^*$, but own-purpose expenditures have decreased. The G' worth of grants has been funded by $T' - T^*$ of increased taxation and by a $E^* - E'$

reduction in own-purpose expenditures.

In general, how the grants are funded—by reducing own-purpose expenditures, by increasing own-source taxation, or by some combination of the two—is dependent on the $MVGE$ and $MVLT$ functions in the relevant range. Given the general case of $\partial MVGE / \partial E < 0$, then if:

- (1) $\partial MVLT / \partial T = 0$ [the implicit assumption of the Oates (1972) style analysis], grants are funded entirely by increased tax collections with a corresponding increase in the size of the budget; or
- (2) $\partial MVLT / \partial T > 0$ (the more general case), the funding of grants will be partly by reduced own-purpose expenditures and partly by increased own-source taxation.

As the ratio of $-\partial MVGE / \partial E$ to $\partial MVLT / \partial T$ increases, the burden of funding grants falls increasingly on own-source taxation with a corresponding increase in budget size.

III. Empirical Evidence

The hypothesis to be tested is that government provision of intergovernmental grants reduces own-purpose expenditures. The impact on state own-purpose expenditures of grants from states to local governments is examined. To test the hypothesis, data for the forty-eight contiguous states in the United States are employed. State own-purpose expenditures (SOPE) are defined as direct general expenditures by state governments per capita. State intergovernmental grants (SIG) are defined as intergovernmental grants from the state governments to local governments per capita.

In an attempt to control for other variables that might influence the level of state spending, four additional variables are included in the regression. Per capita income (Y) is hypothesized to be positively correlated with SOPE. Higher levels of income would be reflected in an upward shift and/or a flattening of the MVGE function. For a given MVLIT function, this would represent an increase in the optimal budget size. Population size, in thousands, (P) is typically hypothesized to contribute to increased government expenditures (due to an upward shift in the MVGE function). There have been some contradictory hypotheses and empirical evidence suggesting that P should be correlated negatively with government size. The argument is that public goods are subject to decreasing costs and therefore increased population should reduce average cost and thereby permit reduced expenditures (a downward shift in the MVGE function). Lacking any decisive evidence to support either hypothesis, no priors are held regarding the relationship between P and SOPE.

The degree of urbanization (U) is defined as population in SMSAs as a percentage of total population. As with P, there are conflicting hypotheses as to the relationship between U and government size. Increased urbanization may lead to a greater need for government goods (reflected by an upward shift in the MVGE function) due to increased congestion and pollution, but concentrated population should permit greater exploitation of scale economies in the provision of public goods (a downward shift in the MVGE function). As with P, no priors are held regarding the relationship between U and SOPE. Finally, SOPE is hypothesized to be positively correlated with federal government grants to state governments per capita (FIG). For the same reason that state grants

to local governments are found to increase local government expenditures, federal grants to state governments should increase state government expenditures.² In terms of the model, federal grants would have the effect of shifting down the MVGT function, since they would represent revenues raised at no tax cost.

All data are from U.S. Bureau of the Census (1979), Tables 23, 24, 39, and 46. Two equations are estimated: a simple linear regression of SOPE on SIG and a multiple regression of SOPE on the five independent variables. Regression results are reported in Table 1.

Results for the simple linear regression (column 1) indicate the hypothesized negative relationship between SOPE and SIG exists but is extremely weak. Both the F-statistic for the equation and the t-statistic for the coefficient for SIG are insignificant at the 10 percent level.

The results for the multiple regression (column 2), which attempts to control for the influence of other relevant variables, indicates a much stronger relationship. Four of the five coefficients are significant at the 95 percent level or better. SIG has the expected negative coefficient. The estimated coefficient for SIG implies that a \$1.00 increase in intergovernmental grants to local governments decreases state own-purpose expenditures by approximately \$0.28. In other words, approximately three-quarters of state grants are financed by increased state own-source taxation.

Per capita income and federal grants to state governments both have the expected positive coefficients. The coefficient for Y implies an income elasticity of state own-purpose expenditures, computed for mean values of SOPE and Y, of approximately 0.5. The estimated coefficient for

FIG suggests that a \$1.00 increase in federal grants increases state own-purpose expenditures by \$1.40. However, as previously noted, this probably overstates the effect of federal grants due to the simultaneity problem of open-ended matching grants. The positive, though insignificant, coefficient for U implies that, other things being equal, the increased possibility for exploiting economies of scale in the provision of public goods created by urbanization is matched by urbanization's attendant pollution and congestion problems. Finally, population size exhibits a negative influence on state expenditures. The scale effects made possible by increased population appear to dominate the increased demand effects.

III. Conclusion

This paper offers empirical evidence in support of the findings of Hammes and Wills (1987), Hewitt (1986), and Logan (1986) that intergovernmental grants are partially funded by reduced grantor government own-purpose expenditures. This paper offers a complementary explanation by considering the supply side of intergovernmental grants, whereas the three cited papers considered the question from the point of view of the consumer/taxpayer. It was shown that, in the general case, vote-maximizing grantor government politicians will finance grants from reduced own-purpose expenditures and increased own-source taxation. The empirical evidence indicates that an additional dollar of grants is financed by increased own-source taxation of approximately \$0.75 and by reduced own-purpose expenditures of approximately \$0.25.

FOOTNOTES

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1. Voters respond favorably to intergovernmental grants either because they support the normative arguments for grants [see Gramlich (1977) or Break (1980) for example] or they see, either correctly or incorrectly due to fiscal illusion, them as a means of exporting their tax base to residents of other localities.
2. Inclusion of FIG introduces a degree of simultaneity into the regression. For open-ended matching grants, grants to states are likely to be determined simultaneously with state expenditures. Gramlich (1977) notes that in studies of state grants to local grants, the estimated coefficient for open-ended matching grants is greater than unity if the simultaneity is not corrected for. In the one case that tests the model properly, he reports that the estimates imply a coefficient of 0.15. Lack of data prevents separation of open-ended matching grants from other types of grants and therefore proper estimation to remove the simultaneity problem is not possible. As such, the coefficient of FIG must be interpreted with some caution.

TABLE 1
REGRESSION RESULTS

<u>Variables</u>	<u>Estimated Coefficients</u>	
	<u>(1)</u>	<u>(2)</u>
SIG	-0.222 (1.26)	-0.279* (2.56)
Y		0.038* (2.48)
P		-0.009* (3.68)
U		0.697 (1.28)
FIG		1.401* (8.04)
Constant	583.350* (12.81)	38.754 (0.47)
R ²	0.034	0.768
F-stat	1.597	27.774

Notes: t-statistics in parentheses.

* - significant at the 95 percent level (two-tailed test).

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FIGURE 1