

# State and Local Governments: Their Stake in Federal Budget Reform

*By Dale Allman and Dan M. Bechter*

State and local government budgets are under siege. Voters have been resisting tax increases and rejecting spending proposals. And now the combination of cutbacks in federal grants-in-aid together with a sluggish economy appears likely to further curb both receipts and expenditures of state and local governments. But such forecasts of imminent decline in state and local government activities are based on incomplete analysis. In particular, any projection of spending by state and local governments should include consideration of the impacts of all the relevant features of the new federal budget and of the economic outlook associated with that budget.

The purpose of this article is to determine the implications of the Reagan administration's economic plan for total expenditures by state and local governments in the 1981-84 period. The article presents a forecast of state and local spending that is conditional on the implementation of the administration's planned fiscal policies and on the success in achieving the level of economic activity that the administration believes to be consistent with these policies.

The first section of the article provides a brief

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history of state and local government spending in the post-World War II period. The second section presents a statistical model designed to explain state and local government spending. The model is then used in the third section to forecast state and local government expenditures through 1984. The forecasts of spending by state and local governments incorporate the Reagan administration's projections of employment, inflation, federal income taxes, and federal grants-in-aid to state and local governments. The final section summarizes the findings reported in the article.

## **PURCHASES OF GOODS AND SERVICES BY STATE AND LOCAL GOVERNMENTS, 1947-80**

Purchases of goods and services by state and local governments formed two distinct patterns between 1947 and 1980.<sup>1</sup> From 1947 to 1970,

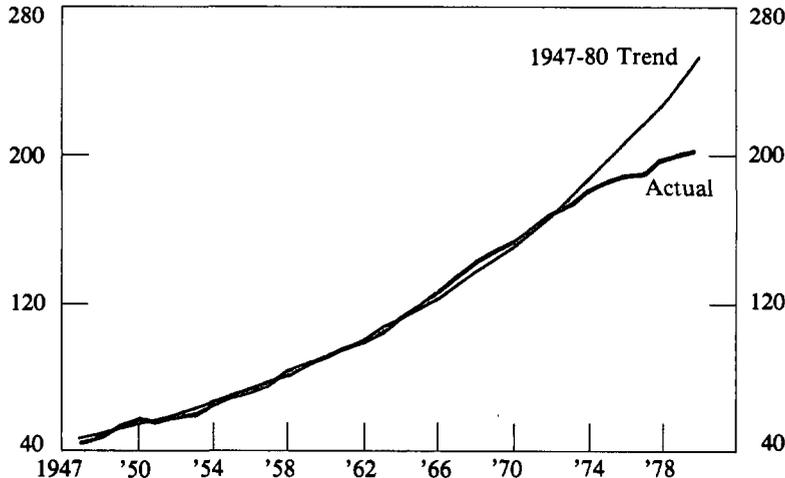
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<sup>1</sup> State and local government purchases of goods and services account for nine-tenths of total spending by these government units. The remaining one-tenth goes for transfer payments. In subsequent analysis and discussion, purchases of goods and services by state and local governments are used as the measure of their economic activity. Transfer payments are omitted because they can be considered negative taxes instead of expenditures, which raises doubts as to whether transfers are explained by the same variables as those explaining purchases of goods and services.

The combined 1980 budgets of all state and local govern-

**Chart 1**  
**STATE AND LOCAL GOVERNMENT PURCHASES**  
**OF GOODS AND SERVICES**

Trend Estimate vs. Actual in  
 Billions of 1972 Dollars



total purchases by state and local governments grew at an almost constant rate of 5.5 percent, once allowance is made for the illusion of acceleration due to rising rates of inflation. After 1970, growth in these purchases slowed markedly to 2.4 percent, dropping well below trend, as depicted in Chart 1.

The growth rate of purchases by state and local governments over the 1947-70 period exceeded the growth rate posted by the general economy. Consequently, real purchases by state and local governments rose from below 9 percent of real gross national product in the late 1940s to about 13 percent in the early 1970s. This statistic is not of incidental significance; it

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ments show that about 55 percent of all their purchases of good and services fell in the category of employee compensation—the cost of the salaries and benefits for state and local governments workers. Structures such as buildings and bridges claimed about 15 percent. The rest went for various other purchases, including public health, school buses, and the like. In the remainder of this article, attention is focused only on total purchases.

implies that the rising standard of living of the postwar generation included not only rising per capita expenditures on consumer goods and housing, but also rising per capita usage of goods and services provided by state and local governments. During the more recent 1971-80 period, in contrast, a decline in the public's standard of living is in part implied by a reduction in the growth rate of real dollars spent by state and local governments.

But what about future state and local government purchases? One way to forecast such expenditures is simply to extend the trend established in the past. But that method, as indicated in Chart 1, would not have provided accurate forecasts in recent years. Moreover, trend extrapolation says nothing about economic behavior and about how that behavior is affected by changes in economic policy and other variables. To incorporate such behavior, as well as alternative policy assumptions, it is generally agreed that the most ap-

propriate forecasting tool is a behavioral economic model.

## A MODEL OF STATE AND LOCAL GOVERNMENT PURCHASES

### The Theoretical Formulation

A logical candidate for a behavioral economic model of state and local government purchases is the theory of consumer choice. According to that theory, a consumer spends his limited funds in such a way as to maximize his satisfaction. For example, if there are only two goods from which to choose, the factors important in determining the most satisfying purchasable combination are the prices of the two goods, the consumer's income, and the consumer's tastes, or how much he likes each of the goods. The theory of consumer choice is used primarily as a basis for studies of consumer demand for goods and services bought in the market for private consumption. The same theory can be extended, however, to explain the indirect consumer purchase of public goods from the government by the payment of taxes.<sup>2</sup>

Suppose that the consumer's income is defined to be net of federal income taxes. How will this income be spent? By a simple extension of the two-goods example, the consumer can be thought of as choosing between two types of goods and services: those provided by state and local governments and those provided by the private sector. The former are paid for by general taxation as well as by user fees, while the latter are paid for by market purchases.<sup>3</sup>

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<sup>2</sup> Such extensions are common in the economics literature. See, for example, Ronald C. Fisher, "A Theoretical View of Revenue Sharing Grants," *National Tax Journal*, Vol. XXXII, No. 2, June 1979, pp. 173-184.

<sup>3</sup> Social goods—goods or services whose total production is available to each consumer, regardless of his contribution—present some problems for the theory of consumer demand. Police protection, flood control, and other forms of public safety are good examples. Social goods cannot be sold, because the voluntary exchange principle of markets

This model of individual consumer choice must then be aggregated across all consumers in order to focus on total state and local government purchases. The aggregation implies a behavioral economic model in which the quantity of state and local goods and services "purchased" by all consumers depends on the total real income of consumers after federal taxes, as well as on the price of these public goods and services relative to the price of private goods and services.

The economic behavioral model must also consider the impact of federal grants-in-aid to state and local governments, since these grants lead to purchases that are not financed by consumers paying state and local government taxes or fees. More specifically, federal grants-in-aid net of public assistance grants should be considered since public assistance grants are almost wholly used for state and local government transfer payments. The presumed effect of nonpublic-assistance grants is to increase total state and local government purchases of goods and services, although these federally financed purchases may substitute in part for what consumers would otherwise pay for with state taxes.

Finally, allowance should also be made in the model for the effect of interest rates on the quantities of state and local goods purchased. The level of interest rates affects state and local government spending decisions by affecting

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requires the consumer's enjoyment of a good to be determined by price payments. Since social goods are enjoyed by everyone but not marketable, they are natural for government finance, where the power to tax can be combined with voting or other political processes to force a sharing of their cost. The complications arising from the existence of social goods are primarily those associated with finding a way within the democratic process to induce each consumer-voter to reveal his true preference for these goods. These complications are simplified by assuming that the consumer-voter pays taxes for social goods in a manner representative of his true preference. See Richard A. Musgrave, *The Theory of Public Finance*, New York: McGraw-Hill, 1959, pp. 9-12, 73-84, and 116-135.

borrowing costs and earnings on bonds held. When the effect on borrowing costs is greater than the effect on bond yields, state and local governments will reduce spending in response to an increase in rates. On the other hand, when an increase in interest rates has a greater impact on bond yields, state and local governments will realize an increase in earnings on net financial assets. The increase in earnings would then serve as a stimulus to increased purchases.

Preparing the model for statistical verification requires defining the quantity, income, and interest rate variables in measurable fashion and specifying how they are related to one another. For the quantity of total state and local government purchases, which is the variable to be explained, the definition chosen is the national income accounts measure of state and local government purchases, adjusted for inflation. For consumer income, the measure used is spendable earnings after adjustment for inflation, in other words, real take-home pay. Real take-home pay is defined as the purchasing power of the wages of an average production or nonsupervisory worker, after deducting federal employment taxes and federal income taxes withheld. To arrive at an aggregate measure of real income, average real take-home pay is multiplied by the number of workers in nonagricultural employment.<sup>4</sup>

The quantity of state and local government purchases is specified to be related to the described measure of total real spendable pay in a linear fashion. A linear specification means that changes in consumer demand for state and local government purchases are assumed to be

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<sup>4</sup> Total real disposable personal income might have been used as the income variable. But that income aggregate includes a wide range of components, such as food stamps and other transfer payments at one end and dividends, rent, and interest items at the other. The behavior of these non-wage sources of income is not likely to reflect the willingness of the average taxpayer to support state and local government purchases.

proportional to changes in total real spendable pay, with the coefficient of proportionality to be estimated by statistical procedures. Linearity is also assumed between state and local government purchases and federal grants-in-aid, and between purchases and the real rate of interest, as measured by the municipal bond rate minus the rate of inflation. The price variable does not appear in the reduced form of the model used for estimation.<sup>5</sup>

### Statistical Estimation

The model described above was estimated using annual data covering the period 1947-80. The results of the reduced form estimation are summarized in Table 1. As indicated by the value of the coefficient of determination, or  $R^2$ , which is 0.98, the model explains almost all of the growth in state and local government purchases in the past 34 years, including the marked slowdown in that growth since 1970.<sup>6</sup>

The variable used for consumer income is found to be an important determinant of total state and local government purchases. Specifically, the equation in Table 1 shows that for every \$1 increase in total real spendable pay, total state and local government purchases rise by about 34 cents.<sup>7</sup> In the context of this ar-

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<sup>5</sup> A complete model for state and local government purchases includes both demand and supply equations, and a variable for the price of state and local government purchases appears in both equations. In a single equation, therefore, the price variable cannot be statistically identified as either a supply price or a demand price. For estimation purposes, therefore, the price variable is eliminated by substitution, which collapses the two-equation model into its reduced form.

<sup>6</sup> The explanatory power of the model is equally good in both time periods. According to Chow tests, the effects of real income, grants-in-aid, and the interest rate on the spending behavior of state and local governments are the same in 1947-70 as in 1971-80.

<sup>7</sup> An effort was also made to measure differences in impact on state and local government purchases arising from changes in total real spendable pay due to changes in employment versus those due to changes in average real spendable pay, but no difference of any consequence could be statistically established. It is concluded, therefore, that a

**Table 1**  
**ESTIMATION RESULTS:**  
**REDUCED FORM MODEL**  
(1947-80)

$$\text{TOT} = -26.36 + 0.34 (\text{SPE} \times \text{TNAG}) +$$

(7.84)      (0.04)

$$1.08 \text{ AID} + 0.79 \text{ R}$$

(0.37)      (0.41)

$$\bar{R}^2 = 0.98 \quad \text{D.W.} = 1.77 \quad \text{S}_e = 4.23 \quad \text{F} = 472.34$$

$$\text{Rho}_1 = -0.79$$

Standard errors of coefficients are presented in parentheses.

TOT = Total annual state and local government purchases of goods and services, 1972 dollars.

SPE = Real spendable pay, as measured by the purchasing power of the average annual earnings, after federal taxes, of a married nonagricultural production worker, with three dependents.

TNAG = Average annual employment of nonagricultural workers.

AID = Annual federal grants-in-aid to state and local governments, 1972 dollars, net of public assistance grants.

R = Moody's Aaa municipal bond yield adjusted for the inflation rate.

title, the interpretation of this result is that increases in real spendable pay cause increases in state and local government purchases of goods and services. That is, the real spendable pay variable is an indicator of consumer desires to obtain, and to pay taxes for, additional public goods.<sup>8</sup>

given amount of increase in total real spendable pay, whether due to rising employment or to rising average real spendable pay or to both, will promote an increase in state and local government purchases of 34 percent of that amount.

Federal grants-in-aid to state and local governments, net of public assistance grants, are also found to increase total spending. The 1.08 coefficient estimate for the AID variable in Table 1 shows that a \$1 increase in federal grants-in-aid adds about \$1.08 to total state and local government expenditures. The grants-in-aid coefficient is not statistically significantly different from one, however, implying that state and local government purchases are increased by about one dollar for every one dollar increase in grants.

The results in Table 1 also indicate that as the real interest rate increases, state and local government purchases of goods and services increase. Specifically, the 0.79 coefficient for the variable indicates that if the real bond yield increases 1 percent, real state and local government purchases will increase \$0.79 billion. This result may imply that the ability to finance additional purchases out of additional interest receipts outweighs the drain from purchases that additional interest payments would have on state and local governments.

### FORECASTS OF STATE AND LOCAL GOVERNMENT PURCHASES

This section examines the implications for state and local government expenditures of alternative federal government fiscal policies.

<sup>8</sup> The model of state and local government expenditures presented here can also be considered a model of state and local government budgets, reduced to its primary explanatory variables. "Reduced form" models recognize the simultaneity in economic relationships, which in this case relates to the joint determination of the revenues and the expenditures of state and local governments. The first researcher to address this simultaneity explicitly in an econometric model was Edward M. Gramlich, "State and Local Governments and Their Budget Constraint," *International Economic Review*, Vol. 10, No. 2, June 1969, pp. 163-182. Gramlich's model was a quarterly econometric model which contained equations for different types of state and local government purchases. While still a standard for comparison, his model and those similar to it are more disaggregated and detailed than is required for purposes of this article.

The examination is conducted by using the economic model described above to forecast real state and local government purchases. The forecasts are made for three years—1982, 1983, and 1984—under five sets of assumptions regarding the future paths of employment, earnings, inflation, federal personal income taxes, and federal grants-in-aid to state and local governments.

The “baseline” forecast is taken from the projections that appeared in the 1982 United States budget, submitted by President Carter to the United States Congress in January 1981. That budget projected continued increases in nominal amounts of federal grants-in-aid to state and local governments. In real, or constant dollar terms, grants were projected to remain roughly flat through 1984. No significant reductions in personal income taxes or in employment taxes were proposed in Carter’s 1982 budget. The assumptions underlying his budget included success of monetary and fiscal policies in reducing inflation, as well as in supporting moderate growth in real income and employment.

The other forecasts of state and local government purchases, which are compared with the baseline forecast, reflect some of the budget initiatives of the Reagan administration. The “reduced taxes” forecast shows the results of three successive reductions in federal personal income taxes. The “declining grants” forecast reflects the impact of proposed reductions in federal grants-in-aid to state and local governments.<sup>9</sup> The “lower inflation” forecast assumes a faster decline in the rate of inflation than projected in the baseline forecast. Finally, a “com-

bined effect” forecast reflects the total impact of reduced taxes, declining grants, and lower inflation.

The five forecasts are summarized for comparative purposes in Tables 2 and 3. Under the assumptions of the baseline forecast, the quantity of state and local government purchases is projected to increase at an average annual rate of 1.1 percent from 1981 through 1984. In the reduced taxes forecast, slightly more growth in state and local government purchases is projected. Currently, scheduled cuts in federal personal income tax rates reduce the rate of growth of federal taxes withheld from 14.9 percent in the baseline forecast to 14.1 percent (see Table 2). These tax rate reductions increase the average growth in real spendable earnings of consumers from 1.4 percent to 2.1 percent which, in turn, supports the faster growth in state and local spending.

The assumed reduction in federal grants-in-aid is found to reverse the growth in state and local government purchases. Such a reduction by itself results in a projected decline of 0.6 percent in state and local government spending.

President Reagan’s budget reform plan differs from the Carter budget not only in its proposals for taxes and expenditures, but also in its projections for progress against inflation. A lower rate of inflation than assumed in the baseline forecast increases both total real spendable earnings and real federal grants-in-aid, each of which acts to increase real state and local government purchases. The purchasing power of take-home pay rises when less inflation is assumed, and total real spendable earnings also rise as a result of the faster growth in employment that would accompany lower inflation, given unchanged amounts of fiscal and monetary stimulus. Budgeted dollars for federal grants-in-aid also have higher real value if inflation is lower.

A significant decline in the rate of inflation would, by itself, give a big boost to state and

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<sup>9</sup> The Reagan administration seeks not only to reduce the level of federal support to state and local governments, but also to change the mix of the types of grants, particularly from categorical grants to block grants. The forecasts presented here do not include estimates of the additional impact on state and local government purchases that would result from such compositional changes.

local government activity. Table 2 shows the lower inflation assumption increasing the 1981-84 growth rate of real state and local purchases to 3.8 percent as against 1.1 percent in the baseline forecast.

Finally, when combined with reduced taxes and declining grants, the lower inflation assumption yields a growth rate of 2.1 percent

in state and local government purchases, as shown in the combined effect forecast of Table 2.

### CONCLUSION

The outlook for expenditures by state and local governments in the years ahead depends importantly on the paths taken by some key economic variables. Cuts in federal grants-in-

**Table 2**  
**FORECASTS OF AVERAGE ANNUAL GROWTH RATE OF TOTAL REAL STATE AND GOVERNMENT PURCHASES, 1981-84**

	Baseline	Reduced Taxes	Declining Grants	Lower Inflation	Combined Effect
Forecast of real state and local government purchases	1.1	1.2	- 0.6	3.8	2.1
Assumed growth rates of:					
Total spendable earnings	1.4	2.1	1.4	4.2	2.8
employment	1.9	1.9	1.9	2.2	4.1
average real spendable earnings	- 0.5	0.2	- 0.5	1.9	1.8
average earnings	9.3	9.3	9.3	9.3	9.3
federal personal income and employment taxes	14.9	14.1	14.9	13.5	14.1
Consumer Price Index	9.0	9.0	9.0	6.7	6.7
Federal Grants-in-Aid in constant dollars	0.3	0.3	-10.1	0.6	- 9.8
in current dollars	8.0	8.0	- 3.2	8.0	- 3.2

**Table 3**  
**IMPACT OF DIFFERENT FISCAL POLICIES AND INFLATION ASSUMPTIONS ON STATE AND LOCAL GOVERNMENT SPENDING**  
(Billions of 1972 Dollars)

	Level				Average Annual Growth Rate 1981-84
	1981	1982	1983	1984	
I. Baseline forecast	179.8	179.8	182.1	185.7	1.1
II. Reduced taxes forecast	179.8	180.6	183.3	186.3	1.2
III. Declining grants forecast	177.7	174.3	173.3	174.5	- 0.6
IV. Lower inflation forecast	179.1	185.8	194.0	200.0	3.8
V. Combined effect forecast	177.0	181.2	185.8	188.2	2.1

aid will reduce state and local government spending, other things equal. But this contractionary effect will be largely offset by the scheduled reduction in federal personal income tax rates. Lower federal income and employment taxes will leave consumers with more spendable earnings, and their enhanced well-being may be expected to support increased state and local government activity as well as increased consumption and saving.

Real income, and therefore the level of economic activity, will continue to be the single most important determinant of the size of state and local government budgets. For the next several years, growth in real income will be

primarily dependent on progress against inflation. The lower the amount of inflation, the greater the amount of economic growth and the greater the increase in state and local government purchases. The more optimistic outlooks for declines in inflation, such as those associated with the Reagan administration's budget and economic policy, imply relatively strong growth in real expenditures by state and local governments over the years 1982-84. Moreover, even the somewhat less optimistic forecasts for inflation, such as in the last Carter budget, imply continued though moderate growth in state and local government spending over the years ahead.