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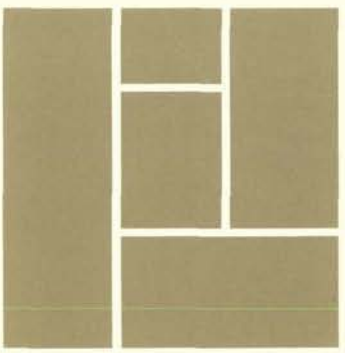

THE URBAN INSTITUTE
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Project Report

ECONOMIC ANALYSIS OF EFFECTS OF BUSINESS CYCLES ON THE ECONOMY OF CITIES

INFLATION, THE BUSINESS CYCLE AND STATE AND LOCAL GOVERNMENT FINANCES

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INFLATION, THE BUSINESS CYCLE AND STATE AND LOCAL GOVERNMENT FINANCES*

Roy Bahl** and Larry DeBoer***

More than any other single factor, the performance of the national economy shapes the financial health of state and local governments. Slower economic growth, a higher rate of inflation, and recessions or the expectation of recessions all affect the structure and growth of state and local government budgets. In some cases, inflation and cyclical fluctuations increase budget deficits and push governments a step closer to insolvency, in others the unfavorable budgetary effects are cushioned by revenue systems which are bouyant with respect to rising prices, and in still others the revenue-dampening effects of slow national growth and recession are more than offset by the gains from inflation and from regional shifts in economic activity. The nature of these effects, their measurement, and how they differ across state and local governments are important national policy concerns.

In this paper, we try to explain how inflation and business cycles affect state and local government budgets. As is the case with most applications of economic theory, we are left with the unsatisfying answer that "it depends,"... on various price and income elasticities, on the kinds of discretionary responses which governments take, on the kind of recession and inflation being faced, on the type of government being discussed, etc. The few earlier studies which have attempted to estimate inflation and recession impacts are reviewed here to search for some consensus about what have been the actual effects. While the answers one gets from such a review are tentative and qualified, the

overall picture that emerges gives some evidence about how inflation and recession compromise or enhance the fiscal health of state and local governments.

Inflation

After a relatively long period of price stability, consumer prices began to rise sharply in 1973, increased by 11 percent in 1974 and 9.2 percent in 1975. After falling off to about 6 percent for two years, prices again increased at double-digit rates for three years before softening during the 1981-83 recession. The question at hand is how this inflation pattern has affected state and local government budgetary position. Microeconomic theory suggests what we might expect in such a case. If the increase in prices of all goods is uniform, i.e., there is no change in relative prices, and if the state and local government tax system is fully responsive to inflation, there will be no real effects on budgets and no induced fiscal responses. Tax collections will be higher, but tax burdens will not,[1] public employees will earn more but not relative to the private sector, etc. The relative position of the state and local government sector would not have changed.

In reality, price increases have not been uniform and state and local government revenue systems have varied widely in their response to inflation. Does this mean that inflation has caused state and local government expenditures to grow at a rate above or below expenditures in all other sectors of the economy? If so, with what consequences for government budgets?

The price indexes shown in Table 1 may help answer one part of this question. Price increases have not been uniform, indeed, changes in the relative prices of energy and food were at the heart of the high inflation rates of the mid-1970s and the softening of prices in the early 1980s. As for measuring the increase in prices faced by state and local governments, one has to rely on the implicit deflator for state and local government purchases as reported in the National Income Accounts. As may be seen in Table 1, this index increased faster than the implicit price deflator for GNP, a comparable measure of the overall inflation rate in the economy. On first blush it would appear that inflation has driven up the relative price of state and local government purchases and in so doing has stimulatd expenditures.

Even if the relative price of purchases by state and local governments does not increase, inflation can affect budgets if tax systems do not fully capture inflation-induced increases in income, consumption, and property values. So while it is intuitively obvious that inflated prices raise the cost of providing government services and stimulate tax bases, it is less obvious whether the revenue or the expenditure effects dominate. A further complication is the need to consider the adjustments caused by inflation, i.e., the public employment reductions brought on by increased wage rates, the capital project postponements caused by higher interest rates, or the tax rate adjustments brought on by revenue shortfalls.

We begin this inquiry about these very complicated fiscal impacts of inflation by tracing out a set of <u>a priori</u> expectations, and then looking for confirmation in the empirical work on the subject.

TABLE 1

ALTERNATIVE MEASURES OF PRICE LEVEL INCREASE

	Labor				Labor and Materials	Capital Outlays		Energy	
	BLS Middle Level of Living[d]								
Year	Amount	Index	CPI	GNP Implicit Deflator	GDP Deflator for SLG Purchases	Interest Rates on Long-Term Treasury Bonds	Construction Costs[a]	Gas and Electricity	Fuel Oil and Coal
1981	25,407	222.0	272.3[b]	193.69	200.3	12.87[b]	204.2[b]	345.9[b]	675.9[b]
1980	23,134	202.1	247.0	177.36	184.7	10.81	186.0	301.8	556.0
1979	20,509	179.1	217.7	162.77	169.8	8.74	170.5	257.8	403.1
1978	18,622	162.7	195.3	152.05	156.5	7.89	158.2	232.6	298.3
1977	17,106	149.4	181.3	141.70	146.1	7.06	148.6	213.4	283.4
1976	16,236	141.8	170.5	133.88	137.7	6.78	137.3	189.0	250.8
1975	15,318	133.8	161.2	127.18	129.7	6.98	127.2	169.6	235.3
1974	14,333	125.2	147.7	116.02	118.4	6.99	115.8	145.8	214.6
1973	12,626	110.3	133.1	105.80	107.3	6.30	105.9	126.4	136.0
1972	11,446	100.0	125.3	100.00	100.0	5.63	100.0	120.5	118.5
1971	10,971	95.8	121.3	96.02	94.5	5.74	92.8	114.7	117.5
1970	10,664	93.2	116.3	91.36	88.3	6.59	85.6	107.3	110.1
1965	9,076	79.3	94.5	74.32	65.1	4.21	62.4	99.5	94.6

[a] Boeckh index, Apartments, Hotels, Office buildings.

[b] preliminary 1981

[c] Spring 1967

[d] Urban U.S. Intermediate Budget

SOURCE: United States Department of Commerce, Bureau of Economic Analysis, Business Statistics, 1979; United States Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, various issues; U.S. Department of Labor, Bureau of Labor Statistics, Autumn Urban Family Budgets and Comparative Indexes for Selected Urban Areas, annual; U.S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics, 1978.

Inflationary Impacts on Public Expenditures and Tax Rates: Theory[1a]

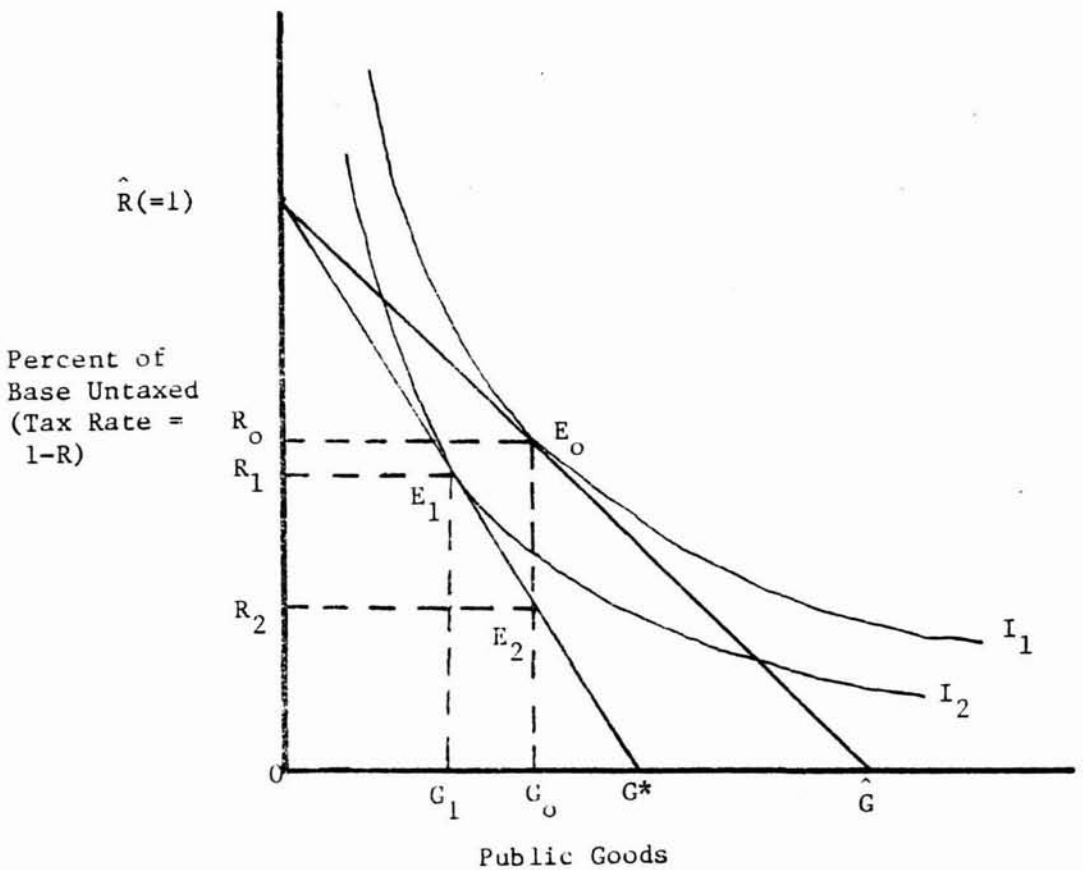
Inflation exerts an absolute price effect, a real income effect, and a relative price effect on government expenditures. The absolute price effect is the one most often discussed. As the general price level in the economy rises, the price that state and local governments pay for their policemen, firemen, utilities, typewriters, etc., also rises. If revenues and expenditures both rise by the general inflation rate, cet. par., then budgets will increase in proportion to the increase in prices and there will be no change in the quantity of inputs employed, nominal tax rates or effective tax rates.

This case is shown in Figure 1. Assume an indifference curve (I_1) which describes state and local government preferences for a public good (G), and the proportion of the tax base which remains untaxed (R).[2] These preferences reflect government officials' judgements about their re-election chances, given each tax level/public goods pair. Preferences also depend on these officials' sense of community needs, on the desire of bureaucrats to enlarge their departments, and so on. Utility increases, cet. par. with an increase in public goods provided and with an increase in the untaxed portion of the taxable base (a decrease in the nominal tax rate). The convex shape of the indifference curve implies declining marginal utility of public goods supplied and of the untaxed portion of the base (increasing marginal disutility of the nominal tax rate).

The concern of the governmental decisionmaker in this model is how his reading of constituent preferences, and his available resources, can

FIGURE 1

LOCAL GOVERNMENT RESPONSE TO PURE INFLATION



lead him to choose an optimal level of taxation and public good purchases.

The budget line ($\hat{\hat{RG}}$) represents the constraint

$$bT = p_G G \tag{1}$$

where

b = the level of the taxable base in dollars,
T = the nominal tax rate,
p_G = the price of public goods, and
G = the quantity of public goods purchased.

Since T = 1 - R,

$$b = bR + p_G G \tag{2}$$

which represents the government's taxable income budget constraint in a more traditional form. The tax base, b, is divided between private income (bR) and public expenditures ($p_G G$). The slope of the budget line $\hat{\hat{RG}}$ is $-p_G/b$, which shows the decrease in the percent of the tax base devoted to private income needed to purchase one more unit of public goods. The point E_o represents an initial equilibrium point, where the community selects G_o in public goods, R_o as the proportion of income to be devoted to private consumption, and a nominal tax rate of $\hat{RR}_o$.

Now suppose that a new round of inflation brings forth the following results: the price of all public and private goods increases by the inflation rate, and the tax base is fully responsive to inflation, i.e., if the general price level increases by 10 percent, so does taxable income. In this case, the purchasing power of the tax base has not changed--one must give up the same amount of private consumption

as before to gain a unit of public goods, and real income has not changed. With no change in purchasing power, the slope of the budget line is unchanged, so there is no change in the equilibrium selection of public goods and nominal tax rate (E_o). In this case, the absolute price effect has no distortive effect on state and local government budgets, though the nominal amount of revenue and expenditure has increased.

The effective tax rate (ETR) is measured as

$$ETR = \frac{p_G C}{qY} \tag{3}$$

where

q = the general price index, and
Y = real community income, i.e., taxable plus non-taxable income.

Equation (3) defines the effective tax rate the ratio of public expenditures to total community income. In the general inflation case described above, the public goods price (p_G) and general price index (q) increase proportionally, and public goods purchases (G) and real community income (Y) do not change. The effective tax rate is unchanged if revenues respond to inflation just as expenditures do.

However, the tax base does not always increase in proportion to inflation, e.g., inflation may bid up property values by more than local officials are willing (or legally allowed) to raise assessments. This results, at least initially, in a reduction of the real income of the government, i.e., inflation has raised the price of government goods by more than revenues, hence the purchasing power of each dollar of revenue

has declined. In such a case, the government may react by reducing the quantity of inputs and (short of increased grants, borrowing or drawing on fund balances) total expenditures will not increase by the full rate of inflation. Call this the 'real income effect and note that its potential dampening effect on state and local government expenditures varies directly with the income elasticity of demand of state and local governments for public goods. In the extreme case where the government's demand for public goods is perfectly income inelastic, nominal tax rates will be increased to fully compensate for the loss in purchasing power.

These points can also be demonstrated with Figure 1. Assume that the tax base does not rise proportionally with the price of public goods, i.e., the purchasing power of the tax base declines. The slope of the budget line, $-p_G/b$, becomes steeper and shifts to $\hat{RG}^*$. If the new equilibrium point were at E_1, the community will choose to purchase fewer public goods and levy a higher nominal tax rate ($\hat{RR}_1$) than before. The effective tax rate, on the other hand, will decline. In equation (3), note that the public goods price (p_G) increases proportionally with the general price index (q), while purchases of public goods (G) decline. On the other hand, an equilibrium at E_2 would indicate how much the nominal tax rate would have to increase to offset the reduced purchasing power of the tax base. At point E_2, public goods purchased remain constant and so does the effective tax rate. This is the case where the government's income elasticity of demand for public goods is zero: real government resources decline, but no change in public goods purchased occurs.

If the tax base does not increase with the general rate of inflation, an interesting difference emerges between the expected reaction of the 'community' and government decisionmakers. This can be demonstrated through a comparison of Figures 1 and 2. Figure 2 shows a community indifference curve, I_1, mapping voter-consumer preferences between public goods (G) and private goods (X). The budget constraint is

$$qY = p_X X + p_G G \tag{4}$$

where

q = the general price index,
Y = real community income,
p_X = the price of private goods,
X = private goods purchased,
p_G = the price of public goods,
G = public goods purchased.

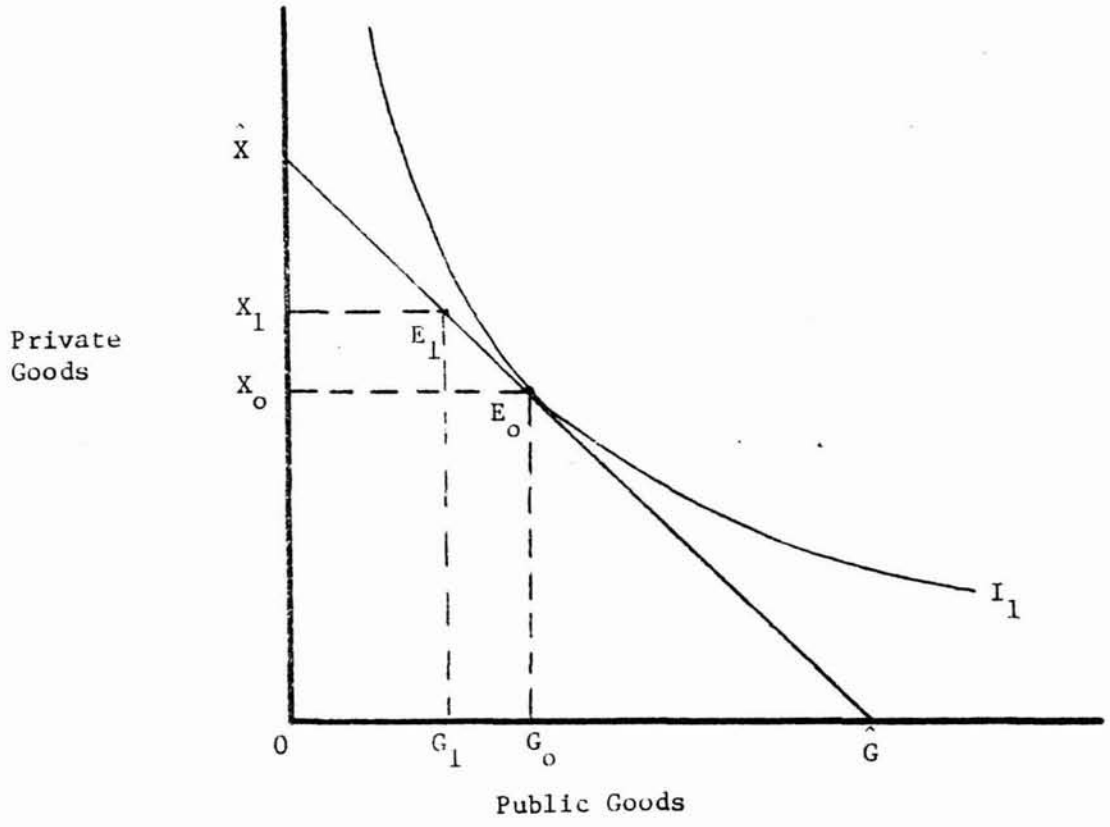
The slope of the budget line in Figure 2 is $-p_G/p_X$, the negative of the price ratio.

Assume that the equilibrium points E_o in Figures 1 and 2 represent the same allocation of community resources between public and private goods. In each Figure, G_o public goods are provided. The tax base, b (some fraction of total community income) must be taxed at rate $\hat{RR}_o$ to provide this level of public goods at price p_{Go}. The untaxed portion of the tax base ($R_o b$) plus that fraction of community income not included in the tax base go to purchase X_o private goods at price p_{xo}.

In a pure inflationary environment, all prices and nominal community income increase by the same proportion. In budget constraint

FIGURE 2

COMMUNITY RESPONSE TO PURE INFLATION



(4), this means q, p_x and p_G all rise by the same proportion, so the budget line does not shift. The community optimum requires no change in the public good/private good allocation so the equilibrium point in Figure 2 remains at E_o.

If the tax base also rises by the same proportion as the general inflation rate, as noted above, the government's budget line $\hat{R}\hat{G}$ does not shift and the equilibrium will remain at E_o. Government officials will provide G_o public goods, the same level as the community optimum. Suppose, however, that the tax base increases at a rate less than the general inflation rate. As shown in Figure 1, the budget constraint shifts to $\hat{R}G^*$ with the decline in the purchasing power of the tax base. At the new equilibrium point E_1, government officials increase the nominal tax rate (from $\hat{R}R_o$ to $\hat{R}R_1$), but not enough to offset the reduced real value of the tax base so purchases of public goods decline from G_o to G_1.

Recall that this pure inflation has no effect on the community budget constraint, so the optimum community allocation E_o shown in Figure 2 does not change. The government, however, now provides only G_1 public goods. Because the tax base does not respond to inflation by the general inflation rate, while nominal community income does, the fraction of real community income outside the tax base increases. This extra private income goes to increase the community's purchases of private goods, from X_o to X_1 in Figure 2. The community's public good/private good allocation shifts from the optimal E_o to the sub-optimal E_1. The effective tax rate is $X_o\hat{X}/O\hat{X}$ at E_o; it decreases to

$X_1\hat{X}/O\hat{X}$ at the sub-optimal allocation E_1. The local public sector is too small.

The obvious question is, if the optimal allocation is at E_o, and the community is at E_1, why does the community not decrease its private good purchases and increase its public good purchases to get back to E_o? In Figure 1, maintaining the supply of public goods at G_1 with the inflationary budget constraint $\hat{RG}^*$ requires the government to select point E_2 on its budget line. At E_2, the nominal tax rate increases to $(1-R_2)$, completely offsetting the decline in the purchasing power of the tax base. As noted above, an allocation at point E_2 requires that the government's income elasticity of demand for public goods be zero. If public goods are normal goods, this elasticity will be positive. The decline in government income will cause reductions in public goods purchases.

The answer to the question posed above then, is that the local government is unable or unwilling to increase the nominal tax rate enough to offset the real decline in the tax base. This phenomenon might be labeled "tax rate illusion." There are legal and psychological barriers to large tax rate increases. Government officials may face tax rate ceilings or limits to the amount tax rates may rise in any one year. Here the community is effectively signalling its government that in spite of any fall in the effective tax rate, there should be no large increases in the nominal rate. In this case the community apparently views a nominal rise in tax rates as a real subtraction from private income: hence, the term tax rate illusion. Governments which face no

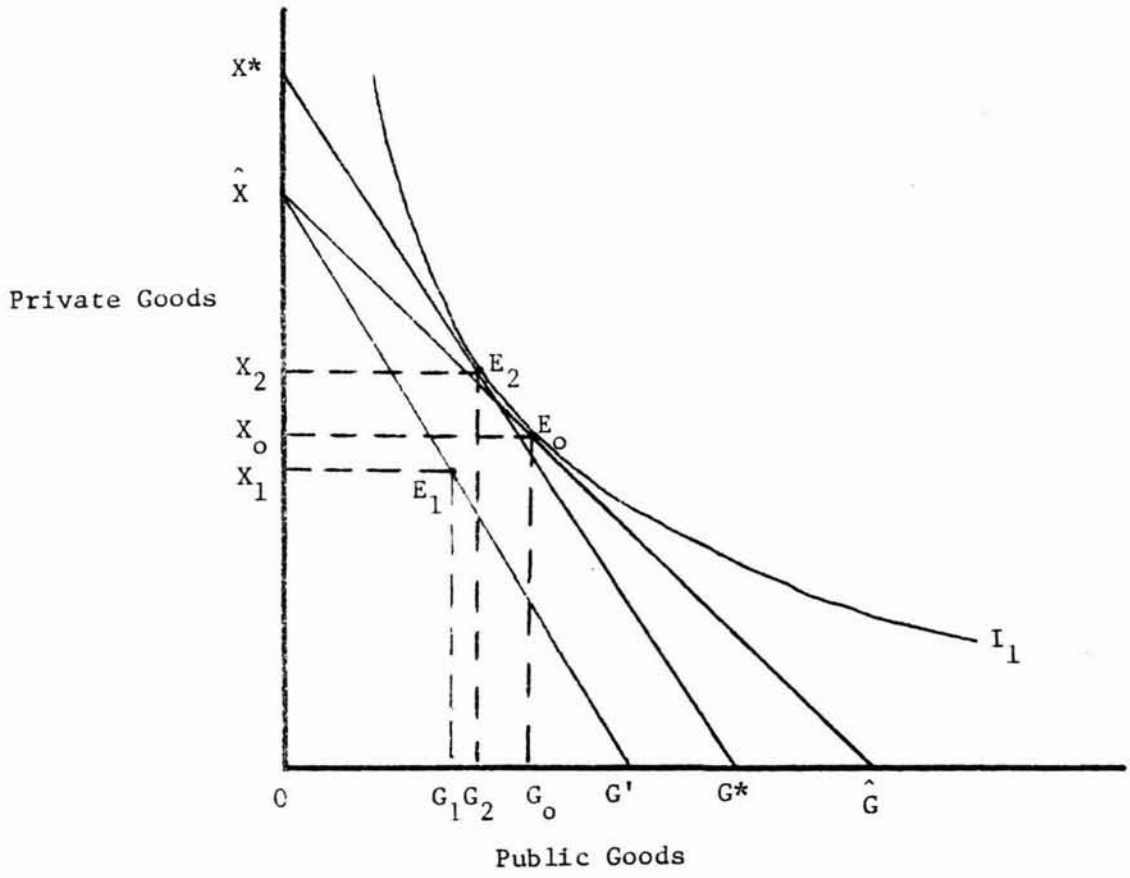
tax rate limitations may themselves "suffer" from tax rate illusion and be unwilling to fully offset their real revenue decline with a tax rate increase.

There is also a 'relative price' effect of inflation on expenditures. If all prices in the economy increase at the same rate, in the absence of a real income effect there is no inducement to cut back consumption of any one good at the expense of another. However, if the price of some goods increases faster than others, some substitution takes place with the degree of substitution depending on the price elasticities of demand for the products. Suppose, that the price of inputs purchased by state and local governments increased faster than the prices of all other goods and services. Holding all else constant, one would expect rational consumer-voters to respond by choosing a smaller state and local government sector. For example, if the price of school teachers increased relative to all else, it is likely that, cet. par., fewer teachers would be hired than under a slower rate of inflation. However, since the state and local government sector is thought to have a price inelastic demand, the retrenchment induced by relative price effects may not be great.[3]

In real terms differential rates of inflation between public and private goods result in a relative price change. In Figure 3, public goods (G) become more expensive relative to private goods (X). This is shown through a shift in the budget line from $\hat{X}\hat{G}$ to $\hat{X}G'$. Equilibrium point E_1 shows a decrease in purchases in both private goods and public goods. The move from E_o to E_1 is caused by a substitution effect, resulting from the relative price change, and an income effect,

FIGURE 3

COMMUNITY RESPONSE TO DIFFERENTIAL INFLATION RATES



resulting from the decrease in purchasing power caused by the price rise. If, however, purchasing power does not decline--as it will not if income increases with the general inflation rate--there is no income effect. In this case the response of the community to the differential inflation rates is a shift from E_o to E_2; in real terms, to purchase more private goods and fewer public goods.

Although the government in Figure 3 is providing fewer public goods, the effective tax rate may rise or fall, depending on the price elasticities of public and private goods. This can be shown with the following equations. The equation for the budget lines in Figure 3 is:

$$qY = p_x X + p_G G \tag{4}$$

where

qY = nominal community income;
p_x = the price of private goods;
p_G = the price of public goods.

The effective tax rate (ETR) is

$$ETR = \frac{p_G G}{qY} \tag{5}$$

which can be written as

$$ETR = \frac{1}{(_xX/p_G G) + 1} \quad . \tag{6}$$

If a good is price inelastic, expenditures on that good will rise with increases in price; if a good is price elastic, expenditures on that good will fall. Thus, if the demand for public goods is price inelastic

relative to the demand for private goods, expenditures on public goods ($p_C G$) may increase relative to expenditures on private goods ($p_x X$) and the effective tax rate will rise, as shown in equation (6).

Real income and relative price effects can work in the same or in opposite directions in terms of their aggregate impacts on state and local government expenditures, i.e., general inflation will increase state and local government expenditures while rising relative prices of inputs and the declining purchasing power of the tax base will set in motion discretionary expenditure cuts that will offset some of this increase. If relative prices of state and local government inputs fall, then the upward pressure on expenditures will be reinforced as consumer-voters (and bureaucrats) demand more of the now-cheaper government goods. It is important to note that absolute price effects are more "automatic" (the city simply pays the higher price of gasoline for its police cars), but relative price effects and real income effects require discretionary actions (the city must take some policy action to reduce its fleet of cars).

The relative price effect may also change the mix of state and local government services provided, or even the methods of providing services. For example, a higher price of garbage collectors can lead to fewer collectors and more expensive and efficient equipment, or to privatization of the service. The first option will depend on whether the technology will permit the substitution of capital for labor and the second on whether the relative price of private provision is somehow lower. The answers vary from function to function.

The dual solutions to the question of the state and local

government discretionary response to inflation point out the importance of the relative response of revenues and expenditures. Only if revenue and expenditures grow at the general inflation rate will there be not tax rate illusion, and no real discretionary response by state and local governments to inflation. If revenues are stimulated more than expenditures, the government realizes an "inflationary dividend" and may increase real expenditures and reduce tax rates. In this case the effective tax rate would climb with inflation. This argument is often made for the response of Federal income tax receipts to inflation. If expenditures are stimulated more than revenues, tax rate illusion prevents the consumer-voter optimum from being maintained in an inflationary environment. The effective tax rate falls.

The important empirical issue, then, is the relative effect of inflation on expenditures and revenues. This issue is addressed in the following sections.

Measuring Expenditure and Revenue Impacts

The measurement of the impact of inflation on state and local government finances in a complex problem. If inflation's impact was merely an absolute price effect, the problem would be much simplified. Expenditures and revenues would increase at the general rate of inflation, with no induced discretionary effects. It is the real income and relative price effects that complicate matters, i.e., inflation stimulates revenues and expenditures, which induces discretionary responses. If expenditures grow more than revenues, nominal tax rate increases, real expenditure cuts and effective tax rate declines will likely result. If public goods become relatively more expensive than

private goods, the state and local government will likely cut expenditures, change the mix of services provided, and either increase or decrease the effective tax rate. An aggregation of these "automatic" or "potential" effects with the discretionary actions they stimulate will miss the pure impact of inflation on state and local government finances. This is because the automatic and discretionary effects are often in opposite directions, for example, the automatic increase in public goods prices versus the discretionary cuts in programs or employment. The separation of these automatic and discretionary responses is an important element of the discussion of the impact of inflation on state and local government finances.

What one can say in the aggregate is that over the 1965-1980 period, state and local government expenditures increased by 401 percent, state and local government taxes by 336 percent, state and local government debt outstanding by 237 percent, and the CPI by 190 percent. During the same period, the share of labor costs and construction in state and local government expenditures fell while the shares of materials/equipment and interest increased (see Table 2). The issue is to understand how inflation affected these changes. Indexing Expenditure - Inflation Impacts

To measure the "potential" impact of inflation on expenditures requires price indexes for each class of state and local government expenditure. The problem might be defined more specifically: the total actual expenditure change (ΔE) is

$$\Delta E = E_t - E_o \qquad (7)$$

TABLE 2

THE COMPOSITION OF STATE AND LOCAL GOVERNMENT EXPENDITURES: 1965-1980

Object	Percent of Total Expenditures			
	1965	1970	1975	1980
Labor Costs	41.6	42.5	39.7	37.9
Materials, Equipment and Supplies[a]	20.6	23.6	28.4	33.2
Construction	18.9	16.4	13.7	11.9
Land and Equipment	5.1	3.6	3.2	2.6
Interest	3.4	3.4	3.8	4.1
Transfer Payments	4.7	5.5	4.2	3.5
Insurance Benefits and Repayments	5.7	4.9	7.0	6.7

[a]Total current expenditures minus total wages and salaries.

SOURCE: U.S. Bureau of the Census, Governmental Finances in 1979-80 (1974-75, 1969-70, 1964-65), GF80, No. 5 (Washington, D.C.: Government Printing Office, 1981).

where

E_t = expenditures in year t

E_o = expenditures in some base year

and the change in expenditures due to inflation (E) is

$$\hat{\Delta E} = \dot{p}E_o \tag{8}$$

where

$\dot{p}$ = some percent increase in an appropriate price index.

Hence, the share of expenditure increase due to inflation is

$$\frac{\hat{\Delta E}}{\Delta E} = \frac{\dot{p}E_o}{E_t - E_o} \tag{9}$$

As noted above, this result gives an estimate of the direct, probably maximum, impact of inflation. It assumes no discretionary quantity adjustments.

The estimation $\hat{\Delta E}/\Delta E$ is a simple exercise if only an appropriate price index is available. Unfortunately, the choice and the measurement of such an index is anything but simple. The problem is that an aggregate price index for state and local government expenditures would have to take into account the differential growth in prices for each component of the state and local government budget, i.e., a kind of market basket survey of state and local government purchases is necessary. The Implicit Price Deflator for state and local government purchases (see Table 2) provides such an estimate, but is flawed for the purposes at hand in that it cannot reflect the wide variation in the package of services purchased by different state and local governments.

It is not available on a regional basis. The only way around this problem would seem to be construction of a price index for each government, weighted to reflect the composition of purchases by that government.[4]

If labor costs are assumed to respond fully to the rate of inflation, the proper index would be a cost-of-living measure. This likely would play the strongest role in determining the wage rate increase necessary to compensate public employees for rising consumer prices. There are few choices of an index for this purpose. The Bureau of Labor Statistics estimates, for 39 metropolitan areas, the cost of three "levels" of living.[5] This is a market basket survey and is limited by its relatively narrow coverage. On the other hand, it has the strengths of allowing for some regional variations in the cost-of-living and having been constructed explicitly for the purpose of measuring annual changes in the cost-of-living. Some analysts have chosen another alternative, i.e., to deflate labor cost increases by the national CPI and thereby assume uniform price increases across the nation. If, in fact, prices are growing faster in the growing region, the index overestimates the effects of inflation on labor costs in the declining regions. On the other hand, if public sector labor unions bargain with national price index information (or if governments make wage agreements with national price level increases in mind), the national CPI may not be so inappropriate an index. Moreover, the CPI is available with relatively little time lag whereas the BLS index is produced with a one to two year lag.

The problem of choosing an appropriate index is even more difficult for nonlabor costs because of the wide range of goods and services involved. One possibility is to use the Implicit Price Deflator (IPD) for state and local government purchases, however, as noted above, this index has the disadvantages of including labor costs and allowing for neither price level variations across regions nor variations in the type of materials purchased. The latter problem may be resolved by choosing a great number of specific price indexes, the very laborious procedure followed by Greytak and Jump,[6] and by the City of Washington, D.C. in estimating inflation effects in conjunction with its long-term expenditure forecast.[7]

In sum, even if the inflation impact is defined only in terms of direct price effects, and even if we assume that state and local governments must pay the full price increases, measurement will be quite subjective. The answer we get for an inflation impact will vary considerably according to the index chosen. This is not to say that one cannot gain some idea about the impact of inflation from such estimation, but rather that the impacts should be interpreted with these conceptual and empirical flaws in mind.

Estimates of the Expenditure Impact of Inflation

There are surprisingly few studies of the impact of inflation on state and local government expenditures. The best and most careful research is a series of studies carried out in the Metropolitan Studies Program of Syracuse University's Maxwell School, under the leadership of David Greytak and Bernard Jump.[8] Working with data for New York City for the 1965-1972 period, for a sample of six local governments, and for

the entire state and local government sector during the 1971-1974 period, they computed expenditure-inflation indexes. The Greytak and Jump series attempts to estimate how much expenditures would grow if they responded fully to price increases, e.g., they assume a zero price elasticity of demand for public employees and estimate the potential for expenditure growth due to inflation.

Their results indicate that the inflationary impact during the 1972-1974 period was greater than that for the entire 1967-1972 period. Moreover, they show that the inflation impact on expenditures could have accounted for virtually all of the expenditure increase of state and local governments over the 1972-1974 period. Actual state and local government expenditures increased by only about 18 percent during these two fiscal years, but if state and local governments had fully responded to the effects of inflation, expenditures would have increased by 25 percent, i.e., if state and local governments had maintained 1972 employment levels and real nonlabor expenditures and had compensated employees and transfer recipients for increases in the cost-of-living, expenditures would have increased by 25.3 percent by 1974 (see Table 3).

An application of the Greytak-Jump method, still using the 1972 base, to 1976 expenditures shows an expenditure-inflation index of 140.2, suggesting that inflation potentially accounted for about 80 percent of total expenditure growth between 1972 and 1976.[9] For the state and local government sector as a whole, one might conclude from these results that inflation accounted for virtually all of the expenditure increase between 1972 and 1976.[10]

TABLE 3

EXPENDITURE AND REVENUE INFLATION INDEXES FOR STATE AND LOCAL GOVERNMENTS: 1972-76

	Expenditure Inflation Indexes (1972 = 100)		Local Source Revenue Inflation Indexes (1972 = 100)	
	(1) 1974	(2) 1976	(3) 1974	(4) 1976
States	125.4	140.8	116.6	128.3
Counties	125.4	140.5	116.7	133.3
Municipalities	125.4	140.6	115.4	130.7
Townships	125.6	141.5	114.8	130.7
School Districts	125.0	138.4	119.2	138.8
Special Districts	125.7	142.5	113.3	124.2
All State and Local Governments	125.3	140.2	116.9	129.6

SOURCE: The indexes were computed using the methods and data sources noted in David Greytak and Bernard Jump, Jr., The Effects of Inflation on State and Local Government Finances, 1967-1974, Occasional Paper No. 25, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, 1975); and reported in Roy Bahl, Bernard Jump, Jr., and Larry Schroeder, "The Outlook for City Fiscal Performance in Declining Regions," in The Fiscal Outlook for Cities, ed. by Roy Bahl (Syracuse, NY: Syracuse University Press, 1979).

This conclusion certainly does not hold for all local government, because expenditure mixes vary substantially. Greytak and Jump carried out case studies of the fiscal performance of six local governments during the 1972-1974 period to show the wide variation in the effects of inflation on expenditures. While the aggregate state and local government expenditure inflation index was 125.3 the indexes for these governments over the same period range from 165.9 in Snowhomish County, Washington to 123.0 in New York City.[11] The percent of expenditure increase attributed to inflation ranged from 93 and 88 percent in Atlanta and New York City to 60 percent in Orange County, California.

Charken and Walker have used a wage index to estimate that 75 percent of the expenditure increase in Los Angeles between 1973 and 1978 could be attributed to inflation.[12] Cupoli, Peek and Zorn used the Greytak-Jump method to estimate that nearly 76 percent of the Washington, D.C. expenditures increase (excluding transfers) between 1972 and 1975 was due to inflation.[13] The City of Dallas has used its forecasting model to ask the interesting and related question of how much will future expenditures respond to <u>higher</u> rates of inflation.[14] Working with a low vs. a high inflation rate scenario, they conclude that a difference of 5 percent in total general expenditures might be expected between 1980 and 1984.[15]

<u>Expected Revenue Impacts</u>

Revenues also respond to inflation in that the nominal value of tax bases rises with increasing incomes, prices and property values. Hence, there is clearly a potential to capture increased revenues induced by inflation. For sales and income taxes, the revenue response is more or

less automatic and estimation of the inflation effects is straightforward enough. However, in the case of the property tax, the problem is far more complicated. Land and improvement values have increased dramatically during recent inflationary periods, thereby providing equally dramatic increases in the potential for increased property tax revenues. Indeed, in terms of the potential revenue effects of inflation, the property tax may be the biggest winner of all. But who would argue that local governments may easily capture this potential increase in the tax base? The major impediment to property tax revenue growth during inflation, of course, is the revaluation of properties. The political obstacles to such revaluation are well known. Indeed, Proposition 13 was partly a result of property tax assessments reflecting skyrocketing property values. The California solution to hold taxable property value growth to an arbitrary 2 percent suggests that during times of inflation, good assessment practices are even more objectionable to voters than bad practices.

If the problem of estimating inflationary impacts is difficult for the property tax, it is next to impossible for most intergovernmental grants. One might hypothesize that because the more elastic Federal and state tax structures respond to inflation, Federal and state aids will also respond proportionately--as if they were an income-elastic tax. We might offer a crude test of this hypothesis by examining the long-term (1965-1980) responsiveness of the grant share of Federal government expenditures (F/B) to changes in nominal income (Y), and the CPI (C):

$$\ln F/B = -7.76 + \underset{(7.7)}{0.96}\ \ln Y - \underset{(2.6)}{0.61}\ \ln C$$

$$R^2 = .97$$

These results show that for any given growth rate in income, inflation has a dampening effect on the grant share of the Federal budget.

Approaches to Estimating Inflation Impacts on Revenues

In attempting to determine the impact of inflation on state and local government revenues, three general approaches have been taken. All are similar in that they somehow try to separate automatic from discretionary increases in revenue growth.[16] The elasticity models try to estimate the percent change in revenues resulting automatically from a 1 percent change in income, i.e.,

$$n = \frac{(\Delta R/\Delta Y)}{(R/Y)} \qquad (10)$$

where

Y = personal income
R = revenue.

If, for example, $n = 1.1$, a 1 percent increase in personal income will automatically increase revenues by 1.1 percent. Then, one might argue, for every 1 percent increase in personal income which is due to inflation, a 1.1 percent inflation-induced growth in revenues will result. If this reasoning is sound, it would seem that an answer to our question could be had from a straightforward estimation of (10) from historical data. Many studies have taken this approach and there are numerous estimates of income elasticities.[17]

As a method for picking up inflationary impacts, the elasticity approach has important weaknesses. It assumes that the effects of inflation can be adequately measured by the growth in nominal personal income, e.g., a 4 percent real and 4 percent inflationary growth in personal income vs. any 8 percent growth in personal income would have an identical effect on revenues. There are reasons to believe otherwise. One is that price increases may somehow change the structure of personal income and consumption and therefore the elasticity of the tax in the future. This possibility would be missed in a straightforward elasticity estimation which typically assumes away price effects. For example, if the ratio of taxable to total consumption rose with increasing prices, so would the sales tax elasticity. There are other examples. In addition to the "progressivity" effects under state income taxes (i.e., bracket creep), one might question whether inflation affects the source distribution of income, particularly capital gains, and thereby affects total taxable income.

A separate but equally serious problem with the elasticity approach has to do with the difficulty of separating automatic from discretionary effects on revenue growth. Particularly in the case of the property tax it is all but impossible to identify an "automatic" responsiveness of tax revenues to growth in either personal income or price levels. These caveats suggest that straightforward use of historical data to provide an estimate of the revenue-inflation impact will be problematic.

An alternative to the elasticity approach is that taken by Greytak and Jump. They have attempted to estimate the <u>potential</u> tax base response to price increase. They ask the question "how much would

revenues grow in response to inflation if tax bases increased at their full potential and if effective tax rates remained constant?" They begin with 1972 and inflate each tax base and user charge base by an "appropriate" index--taken from the CPI, WPI or the BLS family expenditure survey. For example, for the property tax, they used BLS price indexes for residential housing and residential rents, and various Boeckh indexes for commercial and industrial properties.

The problem of estimating the revenue impact of inflation is analogous to that on the expenditure side: the potential effects are for a greater increase in revenues than most governments will be willing (or politically able) to accept. The response to this increased revenue potential by state and local governments has been to allow effective property tax rates to fall by failing to reassess and in some cases to index state taxes or reduce income tax rates. In sum, a part of the potential revenue stimulus of inflation has been foregone.

A third approach, taken by the ACIR, is a substantial improvement on the elasticity estimation method.[18] They have adapted Vogel's model of state and local government expenditure growth during the business cycle,[19] and estimated

$$\Delta R = 1.15 - \underset{(5.54)}{0.12\Delta G} + \underset{(11.28)}{236.42\Delta D}$$

$$R^2 = 0.883 \qquad DW - 1.35$$

where

ΔR = change in own-source revenue
ΔG = change in nominal GNP gap
ΔD = change in implicit price deflator.

The product of the actual change in the deflator between two periods (ΔD) and the regression coefficient (236.42) gives an estimate of the effects of inflation on own-source revenues, holding constant the change in the nominal GNP gap for that period. The ACIR study, while carefully done, is limited by their assumption that revenue changes (automatic and discretionary) can be explained by movements in the business cycle and the price level. There is a voluminous literature which argues that experditure, and therefore revenue and tax rate levels are responsive to changes in population, Federal grants, changing economic structure, etc.[19a] The omission of these important variables leads to (an uncertain) bias in the results.

The differences among the elasticity, ACIR and the Greytak-Jump approaches lie in the question asked. The elasticity approach asks how revenues, net of any discretionary change, respond to changes in nominal personal income. The ACIR approach attempts to explain actual changes in revenue during inflationary periods, including the effects of discretionary actions. Greytak-Jump attempt to estimate the potential response to inflation, i.e., how much more taxable capacity would be available to governments simply because of inflation if the governments could and actually did permit the inflation to be reflected in the tax bases. The interpretation of results from these studies must keep their different questions in mind.

Estimated Revenue Impacts

The Greytak and Jump indexes in Table 3 show that state and local government revenue potential grew by 16.9 percent between 1972 and 1974, i.e., if the 1972-1974 increase in the nominal values of tax bases had

been taxed at 1972 effective rates, the revenues raised by state and local governments would have increased by 16.9 percent, solely because of inflation.

The ACIR study also concludes that state and local government revenues are stimulated by inflation, that they are between 6 and 16 percent higher than they otherwise would have been.[20] Their estimate of an aggregate inflation stimulus of about $77 billion in revenues between 1973 and 1976 is substantially greater than the $40 billion estimated with the Greytak-Jump method between 1972 and 1976. The difference is easily explained. The ACIR method does not adjust for widespread tax rate increases during this period, i.e., the tax rate increases are viewed as part of the effects of inflation. This is perfectly correct if the objective is to show the direct and induced effects of inflation on local government revenues, and if the effect of other factors which determine tax rates is removed.

The conclusion of these analyses would seem to be that inflation exerts a quite stimulative effect on nominal state and local government revenues. The Greytak-Jump method implies a hypothetical increase slightly less than the growth in the CPI for the 1972-1976 period, the ACIR method predicts an inflation effect which is greater than the CPI increase. Obviously, there still remains the issue of great variations in this effect by type of jurisdiction.

The Budgetary Effects of Inflation

The really important question is the net effect of inflation on the budget, i.e., whether inflation drives up revenues by more than it drives up costs. The ACIR answer for the 1973-1976 period is that it

does, while the Greytak-Jump approach yields a conclusion for the 1972-1976 period that it does not. The ACIR estimates net revenue gains during the 1973-1976 period as equivalent to 0.6 percent of own source revenues in 1973, 3.9 percent in 1974, 5.5 percent in 1975, and 2.9 percent in 1976.[21] However, discretionary rate changes are included in their estimates of revenue increase due to inflation, causing one to suspect an overestimate of the pure inflation effects on the revenue side (because other factors may have caused the tax rate increase). Moreover, they do not consider price effects on any expenditure base--they adjust revenue purchasing power by the IPD for state and local government purchases--causing one to suspect an underestimate of the inflation effects on expenditures. Again, the ACIR estimates are of the total direct and indirect effects of inflation on budgets and take into account any discretionary tax and expenditure adjustments the government may have made because of inflation.

The Greytak-Jump estimates, to the contrary, are of how expenditures and revenues would respond to inflation if no discretionary adjustments were made, i.e., no tax rate changes, all inflation-induced changes in the tax base are captured, the number of employees and quantities of goods purchased remain constant, and no programs are cut back. Hence, their estimates are of the potential effects of inflation, but under the assumption that governments make no quantity or price (tax rate and real wage rate) responses.

The Greytak-Jump estimates show that expenditures were potentially more responsive to inflation than were own-source revenues, at both the state and local levels during the 1972-1974 and 1972-1976 periods (see

Table 3). Indeed, while inflation was driving up expenditures by about 25 percent between 1972 and 1974, it was increasing revenues by only about 17 percent. While both indexes continued to increase during the 1974-76 period, the relative cooling of inflationary pressure did allow inflation-induced increases in state and local revenue bases to nearly keep pace with the pressures of inflation on expenditures.

Another way to describe the budgetary effects of inflation is to consider the implications for the purchasing power of state and local government revenues. Purchasing power indexes for the several levels of government, based on 1972 revenue bases, are shown in Table 4. For example, a purchasing power index of 90 would imply that after accounting for the effects of inflation on revenues and expenditures, the revenue base would be 10 percent too small to finance a constant level of services. The period 1973-74 was especially severe for inflationary pressures on state and local governments with the purchasing power index falling nearly 7 percent. The situation did not worsen markedly between 1974 and 1976--the potential growth in revenues was adequate to cover about 92 percent of the inflation induced-increase in expenditures.

While the inflation indexes in Table 4 suggest that state and local government sector purchasing power fell between 1972 and 1976, the actual effect of inflation almost certainly has been more severe than is indicated by these estimates. This is because the revenue and expenditure inflation indexes measure the potential impact of inflation on the budget--these estimates are not meant to imply that state and local governments actually realized these revenue base effects or made

TABLE 4

INDEXES OF PURCHASING POWER OF 1972 REVENUE BASE[a]
(1972 = 100)

	(1)[b] 1974	(2) 1976
States	92.98	91.12
Counties	93.06	94.88
Municipalities	92.03	92.96
Townships	91.40	92.37
School Districts	95.36	100.00
Special Districts	90.14	87.16
All State and Local Governments	93.30	92.44

[a] 1972 revenue excludes intergovernmental aid.

[b] Computed from Greytak, et al., The Effects of Inflation on State and Local Government Finances, 1967-1974.

SOURCE: The indexes were computed using the methods and data sources noted in David Greytak and Bernard Jump, Jr., The Effects of Inflation on State and Local Government Finances, 1967-1974, Occasional Paper No. 25, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, 1975); and reported in Roy Bahl, Bernard Jump, Jr., and Larry Schroeder, "The Outlook for City Fiscal Performance in Declining Regions," in The Fiscal Outlook for Cities, ed. by Roy Bahl (Syracuse, NY: Syracuse University Press, 1979).

these expenditures. Assessment lags would mean that actual property taxes would not grow as implied here and therefore the detrimental effect of price indexes on budgets would actually be understated.[22] Moreover, for declining cities it is altogether possible that property values did not keep pace with the general rates of increase in property values experienced in the rest of the nation.

There is little doubt but that the potential effects of inflation on state and local government budgets are substantial. The expenditure impacts may not show up immediately, because of lagged responses, or directly, because governments may compensate for price increases by cutting services. But it seems clear that inflation has important and substantial effects on the cost side of the budget. The effects on the revenue side may be much less pronounced, particularly for property taxes and particularly in times of taxpayer resistance. On the basis of this evidence, it would seem reasonable to conclude that inflation does reduce the purchasing power of state and local government revenues and may do so by a substantial amount. The 7 to 8 percent reductions suggested in the Greytak-Jump analysis of the 1972-74 period do not seem too far from the mark given the overall inflation rates experienced during that period. For local governments which are more heavily dependent on the property tax, the effect may be much greater.

It is likely, then, that the real income effect reduces the purchasing power of the state and local government tax base. In response to this real income decline, increases in tax rates and reductions in real expenditures may be anticipated. If a government resorts entirely to tax rate hikes, it may offset the real tax base

decline and hold the effective tax rate constant. It is more likely, however, that state and local governments will respond to inflation with real cuts in expenditures.

The expenditure impacts of inflation are a complicated matter involving direct, automatic effects and indirect, discretionary effects. These effects depend on input price movements, which are difficult to measure; on the impact of institutional arrangements, such as public employee unions; and on the political will of state and local governments to undertake discretionary actions. We may never be able to sort out the "pure" effects of inflation, but we may begin to examine the empirical evidence on this question by considering the evidence for the major components of state and local government expenditures: labor costs, materials, equipment, supplies, capital outlays, and transfer payments.

Labor Costs

Since about 37 percent of state and local government expenditures are for wages and salaries, an understanding of how inflation has stimulated labor costs is important. The same scenario as above holds: labor costs are pushed up by inflation, cet. par., to the extent each of the following is true:

--community income increases in proportion to inflation;
--the local revenue structure is inflation responsive;
--the relative price of labor decreases;
--the demand for labor is price inelastic;
--the demand for labor is income elastic.

The inflationary impacts on labor expenditures are dampened to the extent

--community income increases less than in proportion to inflation;
--the local revenue structure is not inflation responsive;
--the relative price of labor rises;
--the demand for labor is price elastic;
--the demand for labor is income inelastic.

Inflationary impacts on labor costs cannot be read from available data in a straightforward way. Some method of estimation is necessary. When labor costs increase faster than the rate of inflation, the empirical problem is how much of the increase should be assigned to inflation. One approach is to assume that the full rate of inflation is captured in labor cost increases, i.e., wage increases fully reflect cost-of-living increments. This implies that state and local government labor expenditures are indexed to cost-of-living increases and that the price elasticity of demand for public employees is zero. In the sixties and early seventies this may have been an appropriate assumption for estimation--public employees received cost-of-living increments and real wage increases. Average public employee wages increased by more than the full CPI increase, public employees were not being laid off, and revenues were more than keeping pace with inflation.

The increasing rates of inflation beginning in about 1973 changed this pattern as state and local governments began to adjust their spending patterns to rising input prices. Through most of the 1970s, average compensation (including supplements) of state and local government workers increased because of inflation, but at a rate less than the CPI.[24] An index of the actual increase in state and local

government employee wages shows less growth than the CPI since 1973 (see Tables 5 and 6). Moreover, there has been a marked slowing in the rate of growth in public employment rolls.

The story these data tell is that sometime after 1973 state and local governments began to use discretionary actions to offset some of the expenditure impacts of inflation. This response was possible because wage rate increments are a negotiated, discretionary action of state and local governments, i.e., governments aren't required to pay full cost-of-living increments in the same way that they are required to pay a higher price for a gallon of gasoline. This feature has been used to keep the growth in the price of state and local government labor inputs low relative to the general price level.

This state of affairs leaves a complicated set of effects to sort out:

-- inflation has increased the wage rate paid in the state and local government sector thereby increasing potential expenditures; some of this potential increase has been offset, however, because revenue growth has not kept pace with inflation, and because the ensuing 'real income effect' has dampened public employment growth.

-- state and local governments negotiated lower wage increments for public employees, after 1973, than the rate of inflation. This has kept some of the inflationary pressure off state and local government expenditures.

-- the combination of higher labor costs due to general inflation and revenue increases below the general inflation rate may have dampened public employment growth, but the lower relative price effect after 1973 may have increased it. In aggregate, labor costs would probably have been lower under a lower rate of inflation because the income elasticity of demand for labor is greater than the price elasticity.

TABLE 5

AVERAGE ANNUAL WAGES AND SALARIES PER FULL TIME EQUIVALENT EMPLOYEE BY INDUSTRY, 1962-1979[a]

Year	All Industry	Private Industry	Federal Civilian	State and Local Government
1962	$ 5,162	$ 5,203	$ 6,644	$ 5,017
1972	8,760	8,588	12,679	8,916
1973	9,290	9,104	13,497	9,505
1974	9,991	9,830	14,112	10,063
1975	10,835	10,673	15,194	10,865
1976	11,608	11,451	16,269	11,639
1977	12,391	12,251	17,528	12,331
1978	13,290	13,180	18,978	12,991
1979	14,378	14,322	20,008	13,841
	Average Annual Growth Rates			
1962-72	5.4%	5.1%	6.7%	5.9%
1972-73	6.1	6.0	6.5	6.6
1973-74	7.5	8.0	4.6	5.9
1974-75	8.4	8.6	7.7	7.8
1975-76	7.1	7.3	7.1	7.1
1976-77	6.7	7.0	7.7	5.9
1977-78	7.3	7.6	8.3	5.4
1978-79	8.2	8.7	5.4	6.5
	Average Growth Per One Percent Increase in CPI			
1962-72	1.6%	1.5%	2.0%	1.8%
1972-73	.98	.97	1.05	1.06
1973-74	.68	.73	.42	.54
1974-75	.92	.95	.85	.86
1975-76	1.22	1.26	1.23	1.22
1976-77	1.03	1.08	1.19	.91
1977-78	.96	1.00	1.09	.71
1978-79	.71	.76	.47	.57

[a]Calendar years.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, The National Income and Product Accounts of the United States, 1929-74, Tables 6.6 and 6.9; National Income and Product Accounts, 1976-79, July 1981, Tables 6.5B-6.9B.

TABLE 6

AVERAGE ANNUAL SUPPLEMENTS TO WAGES AND SALARIES PER FULL TIME EQUIVALENT EMPLOYEE BY INDUSTRY, 1962-1976[a]

Year	All Industry	Private Industry	Federal Civilian	State and Local Government
1962	$ 469	$ 491	$ 554	$ 464
1972	1125	1151	1497	1110
1973	1298	1331	1689	1248
1974	1460	1485	2007	1437
1975	1683	1706	2440	1656
1976	1910	1917	2811	1960
1977	2122	2130	3093	2188
1978	2336	2348	3302	2401
1979	2618	2622	3623	2743
	Average Annual Growth Rates			
1962-72	9.1%	8.9%	10.5%	8.7%
1972-73	15.5	15.6	12.8	12.4
1973-74	12.5	11.6	18.8	15.1
1974-75	15.3	14.9	21.6	15.2
1975-76	13.5	12.4	15.2	18.4
1976-77	11.2	11.1	9.0	11.6
1977-78	10.1	10.3	7.7	9.7
1978-79	12.1	11.7	9.7	14.2
	Average Growth Per One Percent Increase in CPI			
1962-72	2.8%	2.8%	3.2%	3.0%
1972-73	2.5	2.5	2.1	2.0
1973-74	1.1	1.1	1.7	1.4
1974-75	1.7	1.6	2.4	1.7
1975-76	2.3	2.1	2.6	3.2
1976-77	1.7	1.7	1.4	1.8
1977-78	1.3	1.4	1.1	1.3
1978-79	1.1	1.0	0.8	1.2

[a]Calendar Years

SOURCE: U.S. Department of Commerce, Office of Business Economics, The National Income and Product Accounts of the United States, 1929-74, Tables 6.4 and 6.7; National Income and Product Accounts, 1976-79, July 1981, Tables 6.5B-6.9B.

-- increased Federal grants in the mid-1970s made up for some of the real revenue loss due to inflation and thereby stimulated public employment growth.

To belabor a point, the public employment effects of inflation are not easily deduced. As was described above, state and local government employment has increased throughout most of the past decade. This increase has come about for a myriad of reasons including increasing incomes, changing voter tastes, needs related to urbanization, etc. The question here is whether this rate of increase would have been higher or lower if the rate of inflation had been lower. The answer would appear to be that inflation has dampened the growth in state and local government employment.

To sort out this net impact, an income and a substitution effect have to be identified. First, the income effect. If the purchasing power of state and local government revenue declines during inflationary periods, layoffs or a slower rate of employment growth might be expected. Governments, like any consumer, will purchase fewer inputs when real income falls. If the local revenue structure were responsive to inflation or had there been a very low inflation rate, real revenues would have been higher and a higher level of state and local government employment would have resulted. While this real income effect probably dominates the inflation impact on employment, there may be an offsetting or reinforcing substitution effect due to the changing relative price of labor. The substitution effect is likely to be small because the demand for public employees is quite price inelastic, i.e., as wage rates go down (relative to other prices), state and local governments will increase their employment rolls (or at least let them grow faster than

they would have otherwise) but not by very much. For example, Ehrenberg's estimates would suggest that a 10 percent wage rate increment would reduce public sector employment by only 3 to 4 percent.[25]

In fact, through most of the 1970s, inflation has outrun the increase in state and local government labor costs and, as a result, the size of the real public employment budget is likely smaller than it would have been under a zero rate of inflation. This, in turn, suggests that a part of the cost of inflation is borne directly by public employees (in the form of lower real wages) and in part by residents (in the form of the lower public service levels attributable to having fewer public employees).

A number of qualifiers have to be offered to this speculation. There is simply too much variation in functional responsibility, labor practices, revenue structures and economic conditions to permit such a generalization about the effect of inflation on labor costs for all state and local governments. Where unions are strong, public employee compensation tends to be higher,[26] hence, one might conclude that cet. par. labor costs will better keep pace with inflation in heavily unionized areas of the Northeast and Industrial Midwest. Where public employee organization is weak, labor would seem much more vulnerable to the prospect of bearing a substantial share of the burden of inflation.

Another important difference is whether the local revenue structure is responsive to increasing prices. For states and some local governments that rely heavily on sales and income taxes, the purchasing power of local government revenues may respond to inflation. That is,

the inflation-induced increase in sales and income tax bases may generate revenues which are more than adequate to cover the inflation-induced increase in the cost of providing a constant level of services. This would increase real government revenues and suggest both a greater willingness on the part of government to grant cost-of-living increases, and a lesser propensity to cut employment rolls. The net impact of inflation in such a case is to increase the public employment budget. Public employees and residents share in the benefits of inflation at the expense of taxpayers who must foot the bill for the increased cost. If taxpayers instead force a discretionary tax reduction, the real income of the government declines and the process is as described above.

Still other factors would cause us to question generalizations about the impact of inflation. For examples, governments have different functional responsibilities, hence, different uniformed, blue collar, and white collar employment mixes; and the precarious financial position of a Cleveland or a Detroit may hold wage responses to inflation below what they otherwise might have been. All of these reasons suggest that the average response deduced above must be interpreted cautiously. Labor costs may well have responded less than proportionately to inflation for the state and local government sector as a whole since 1973, but for some governments the response was quite different from this average.

Finally, there is the question of Federal grants. An increase in Federal assistance, particularly programs such as CETA, kept public employment levels higher than they otherwise would have been.

Particularly between 1970 and 1978, the large increases in Federal grants shored up the real income position of state and local governments and held public employment at what might be termed artifically high levels.

Non-Labor Cost

Non-labor expenditures respond to inflation more directly, since governments have little control over prices paid for materials and supplies purchased. The alternatives are simply to pay the higher price, or to reduce the quality or quantity of the inputs used. The former is often the choice because the nature of the production process in the state and local sector leaves little room for substitution between labor and non-labor inputs.[27]

To examine the direct effects of price increases on nonlabor costs, assume that the government makes no quality or quantity adjustments. The inflation impact will then depend on whether the unit cost of materials purchased by state and local governments has risen as fast as the general price level. The cost of materials/supplies, etc., to governments is a weighted average: the quantity of each type of purchase weighted by the increase in the appropriate price index. Greytak, Gustely and Dinkelmeyer constructed such an index for New York City material input costs for the 1965-1972 period, using over 60 categories of purchases and a separate price index for each.[28] Their findings showed the cost of supplies to be increasing at a slower rate than the CPI, but materials and equipment to be increasing at about the same rate. Using a similar method for the 1971-1974 period, Greytak and Jump found the same relationship between the increasing price of

material inputs and the CPI--material input prices increased by about 90 percent of the rate of increase in the consumer price index. However, for five other local government areas studied, they found the materials price response to vary from about 60 percent of the CPI in Orange County California to about 93 percent in Atlanta, Georgia.[29] Cupoli, Peek and Zorn, studying Washington, D.C. expenditures for the 1972-1975 period estimated that inflation drove up material costs by 31.6 percent as against a 28.7 percent increase in the CPI.[30]

Governments may not elect to pay the full cost increase implied. If the net effect of inflation is to lower the purchasing power of government revenues, some quantity adjustments will also take place. Examples would be deferral of road maintenance, telephone use restrictions, reduced school busing service, restricted travel, deferral of office machine replacement, keeping the city swimming pool closed and postponing the purchase of tools, repair parts, etc. This is the same kind of real income effect as noted above; if real government revenues fall when the inflation rate rises, the quantity of inputs will be reduced, i.e., they will be at a lower level than would have been the case with a lower inflation rate. Unfortunately, data limitations make it impossible to observe actual price and quantity adjustments. One can only conclude that where inflation dampens real revenue growth, it probably has had the net effect of lowering the quantity of materials, supplies used. Hence, state and local government expenditures on these items have not likely risen by the full amount implied by the price increase.

Capital Costs

The effect of inflation on capital expenditures is more difficult to sort out. The question is whether capital expenditures would be higher or lower, cet. par., under a lower rate of inflation. One might begin with a consideration of the potential impact, i.e., assume that governments would not alter their capital project plans, and estimate the increased cost of those projects due to inflation. When viewed this way, the issue is simply how much have construction and financing costs risen, and what is the relative importance of each of these in the makeup of total capital costs. Between 1965 and 1980, construction costs increased by 130 percent and interest rates on treasury bonds by 205 percent. Inflation clearly had an upward pressure on the amount spent.

Was there a displacement toward or away from capital expenditures because of an increase in the relative price of capital expenditures? Over most of the present decade, capital construction costs have increased at less than the general inflation rate while interest rates have grown faster (see Table 2). One can only speculate about the net impact of these relative price changes, but it is clear that state and local governments have many discretionary options for countering increased capital project costs. Governments may avoid inflationary effects by reducing the size or quality of a project, postponing construction or even cancelling it altogether. For examples, the proposed highway construction may be two-lane instead of four-lane or it may not go as far, the sewer system may not be extended for another two years or the municipal auditorium may never be built. These effects of

inflation are not easily measureable and surely don't show up in budgets, but they may well be the most important impacts. Again, we cannot observe the quality and quantity adjustments actually made, but the evidence of recent years shows that state and local governments have substantially slowed their rate of capital formation.[31]

Transfer Payments

Inflation also affects state and local government expenditures by raising expenditures on transfer payments--particularly public assistance and medicaid payments. These effects are not easily measured, yet we know that transfer payments respond to inflation in that income maintenance is related to the cost-of-living and medical assistance is related to medical costs. However, the long-term effects of inflation are especially difficult to estimate because state and local governments have some discretion over how much they will spend on these programs. Again it is the problem of inflation exerting a direct and an indirect effect.

Medicaid and AFDC are the most important of the transfer payment programs in state and local government budgets. With respect to the former, states have three avenues open in adjusting the level of payments in the face of increasing prices. They may change eligibility rules thereby undertaking a quantity adjustment; they may adjust benefit levels, i.e., number of hospital days insured, number of physical benefits, drug and dental allowances; and they may adjust fee schedules.

Following the medicare reimbursement schedule, which is essentially indexed, gives the greatest inflationary response. Though states have attempted to slow the increase in medicaid costs by reducing primary

health care services, they have been heavily burdened by the rising cost of hospital and nursing home services. Davis and Schoen report that real annual medicaid payments per recipient rose by only $23, from $338 in 1969 to $361 in 1977, the number of recipients doubled, and the general price of medical care nearly doubled.[32] At least half of the state and local government expenditure increase of medicaid might be attributed to inflation.

An even greater proportion of the recent increase in state and local government expenditures for public assistance may be attributed to inflation. Since 1970, there has been little real growth in state and local government expenditures for public assistance, though nominal expenditures by state and local governments increased by 90 percent. This pattern, however, masks a real expenditure increase due to an increased number of recipients between 1970 and 1975 and real expenditure cutbacks after 1975.[33]

Another major type of transfer payment is state aid to local government. It would seem interesting to raise the issue of whether inflation would affect a state's choice between direct spending and local assistance. That is, as inflation drives up state government costs, cet. par., is there a tendency to cut back on aid to local governments rather than reduce the scope or quality of direct state expenditures? A time series analysis of the 1957-1980 period suggests that this may indeed be the case. A simple estimate of the determinants of long-term changes in the state aid share of total state government expenditures shows

$$A/E = -1.97 + \underset{(7.7)}{0.36Y} - \underset{(6.1)}{0.50C} \qquad (11)$$

$$\bar{R}^2 = 0.84$$

where

A/E = state aid share of total state government expenditures
Y = nominal personal income (in millions)
C = consumer price index
All variables in natural logarithms and t-statistics in parentheses.

These results indicate, cet. par., that the aid share is dampened by a higher rate of inflation, and is likely to exhibit a stronger positive response to an increase in real income than to the same percent increase in nominal income.

Recession

On first blush, the fiscal impacts of recession seem intuitively obvious. As income growth slows and the unemployment rate rises, the growth in state and local government revenues will slacken. The harder hit is the area economy and the more reliant it is on "sensitive" sales and income taxes, the greater is the revenue loss. The only appreciable impacts on the expenditure side are on certain social service functions which are sensitive to movements in the unemployment rate. These "direct" or "automatic" effects of recession are clearly unfavorable to state and local budgets.

There is, of course, much more to the story. Revenue declines brought on by recession may induce governments to undertake discretionary actions to make up for some of the loss. For example,

state and local governments may increase tax rates or lay off workers. Such discretionary actions are an important impact of the business cycle, but should be separated from the more "pure" effects noted above.

The Expected Impacts of Recession

Recession may be viewed as a reduction in real incomes, and the impact on the state and local government sector depends in part on the income elasticity of demand for public goods. The more elastic is this demand, the more sensitive will be the state and local government sector to recession. While the demand for local public goods appears to be income elastic, suggesting a substantial fiscal response to recession, there are reasons to expect that discretionary actions might be taken to cushion the decline. A first reason is that governments may expect the recession to be short-lived and take temporary measures to fund existing programs.

A second possibility is that expenditures may be rigid downward because many state and local government expenditures are in the nature of fixed commitments and cannot be dismissed. These include debt, pensions, "safety net" expenditures, a large portion of wages and salaries, and much of the general overhead of the government. To maintain these, tax rates may be increased to compensate for the revenue loss due to the recession.

The fiscal impact of recession may also be cushioned by some built-in downward rigidity of tax structures. In states with a progressive income tax, the revenue losses attributable to slow real income growth and increasing unemployment are partially recouped by the "bumping-up" of higher income families into higher marginal tax

brackets. This effect would be especially important when the rate of inflation was also high. In general, however, sales and income taxes will be more responsive to recession than the property tax. To be sure, the growth in the property tax base will be slower: the demand for housing and industrial-commercial space will be off from previous levels and hence there will be a slower increase in values of existing properties. In the worst cases, abandonments, vacancies or tax delinquency may occur. Still, the growth rate in most of the property tax base will not be substantially affected by recession. The poor reassessment practices which characterize the U.S. property tax system would appear to have at least one advantage.

Finally, the impact of recession on budgets may be softened by discretionary expenditure adjustments which take some of the pressure off current budgets. The timing of fiscal adjustments is an important if often overlooked issue. While it is interesting to learn how state and local governments alter their taxes and expenditures in the face of recession, it is as interesting to learn when they make these adjustments. On the expenditure side, there may well be a lag before reductions begin, with temporary shortfalls made up in any one of a number of ways: depleting accumulated balances, short-term borrowing, underfunded pension systems, selling off financial and real assets, deferring compensation increases, etc. It may be that the full effects of recession on the expenditure side are not felt for several years and even then occur over a period of time. The expenditure effects of recession may be much greater than is indicated in most surveys.

Studies of the Fiscal Impact of Recession

The answer to the question of how have state and local government budgets fared during recession is to be found in empirical analysis. Following the discussion above, it would seem reasonable to separately review the evidence from two kinds of studies: first the studies of fiscal performance during the recession and then those few studies which have attempted to address the more difficult question of the pure fiscal impact of the recession.

The Perversity Hypothesis

During the 1950s and 1960s a number of authors engaged in a debate over the direction of the state and local government sector's response to the business cycle. These authors recognized that the sector was large enough to significantly offset or reinforce the Federal government's stabilization policy. Early in the debate it was asserted that the state and local sector responded to the business cycle pro-cyclically (the "perversity hypothesis"), that is, during recession governments would cut back expenditures and borrowing, and increase tax rates. These actions would tend to counteract a stabilization policy of the Federal government. Later several authors claimed that state and local governments act counter-cyclically. In a recession, this would mean decreases in revenue collections and increases in expenditures and borrowing, reinforcing Federal counter-cyclical policy.

The important division of direct or automatic responses and discretionary responses often went unexamined in the perversity hypothesis debate.[34] However, these concepts can be used to analyze the claims of the supporters and opponents of the perversity hypothesis.

Automatic responses of state and local governments tend to be more or less countercyclical.[35] Tax bases--retail sales, income, new construction, and so on--tend to decline in recession, reducing revenues. Expenditures increase with unemployment to the extent the government provides welfare services. Because most state and local governments lack the ability to run deficits, the discretionary response in recession must be towards balancing the budget. Tax rates will likely be increased and expenditures cut. The relative magnitudes of these opposing effects will determine whether the state and local government response to the business cycle is pro- or counter-cyclical.

The perversity hypothesis argument, that state and local governments respond to the business cycle pro-cyclically, was based on three points. First, the model of an economic downturn was the Great Depression, i.e., a deep, prolonged fall in economic activity.[36] Second, the income elasticity of state and local revenues was considered to be relatively low. Revenues were viewed as unresponsive to the business cycle. Third, the expenditures of state and local governments were thought not likely to vary with the business cycle. It was pointed out that one-third of these expenditures were for schools, which could not be cut in expansion and would not automatically increase in recession.[37]

Since the automatic responses of expenditures and revenues were slight, the role of these responses in stabilizing the economy would be insignificant. In a deep recession, however, budget balancing discretionary actions would be required. These perverse discretionary responses would outweigh the feeble countercyclical automatic responses,

and the net impact of state and local governments on the economy would be pro-cyclical.

Those authors who argued that state and local governments act counter-cyclically took a different view on the above three points. The model of recession used was the short, mild downturn of the 1950s.[38] Eevenues was considered to be relatively income elastic, and thus more sensitive to recession and expansion. Expenditures, too, were likely to vary counter-cyclically, especially with the growth of public assistance programs in the 1960s.[39] The counter-cyclical response of state and local government budgets would be large. But, due to the mildness of the recession, strong pro-cyclical discretionary actions would not be required. The counter-cyclical response would likely outweigh the pro-cyclical.

Supporters of the counter-cyclical state and local government position also noted that lags in the discretionary response to the business cycle have counter-cyclical effects. Information about revenue shortfalls will not be available instantly, and once such information is available, discretionary action in response will also take time. Furthermore, if government officials expect the recession to be short, they may not be averse to depleting their accumulated balances or issuing short-term debt rather than cutting expenditures or raising taxes. While state and local governments are unlikely to respond intentionally with discretionary countercyclical policy, the effects of information lags and uncertainty may delay discretionary pro-cyclical policy until the recovery begins.[40]

The pro- and counter-cyclical positions can be reconciled. First, most supporters of the counter-cyclical hypothesis agree that while these governments respond to mild recessions counter-cyclically, they are likely to act pro-cyclically in serious contractions. Second, it is probable that both revenues and expenditures have become more sensitive to the business cycle since the Great Depression. The mix of revenue sources has moved away from the less responsive property tax, toward the more responsive sales and income taxes. Improved property assessment practices, the removal of necessities from the sales tax base, and the imposition of more progressive income taxes have also contributed to the responsiveness of revenues to economic fluctuations.[41] Thus, the pro- and counter-cyclical proponents may each have been correct in their times.

Finally, some analysts in the mid-1960s pointed out that state and local government behavior was neither pro-cyclical nor counter-cyclical, but unrelated to the business cycle. The secular growth of the state and local sector in response to rising populations and public services demand appeared to overwhelm any cyclical effects.[42] Perhaps for this reason, the investigation of the state and local response to the business cycle lapsed for nearly ten years in the late 1960s and early 1970s.

Fiscal Performance During Recessions: The Literature

The unstable economic environment of the 1970s and 1980s has rekindled interest in the response of state and local governments to recession. A number of analysts have attempted to understand the fiscal effects of recession by studying the budgetary performance of state and

local governments during the 1974-75 and 1981-82 recessions. Two conclusions might be drawn from this work: (a) the budgets of state and local governments were squeezed during the recession, so that compensating tax increases and expenditure reductions did take place, and (b) the fiscal squeeze was more severe for central cities, particularly those in the older industrial region.

The evidence clearly points to increasing fiscal stress during recession years. The financial collapse of New York City was long in the making but ultimately brought on by the recession.[43] The near collapse of Yonkers, Buffalo and New York State can be traced to the effects of recession, though all were brought to the brink by the long-term decline in their economic base. In each case the response was some combination of increased taxes and expenditure cutbacks. Stanley's case studies of Detroit, St. Louis, Buffalo, Cleveland and New York City (carried out in late 1975) indicated projected budget deficits which would require either, or both, sizable expenditure cutbacks or tax rate increases.[44] Congressional testimony from representatives of many different state and local governments tended to support the claim that the recession was forcing drastic fiscal adjustments at the state and local government level.[45]

At least two surveys tried to more systematically ferret out the tax and expenditure adjustments made by state and local governments in response to the 1974-75 recession. A Joint Economic Committee survey, covering 48 states and 140 local governments, concluded that state and local governments did indeed raise taxes, cut expenditures and postpone or cancel capital improvement investments because of the recession.[46]

But the estimated deflationary adjustments were a relatively modest 3.5 percent of total state and local government own-source revenue. Indeed, the results of this survey do not indicate pressure of a magnitude that would bring on acute fiscal distress. The second survey, carried out by the Senate Subcommittee on Intergovernmental Relations, covered about 400 jurisdictions.[47] Though no estimates were made of the magnitude of fiscal adjustments, it was found that one-third of these governments raised taxes, over half instituted personnel limitations and about one-fifth delayed or canceled capital projects. Again, the effects of the recession--as indicated in these surveys--are not as far reaching as might have been imagined.

There has been some survey work that indicates a similar response by state and local governments in the 1981-82 recession. A JEC mail questionnaire to 48 large cities revealed a pattern of service level cuts, capital project deferrals and tax increases in FY 1982.[48] Tax rate increases were reported by 20 and user charge increases by 31 of the 48 cities in the survey. An ACIR survey underlines this finding on the increases use of user charges--215 of 307 responding cities reported increases.[49] The National Conference of State Legislatures' fiscal survey at the end of 1981 shows 29 states with prospects for FY deficits or thin budget margins, and 24 states reporting employment reductions in the preceding year.[50] None of these surveys provided enough information to estimate the severity of cutbacks or tax increases in response to the 1981-82 recession. The Tax Foundation in its very useful annual compendium of state tax actions, reports that tax actions in 30 states in fiscal 1981 will raise revenues by a net $2.5 billion per year.[51]

While this is the highest annual statutory increase in 10 years, it represents only about 1.5 percent of total state government tax revenues.

If the overall fiscal effects of these recessions were not so devastating on a nationwide basis, it may be asked whether there have been substantial variations in these effects across regions or across levels of government. The answer is that there clearly have been, with metropolitan central cities in particular and governments in the declining regions in general, feeling the most pressure. The recession hit the older central cities hardest--they went in earlier and deeper and have come out slower than the rest of the country. This was true in the 1969-1972 recession-recovery[52] and for the 1974-1978 recession-recovery.[53] All of the surveys mentioned above concluded that fiscal adjustments were more drastic in the more distressed cities and regions. The JEC survey found that the most severe fiscal adjustments took place in areas where the unemployment rate was higher.[54] Other JEC surveys, of 67 large cities in 1977,[55] and of 48 large cities in 1981,[56] reached a similar conclusion. Most studies have concluded that city governments were hardest pressed, but the National Governors' Association has argued that state governments were also forced to budgetary adjustments by the 1973/75 recession.[57] A GAO study has concluded that states fared better than cities, and counties better than either.[58]

If there is a general conclusion to be drawn from these studies, it would seem to be that there are great variations in the magnitude of budgetary adjustments resulting from recession. Though in aggregate the

TABLE 7

STATE AND LOCAL GOVERNMENT INDICATORS
IN RECESSION AND EXPANSION
(1972 dollars)[a]

Gross National Product

Recession			Expansion		
Peak	Trough	Average Annual Percent Change	Trough	Peak	Average Annual Percent Change
1969-IV	1970-IV	-0.56	1970-IV	1973-IV	5.07
1973-IV	1975-I	-4.58	1975-I	1980-I	4.86
1980-I	1980-II	-9.91	1980-II	1981-II	3.22
1981-II	1982-III[b]	-1.12			
Unweighted Mean		-4.04			4.39

Revenues

		Average Annual Percent Change			
Recession		Total	Own Source	Federal	Property
Peak	Trough	Revenues	Revenues	Grants	Tax
1969-IV	1970-IV	6.57	5.86	9.86	7.22
1973-IV	1975-I	-0.51	-2.49	7.15	-4.09
1980-I	1980-II	-6.95	-8.54	-1.46	-3.88
1981-II	1982-III[b]	-1.34	1.43	-11.43	3.52
Unweighted Mean		-0.56	-0.94	1.03	0.69
Expansion					
1970-IV	1973-IV	6.44	5.50	10.51	1.68
1975-I	1980-I	3.56	3.37	4.21	-1.35
1980-II	1981-II	1.55	3.77	-5.73	-1.84
Unweighted Mean		3.85	4.21	3.00	-0.50

TABLE 7 (CONT.)

Expenditures

Recession			
		Average Annual Percent Change	
Peak	Trough	Total Expenditures	Transfer Payments
1969-IV	1970-IV	9.31	16.71
1973-IV	1975-I	2.59	-2.01
1975-I	1980-II	-3.53	0.21
1981-II	1982-III[b]	5.34	4.66
Unweighted Mean		3.43	4.89
Expansion			
1970-IV	1973-IV	4.87	4.32
1975-1	1980-I	2.29	2.84
1980-II	1981-II	-0.92	1.37
Unweighted Mean		2.08	2.84

Surplus (less Social Insurance)
(billions of dollars)

Recession			Expansion		
Peak	Trough	Average Annual Absolute Change	Peak	Trough	Average Annual Absolute Change
1969-IV	1970-IV	-4.33	1970-IV	1973-IV	2.63
1973-IV	1975-I	-6.14	1975-1	1980-I	1.50
1975-I	1980-II	-6.92	1980-II	1981-II	3.22
1981-II	1982-III[b]	-4.40			
Unweighted Mean		-5.45			2.45

[a] deflated with the GNP implicit price deflator.

[b] recession trough not yet determined.

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, The National Income and Product Accounts of the United States, 1929-74; _____, National Income and Product Accounts, 1976-79, July 1981; _____, Survey of Current Business, July 1978; July 1981; October 1982.

adjustments do not appear to have been all that great, for some governments they may have been substantial. It does seem clear, however, that there is a pattern to fiscal adjustment during periods of recession. State and local governments tend to slow down on spending increases and increase tax rates, but the latter is undertaken later, after other available funding opportunities are exhausted.

These surveys are useful in helping analysts understand what governments do in response to national recessions. However, the studies cannot help us get at the pure effects of recession because they are unable to abstract from the fiscal influences of all other factors, e.g., population decline, tax limitations, inflation. In particular, the failure to separate inflation from recession effects is a major problem with this literature.

Fiscal Performance During Recessions: Empirical Evidence

Data on the fiscal performance of the state and local government sector in expansion and recession periods during the 1969-81 period are shown in Table 7.[59] While one may learn something by studying this pattern of cyclical response, it has to be remembered that "all else" has not been held constant, e.g., adjustments to the recent declines in Federal grants.

The trend in own source revenues appears to give a particularly clear indication of cyclical response in the 1970s and 1980s. On the average during expansions, the percent increase in own source revenue is similar to the percent increase in GNP. During recessions, however, the rate of decline in own source revenues is only about one-fourth that of in GNP. One possible explanation for this is that the income elasticity

of the state and local tax base is lower during recessions than during expansions. This is because downward-revisions in property values during hard times are less likely than upward revisions during expansion and because consumers may cut savings before they begin reducing their taxable consumption. This seems unlikely, in part because the tax base may have had time to adjust during the long expansions (averaging 12 quarters) but not during short recessions (averaging 3 quarters). If anything, the automatic revenue effects of recession (e.g., the slowing property value growth due to a slowdown in new construction) may not be felt until the expansion.

A more likely explanation of this pattern is that state and local governments make discretionary changes in tax rates and bases during recessions to offset automatic revenue decline, and to attempt to maintain the growth in public services. For example, the near 6 percent rise in own-source revenue in the 1969-70 recession is probably a legacy of the rapid expansion of the state and local government sector in the 1960s, and suggests discretionary revenue increases which more than offset the mild automatic drop implied by the GNP figures. The same pattern emerged during the 1973-75 recession when own source revenue fell only half as much as GNP, but during the short, sharp recession of 1980, the drop in own source revenue almost matched the fall in GNP. The 1980 recession was simply too short for discretionary actions to occur during the recession. The fact that own source revenue increased faster than GNP in the brief 1980-81 expansion lends support to this point: the offsetting discretionary actions in response to the 1980 recession may have shown up during the 1980-81 expansion. In the early

stages of the present recession, own source revenue have continued to increase.

The simple unweighted means of Federal grant growth during recession and expansion imply that grants have been pro-cyclical--increasing less during recessions than during expansions--and have aggravated the state and local sector's budget problems during recession. Closer inspection reveals that Federal grant behavior has been dominated by a longer term trend of decline rather than by cyclical variation. The Federal grant growth rate peaked during the 1970-73 expansion, and since has fallen, irrespective of expansions or contractions. The most significant drop in Federal grants has occurred since 1981, and this very likely has contributed to the pro-cyclical own source revenue response by the state and local sector.

The behavior of the property tax during this period has been quite erratic and there is little evidence of a strong cyclical effect. More likely, the revenue performance of the property tax is dominated by other factors, e.g., Propositions 13 and 2½, discretionary rate actions of pressed local governments, etc. The rebound of property tax receipts during the current recession is likely a discretionary response to the long recession and the drop in Federal aid.

Until the 1981-82 recession, the rate of increase in total expenditures by state and local governments was slowing. The rapid growth during 1969-70 recession, probably the last gasp of the expansion of the 1960s, gave way to a growth rate roughly the same as GNP during the 1970-73 expansion. Expenditures continued to grow during the 1973-75 recession, but the expansion of 1975-80 brought an expenditure

growth rate well below that of GNP. During the brief 1980 downturn, real expenditures declined, but they have increased during the early part of the current recession. This is probably less due to the cycle than to the state and local sector replacing some of the social service financial responsibility previously supplied by the Federal government. A clear cyclical trend in state and local government expenditures is not easily found.

A counter-cyclical pattern is evident in state and local transfer payments, i.e., transfer payments have risen at a greater rate during recessions than during expansions. Note, however, that in the 1973-75 and 1980 recessions the transfer payment growth rates were low relative to the growth rates during expansion. It may be that welfare eligibility requirements are met by new recipients with a lag, meaning that increases in payments occur during recoveries. Another explanation is that transfer payments on the state and local level are not as "uncontrollable" as are entitlement programs on the Federal level, and are thus subject to discretionary cuts in the face of declining revenues.

The state and local surplus shows the change in the difference between absolute revenue and expenditure growth (net of contributions and outlays of retirement programs). It is an attempt to measure the change in the sector's net contribution to aggregate demand. In every recession shown here the measure has moved towards a deficit, and in every expansion, towards a surplus. This implies that the state and local sector has had a net countercyclical impact on the economy, i.e.,

the automatic counter-cyclical response to the business cycle has outweighed the discretionary pro-cyclical response.

Some recent trends may lessen is counter-cyclical pattern. The annual rate of decline in the surplus in the most recent recession is the smallest in a decade. This has occurred even after the apparently high rate of surplus accumulation in the preceding expansion. The continuous decline in property tax revenues between 1973 and 1981 may have restricted counter-cyclical options, especially of local governments. The recent rapid fall in grants has contributed to a pro-cyclical rise in own source revenues during the most recent recession, as governments have increased tax rates to maintain expenditures. Although the state and local sector has had a counter-cyclical influence in the past, the indications are that this effect may be less pronounced in the future.

The Fiscal Effects of Recession

Recession creates idle resources, i.e., a gap between actual and full employment levels of economic activity. This in turn creates a gap between actual and full employment levels of revenue and expenditure. It seems clear that a proper measure of the effects of recession on revenues would center on the estimation of such a gap, and the few studies which have addressed the revenue-recession impact have taken this approach.

Revenues. The Council of Economic Advisors estimates full employment receipts for state and local governments by applying actual average tax

rates to full employment tax bases.[60] They estimated the revenue loss due to the recession to be 4.3 percent of actual revenues in 1974, 9.1 percent in 1975 and 6.6 percent in 1976. Vogel adjusted these estimates to account for discretionary tax rate increases by state and local governments during recessions and, hence, for a CEA overestimate of full employment receipts.[61] His method shows the revenue shortfall to be about half that of the CEA for the 1971 recession. Crider used estimated elasticities by type of tax and computed revenue yield under a recession and full employment scenario.[62] He found revenues to be below their potential by 4.8 percent in 1974 and 10 percent in 1975. His estimates include only own source revenues. The ACIR estimated a model similar to Vogel's to find a revenue loss equivalent to 8.4 percent of revenues in 1975.[63] However, the ACIR considered only own source revenue whereas the CEA and Vogel considered total revenues.

These approaches share two problems. All explain changes in actual revenues hence, include the discretionary reaction of state and local governments to recession and inflation. Vogel attempts to adjust for this but it is not likely that his adjustments account for the full amount of discretionary change. The other problem has to do with model specification, i.e., with the failure to account for other factors which influence revenue growth. All attempt to control for inflation but none consider secular trends in regional income or interregional migration. In sum, none of these estimates are of the pure effects of recession.

The ACIR also used this regression method to estimate the recession-related revenue loss for 1976 on a state-by-state basis. As might have been expected the variation is wide, ranging from percentage

revenue losses of 20.5 percent in Maine and 16.3 percent in Connecticut to less then 5 percent in several states. The greatest impact is in the industrial states of the Mideast and the Northeast. When the recession effects are separately estimated for all state and for all local governments, the conclusions are that state own-source revenues are almost twice as sensitive to the business cycle as local own-source revenues.

Expenditures. Little attention has been paid the impact of recession on state and local expenditures. Here and elsehwere[64] it has been argued that a deferral effect causes state and local governments to postpone expenditure increases during a recession and in its immediate aftermath. The ACIR has estimated such a deferral effect. They find that a recessionary gap tends to increase expenditures immediately but results in a decrease in expenditures during the following fiscal year.[65] When both the current and deferred effects are considered, the recession impact on expenditures is negligible. Again, it is important to note that these are estimates based on how much state and local governments actually spend, hence may include far more than just the effects of recession.

Crider, assuming that real earnings of state and local government employees declined by 1.4 percent between 1973 and 1975 because of the recession, estimates a $3 billion decline in expenditures.[66] This was partially offset by a $1 billion increase in state and local government spending for welfare and related services, hence, a $2 billion recession-related decline. As the ACIR, he effectively concludes a miniscule expenditure effect of recession.

Borrowing and Spending. The market for state and local government debt, and the interest rate or yield of state and local government bonds varies with the business cycle. This variation is evident in Figure 4. Since about 40 percent of state and local government capital spending is financed by bond issues,[67] one would expect that capital spending would also vary cyclically. Until recently, however, this has not been the case. Figure 5 shows that although growth in both short and long-term debt has been sporadic, between 1947 and 1975 there were no significant declines in state and local government capital spending. Only after the recessions of 1973-1975 and 1980 did capital spending fall.

Clearly, when borrowing is expensive or when funds are not available, state and local governments have historically fallen back on other forms of financing. During the 1950s and early 1960s it was noted that state and local government construction work varied only half as much as bond sales, so state and local government must have used temporary or short-term financing while construction continued on its course.[68] The pattern continued later in the 1960s and analysts examined the possible responses to high interest rates by state and local governments. Governments may increase tax rates or cut current expenditures to compensate for borrowing reductions; they may shift to short-term borrowing until long-term financing costs fall; they may postpone borrowing until just before the funds are needed, rather than borrowing well in advance; they may draw down accumulated liquid assets; they may increase their reliance on intergovernmental aid; or they may postpone or cancel capital projects. In a survey which asked state and local government officials how the credit crunch of 1966

affected their borrowing and capital spending plans, it was found that while long-term borrowing was reduced 20 percent from planned levels, planned capital spending was reduced by less than 2 percent.[69] Municipal yields did jump in 1966, and there was a pause in the growth of long and short-term debt, but little change in the growth of state and local government capital spending. The survey found three explanations for the relatively small effect of the credit crunch on capital spending. The first is that borrowing for capital projects is done in advance of need. Many government officials reported that "borrowing postponements for abandonments could not have affected 1966 contract awards because the funds would be needed only in the future."[70]

This leads to a second explanation, that state and local governments reduced their liquidity levels in order to maintain planned capital spending. Note in Figure 4 that municipal yields were quite stable between 1961 and 1965. This period of stability in credit markets allowed state and local governments to build liquidity (the ratio of liquid assets to total expenditures). The ratio fell from .57 in 1966 to .37 in 1969.[71] A third explanation for the continuation of capital spending growth is that state and local governments resorted to short-term debt as a substitute for long-term debt. This explanation does not appear to be confirmed by our data. Both long- and short-term debt experienced a pause in growth in 1966 (see Figure 5). It may be that actual short-term debt was increased over the original planned amount, something which would only be apparent from survey data.

Of the possible responses to high interest rates described above, three predominated in 1966: state and local governments postponed

FIGURE 4

YIELDS OF U.S. TREASURY AND MUNICIPAL BONDS
(P=Recession Peak; T=Recession Trough)

SOURCE: U.S. Department of Commerce, Business Statistics, 1979, and Survey of Current Business, various issues.

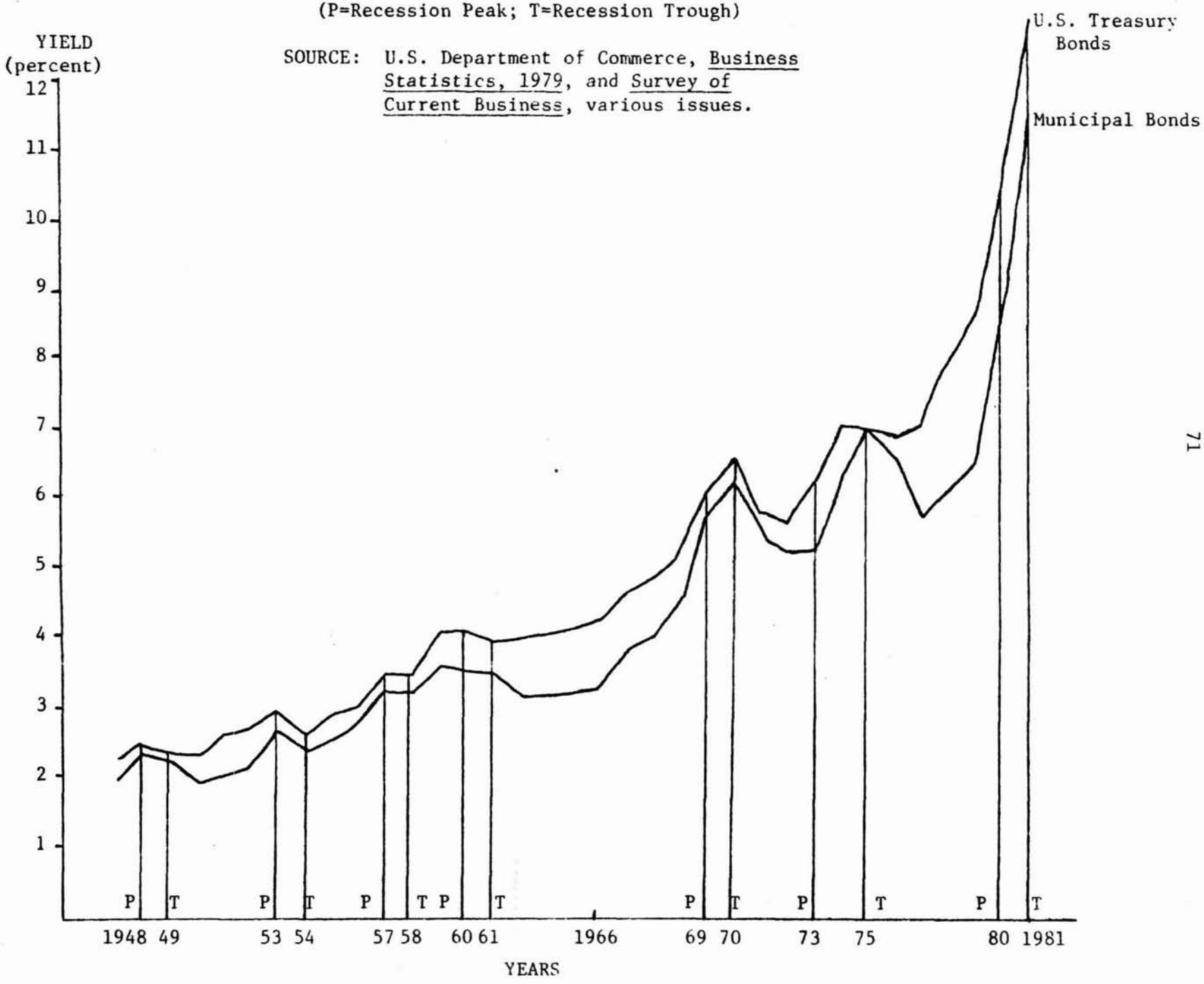
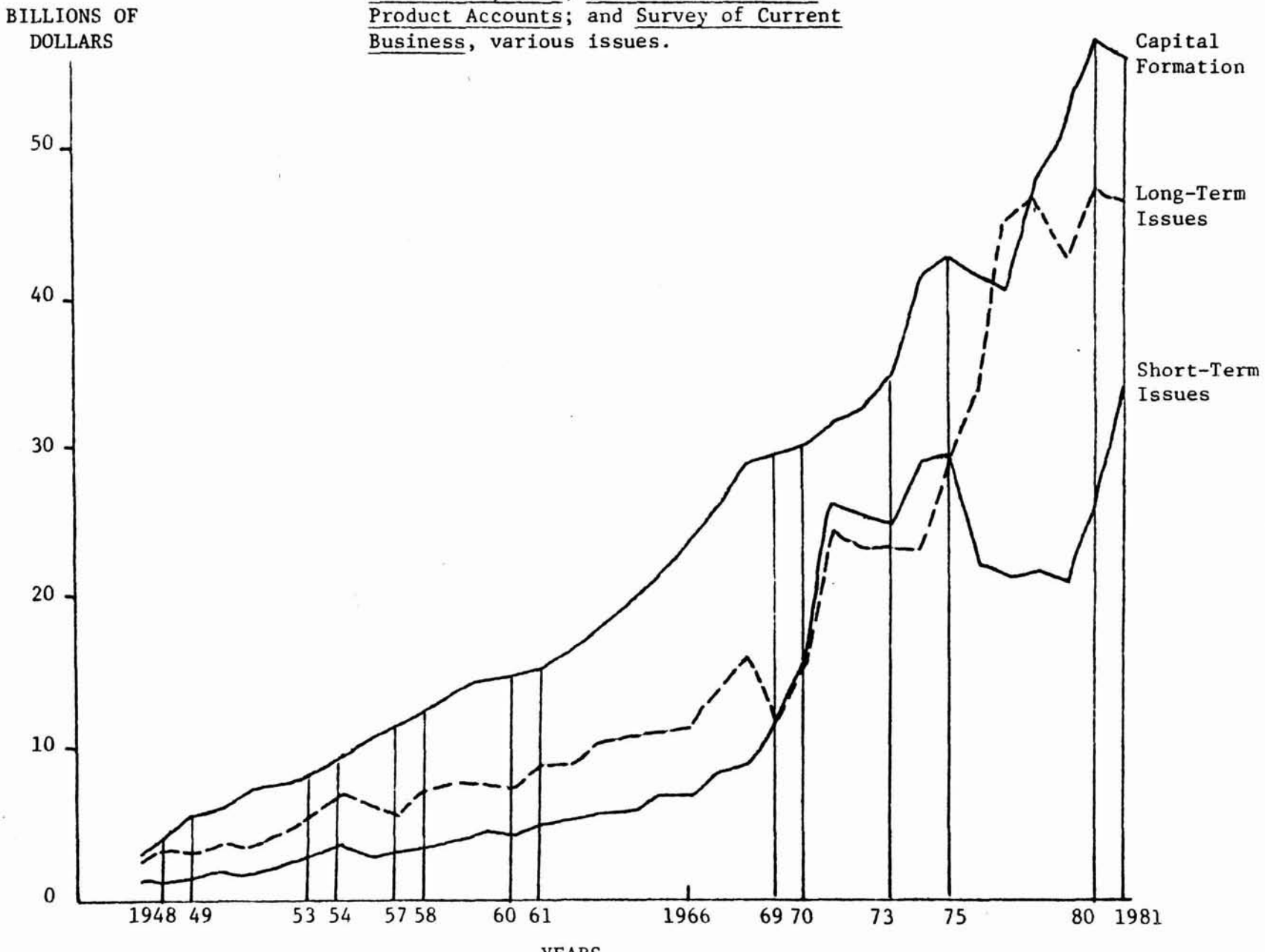


FIGURE 5

VALUE OF SLG LONG AND SHORT-TERM MUNICIPAL ISSUES
AND SLG GROSS FIXED CAPITAL FORMATION

SOURCE: U.S. Department of Commerce, Business Statistics, 1979; National Income and Product Accounts; and Survey of Current Business, various issues.



borrowing, reduced liquidity levels and issued short-term debt. There is little evidence of tax increases, current expenditure reductions, or capital spending reductions.

A similar survey of state and local governments was taken in 1970, after another period of unsettled credit conditions.[72] Again, it was found that state and local governments significantly reduced their planned long-term borrowing without a similar reduction in planned capital spending. In 1969, however, short-term borrowing predominated over borrowing postponement and reduced liquidity as the method of alternative financing. Our data confirm these points. Figure 4 shows a rise in municipal yields in 1969 that was unprecedented at the time. Clearly credit conditions were unsettled. Long-term debt, shown in Figure 5, records a sharp drop in 1969, while short-term debt shows a substantial increase. This is consistent with the idea that state and local governments used short-term as a substitute for long-term debt. Capital spending did not decline, although its growth rate was reduced.

It is likely that while capital spending reductions were small relative to borrowing reductions in 1969, they were larger than the spending reductions which occurred in 1966. Continued tightness in credit markets may have had a cumulative effect on the financial strength of state and local governments. Such tightness did continue after 1966, and by 1970 municipal yields were twice their 1965 level. In addition, the liquidity ratio was at its lowest point in ten years in 1969. State and local government officials may have been less inclined to speculate on a drop in long-term rates after five years of rapid increase by issuing short-term debt. They could not resort to liquidity

financing as readily with liquidity levels so low. A reduction in planned capital spending became an option more often used in 1969 then it was in 1966.

The problems of state and local governments with credit markets intensified during the 1970s. As of 1974 the liquidity ratio was still relatively low at .48. As shown in Figure 4, the municipal yield fell between 1970 and 1973, but remained several points higher than the stable rate of the early 1960s. The yield again jumped to new record levels by 1975. The depth of the 1973-1975 recession caused new problems for state and local governments. Commercial banks and insurance companies experienced sharp drops in profits during this period. These institutions are usually the prime source of demand for municipal debt, which is used as a tax-free shelter for income. With little income to protect from taxes, banks and insurance companies cut their demand for tax-free municipal bonds. State and local governments turned to individual buyers to market their long-term debt. Since these new buyers were generally in lower tax brackets than were the institutions, municipal yields moved closer to those of taxable securities.[73] The spread between these rates usually diminishes during recessions and increases during expansions, but the 1973-1975 recession was so serious that the spread disappeared. In spite of the tax savings on municipals, there was no difference between the taxable and non-taxable interest rates. Long-term borrowing became expensive for state and local governments.

In 1969 state and local governments substituted short-term debt for long-term debt. With the New York City fiscal crisis of 1975, the

market for short-term debt contracted. Note in Figure 5 the sharp drop in short-term borrowing in 1976, followed by three years of no growth. State and local governments faced continued low liquidity levels, an absence of the short-term borrowing option, and a general decline in revenues during the recession. These governments were forced to borrow at a high long-term rate, and, for the first time, to cut back on capital expenditures. This cutback is seen between 1975 and 1977 in Figure 5.

Capital spending was cut again during the 1980 recession, as shown in Figure 5. In addition, a recent Joint Economic Committee survey of cities shows that per capita capital outlays declined 1.6 percent between 1980 and 1981. Only 60 percent of these city's planned capital spending was realized. Cutbacks in Federal aid and high short and long-term interest rates are the likely causes of these capital spending cutbacks.[74]

The trend in state and local government borrowing and capital spending in the 1960s and 1970s has been towards a tightening of alternative funding options. In 1966, liquidity levels were high and the short-term debt market was healthy. In spite of a cutback in planned long-term borrowing, no drop in capital spending was necessary. In 1969, liquidity levels were down, and capital spending. In 1975, liquidity was still relatively low, and the short-term debt market contracted. State and local governments had no choice but to borrow at high long-term rates and reduce capital spending. In the two recessions of the 1980s state and local governments again cut capital spending.

Reducing capital spending during recessions now appears to be an action state and local governments will continue to take.

Conclusions

The main finding of the ACIR study, State-Local Finances in Recession and Inflation, is that the combined fiscal effects of recession and inflation on aggregate state and local government finances are not "excessively severe."[75] While this result correctly describes their findings, it may be misleading. Indeed, the conclusions one might draw from this chapter are that the effects of inflation and recession are quite severe for certain types of state and local governments and may be a substantial and increasing problem for the entire sector.

Studies of the 1973-1976 period place the revenue loss due to recession at 5 to 10 percent of total state and local government revenues, with the 10 percent loss a more realistic estimate at the height of the recession. For some governments, notably those located in the declining regions and state governments with highly elastic tax structures, the revenue loss was estimated to be as high as 20 percent. Little impact on state and local government expenditures could be found. Several conclusions might be drawn from these results. First, even a 5 to 10 percent loss in revenue potential is considerable and a 15 to 20 percent loss is disastrous. Second, many of those states which have elastic revenue structures and are therefore most susceptible to recession impacts are located in the declining region. Third, even these estimates understate the fiscal impact of recession in that they show the loss in revenue potential but do not adjust for the

discretionary actions taken by these governments in the face of revenue loss. Hence, the actual revenue growth in Massachusetts may be 20 percent less than its full employment/noninflationary amount in 1976, but the gap may have been 30 percent if the state and local governments had not increased tax rates to make up for some of the loss. Finally expenditure impacts have not been estimated as important, yet most surveys show the recession induced important program cutbacks and deferrals.

The inflation studies are also subject to the problem of whether and how to count the induced fiscal adjustments resulting from rising prices. The best research seems to imply an impact resulting in a 5 to 10 percent loss in purchasing power of state and local government revenues during the 1972-1974 period. The effect cooled off thereafter and inflation-induced revenue and expenditure increases were about parallel between 1974 and 1976. There have been no thorough, comparable studies since 1975. At least three important implications for the future might be drawn from this work: local governments which are more labor intensive and more reliant on property taxation will be hurt most; when the inflation rate rises to high levels the impact on expenditures outstrips that on revenues; inflation induces service level cutbacks which may have longer run effects on the viability of local economies.

One cannot easily infer the future from these studies, and there are no reliable models which allow forecasts. But these results do give some basis for judging the probable impacts of inflation and business cycles on state and local government finances. Inflation rates are likely to remain high (relative to real GNP growth) in the near future.

This will harm local governments most because of their labor intensive expenditure base and their reliance on the property tax. Especially if inflation and slow economic growth combine to keep real private earnings from growing, there will be heavy voter resistance to discretionary attempts to capture the inflation-induced growth in property values. Among local governments, those with already high property tax rates and little new construction, and those with stronger public employee unions--the older central cities--will be hurt most.

A buffer against this inflation effect is the possibility of increased state aid since inflation could increase state revenues by more than it increases a much less labor-intensive expenditure base. The states that stand to gain most are those with progressive income tax structures, broad-based sales taxes, and relatively less direct expenditure responsibility. This includes many of the older states in the north, but there is some question about the ability of these states to withstand further increases in the effective tax rate. Indeed, New York is a good example of a state whose progressive tax structure has captured inflation-induced revenue increases but where an already high average tax rate has forced tax reductions. Still, we are led once again to the conclusion that state government discretionary action will play a pivotal role in determining local government fiscal health.

If inflation occurs in concert with recession, the situation is altered to the detriment of state governments because they lose some of the revenue increments captured by inflation. Those states with the less elastic revenue structures suffer less from recession, but on the other hand, they gain less from inflation. The most important feature

of recession, however, is that some state and local governments suffer more than others. Again, it is those governments in the declining regions whose economies suffer most during recession. Therefore, older central cities suffer disproportionately heavier revenue losses during recession and are located in states which are likely to be facing a similar situation, therefore reducing the chances for marked increases in state aid. If this comes at a time when inflation is driving up local costs but having little effect on property tax revenues, these central cities become doubly-damned.

FOOTNOTES

*This paper draws from Chapter IV of Roy Bahl, State and Local Government Finances in a Changing National Economy (New York: Oxford University Press, forthcoming); and Larry DeBoer, "The Response of State and Local Government Finances to Economic Fluctuations" (Syracuse University, Ph.D. dissertation, 1983).

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[1]Except in the case of graduated rate taxes where 'bracket creep' will increase tax burdens.

[1a]The reader not interested in the microeconomics of this issue may skip this section without significant loss in continuity.

[2]In other words, total income is divided first into a 'taxable' and a 'nontaxable' component. The former, our concern here, is then divided between private goods and taxes whereas the latter is out of reach of the public sector and is used exclusively for private goods. The taxable/non-taxable shares of total income are determined by the nature of the state and local government tax base, constitutional limits, etc.

[3]The conceptual problems with defining and using prices indexes to measure inflation in the public sector are considerably more complex than implied here. For a thorough discussion, see David Greytak and Bernard Jump, Jr., The Impact of Inflation on the Expenditures and Revenues of Six Local Governments, 1971-1974, Monograph No. 4, Metropolitan Studies Program, The Maxwell School (Syracuse, New York: Syracuse University, December 1975).

[4]Unfortunately, the price indexes which would be used for such a construction (i.e., CPI, WPI) are not available on a government-by-government basis. Hence, one might be able to use these indexes to account for the different mix of expenditures of different local governments, but not for the differential rates of price increase in different regions of the county.

[5]See, for example, Bureau of Labor Statistics, "Autumn 1976 Urban Family Budgets and Comparative Indexes for Selected Urban Areas" (Washington, D.C.: U.S. Department of Labor, April 27, 1977), pp. 79-369.

[6]Greytak and Jump, The Impact of Inflation on the Expenditures and Revenues of Six Local Governments, 1971-1974.

[7]Multi-Year Financial Plan FY 1979-83, District of Columbia Government, September 1977; and Roy Bahl, Larry Schroeder, Marla Share and Anne Hoffman, "Local Government Revenue and Expenditure Forecasting: Washington, D.C." Occasional Paper No. 51, Metropolitan Studies Program, The Maxwell School (Syracuse, New York: Syracuse University, September 1981).

[8]David Greytak, Richard Custely, and Robert J. Dinkelmeyer, "The Effects of Inflation on Local Government Expenditures," National Tax Journal, Vol. XXVII, No. 4 (December 1974): 583-598; Roy Bahl, Alan Campbell and David Greytak, Taxes, Expenditures, and the Economic Base: A Case Study of New York City (New York: Praeger Publishers, 1974), chapters 3 and 4; David Greytak and Bernard Jump, Jr., "The Impact of Inflation on State and Local Government Finances, 1967-1974," Occasional Paper No. 25, Metropolitan Studies Program, The Maxwell School (Syracuse, New York: Syracuse University 1975); Greytak and Jump, The Impact of Inflation on the Expenditures and Revenues of Six Local Governments, 1971-1974; David Greytak and Bernard Jump, Jr., "Inflation and Local Government Expenditures and Revenues: Methods and Case Studies," Public Finance Quarterly, Vol. 5, No. 3 (July 1977): 275-301.

[9]Roy Bahl, Bernard Jump, Jr., and Larry Schroeder, "The Outlook for City Fiscal Performance in Declining Regions," in The Fiscal Outlook for Cities, ed. by Roy Bahl (Syracuse, New York: Syracuse University Press, 1978), pp. 11-16.

[10]Robert Crider reached a similar conclusion with an index constructed by weighting components of local government compensation and other expenditures by the CPI and WPI. See The Impact of Inflation on State and Local Government, Urban and Regional Development Series No. 5 (Columbus, Ohio: Academy for Contemporary Problems, July 1978).

[11]The other four local governments studied were Erie County, New York; Roanoke, Virginia; Orange County, California; and Atlanta, Georgia.

[12]Jan Chaiken and Warren Walker, "Growth in Municipal Expenditures: A Case Study of Los Angeles," The Rand Corporation (June 1979).

[13]Cupoli, Peek and Zorn, An Analysis of the Effects of Inflation on Finances in Washington, D.C.

[14]City of Dallas, Summary Long Range Financial Plan, 1979-80 to 1983-84 (Dallas, Texas: Office of Management Services, August 1979); Roy Bahl, Larry Schroeder and Kurt Zorn, "Local Government Revenue Expenditure Forecasting: Dallas, Texas," Occasional Paper No. 49, Metropolitan Studies Program, The Maxwell School (Syracuse, New York: Syracuse University, September 1981).

[15]The following scenario of percent increase in prices was used:

		1981	1982	1983	1984
Personnel:	High Inflation	7.5	7.0	6.5	6.5
	Low Inflation	6.5	6.0	6.0	5.5
Non-Personnel:	High Inflation	11.0	10.0	9.0	9.0
	Low Inflation	9.0	8.0	7.0	6.5

[16]The separation of automatic from discretionary changes in the estimation of revenue-income elasticities for state and local governments is discussed in Roy Bahl and Larry Schroeder, Forecasting Local Government Budgets, Occasional Paper No. 38, Metropolitan Studies Program, The Maxwell School (Syracuse, New York: Syracuse University 1979).

[17]These are reviewed in Bahl and Schroeder, "Forecasting Local Government Budgets."

[18]Advisory Commission on Intergovernmental Relations, State-Local Finances in Recession and Inflation (Washington, D.C.: Government Printing Office, May 1979).

[19]Robert C. Vogel, "The Responsiveness of State and Local Receipts to Changes in Economic Activity: Extending the Concept of the Full Employment Budget," Joint Economic Committee of the U.S. Congress, Studies in Price Stability and Economic Growth (Washington, D.C.: Government Printing Office, June 1975); and Robert Vogel and Robert Trost, "The Response of State Government Receipts to Economic Fluctutions and the Allocation of Counter-Cyclical Revenue Sharing Grants," The Review of Economics and Statistics, Vol. LXI, No. 3 (August 1979): 389-400.

[19a]For a review of this literature, see Roy Bahl, Marvin Johnson and Michael Wasylenko, "State and Local Government Expenditure Determinants: The Traditional View and a New Approach," in Public Employment and State and Local Government Finance, ed. by Roy Bahl, Jesse Burkhead and Bernard Jump, Jr. (Cambridge, Mass.: Ballinger Publishing Company, 1980), pp. 65-111.

[20]Advisory Commission on Intergovernmental Relations, State-Local Finances in Recession and Inflation, p. 34.

[21]Ibid., p. 38.

[22]There also may be a lag in collective bargaining agreements which would cause these expenditure effects to be overestimated. Yet, it would be easier to believe that over the longer run public employee wage rates will catch up with those in the private sector than to believe that property tax assessment lags will be eliminated.

[24]See Jesse Burkhead and Shawna Grosskopf, "Trends in Public Employment and Compensation," in Public Employment and State and Local Government Finances, ed. by Roy Bahl, Jesse Burkhead and Bernard Jump, Jr. (Cambridge, Mass.: Ballinger Publishing Co., 1980); and Shawna Grosskopf, "Public Employment Trends and Problems," in Urban Government Finances in the 1980s, ed. by Roy Bahl (Beverly Hills, California: Sage Publications, 1981).

[25]See Ronald Ehrenberg, "The Demand for State and Local Government Employees," American Economic Review 63 (June 1973).

[26]See, for example, R. Ehrenberg, "Municipal Government Structure, Unionization, and the Wages of Firefighters," Industrial and Labor Relations Review (October 1973).

[27]The assumption of a constant labor share of total expenditures has been studied. See Thomas Borcherding and Robert Deacon, "The Demand for Services of Non-Federal Governments," American Economic Review 62 (December 1972).

[28]Greytak, Gustely, and Dinkelmeyer, "The Effects of Inflation on Local Government Expenditures."

[29]Greytak and Jump, Jr., "Inflation and Local Government Expenditures and Revenues: Methods and Case Studies."

[30]Edward M. Cupoli, William A. Peek and C. Kurt Zorn, "An Analysis of the Effects of Inflation on Finances in Washington, D.C.," Occasional Paper No. 36, Metropolitan Studies Program, The Maxwell School (Syracuse, New York: Syracuse University, April 1979).

[31]George Peterson, "Capital Spending and Capital Obsolescence: The Outlook for Cities," in The Fiscal Outlook for Cities, ed. by Roy Bahl (Syracuse, New York: Syracuse University Press, 1978), pp. 49-74.

[32]Karen Davis and Cathy Schoen, Health and the War on Poverty: A Ten Year Appraisal (Washington, D.C.: Brookings Institute, 1978), Chapter 3.

[33]For detail on this pattern of growth, see Ann Kalman Bixby, "Social Welfare Expenditures, Fiscal Year 1979," Social Security Bulletin, Vol 44, No. 11 (November 1981): 3-12.

[34]An early article which does separate automatic and discretionary responses is Melvin White and Anne White, "Impact of Economic Fluctuations on Municipal Finance," National Tax Journal 7 (March 1954).

[35]Gramlich compares the countercyclical response of state and local budgets to the automatic stabilizers in the Federal budget. See Edward M. Gramlich, "The New York City Fiscal Crisis: What Happened and What is to be Done?" American Economic Review 66 (May 1976).

[36]See Alvin Hansen and Harvey Perloff, State and Local Finance in the National Economy (New York: W.W. Norton and Co., 1944).

[37]Mabel Newcomber, "State and Local Financing in Relation to Economic Fluctuations," National Tax Journal 7 (June 1954); and Eugene Myers and Randall Stout, "The Role of States and Local Governments in National Fiscal Policy," National Tax Journal 10 (June 1957).

[38]James A. Maxwell, "Countercyclical Role of State and Local Governments," National Tax Journal 11 (December 1958); Morton Baratz and Helen Farr, "Is Municipal Finance Fiscally Perverse?" National Tax Journal 12 (September 1959).

[39]Robert W. Rafuse, Jr., "Cyclical Behavior of State-Local Finance," in Essays in Fiscal Federalism, edited by Richard Musgrave (Washington, D.C.: The Brookings Institution, 1965); and Ansel Sharp, "The Behavior of Selected State and Local Fiscal Variables During the Phases of the Cycles 1949-61," in 1965 Proceedings of the Fifty-Eighth Annual Conference on Taxation (Harrisburg, Pa.: National Tax Association, 1966).

[40]See Baratz and Farr, "Is Municipal Finance Fiscally Perverse?" National Tax Journal 12 (September 1959).

[41]Dennis Zimmerman, "The Sensitivity of the State-Local Tax System to Economic Activity: Experience From the Great Depression to the 1970s," in The Business Cycle and Public Policy, 1929-80, U.S. Congress, Joint Economic Committee (Washington, D.C.: Government Printing Office, 1980).

[42]Rafuse, "Cyclical Behavior of State-Local Finances"; and Sharp, "The Behavior of Selected State and Local Fiscal Variables During the Phases of the Cycles 1949-61."

[43]Roy Bahl, Alan Campbell, David Greytak, Bernard Jump, Jr., and David Puryear, "Impact of Economic Base Erosion, Inflation and Retirement Costs on Local Governments," Testimony: Fiscal Relations in the American Federal System: Hearings before a Subcommittee on Government Operations, House of Representatives, 94th Congress, First Session, July 15, 1975.

[44]David T. Stanley, "Running Short, Cutting Down: Five Cities in Financial Distress" (Washington, D.C.: The Brookings Institution, March 1979), unpublished manuscript.

[45]U.S. Senate Committee on Government Operations, Subcommittee on Intergovernmental Relations, Intergovernmental Anti-Recession Assistance Act of 1975, Hearings on S. 1359 94th Congress, 1st Session (Washington, D.C.: Government Printing Office, 1975); U.S. House of Representatives, Committee on Government Operations, Subcommittee on Intergovernmental Relations and Human Resources, Intergovernmental Anti-Recession Assistance Act of 1977, Hearings on H.R. 3730 and Related Bills, 95th Congress, 1st Session (Washington, D.C.: Government Printing Office, March 1, 2, and 8, 1977), pp. 143-292.

[46]U.S. Congress, Joint Economic Committee, Subcommittee on Urban Affairs, The Current Fiscal Position of State and Local Governments, Survey of 48 State Governments and 140 Local Governments, 94th Congress, 1st Session (Washington, D.C.: Government Printing Office, December 17, 1975).

[47]U.S. Senate, Committee on Governmental Affairs, Subcommittee on Intergovernmental Relations, The Counter-Cyclical Assistance Program: An Analysis of Its Initial Impact, 95th Congress, 1st Session (Washington, D.C.: Government Printing Office, February 28, 1977).

[48]U.S. Congress, Joint Economic Committee, Emergency Interim Survey: Fiscal Condition of 48 Large Cities, 97th Congress, 1st Session (Washington, D.C.: Government Printing Office, January 14, 1982).

[49]Preliminary results reported in Municipal Finance Officers Association, Resources in Review (Washington, D.C.: MFOA, 1982), p. 11.

[50]Stephen Gold and Karen Benker, State Fiscal Conditions as State Entered 1982 (Denver: National Conference of State Legislatures, 1982).

[51]Tax Foundation, Tax Review, Vol. XLII, No. 8 (September 1981).

[52]Kathryn Nelson and Clifford Patrick, Decentralization of Employment During the 1969-1972 Business Cycle: The National and Regional Record (Oakridge, Tennessee: Oakridge National Laboratory, June 1975), p. 15.

[53]John C. Zamzow, "The Current Recession: Its Regional Impact," Testimony for Subcommittee on Fiscal and Intergovernmental Policy of the Joint Economic Committee, October 16, 1979; and Bahl, Jump and Schroeder, "The Outlook for City Fiscal Performance in Declining Regions."

[54]U.S. Congress, Joint Economic Committee, Subcommittee on Urban Affairs, The Current Fiscal Position of State and Local Governments, Survey of 48 State Governments and 140 Local Governments, 94th Congress, 1st Session (Washington, D.C.: Government Printing Office, December 17, 1975).

[55]U.S. Congress, Joint Economic Committee, Subcommittees on Economic Growth and Stabilization and on Fiscal and Intergovernmental Policy, The Current Fiscal Condition of Cities: A Survey of 67 of the 75 Largest Cities, 95th Congress, 1st Session (Washington, D.C.: Government Printing Office, July 28, 1977).

[56]U.S. Congress, Joint Economic Committee, Emergency Interim Survey: Fiscal Condition of 48 Large Cities, 97th Congress, 1st Session (Washington, D.C.: Government Printing Office, January 14, 1982).

[57]National Association of State Budget Officers, State Fiscal Survey Fiscal Years 1975, 1976 and 1977, Summary Report (Lexington, KY: National Association of State Budget Officers, February 1977), p. 3.

[58]The Comptroller General of the United States, Report to Congress, Antirecession Assistance is Helping but Distribution Formula Needs Reassessment (Washington, D.C.: General Accounting Office, July 20, 1977). For more details, see The Comptroller General of the United States, Impact of Antirecession Assistance on 15 State Governments, Impact of Antirecession Assistance on 16 County Governments: and Impact of Antirecession Assistance on 21 City Governments (Washington, D.C.: General Accounting Office, February 22, 1978).

[59]The percentage changes shown in Table 7 are average annual percent changes calculated from the quarterly National Income Account series. For example, the 1973-IV to 1975-I recession lasted 5 quarters. The average quarterly change in GNP over that period was -1.17 percent, which is a -4.58 annual rate. National peak and trough dates are available in U.S. Department of Commerce, Bureau of Economic Analysis, Business Conditions Digest, a monthly publication. As the time of this writing the peak and trough dates of the current recession have not been determined. The second quarter of 1981 is used as the peak of this recession, and the average annual percent change is calculated using the last observation in the data series.

[60]See, for example, U.S. President, Economic Report of the President, 1977.

[61]Vogel, "The Responsiveness of State and Local Receipts to Changes in Economic Activity: Extending the Concept of the Full Employment Budget"; and Vogel and Trost, "The Response of State Government Receipts to Economic Fluctuations and the Allocation of Counter-Cyclical Revenue Sharing Grants."

[62]Crider, The Impact of Recession on State and Local Finance.

[63]Vogel's estimated equation is

$$\ln R = 3.04 + \underset{(61.2)}{0.0151\ \ln R} + \underset{(34.7)}{1.39\ \ln P} + \underset{(10.4)}{0.37\ \ln(GAP)}$$

$$R^2 = 0.99 \qquad DW = 1.27$$

The ACIR equation is shown on page 27.

[64]Bahl, Jump and Schroeder, "The Outlook for City Fiscal Performance in Declining Regions."

[65]ACIR, State-Local Finances in Recession and Inflation, pp. 80-81.

[66]Crider, The Impact of Recession on State and Local Finance.

[67]Paul Schneiderman, "State and Local Government Gross Fixed Capital Formation: 1958-73," Survey of Current Business 55 (October 1975).

[68]Manuel Gottlieb, "Cyclical Timing of Municipal Bond Issues," The Quarterly Review of Economics and Business 1 (May 1961).

[69]Paul McGouldrick and John Peterson, "Monetary Restraint and Borrowing and Capital Spending by Large State and Local Governments in 1966," Federal Reserve Bulletin 54 (July 1968).

[70]Gottlieb, "Cyclical Timing of Municipal Bond Issues."

[71]Crider, The Impact of Recession on State and Local Finance.

[72]John Peterson, "Response of State and Local Governments to Varying Credit Conditions," Federal Reserve Bulletin 57 (March 1971).

[73]Lynn Browne and Richard Syron, "Big City Bonds After New York," New England Economic Review (July/August 1977).

[74]U.S. Congress. Joint Economic Committee. Trends in the Fiscal Condition of Cities: 1980-82 (Washington, D.C.: Government Printing Office, 1982).

[75]ACIR, State-Local Finances in Recession and Inflation, pp. 80-81. It should be noted that they caution and demonstrate that this conclusion does not hold for all states.