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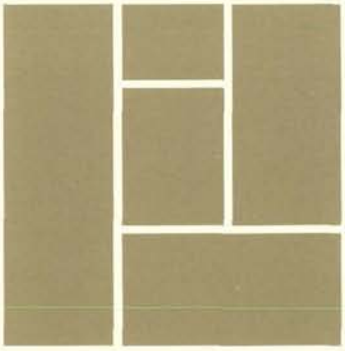

THE URBAN INSTITUTE

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Project Report

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

THE EFFECTS OF INFLATION ON STATE AND LOCAL GOVERNMENT FINANCES, 1972-1982

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THE EFFECTS OF INFLATION ON STATE AND LOCAL GOVERNMENT FINANCES, 1972-1982

Bernard Jump, Jr.*

This paper presents an analysis of some of the effects of inflation on state and local government fiscal performance during the last decade. In particular, this analysis provides estimates of the relative impact of inflation between 1972 and 1982 on state and local government expenditures and revenues.

The inflation impact estimates take the form of index numbers. On the expenditure side the index numbers are measures of the growth in government expenditures that would have been required to maintain a fixed level of real inputs and a constant level of real income for government employees and aid recipients who were on board at the beginning of the period. On the revenue side the index numbers show the revenue growth that the revenue base at the beginning of the period could have produced if governments had been able to capture all of the inflation-induced revenue potential that occurred during the period.

The following discussion is divided into two periods: 1972 to 1977 and 1977 to 1982. The beginning and ending year of the first period coincide with years covered by the Census Bureau's quinquennial Census of Governments. This permitted the estimation of inflation indexes covering the 1972 to 1977 period for each of the Census Bureau's

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standard classifications of subnational governments--states and local governments combined, states, local governments combined, counties, municipalities, townships, school districts, and special districts--and a comparison of the inflation estimates with measures of actual expenditure and revenue growth. In the case of the 1977 to 1982 period, however, details about actual expenditures and revenues were not available for townships, school districts, and special districts as separate classifications.[1] So while inflation indexes covering 1977 to 1982 were estimated for these classifications it is not possible to compare them with their counterpart, actual expenditure and revenue indexes.

State and Local Government Current Expenditures: 1972-1982

Expenditure Trends, 1972-1977

Growth in state and local government expenditures on current operations during the 1972-1977 period averaged double-digit annual rates. As the expenditure growth indexes in Table 1 show, expenditure increases made for the entire period by the various groupings of governments ranged between 62 percent (for school districts) and 117 percent (for special districts) of their 1972 levels. In annual growth rates these increases ranged between 10 percent and almost 17 percent yearly. By way of comparison, GNP growth between 1972 and 1977 averaged

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[1] Details about 1982 revenues and expenditures for townships, school districts, and special districts will be available in the forthcoming 1982 Census of Governments volume pertaining to the finances of governments.

TABLE 1

EXPENDITURE GROWTH INDEXES FOR CURRENT OPERATIONS AND TRANSFER PAYMENTS, STATE AND LOCAL GOVERNMENTS, 1972-1977
(1972 = 100)

	Personal Services Expenditures	Fringe Benefit Expenditures	Total Employee Compensation Expenditures	Material Input Expenditures	Total Current Operation[a] Expenditures	Transfer[b] Payments	Total Current Operations Expenditures and Transfer[a] Payments
State and Local	157.5	224.3	164.9	209.4	177.9	113.2	172.5
State	155.4	221.3	162.8	239.3	190.2	119.2	180.4
Local	158.3	225.5	165.8	190.7	172.3	105.9	168.6
County	183.6	261.5	192.2	180.7	188.1	105.3	172.9
Municipality	151.9	216.4	159.1	195.0	170.3	107.8	167.0
Township	170.8	242.6	178.8	162.9	173.1	30.8	172.6
School District	150.3	214.0	157.4	191.0	162.2	*	162.2
Special District	196.1	279.1	205.3	232.1	216.6	*	216.6

[a]Excludes debt service.

[b]Assistance and subsidies.

*Transfer payments not a responsibility of school districts or special districts.

SOURCE: U.S. Bureau of the Census, Census of Governments, 1972, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1974), Tables 1, 6, pp. 25, 28; Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), Tables 1,6, pp. 23, 26; U.S. Department of Commerce, Survey of Current Business (July 1976): Tables 6.5, 6.6, p. 51; Survey of Current Business (July 1982): Tables 6.5B, 6.6B, pp. 81, 82.

10.1 percent annually. As a group, local governments lagged well behind the states in expenditure growth, with annual growth rates for the two averaging about 11 percent and 12.5 percent, respectively.

Predictably, there was considerable variation in rate of growth among the various expenditure classifications. The miniscule growth in transfer payments[1] reflects demographic changes, a general tendency by governments not to provide substantial increments to recipients as offsets to cost-of-living increases, and some shifting of responsibility between local and state units. More significant from the standpoint of their impact on total expenditures were expenditures for wages and salaries (i.e., personal service expenditures). Increases in these outlays were held below a 10 percent annual rate for both states and for all local governments combined. Not so with expenditures for fringe benefits (e.g., employee pension contributions, Social Security payroll taxes, health insurance) which had average increases of more than 17 percent yearly. These are items which are more or less uncontrollable in the short-run, and the period was one when closer attention was being paid to past underfunding of pension accruals, when Social Security taxes were growing sharply, and when employee health care insurance costs were soaring.

At the state level what are referred to here as material input expenditures grew even more rapidly than fringe benefit expenditures,

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[1]This is the Census Bureau object category known as assistance and subsidies. At the local level it comprises only cash assistance payments to public welfare recipients. At the state level it also includes veterans' bonuses and direct cash grants for tuition, scholarships, and aid to nonpublic educational institutions.

their respective annual growth rates being about 19 percent and 17 percent. At the local level material input expenditure growth did not quite reach the fringe benefit growth rate but it did surpass the rate by which personal service expenditures grew. It is difficult to say precisely why such large growth occurred in either case.[1]

Expenditure Inflation Indexes, 1972-1977

In this section the notion of an expenditure inflation index is explained and estimated indexes for the 1972-1977 period are presented. In essence, the inflation indexes for expenditures are estimates of the proportion by which base year (i.e., 1972) expenditures would have had to increase during the five year period if the governments just maintained a constant level of labor and nonlabor inputs and if the purchasing power of average employee compensation and transfer payments had been maintained.[2] The expenditure inflation indexes for 1977 are reported in Table 2.

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[1] Absent a specific Census Bureau classification for material input expenditures, the approach taken in this analysis was to use the residual after other identifiable components of current expenditures were subtracted from total current expenditures. This study assumed that the residual value would be a satisfactory estimate of expenditures for non-labor inputs. Notwithstanding the logic of the technique used to produce the material input expenditure estimates, it is surprising to find that these outlays grew much more rapidly than compensation outlays. One explanation could be that substantial contracting out of some activities took place, the effect being both to pull down the employee compensation index as contracted activities were substituted for services formally provided by government employees and to push up the material input expenditures. This is, however, speculation. A fuller explanation must await analytical efforts that expressly address the issue. Such an undertaking is beyond the scope of this analysis.

[2] See the Appendix for a description of how the indexes were computed.

TABLE 2

INFLATION INDEXES FOR CURRENT OPERATION EXPENDITURES AND TRANSFER PAYMENTS, STATE AND LOCAL GOVERNMENTS, 1972-1977
(1972 = 100)

	Employee Compensation Expenditures	Material Input Expenditures	Total Current Operation Expenditures[a]	Transfer Payments[b]	Total Current Operation Expenditures and Transfer Payments[a]
State and Local	141.9	164.0	146.7	141.9	146.3
State	141.9	164.0	148.4	141.9	147.5
Local	141.9	164.0	145.9	141.9	145.7
County	141.9	164.0	148.7	141.9	147.3
Municipality	141.9	164.0	147.0	141.9	146.7
Township	141.9	164.0	148.5	141.9	148.5
School District	141.9	164.0	143.4	*	143.4
Special District	141.9	164.0	146.5	*	146.5

[a] Excludes debt service.

[b] Assistance and subsidies.

* Transfer payments not a responsibility of school districts and special districts.

SOURCE: U.S. Bureau of the Census, Census of Governments, 1972, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1974), pp. 25, 28; Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), pp. 23, 26; Statistical Abstract of the United States 1974, 95th ed. (Washington, D.C., 1974), Table 668, p. 414; Statistical Abstract of the United States 1981, 102nd ed. (Washington, D.C., 1981), Table 785, p. 471; U.S. Department of Commerce, Survey of Current Business, Vol. 56, No. 6 (June 1976): Tables 6.5, 6.6, p. 51; Survey of Current Business, Vol. 62, No. 6 (June 1982): Tables 6.5B, 6.6B, pp. 81, 82; and from data described in the Appendix.

As a guide to using these index numbers, the index number for state and local total current operation expenditures and transfer payments (146.3) can be used as an illustration. An index number of 146.3 means that if governments (1) increased the compensation of all employees on their payrolls in 1972 and the payments to all 1972 transfer recipients at a rate commensurate with cost-of-living increases, (2) absorbed all unit price increases, and (3) acquired the same volume of inputs in 1977 as in 1972, their expenditures would have had to increase by 46.3 percent for the period or by about 7.9 percent yearly. As the actual expenditure indexes in Table 1 show, however, state and local government expenditures grew by more than 72 percent during the period. Expenditures by the state and local sector on employee compensation and on material input expenditures also grew more rapidly than the growth in the inflation indexes with outlays for transfers lagged behind the inflation index for transfers.

Examination of the inflation index numbers for the individual expenditure components reported in Table 2 reveals that the employee compensation index and the transfer payment index for state and local governments trailed the group's total current operation expenditures and transfer payments index by 4.4 percentage points. In contrast, the material input expenditure index ran ahead of the total index by about 18 percentage points, reflecting an exceptionally rapid runup in producer prices during the period. Much the same relationship existed for each of the other governmental classifications.

The methodology that was used to estimate the inflation indexes produces identical index values at all levels of government for any

individual expenditure category (i.e., employee compensation, material inputs, or transfer payments). Index number variation among governmental groupings is possible and is due entirely to differences among government groups in the relative distribution of their total expenditures among employee compensation, material input expenditures, and transfer payments. Because these relative distributions are not enormously different among the groups, the variations reflected in the third and fifth columns of Table 2 are not large either.

Inflation and State and Local Government Expenditures, 1972-1977: Conclusions

For convenience to the reader, the actual and the inflation-induced expenditure indexes for total expenditures are combined in Table 3. The indexes show that state and local governments managed to increase their expenditures for employee compensation, material inputs, and all current activities combined by more than would have been required merely to maintain the 1972 level of real inputs and the real income of employees and transfer payment recipients. Thus, these governments could have had a margin leftover after they had fully compensated employees and transfer payment recipients for cost-of-living increases and absorbed material cost increases. Only in the case of transfer payments did the inflation rate exceed the actual expenditure rate.[1]

It deserves to be emphasized, however, that just because the indexes imply that there could have been a margin available to acquire more labor and material inputs, the do not tell anything about how state

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[1]The index numbers for transfer payments are not reported separately in Table 3. See Tables 1 and 2 above.

TABLE 3

INDEX FOR ACTUAL AND INFLATION INDUCED EXPENDITURES, STATE AND LOCAL GOVERNMENTS, 1972-1977
(1972 = 100)

	Actual Total Expenditures Index, 1977	Inflation Induced Total Expenditures Index, 1977
State and Local	172.5	146.3
State	180.4	147.5
Local	168.6	145.7
County	172.9	147.3
Municipalities	167.0	146.7
Township	172.6	148.5
School District	162.2	143.4
Special District	216.6	146.5

SOURCE: Column 1 from Table 1; Column 2 from Table 2.

and local governments actually divided their additional expenditures between, say, compensation increases to current employees and compensation expenditures to add new employees to the workforce. For that matter, one cannot be certain on the basis of this analysis that governments even kept their workforces whole with respect to inflation. Compensation increases could have lagged behind the cost-of-living increases, in which case there would have been an even larger share of the actual expenditure increase available for workforce expansion. In any case, the expenditure data for 1972-1977 provide some basis for concluding that state and local governments in general fared rather well in a time of substantial inflation.[1]

Expenditure Trends, 1977-1982

During the 1977-1982 period, spending by both state and local governments slowed relative to the immediately previous five-year period with the local government spending rate actually slipping slightly below the double digit level.

Among the components of expenditures, material inputs grew most rapidly of all expenditure categories at the local level while they ran a dead heat with fringe benefits as the fastest growing components at the state level. In sharp contrast were 1977-1982 expenditures for

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[1]Although it is possible to estimate how actual expenditure increases were divided between price offsets to inflation, real compensation increases, and input quantity increases, that task has not been attempted here. For an example of how it can be done, see David Greytak and Bernard Jump, "The Effects 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).

transfers whose growth rates substantially outpaced the rates for 1972-1977--although they still lagged far behind the growth in expenditures for other components of state and local spending between 1977 and 1982.

It is also worth noting that total current expenditures for state and local governments combined and for individual local groupings mostly lagged GNP growth during the 1977-1982 period. Obviously, three years hardly establishes the formation of a solid trend. All the same, one would be hard-pressed to look back in the previous three decades and find any other multiple year periods when state and local government expenditure growth trailed GNP growth.[1]

Expenditure Inflation Indexes, 1977-1982

The inflation indexes for 1977-1982 (Table 5) reveal two noteworthy developments relative to the 1972-1977 period. First, the indexes reflect the general acceleration in the rate of inflation that occurred during the late 1970s and early 1980s.

Second, where material input costs had grown faster than the costs for the two other expenditure objects between 1972 and 1977, material input cost growth slowed enough between 1977 and 1982 to bring it below the growth rate for compensation and transfer payment costs. But as material inputs represented a minority share of state and local government outlays, their overall impact on the inflation indexes for

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[1]See Advisory Commission on Intergovernmental Relations, Significant Features of Fiscal Federalism, 1980-81 Edition (Washington, D.C.: U.S. Government Printing Office, 1981), pp. 7, 8, and 15; and 1981-82 Edition (Washington, D.C.: U.S. Government Printing Office), p. 14.

TABLE 4

EXPENDITURE GROWTH INDEXES FOR CURRENT OPERATION AND TRANSFER PAYMENTS, STATE AND LOCAL GOVERNMENTS, 1977-1982
(1977 = 100)

	Personal Service Expenditures	Fringe Benefit Expenditures	Total Employee Compensation Expenditures	Material Input Expenditures	Total Current Operation[a] Expenditures	Transfer[b] Payments	Total Current Operation Expenditures and Transfer Payments[a]
State and Local	151.2	179.2	155.4	185.3	164.5	132.8	162.6
State	160.6	190.3	165.1	190.2	175.4	143.8	172.4
Local	147.5	174.9	151.6	181.4	159.0	117.7	157.5
County	154.0	182.5	158.3	204.4	163.9	127.9	159.7
Municipality	140.1	166.0	144.0	190.4	158.4	96.3	156.1
Township	127.6	151.3	131.2				
School District	148.3	175.7	152.4			*	
Special District	180.4	213.7	185.3			*	

[a]Excludes debt service.

[b]Assistance and subsidies.

*Transfer payments not a responsibility of school districts and special districts.

SOURCE: U.S. Bureau of the Census, Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), Tables 1, 6, pp. 25, 28; County Government Finances in 1981-82, Series GF82, No. 8 (Washington, D.C.: U.S. Government Printing Office, 1984), Table 1, pp. 7-8; City Governmental Finances in 1981-82, Series GF82, No. 4 (Washington, D.C.: U.S. Government Printing Office, 1983), Table 1, pp. 7-8; Governmental Finances in 1981-82, Series GF82, No. 5 (Washington, D.C.: U.S. Government Printing Office, 1983), Table 9, p. 31; U.S. Department of Commerce, Survey of Current Business (Washington, D.C.: U.S. Government Printing Office, July 1982), Tables 6.5B, 6.6B, pp. 81-82; and Survey of Current Business (Washington, D.C.: U.S. Government Printing Office, July 1983), Tables 6.5B, 6.6B, p. 71.

TABLE 5

INFLATION INDEXES FOR CURRENT OPERATION EXPENDITURES AND TRANSFER PAYMENTS, STATE AND LOCAL GOVERNMENTS, 1977-1982
(1977 = 100)

	Employee Compensation Expenditures	Material Input Expenditures	Current Operation Expenditures[a]	Transfer Payments[b]	Total Current Operation Expenditures and Transfer Payments[a]
State and Local	156.7	146.5	153.6	156.7	153.8
State	156.7	146.5	152.5	156.7	152.9
Local	156.7	146.5	154.2	156.7	154.3
County	156.7	146.5	153.5	156.7	153.8
Municipality	156.7	146.5	153.5	156.7	153.7
Township	156.7	146.5	152.5	156.7	153.5
School District	156.7	146.5	155.2	*	155.1
Special District	156.7	146.5	152.2	*	152.2

[a] Excludes debt service.

[b] Assistance and subsidies.

* Transfer payments not a responsibility of school districts and special districts.

SOURCE: U.S. Bureau of the Census, Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), pp. 23, 26; Statistical Abstract of the United States 1981, 102 ed. (Washington, D.C., 1981), Table 785, p. 471; U.S. Department of Commerce, Survey of Current Business, Vol. 62, No. 6 (June 1982): Tables 6.5B, 6.6B, pp. 81, 82; and from data and methods described in the Appendix.

total expenditures was swamped by the rapid escalation in the employee compensation and transfer payment components.

Inflation and State and Local Government Expenditures, 1977 to 1982: Conclusions

Notwithstanding the acceleration in inflation that characterized the 1977-1982 period, both states and local jurisdictions managed to increase their aggregate real expenditures on current operations and transfer payments. But the similarity between the state and the local pattern ends there. In the case of local governments actual expenditure growth only barely exceeded the amount that could have been accounted for by inflation. Their outlays for wages and salaries and for transfer payments lagged behind the rates that would have been necessary were they to have kept up with inflation. It was only because growth in local government expenditure for employee fringe benefits and for material inputs far exceeded the period's inflation rate that aggregate local spending exceeded the inflation rate.

State expenditures, on the other hand, were about 13 percent greater in the aggregate than the volume required merely to offset inflation, and every component of states' expenditures except transfer payments grew in real terms.

State and Local Government Revenues: 1972-1982

Revenue Trends, 1972-1977

Total state and local government revenues from taxes, intergovernmental aid, and miscellaneous items grew by about 70 percent between 1972 and 1977, or over 11 percent annually (Table 7). Special

TABLE 6

INDEX FOR ACTUAL AND INFLATION INDUCED EXPENDITURES, STATE AND LOCAL GOVERNMENTS, 1977-1982 (1977 = 100)

	Actual Total Expenditures Index, 1982	Inflation Induced Total Expenditures Index, 1982
State and Local	162.6	153.8
State	172.4	152.9
Local	157.5	154.3
County	159.7	153.8
Municipality	156.1	153.7

SOURCE: Column 1 from Table 4; Column 2 from Table 5.

TABLE 7

REVENUE GROWTH INDEXES FOR LOCALLY RAISED REVENUES, INTERGOVERNMENTAL AND TOTAL REVENUES, STATE AND LOCAL GOVERNMENTS, 1972-1977
(1972 = 100)

	Property Taxes	Sales and Gross Receipts Taxes	Income Taxes	Total Locally Raised Revenue	Intergovernmental Revenues	Total Revenues
State and Local	145.8	161.6	195.6	163.5	199.2	170.2
State	179.8	157.5	199.1	170.5	173.8	171.5
Local	144.8	193.9	168.3	155.9	209.4	170.1
County	149.5	219.5	200.5	166.1	189.0	175.7
Municipalities	142.9	181.7	164.7	155.9	208.7	173.3
Townships	144.0	225.8	276.9	148.3	221.3	164.4
School District	142.3	294.1	149.2	144.6	178.4	159.8
Special District	176.1	271.4	---	190.8	279.5	217.1

SOURCES: U.S. Bureau of the Census, Census of Governments, 1972, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1974), p. 26; Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), p. 24.

district revenue was the fastest growing at 117 percent and school district revenue grew slowest at 60 percent.

For state and local governments combined intergovernmental revenues and income tax revenues ran neck and neck as the fastest growing revenue producers. At the state level, income taxes grew most rapidly and at a rate that was well ahead of intergovernmental revenue growth. Intergovernmental aid set the pace among local government revenue sources with sales and gross receipts taxes a close second. For all classifications of government total revenues grew faster than revenues from own sources because intergovernmental aid grew faster than own source revenue.

Revenue Inflation Indexes, 1972-1977

As demonstrated previously, inflation during the 1970s took a toll on governments with respect to the cost of the goods and services that they purchase. Here attention is shifted to the positive side of inflation as seen by governments in search of revenues. That is, inflation can increase the potential revenue productivity of those revenue bases that are defined in monetary terms.

The approach used to estimate the revenue inflation indexes is similar to that used to estimate expenditure inflation indexes. The revenue inflation indexes are estimates of the potential effect that inflation-induced increases in the nominal value of revenue bases would have had on revenue collections if the inflated bases had been taxed in 1977 at the same rates that prevailed in 1972. In other words, the inflation indexes measure the potential revenue increases that would have been forthcoming if the only change in the revenue system was a

nominal increase in the taxable bases, an increase attributable solely to inflation.[1]

Inflation indexes covering 1972 to 1977 for the principal types of state and local government taxes and for total state and local government own source revenues are reported in Table 8. Predictably, the state personal income tax had the largest inflation-induced revenue potential at 82 percent. Obviously this result is due not only to inflation in taxable income but also to bracket creep brought about by progressive income tax structures. By comparison, local individual income taxes had much lower growth in revenue potential because these taxes are dominated by systems with little or no progressivity.[2] Among the other major state taxes, the growth in revenue potential for the general sales tax and the corporation income tax was comparatively responsive to inflation while motor vehicle license taxes, levied as they are as specific instead of ad valorem, showed no potential responsiveness at all.

Most local government tax systems are dominated by the property tax. Thus, the revenue potential of the property tax deserves close attention. Estimated here at 46 percent, the growth rate in potential property tax revenue due to inflation was only slightly below the rate for the most responsive local tax, the personal income tax, and slightly

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[1] See the Appendix for a description of how the indexes were computed.

[2] Although the state personal income tax inflation index was computed by means of a model that simulates bracket creep, data were not available for such simulations in the case of progressive local government income taxes.

TABLE 8

INFLATION INDEXES FOR REVENUES RAISED BY STATE AND LOCAL GOVERNMENTS, 1972-1977
(1972 = 100)

	Property Tax	General Sales Tax	Selective Sales and Gross Receipts Tax	Individual Income Tax	Corporation Income Tax	Motor Vehicle License Tax	Total Taxes	Total[a] Revenues
State and Local	147.8	143.1	111.8	177.3	156.0	100.0	141.5	138.7
State	165.0	143.1	109.3	182.1	156.0	100.0	138.4	137.1
All Local	146.4	143.1	137.1	149.4	---	100.0	144.5	139.9
County	146.4	143.1	124.3	149.4	*	100.0	144.2	139.6
Municipality	146.4	143.1	137.7	149.4	---	*	143.0	136.8
Township	146.4	143.1	164.5	149.4	*	*	145.3	142.6
School District	146.4	143.1	164.5	149.4	*	*	146.0	145.0
Special District	146.4	143.1	100.0	*	*	*	145.9	129.4

--- Minor amounts included with individual income taxes for local governments.

* Not levied in base year

[a]Excludes revenues from intergovernmental aid programs.

SOURCE: U.S. Bureau of the Census, Census of Governments, 1972, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1974), p. 26; Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), p. 24; and computed from data described in the Appendix.

larger than the potential of another significant revenue source, the general sales tax.

Before leaving this section the reader is reminded that the notion of there being potential additions to tax revenues because the nominal value of a constant real tax base increases on account of inflation is emphatically not equivalent to saying that the additions can or will be realized automatically. In the case of the property tax, for example, the 46 percent potential additions to tax revenues in 1977 relative to 1972 tax revenues is predicated on the assumption that the effective property tax rate was the same in 1977 as in 1972. Where a government was able to comply with that assumption, its actual 1977 property tax revenues would exceed its 1972 property tax revenues by the percentage implied by the 1977 revenue inflation index number for the property tax (i.e., estimated here at 46.4 percent). Obviously, the fundamental assumption on which the revenue inflation index is based is hardly suitable for some governments, what with tax "reforms" such as California's Proposition 13 that automatically decrease effective tax rates in the face of inflating property values.

Finally, lest there be any confusion, the notion of inflation indexes, whether the indexes be for revenues or for expenditures, does not imply that there necessarily is a stable relation between revenue changes or expenditure changes and changes in the nominal value of the revenue base or the unit price of the object of the expenditure. Surely there are other determinants of revenues and expenditures whose relative importance will vary from year to year. Just as surely, the volume of revenues raised by a community will be influenced by the community's

demand for government services and the community's demand for services will be influenced by its revenue growth (or decline). Nevertheless, the view that is reflected in this analysis is that it is still instructive to know by how much revenues and expenditures would rise if they maintained a stable relationship with the rate of inflation.

Inflation and State and Local Government Revenues, 1972-1977: Conclusions

Actual revenues collected by all levels of state and local government grew faster than potential revenue increases attributable to inflation during 1972 and 1977 (Table 9) Thanks to their progressive income taxes, the states turned in a better revenue raising performance than all local governments did as measured by the difference between their actual revenue index number for 1977 and their inflation-induced revenue index number for the same year.

All groups of local governments also managed to raise revenues in amounts that exceeded inflation-induced potential revenue increases. Among the local groups school districts had the smallest "excess" of actual revenues collected due, undoubtedly, to their disproportionately heavy reliance on the property tax. In contrast were special districts which had the widest margin, the largest actual revenue growth, and the slowest potential revenue growth. In all likelihood these phenomena can be explained by the comparatively large growth in the number of special districts between 1972 and 1977.

Revenue Trends, 1977-1982

Several aspects of state and local government revenue growth between 1977 and 1982 deserve some attention here (Table 10). First,

TABLE 9

INDEX FOR ACTUAL AND INFLATION INDUCED REVENUES,
STATE AND LOCAL GOVERNMENTS, 1972-1977
(1972 = 100)

	Actual Total Revenues Index, 1977	Inflation Induced Total Revenues Index, 1977
State and Local	170.2	138.7
State	171.5	137.1
Local	170.1	139.9
County	175.7	139.6
Municipality	173.3	136.8
Township	164.4	142.6
School District	159.8	145.0
Special District	217.1	129.4

SOURCE: Column 1 from Table 7; Column 2 from Table 8.

TABLE 10

REVENUE GROWTH INDEXES FOR LOCALLY RAISED REVENUES, INTERGOVERNMENTAL AND TOTAL REVENUES, STATE AND LOCAL GOVERNMENTS, 1977-82
(1977 = 100)

	Property Taxes	Sales and Gross Receipts Taxes	Income Taxes	Total Locally Raised Revenue	Intergovernmental Revenues	Total Revenues
State and Local	131.0	154.4	171.3	165.8	139.2	160.0
State	137.7	150.5	172.3	171.0	142.2	162.7
Local	130.8	179.2	162.6	159.7	150.9	155.9
County	137.4	185.5	171.2	168.6	148.4	159.5
Municipality	124.8	178.6	160.5	163.4	131.5	150.8

SOURCE: U.S. Bureau of the Census, Census of Governments, 1977, Vol. 4, No. 5, Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), p. 24; Governmental Finances in 81-82 (Washington, D.C.: U.S. Government Printing Office, 1981), p. 18; City Government Finances in 81-82 (Washington, D.C.: U.S. Government Printing Office, 1983), p. 7; County Government Finances in 81-82 (Washington, D.C.: U.S. Government Printing Office, 1981), p. 7.

total revenue grew at a slower rate than in the immediately previous five years. Second, unlike 1972-1977, when intergovernmental aid growth exceeded growth in own source revenue at the state and local levels, the 1977-1982 period saw the growth of intergovernmental revenues slow abruptly to a rate well short of the rate of expansion in own source revenues raised by state and local governments.

Equally important, property tax revenue growth at the local level averaged about 5½ percent yearly during the period, a rate that was well below the rate of growth for any other major revenue source. Probably the major factor in the slow growth of property tax receipts was Proposition 13 in California. For example, California local governments collected 21 percent less in property taxes in 1982 than they collected in 1977.[1]

Revenue Inflation Indexes, 1977-1982

In general, the 1977-1982 revenue inflation indexes contained in Table 11 carry few surprises for anyone who has already reviewed the 1972-1977 indexes and who otherwise has some familiarity with the period's inflation rates. For just as price increases as reflected by the CPI, PPI, and the GNP deflator accelerated between 1977 and 1982 so, too, did the inflation indexes for state and local government revenue.

At the state level the individual income tax lost its premier position to the property tax as the revenue source that reflected the greatest increase in inflation-induced revenue potential. It is likely

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[1]U.S. Bureau of the Census, Governmental Finances, 1976-77 and 1981-82, Series GF (Washington, D.C.: U.S. Government Printing Office, 1978 and 1983).

TABLE 11

INFLATION INDEXES FOR REVENUES RAISED BY STATE AND LOCAL GOVERNMENTS, 1977-1982
(1977 = 100)

	Property Tax	General Sales Tax	Selective Sales and Gross Receipts Tax	Individual Income Tax	Corporation Income Tax	Motor Vehicle License Tax	Total Taxes	Total[a] Revenues
State and Local	163.6	161.4	119.9	165.3	165.6	100.0	152.0	148.8
State	176.8	161.4	116.4	173.6	165.6	100.0	149.7	148.6
Local	162.5	161.4	146.5	155.5	---	100.0	158.9	151.6
County	162.5	161.4	123.2	155.5	*	100.0	158.9	150.3
Municipality	162.5	161.4	201.4	155.5	---	*	160.4	151.1
Township	162.5	161.4	171.9	155.5	*	*	158.6	153.1
School District	162.5	161.4	173.5	155.5	*	*	160.5	159.0
Special District	162.5	161.4	100.0	155.5	*	*	149.3	137.7

--- Minor amounts included with individual income taxes for local governments.

* Not levied in base year.

[a]Excludes revenues from intergovernmental aid programs.

SOURCE: U.S. Bureau of the Census, Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), p. 24; Government Finances in 81-82 (Washington, D.C.: U.S. Government Printing Office, 1981), p. 18; City Government Finances in 81-82 (Washington, D.C.: U.S. Government Printing Office, 1983), p. 5; County Government Finances in 81-82 (Washington, D.C.: U.S. Government Printing Office, 1984), p. 7; and computed from data described in the Appendix.

that this development was a reflection of a variety of revisions in the structure of many states' personal income taxes, revisions that were made specifically to remove some of the sting from a tax that could lead to growing average tax burdens even on persons whose real income had not grown not at all.

At the local level property tax and general sales tax indexes for 1977 to 1982 reflected similar degrees of potential responsiveness to inflation in their bases. But as discussed further in the next section, the potential growth in property tax revenue brought about by rising property values is an overstatement of the incremental property taxes available because of inflation. Also notable at the municipality, township and school district levels was the sharp expansion in revenue potential from selective sales and gross receipts taxes, a phenomenon attributable largely to utility and energy prices.

Inflation and State and Local Government Revenues, 1977-1982: Conclusions

The states continued during 1977 to 1982 to be able to capture the potential increments to revenues attributable to inflation and some additional revenue as well (Table 12). All local governments and counties combined did not have things as easy as the states, but each managed to gain incremental revenues in amounts that were in excess of those attributable to inflation. Not so municipalities, however. At best their actual revenues just kept pace with the inflation-induced revenue potential.

A very large portion of the local government revenue potential is the result of rapid expansion in potential property tax revenues. But

TABLE 12

INDEX FOR ACTUAL AND INFLATION INDUCED REVENUES,
STATE AND LOCAL GOVERNMENTS, 1977-1982
(1977 = 100)

	Actual Total Revenues Index, 1982	Inflation Induced Total Revenues Index, 1982
State and Local	160.0	148.8
State	162.7	148.6
Local	155.9	151.6
County	159.5	150.3
Municipality	150.8	151.1

SOURCE: Column 1 from Table 10; Column 2 from Table 11.

that expansion in potential revenues was an instance where appearances are deceiving. As noted, actual property tax revenues grew at a much slower rate between 1977 and 1982 than did other local revenue sources as Proposition 13 in California and similar property tax limitations elsewhere were enacted. Thus, a sizable portion of the 1977 taxable property base was not legally available to be taxed in 1982, meaning that one of the fundamental assumptions upon which the estimation of revenue inflation indexes are based had been violated.

Net Effect of Inflation on Expenditures and Revenues, 1972-1982

Before concluding this section it will be useful to examine the relationship between the inflation indexes for expenditures and those for revenues and to estimate the net effects of inflation on potential revenues and potential expenditures.

A rough measure of the net effects of inflation on potential revenues and expenditures can be obtained by examining the changing purchasing power over time of a revenue base that is held constant in real terms. Table 13 contains such estimates for the major governmental groupings for 1972-1977 and 1977-1982. The procedure used was to estimate the purchasing power that the 1972 (1977) revenue base would have yielded in 1977 (1982) after allowances for inflation-induced potential increases in both expenditures and revenues. The 1977 (1982) revenue inflation index for each level of government was deflated by the appropriate 1977 (1982) expenditure inflation index and the result was multiplied by 100 to produce what amounts to a net purchasing power index in terms of the 1972 (1977) revenue base. The net purchasing power index, with decimals shifted appropriately, was then multiplied by

TABLE 13

EXPENDITURE, REVENUE AND PURCHASING POWER INDEXES, AND REVENUE BASE PURCHASING POWER CHANGE, STATE AND LOCAL GOVERNMENTS, 1972-1977 and 1977-1982

Type of Government	1977 Inflation Indexes (1972 = 100) Expenditures (1)	Revenues (2)	Index of 1977 Purchasing Power of 1972 Revenues Base[a,b] (1972 = 100) (3)	Purchasing Power Loss[c] (in millions) (4)	1982 Inflation Indexes (1977 = 100) Expenditures (1)	Revenue (2)	Index of 1980 Purchasing Power of 1977 Revenue Base[a,b] (1977 = 100) (3)	Purchasing Power Loss[c] (in millions) (4)
State	147.5	137.1	92.9	$5016.2	152.9	148.6	97.2	$3374.0
County	147.3	139.6	94.8	712.1	153.8	150.3	97.7	523.2
Municipality	146.7	136.8	93.2	1596.0	153.7	151.1	98.3	622.3
Township	148.5	142.6	96.0	124.2	153.5	153.1	99.7	13.8
School District	143.4	145.0	101.1	(237.6)	155.1	159.0	102.5	(781.0)
Special District	146.5	129.4	88.3	430.4	152.2	137.7	90.5	666.7

[a] 1972, 1977 revenues exclude intergovernmental aid.

[b] Equal to: 100(column 2/column 1).

[c] Equal to: (1972 (or 1977) revenues exclusive of intergovernmental aid) - [(column 3)(1972 (or 1977) revenues exclusive of intergovernmental aid)/100].

( ) numbers in parenthesis equal gains in purchasing power.

SOURCE: U.S. Bureau of the Census, Census of Governments, 1972, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing OFfice, 1974), p. 26; Census of Governments, 1977, Vol. 4, No. 5: Compendium of Government Finances (Washington, D.C.: U.S. Government Printing Office, 1979), p. 24; and data sources described in Appendix.

actual 1972 (1977) revenues and the product was subtracted from 1972 (1977) revenues. This yielded an estimate for the terminal year (1977 or 1982) of the amount by which inflation had lowered or raised the purchasing power of a given level of government's own source revenue base as that base stood in the beginning year (either 1972 or 1977) when allowance is made for inflation's potential effects on both expenditures and revenues.

The results reported in Table 13 provide generally dismal picture regarding inflation's effects on state and local governments. During both the 1972-1977 and 1977-1982 periods all governmental classifications except school districts lost ground to inflation on a net basis. That is, maintenance through the period of a fixed volume of inputs at constant real compensation rates and prices would have required expenditure increases in excess of the additional revenues that would have been forthcoming if all inflation-induced revenue potential were captured by the tax collector.

In conclusion, the answer to the question whether or not state and local governments gain more than they lose in a period of inflation depends on a congeries of factors. There may be no single answer that fits any government or all periods. With a sufficiently elastic tax structure, "willing" taxpayers, enough inflation in the tax bases, and employee demand for compensation increases that is less elastic with respect to inflation than the tax structure is, a government might do very well indeed in maintaining, or even adding to the services it provides. That there could be for very long anywhere such a set of conditions seems unlikely indeed.

Addendum: Inflation, Interest Rates, and State and Local Government Capital Outlays and Borrowing, 1972-1982

Inflation and Interest Rates

Although the primary subject of this paper concerns state and local government current operation expenditures and outlays, it is appropriate to consider briefly what happened to capital expenditures in the face of the inflationary surge of the 1972-1982 period since prices of capital items were affected by general inflation as were the prices of goods and services required for current operations. So, too, interest rates moved upward during the decade.

Obviously, a sharp increase in interest rates can severely affect the plans of state and local governments that were contemplating relatively large capital outlays to be financed initially by issuance of debt. The possible responses by a government facing such circumstances can range from proceeding with the capital spending plan, stretching out the maturity of the net debt issue, and permitting the debt interest costs to absorb a larger share of the operating budget all the way to cancelling plans for capital outlays until market conditions have improved.

But increasing interest rates are not without their benefits on the revenue side of the budget. To the extent that governments have cash balances available for temporary investments higher interest rates will mean increased revenues from interest earnings. As financial managers become atuned to the potential gains to be had from superior cash management, they are likely to be able to identify ways in which cash

balances available for investment can be increased and used to acquire better yielding financial assets.

A priori, it is not obvious whether most governments are likely to gain or lose on a net basis when market interest rates rise. Much will depend on how a particular jurisdiction is situated with respect to cash balances available for investment on the one hand and with respect to the need for borrowed funds on the other.

One thing is clear, however, as regards the short-run effects of rising interest rates on the current budget situation faced by state and local governments in the 1972-1982 period. Measured by the difference between state and local government revenues from interest earnings and their expenditures for interest on debt outstanding, the financial condition of the state and local sector showed notable improvement. State and local government interest earnings grew rapidly between 1972 and 1982, and by 1982 they accounted for nearly three times the proportion of state and local own source revenue that they brought in during 1972 (Table 14). The gains from larger interest earnings were not offset by proportionate growth in interest expenditure burdens, either. In fact, state and local government interest expenditures as a proportion of total state and local government general expenditures other than for capital outlays were only 0.2 percentage points higher in 1982 than they were in 1972.

As the data in Table 14 show, the combined effects of comparatively rapid growth in interest earnings on invested assets and stability in the share of expenditures required to pay interest were very favorable for state and local budgets between 1972 and 1982. Where interest

TABLE 14

STATE AND LOCAL GOVERNMENT INTEREST EARNINGS, GENERAL REVENUE, INTEREST EXPENDITURES ON GENERAL DEBT, AND GENERAL EXPENDITURES, 1972-1982
(dollar amounts in millions)

Year	Interest Earnings	General Revenues From Own Sources	Interest Earnings on Percentage of General Revenues (Col. 1 ÷ Col. 2)	Interest on General Debt	General Expenditures[a]	Interest on General Debt as Percentage of General Expenditures (Col. 4 ÷ Col. 5)	Ratio: Interest on General Debt to Interest Earnings (Col. 4 ÷ Col. 1)
1972	$ 3,212	$135,100	2.38%	$ 6,893	$135,590	5.1%	2.14
1973	3,864	150,921	2.56	6,785	149,489	4.5	1.76
1974	6,261	165,889	3.77	7,666	164,538	4.7	1.22
1975	7,843	181,141	4.33	8,782	189,510	4.6	1.12
1976	6,973	200,586	3.48	10,269	214,381	4.8	1.47
1977	6,798	223,211	3.05	11,394	234,223	4.9	1.68
1978	8,210	246,368	3.33	11,983	257,350	4.7	1.46
1979	11,801	268,115	4.40	12,981	281,196	4.6	1.10
1980	17,025	299,293	5.69	14,747	314,390	4.7	0.87
1981	20,458	333,109	6.14	17,131	349,556	4.9	0.84
1982	25,706	369,236	6.96	19,970	379,546	5.3	0.78

[a]Excludes general expenditures for capital outlays.

SOURCE: U.S. Bureau of the Census, Governmental Finances, Series GF (Washington, D.C.: U.S. Government Printing Office), annual issues.

expenditures on general state and local debt totaled more than twice the amount that state and local governments earned from interest on invested assets in 1972, the tables had been turned enough by 1982 so that state and local government interest earnings exceeded their interest expenditures by almost 29 percent.

Trends in State and Local Government Debt Burden

Although the general increase in market interest rates and, presumably, closer attention to the management of governments' liquid assets were important contributors to the decline in the ratio of state and local government interest expenditures to interest earnings, it is important not to overlook the fact that state and local governments also kept tight reins on their indebtedness. For example, the growth in state and local government debt outstanding trailed revenues throughout the 1972-1982 period (Table 15).

Similarly, the burden of debt service as a proportion of revenues from own sources supports the conclusion that indebtedness remained within the bounds of reasonableness (Table 16). The burden of long-term debt showed no discernible trend during the 1972-1982 period. It began the period equal to 9.5 percent of state and local government revenues from own sources and it ended the decade at 9.8 percent. In the case of total debt burden (i.e., long-term debt service plus short-term debt outstanding), the weight actually fell from 19.4 percent of own source revenues in 1972 to 14 percent in 1982.

Trends in State and Local Government Capital Spending

All-in-all, the evidence is persuasive that the state and local sector has been taking a very prudent tack in its reliance on indebtedness.

TABLE 15

STATE AND LOCAL GOVERNMENT DEBT OUTSTANDING, 1972 - 1982
(in billions of dollars)

Fiscal Year Ending	Short-Term Debt	Long-Term			Total, Short-Term and Long-Term	Memo: Total Revenues
		Full Faith and Credit	Non-Guaranteed	Total		
1972	15.7	95.8	63.0	158.8	174.5	189.7
1973	15.9	102.7	69.7	172.6	188.5	217.6
1974	16.7	110.0	79.0	190.0	206.7	237.9
1975	19.8	115.6	85.9	201.4	221.2	264.0
1976	18.8	130.6	90.7	221.3	240.1	303.3
1977	13.4	137.7	106.4	244.1	257.5	337.7
1978	11.4	142.5	126.5	269.0	280.4	371.6
1979	11.8	145.4	146.9	292.3	304.1	404.9
1980	13.1	149.8	172.7	322.5	335.6	451.5
1981	15.6	151.8	196.6	348.3	363.9	506.7
1982	19.0	151.2	229.1	380.3	399.3	545.9
Average Annual Growth (Percent)	3.2	4.7	13.8	9.1	8.6	11.2

SOURCE: U.S. Bureau of the Census, Governmental Finances, Series GF (Washington, D.C.: U.S. Government Printing Office, annual issues).

TABLE 16

STATE AND LOCAL GOVERNMENT DEBT BURDEN, 1972 TO 1982
(dollar amounts in billions)

Fiscal Year Ending	Total Debt Service					Revenues From Own Sources	Ratio: Long Term Debt Service Own Source Revenues	Ratio: Total Debt Service Own Source Revenues
	Long-Term Debt Service			Short-Term Debt	Total			
	Interest	Long-Term Debt Retired	Total					
1972	$ 6.9	8.2	15.1	15.7	30.8	158.5	9.5	19.4%
1973	7.8	9.0	16.8	15.9	32.7	178.4	9.4	18.3
1974	8.8	10.8	19.6	16.7	36.3	196.0	10.0	18.5
1975	10.1	10.9	21.0	19.8	40.8	217.0	9.7	18.8
1976	11.7	11.3	23.0	18.8	41.8	247.7	9.3	16.9
1977	13.0	13.2	26.2	13.4	39.6	275.2	9.5	14.4
1978	14.0	16.7	30.7	11.4	42.1	302.0	10.2	13.9
1979	15.5	27.1	42.6	11.8	54.4	329.8	12.9	16.5
1980	17.6	17.4	35.0	13.1	48.1	368.5	9.5	13.1
1981	20.5	18.9	39.4	15.6	55.0	416.4	9.5	13.2
1982	24.1	21.0	45.1	19.0	64.1	459.0	9.8	14.0

SOURCE: U.S. Bureau of the Census, Governmental Finances, Series GF (Washington, D.C.: U.S. Government Printing Office, annual issues).

Yet as desirable as it may have been from the short-run viewpoint to hold an "uncontrollable" such as debt burden in check, the accomplishment came at a heavy price in terms of the volume and condition of the state and local capital plant. Commerce Department data show that the real value of state and local capital outlays fell steadily in the decade (Table 17). The decline was so large that by 1982 the real value of annual capital outlays was only about three-fourths the size of real outlays a decade earlier.

State and local capital spending also lost ground to other categories of state and local spending. Where capital outlays accounted for about one-fifth of all spending on goods and services by states and local governments in 1972, they had fallen to less than 14 percent of the total by 1982.

Of course, there is no iron law of government spending requiring either that real capital outlays must grow inexorably or that a fixed relationship must be maintained between capital outlays and total outlays. In the case of the state and local sector in the 1972-1982 decade, for example, some slowdown in outlays for education facilities was inevitable as school age populations in many jurisdictions were shrinking. But it is doubtful that fulfillment of particular capital outlay needs explains most of the real decline in capital expenditures. Even after making such allowances, informed opinion holds that recent additions to the state and local capital plant have been below the

TABLE 17

STATE AND LOCAL GOVERNMENT CAPITAL EXPENDITURES AND TOTAL EXPENDITURES ON GOODS AND SERVICES, 1972-1982
(dollar amounts in billions)

	Capital Expenditures (Current $)	Capital Expenditures (1972 $)	Total Expenditures (Current $)	Ratio: Column 1/ Column 3 (percent)
1972	$31.1	$31.1	$151.4	20.5%
1973	33.8	31.7	168.5	20.1
1974	40.3	32.1	193.1	20.9
1975	41.9	30.4	217.2	19.3
1976	39.9	28.1	232.9	17.1
1977	39.0	26.0	250.4	15.6
1978	46.4	27.7	278.3	16.7
1979	50.4	26.5	306.0	16.5
1980	56.6	26.7	340.8	16.6
1981	55.4	24.8	366.5	15.1
1982	54.3	23.9	390.5	13.9

SOURCE: Survey of Current Business, July 1982; Survey of Current Business, July 1983; and U.S. Department of Commerce, Bureau of Economic Analysis, The National Income and Product Accounts of the United States, 1929-76, Statistical Tables, September 1981.

volume required even to maintain the existing stock of public facilities.[1]

Inflation and Capital Spending: A Tentative Conclusion

That inflation contributed to the slowdown in state and local capital purchases seems a reasonable conclusion. First, as inflation began to squeeze operating budgets there was relatively less in the way of discretionary funds available to service additional indebtedness. In the face of severe budgetary constraints few capital items probably seemed as urgent to either hard-pressed public officials or their constituents as did expenditures for current services.

Also, even though state and local governments had opportunities to invest their liquid assets more productively as inflationary conditions pushed yields upward, they were limited in their ability to use increased earnings on liquid investments to support large increments in debt service on additional borrowing. Because most of the liquid assets in a government's general fund are likely to be working capital, they must be available more or less on demand and certainly within a period of only a few days, weeks, or months or at the most. So while market conditions during a period may offer unusually high yields to governments on their liquid asset portfolios, it is not practical (and probably not permissible, either) for governments to lock up the relatively high yields for a period that matches the maturities of the new debt that they have to issue to finance capital outlays.

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[1] See, for example, "Rebuilding America's Infrastructure," Morgan Guaranty Survey, July 1982; and U.S. Congress, Joint Economic Committee, Trends in the Fiscal Condition of Cities: 1981-1983, 98th Congress, 1st session, 1983, p. 25.

By way of contrast, custom, legal restrictions, and prudent management require that most borrowing to finance capital outlays be done with long-term securities. However, much governments may be helped on the revenue side as a result of higher returns on investments, on balance, a period of relatively high and rising interest rates probably works to the disadvantage of governments that are trying to acquire capital facilities. As a consequence, subnational governments are now facing what some observers describe as an infrastructure crisis.

APPENDIX

METHODOLOGY AND DATA SOURCES

Expenditures

This subsection of the Appendix describes the methods and data used in estimating the inflation indexes for expenditures for the years 1972 to 1977 and 1977 to 1982. Inflation index numbers were calculated in the general form:

$$I_t = \frac{\Sigma(P_{ti}/P_{oi})P_{oi}Q_{oi}}{\Sigma P_{oi}Q_{oi}}$$

where:

P = price per unit purchased
Q = quantity purchased
o = base year
t = any given later year
i = goods and service groups included

P_{ti}/P_{oi} = a price relative (i.e., the price of a good or service i in the current year t relative to its price in the base year o)

$\frac{P_{oi}Q_{oi}}{\Sigma P_{oi}Q_{oi}}$ = the base period expenditure weight (i.e., expenditure for goods and services in group i as a proportion of total expenditures in the base year o).

The expenditure data used in the construction of the inflation indexes are those reported in the U.S. Bureau of the Census, Census of Governments, Compendium of Government Finances for the years 1972 and 1977; as well as U.S. Bureau of the Census, Governmental Finances in 1981-82; City Government Finances in 1981-82; and County Government Finances in 1981-82. Personal Services and Transfer Payment Expenditures were directly reported in the above. Material Input Costs were derived by subtracting Personal Services and Fringe Benefits from current Operating Expenditures. Fringe

Benefit Expenditures for each level of government in 1972, 1977, and 1982 were estimated by applying the ratio of Fringe Benefit Expenditures to Personal Services (payroll) Expenditures for all state and local governments as given in the July issue of the Survey of Current Business to the Personal Service Expenditures of each level of government. Total Compensation Expenditures were derived by adding Payroll Expenditures to Fringe Benefit Expenditures.

For Material Input Expenditures, price relatives were estimated as the mean of WPI producer finished goods for nonmanufacturing industries and WPI intermediate supplies for nonmanufacturing industries. For the price relatives based on the WPI, the average annual indexes for 1972, 1977 and 1982 were used. Price relatives for personal services, fringe benefit and transfer payment costs are based upon the BLS Family Budget, Autumn 1972, 1977, and 1982 figures. The following sources were used: U.S. Bureau of the Census, Statistical Abstract of the United States: 1974 (93rd edition), Washington, D.C., 1974; Statistical Abstract of the United States: 1981 (102nd edition), Washington, D.C., 1981, and proxies to deal with discontinued data series.

For Table 5, the following proxy was used for the discontinued "Urban U.S. Budget" series from the Statistical Abstract:

$$\frac{FB_i}{PD_i} = P_i$$

where

FB_i = Family budget in year i (from Statistical Abstract)
PD_i = Price deflator in year i (from Survey of Current Business in year i + 2)
P_i = Proxy index in year i.

The proxy from 1977 (i) to 1981 (i+4) were computed. Then the annual average growth rate was derived for P_i, and this average was multiplied by P_{i+4} to obtain P_i+S. This number and the D_i were put into the equation above to obtain FB_{i+5}.

Revenues

This section of the Appendix describes the methods and data used in estimating the inflation indexes for own source revenues by level of government for the years 1972 to 1977 and 1977 to 1982.

Inflation indexes were constructed from disaggregated data and are of the form:

$$I = \frac{\Sigma\left(\frac{V_{ti}}{V_{oi}}\right) V_{oi}Q_{oi}}{\Sigma V_{oi}Q_{oi}}$$

where

V = value of taxable object
Q = quantity of taxable object
o = base year
t = any given later year
i = class of taxable object

$\frac{V_{ti}}{V_{oi}}$ = value relatives (i.e., the value of a taxable object i in the current year t relative to its value in the base year o)

$\frac{V_{oi}Q_{oi}}{\Sigma V_{oi}Q_{oi}}$ = the base weight (i.e., taxable object i's share of the total value of taxable objects in the base year o).

The remainder of this section identifies the data sources for the inflation indexes for own source revenue. The following format is employed for revenue subclasses and their price relatives. The title of each subclass appears on the left and the price relative used is in the column on the right, e.g., Residential Property, CPI; Shelter.

Property Tax

Data Sources and Procedures:

Inflation Index:

The inflation index used for state government property taxes was the inflation index for state assessed property. The inflation index for local government property taxes was determined by: weighting the index for real property by the percentage of locally assessed property that was real property, and then adding the personal property index, weighted by the percentage of locally assessed property that was personal property. The state and local government property tax inflation index was composed of the local government index, weighted by the percentage of property that was assessed locally, and the state government index, weighted by the percentage of property that was state assessed.

Real Property:

Inflation Index:

Weights	
All Types of Property	U.S. Bureau of the Census, Census of Governments 1972: Vol. 2, Part I, Taxable Property Values and Assessment-Sales and Price Ratios U.S. Bureau of the Census, Census of Governments 1977: Vol. 2, Taxable Property Values and Assessment-Sales and Price Ratios
Price Relatives	CPI; Shelter
Residential Property (nonfarm)	
Commercial	Boeckh Index Commercial and Factory
Industrial	Boeckh Index Commercial and Factory
Acreage and Farms	Farm Construction Except Housing Cost Index[1]
Other	Farm Construction Except Housing Cost Index

[1]This index was unavailable for 1977 and 1980, so an index was devised whereby the ratio of 1972 Farm Construction Except Housing-Cost Index/CPI Shelter was held constant for 1977 and 1982 yielding a surrogate index.

Personal Property:

Inflation Index:

Weights	
All Types of Personal Property	U.S. Bureau of the Census, Census of Governments, 1972; Vol. 2, Part I, Taxable Property Values and Assessment-Sales Price Ratios.
	U.S. Bureau of the Census, Census of Governments, 1977; Vol. 2, Taxable Property Values and Assessment-Sales Price Ratios.
Price Relatives	
Commercial and Industrial	WPI--Producers Finished Goods
Agriculture	WPI--Intermediate Materials and Supplies for non-manufacturing
Household	WPI--Consumer Finished Goods
Motor Vehicles	WPI (1411)--Motor Vehicles
Other	WPI--Industrial Commodities
Residual[1]	CPI--All Items

State Assessed Property:

Inflation Index:

Weights[2]	
All Types of Property	U.S. Bureau of the Census, Census of Governments, 1972; Vol. 2, Part I, Taxable Property Values and Assessment--Sales Price Ratios.
	U.S. Bureau of the Census, Census of Governments, 1977: Vol. 2, Taxable Property Values and Assessment--Sales Price Ratios.

[1]Personal Property values were not available for all states from the Census of Governments; a summation of the types of personal property yielded a percentage less than 100. The remaining unaccounted-for percentage was labeled "residual" and weighted by the CPI; all items.

[2]The percentage composition of state assessed property was not given in the 1977 Census of Governments, so the 1972 weights were utilized.

Price Relatives	CPI--Railroad Fares, Coach/ Intercity
Railroads	Train Fare
Other Public Utilities	CPI--Gas and Electricity
Other	CPI--All Items

General Sales Tax:
Data Sources and Procedures:

Inflation Index:

States were divided into three categories according to the general nature of the tax base; specifically, Medicine Exempt, Food and Medicine Exempt, Food and Medicine Taxable. The states were assigned to the three categories according to information obtained from these Advisory Commission on Intergovernmental Relations publications: State-Local Finances: Significant Features and Suggested Legislation: 1972 Edition (Washington D.C.: U.S. Government Printing Office, 1972) and Significant Features of Fiscal Federalism 1976-77 Edition, Vol. II (Washington, D.C.: U.S. Government Printing Office, 1977). The categories are then weighted by the percentage of total general sales tax collections by the state in these categories. This was done for state governments, and for the state with local governments having general sales tax powers.

Weights	
All Categories	U.S. Bureau of the Census, Census of Governments, 1977; Vol. 4, No. 5: Compendium of Government Finances.
	U.S. Bureau of the Census, State Government Finances in 1972.
	U.S. Bureau of the Census, State Government Finances in 1977.
	U.S. Bureau of the Census, Census of Governments, i.e., Census of Governments Documents 1972; Vol. 4, No. 5: Compendium of Government Finances.

Price Relatives	
Food and Medicine Taxable	CPI; All items
Medicine Exempt	CPI; All items less Medical Care Services
Food and Medicine Exempt	CPI; All items less Food Items and Medical Care Services

Alcoholic Beverages Tax:
Data Sources and Procedures:

Inflation Index:

The Alcoholic Beverage Tax Collections which were obtained from ad valorem type levy were weighted against the non-inflation sensitive flat rate alcoholic beverage levies, with the percentage of total tax collections used as the weights to be used in the construction of the index. The Alcoholic Beverage Tax Collections which were obtained from an ad valorem type levy were acquired from the following Advisory Commission on Intergovernmental Relations publications: State-Local Finances: Significant Features and Suggested Legislation; 1972 Edition and Significant Features of Fiscal Federalism, 1976-1977 Edition, Vol. II.

Weights	U.S. Bureau of the Census, Census of Governments, 1972; Vol. 4, No. 5: Compendium of Government Finances.
	U.S. Bureau of the Census, Census of Governments, 1977; Vol. 4, No. 5: Compendium of Government Finances.
	U.S. Bureau of the Census, State Government Finances in 1977.
Price Relative	CPI; Alcoholic Beverages.

Tobacco Products Tax:
Data Sources and Procedures:

Inflation Index:

The weights used in the construction of the index were the percentage amount of the total Tobacco Products Tax which were collected by ad valorem levies against those collected in a flat rate manner.

Weights	U.S. Bureau of the Census, Census of Governments, 1972; Vol. 4, No. 5: Compendium of Government Finances.
	U.S. Bureau of the Census, Census of Governments, 1977; Vol. 4, No. 5: Compendium of Government Finances.
	U.S. Bureau of the Census, State Government Finances in 1972.
	U.S. Bureau of the Census, State Government Finances in 1977.
Price Relative	CPI; Tobacco Products.

Public Utilities Tax:
Data Sources and Procedures:

Inflation Index:

Weights	Bureau of Labor Statistics, CPI Detailed Report. January 1973 (1978) "Relative Importance of Components in the Consumer Price Index, 1972 (1977."
	CPI; Residential Water and Sewerage Services
Price Relatives	CPI; Gas and Electricity

Insurance Tax:
Data Sources and Procedures:

Weights	Bureau of Labor Statistics, CPI Detailed Report, January 1973 (1978), "Relative Importance of Components in the Consumer Price Index, 1973 (1978)."
Price Relatives	CPI; Property Insurance CPI; Auto Insurance Rates

Amusement Tax:
Data Source:

Inflation Index:

Price Relative	CPI; Recreational Services

Corporation Income Tax:
Data Sources and Procedures:

Inflation Index:

Weights	Survey of Current Business, July 1973, July 1983, "Corporate Profits Before Tax by Industry."
Price Relatives	
Agriculture	WPI; Farm Products
Contract Construction	CPI; Housing
Manufacturing	WPI; Industrial Commodities
Wholesale and Retail Trade	CPI; All Items
Finance, Insurance and Real Estate	CPI; Other Services
Transportation	CPI; Transportation
Communications and Public Utilities	CPI; Utilities
Services	CPI; Services Less Rent
Mining and Rest of World	WPI; Industrial Commodities

Current Charges:

Data Sources and Procedures:

Inflation Index:

The Inflation Index for the current charges was obtained by weighting the expenditure inflation index for total personal, fringe and material costs (of the level of government in question) by the percentage of total charges for current services which were collected for the following functions: education, hospitals, sewers, and sanitation other than sewerage; against an index of the 1.00 for all other charges.

Weights	U.S. Bureau of the Census, Census of Governments, 1972; Vol. 4, No. 5, Compendium of Government Finances.
	U.S. Bureau of the Census, Census of Governments, 1977; Vol. 4, No. 5, Compendium of Government Finances.
Price Relatives	Expenditure Inflation Index calculated for the specified level of government.

Personal Income Tax:

Data Sources and Procedures:

Inflation Index:

Given the wide variations in the design of income tax systems across the states, it was necessary to calculate the impact of inflation on each state's income tax liabilities, and then to aggregate the impact of inflation on all states' receipts.

The impact of inflation on income was measured by the change in the BLS cost-of-living for Intermediate Level Budgets, from the autumn of the base year to the autumn of the terminal year. The BLS reports this data

for selected cities in each year. For each state, the index used was either: the change in COL in the Metropolitan Areas in states for which only one such area's data were reported; the mean of that change for any state in which more than one metropolitan area appeared; or, the change in the COL in a metropolitan area which was nearest to a state having no metropolitan areas in the BLS sample. Data on the distribution of income within each state was obtained from the Statistics of Income: Individual Income Tax Returns for each base year.

As with all taxes, the identification of the impact of inflation on revenues assumes an unchanged tax system. In this spirit, tax systems which were not indexed in 1972 (1977), but were indexed in the interim, were simulated for the entire period under the unindexed tax system.

The state personal income tax inflation indexes were computed by Richard McHugh. For a detailed explanation of his technique, see the National Tax Journal, Vol. XXXIV, No. 2, June 1981, pp. 193-206; especially Appendix B, pp. 203-204.

For Table 11, it was necessary to develop a proxy to be used in computation of the personal income tax. The "Intermediate Level Budget, Urban U.S.," by the BLS was discontinued. The average annual growth rate for the discontinued data series and Personal Income (as defined in the Survey of Current Business) were calculated and reduced to a ratio. The increase for Personal Income in 1982 was converted, through the ratio, to the proxy increase for the "Budget." This proxy was multiplied by the 1981 "Budget" to get the projected increase for 1982, which was then added to the 1981 figure to get the 1982 proxy.

Personal Income Tax--All Local Governments:
Data Sources and Procedures:

Inflation Index:

The inflation index of the income tax of local governments was calculated on the assumption that inflation has no impact on the average tax rate. The impact of inflation on income was measured by the change in the BLS cost-of-living for Intermediate Level Budgets, Urban U.S., from the autumn of the base year to the autumn of the terminal year.

Miscellaneous General Revenue:
Data Sources and Procedures:

Inflation Index:

The inflation Index for Miscellaneous Revenues was obtained by weighting the consumer price index for all items less food by the percentage of total miscellaneous revenues obtained from the sale of property; by weighting interesting earnings by an index of the three month Treasury bill rate on new issues; and by weighting all other miscellaneous revenue sources by an index of 1.00.

Weights	U.S. Bureau of the Census, Census of Governments, 1972; Vol. 4, No. 5, Compendium of Government Finances.
	U.S. Bureau of the Census, Census of Governments, 1977; Vol. 4, No. 5, Compendium of Government Finances.
Price Relatives	CPI; all items less food three month Treasury bill rate on new issues.