Cletus C. Coughlin
and Thomas B. Mandelbaum

Cletus C. Coughlin is a senior economist and Thomas B. Mandelbaum is an economist at the Federal Reserve Bank of St. Louis. Thomas A. Pollmann provided research assistance.

Have Federal Spending and Taxation Contributed to the Divergence of State Per Capita Incomes in the 1980s?

FROM THE EARLY 1930s through the late 1970s, per capita incomes rose faster in low-income than high-income states, resulting in a substantial reduction in the inequality of state per capita income. This trend, however, has been reversed in the last decade (figure 1).[1] Per capita income inequality has risen gradually since 1978 and, by 1987, had returned to the levels prevailing in the mid-1960s.[2]

Historically, the federal government's fiscal policies have been linked to regional disparities in economic growth. During the 1970s, for example, it was alleged that federal spending had been biased in favor of the Sun Belt at the expense of the Frost Belt, resulting in more rapid Sun Belt growth and slower Frost Belt growth.[3] Given the levels of income in these two regions, this growth differential reduced income inequality across states. Two recent studies argue, however, that the distribution of grants-in-aid and procurement has shifted toward the New England and mid-Atlantic regions.[4] Such redistri-

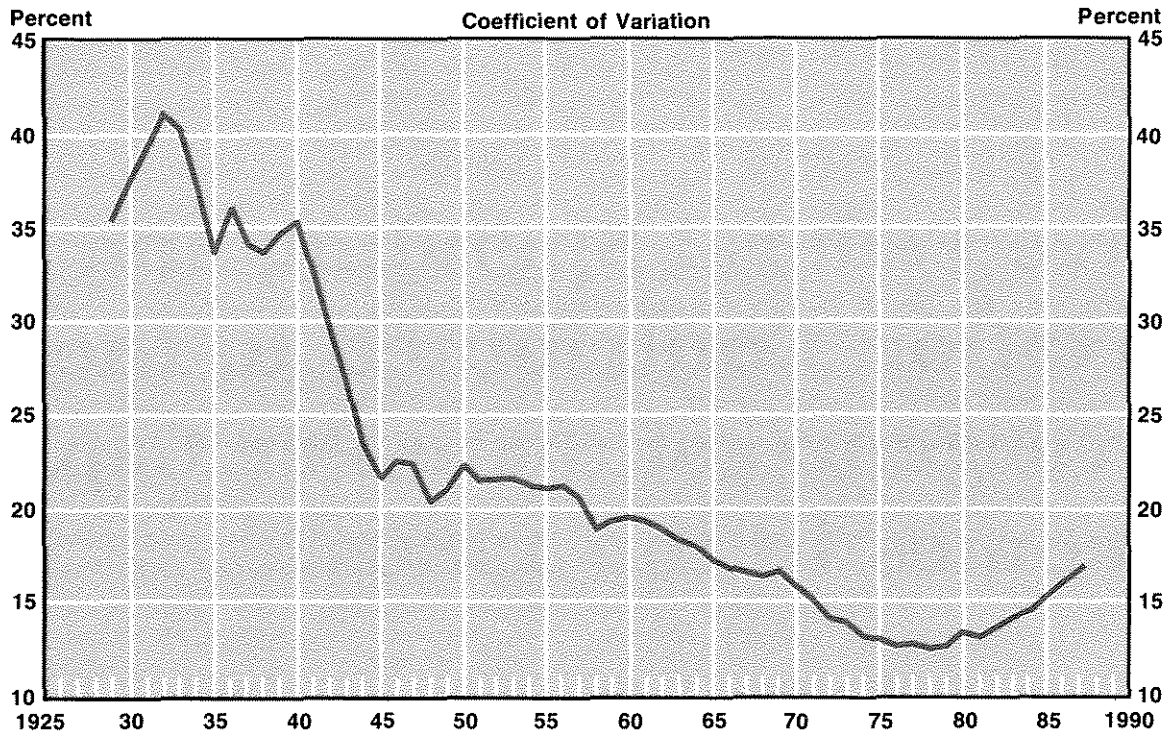
[1]The measure of income inequality used in this article is the coefficient of variation of annual state per capita income across the 48 contiguous states. For each year, the measure indicates the degree of dispersion of state per capita incomes about the mean state per capita income. Because we consider the state to be the appropriate unit of observation, each state is weighted equally in computing the inequality measure. However, Coughlin and Mandelbaum (1988), p.28, found this unweighted coefficient of variation to be closely correlated with a population-weighted coefficient of variation, and also closely correlated with another commonly used measure of inequality, the standard deviation of the ratio of regional to national per capita income.

[2]Ray and Rittenoure (1987) and the U.S. Department of Commerce (1988) document the rise of per capita income inequality between U.S. Census regions since 1979, while Coughlin and Mandelbaum (1988) show interstate income inequality has increased since 1978. Ray and Rittenoure (1987) concluded that changes in energy prices, agricultural prices and world trade patterns contributed to the increasing regional income inequality, while Coughlin and Mandelbaum (1988) concluded that changes in energy prices have contributed to the rise in inequality but that the farm crisis did not.

[3]See, for example, "The Second War Between the States (1977)" and "Federal Spending: The Northeast's Loss is the Sunbelt's Gain (1976)."

[4]See Weinstein and Wigley (1987) and Gross and Weinstein (1988).

Figure 1
Inequality of State Per Capita Income



bution could potentially increase income inequality by stimulating growth in relatively high-income states at the expense of growth in low-income states.[5]

Whether the rising inequality of state per capita income is really due to changes in federal spending and taxation is an unsettled issue, chiefly because there has been no thorough analysis of the effects of changes in the distribution of federal spending and taxation on state income inequality. In this study, we demonstrate that while the distribution of transfer payments and the federal tax burden alters the degree of inequality, no major changes in this relationship have occurred in the 1980s. Next, we describe and analyze the flow of funds between the states and the federal government. Changes in the size and distribution of these flows do not appear to have been a cause of the increasing inequality.

HAVE FEDERAL PERSONAL TAXES AND TRANSFERS AFFECTED INEQUALITY?

The income measure used in calculating the inequality measure (that is, the coefficient of variation) in figure 1 is total personal income. Total personal income is the sum of: 1) net earnings which are total earnings less personal contributions to social insurance, by place of residence; 2) dividends, interest and rent and 3) transfer payments, which are primarily Social Security and Medicare payments. The relative shares of these categories in terms of total per-

[5]Fierce competition among states for federally funded projects, such as the superconducting supercollider, suggests the importance of federal expenditures to state economies. Competing states spent millions of dollars preparing site studies and public relations campaigns to attract the $4.4 billion facility. Texas, which was awarded the supercollider in November 1988, offered $1 billion in bonds and services to persuade the U.S. Department of Energy that it should be chosen. See "U.S. Picks Small Town" (1988).

sonal income for 1969, 1978 and 1987 are listed in table 1. The share of net earnings declined from 77.4 percent in 1969 to 68.7 percent in 1987. Meanwhile, the shares of both dividends, interest, and rent and transfer payments increased.

Table 1 also shows two factors, personal contributions for social insurance and federal personal taxes, that are used below to adjust total personal income. Personal contributions for social insurance are subtracted from total earnings in computing total personal income. As a percentage of total personal income, these contributions rose from 3.4 percent in 1969 to 4.5 percent in 1987. Federal personal taxes, which include individual income, estate and gift taxes, declined from 12.3 percent of total personal income in 1969 to 10.8 percent in 1978, then exhibited little change in the 1980s. They represented 10.7 percent of total personal income in 1987.

To examine how personal taxes and transfers relate to the interstate inequality of per capita income, we compare the inequality (that is, the coefficient of variation) of total personal income with the inequality of income, assuming no federal taxes and no transfer payments exist. The latter measure of income, which we call private income, is derived by subtracting transfer payments from total personal income and adding personal contributions for social insurance. Thus, private income is the sum of total earnings and dividends, interest and rent.

Figure 2 reveals two noteworthy facts about the inequality of private income. First, its trend, generally decreasing through the late 1970s and increasing thereafter, is similar to the trend in the inequality of total personal income. Second, its level is consistently higher than the inequality of total personal income. This suggests that the combined effect of transfer payments and personal contributions for social insurance is to reduce income inequality.

Figure 2 also reveals that nearly all of the difference between the inequality of private income and that of total personal income can be accounted for by transfer payments. The addition of transfer payments to private income produces an inequality measure virtually identical to the inequality of total personal income. Consequently, the effect of contributions for social insurance programs (that is, Social Security, Medicare and unemployment insurance) on interstate per capita income inequality is negligible. Since most contributions for social insurance are proportional to earnings up to some maximum, this finding is not surprising.

Table 1

Income Components and Taxes as a Percent of U.S. Total Personal Income

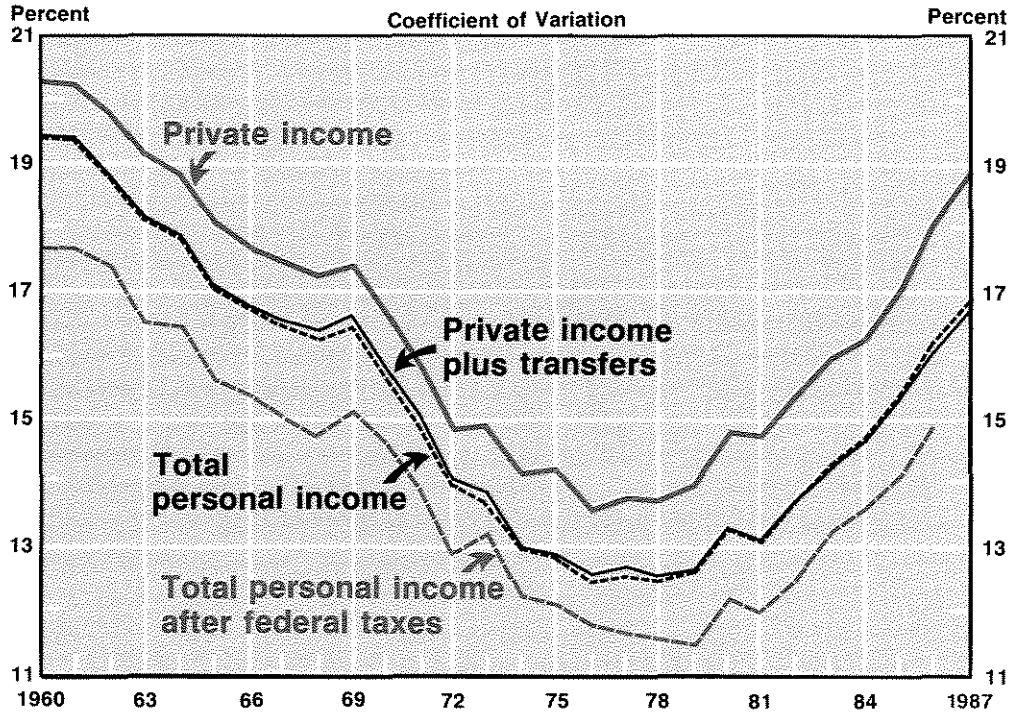
	1969	1978	1987
Components of total personal income			
Net earnings[1]	77.4%	73.4%	68.7%
Dividends, interest and rent	13.3	13.0	16.7
Transfer payments	9.3	13.6	14.6
Personal contributions for social insurance	3.4	3.8	4.5
Federal personal taxes	12.3	10.8	10.7

[1]Wage and salary disbursements, other labor income and proprietors' income minus personal contributions for social insurance.

Another factor that has potentially important implications for inequality is federal personal taxes. As figure 2 shows, the coefficient of variation of per capita state income after subtracting federal personal taxes increased at a rate similar to the other inequality measures since the late 1970s. The direct impact of federal taxation can be seen by the consistently lower level of income inequality after federal taxes are subtracted. The lack of a major change in the gap between the inequality measures before and after taxes suggests that changes in the distribution of federal personal taxes in the 1980s have not altered interstate income inequality substantially.

In summary, while the interstate distributions of the federal personal taxes and transfer payments have consistently reduced income inequality, they have had little effect on the change in inequality. Contributions for social insurance have had no substantial influence on either the level or the change in interstate income inequality. Thus, the evidence suggests that the increase in income inequality over the last 10 years is not due to changes in the

Figure 2
Interstate Inequality of Per Capita Income Measures



NOTE: The figure shows the coefficient of variation for four income measures. Total personal income is transfer payments, dividends, interest, rent and total earnings minus social insurance contributions. Private income is total personal income plus social insurance contributions minus transfer payments. Private income plus transfers is total personal income plus social insurance contributions. Total personal income after federal taxes is total personal income minus federal personal taxes.

distribution of transfer payments, social insurance contributions or federal personal taxes.[6]

FEDERAL FLOW OF FUNDS

The preceding analysis focuses on components of income that, in an accounting sense, can be either added or subtracted to produce different income measures. While this analysis is informative, federal fiscal policy entails numerous tax and spending programs that preclude a straightforward accounting analysis and that may have major income effects at the state level. These include federal corporate income taxes, excise taxes, federal grants to state and local governments and procurement contracts. This section considers the effects of the broader flows of funds between the federal government and the various economic actors in states including state governments, local governments, individual residents and corporations.

The flow of federal funds to and from a state is usually calculated as a ratio of a state's share of total federal expenditures to its share of total payments made to the federal government.[7] If the ratio is greater than unity, the state receives

[6]While the method used in this section suggests the direct impact that the distribution of transfer payments, social insurance contributions and federal personal taxes have on income inequality, it has limitations. If transfer payment programs or federal taxes actually were eliminated, shifts in production, consumption and investment eventually would take place that might lead to changes in interstate income inequality unlike those indicated in figure 2.

[7]Advisory Commission on Intergovernmental Relations (1980), Erdevig (1986), and Rymarowicz (1988), for example, use this ratio in examining the flow of federal funds to states.

a greater share of the national total than it pays to the federal government, a condition thought to stimulate the state's economy and raise per capita income. Conversely, a ratio less than one suggests a drain of state funds that potentially dampens the state's economic activity. See the shaded insert for a more complete explanation of how the federal funds ratio was calculated, what expenditures and tax payments are included and how the data were estimated.

The Conventional Wisdom: Economic Effects of Federal Funds

A larger federal funds inflow can stimulate regional economic growth by augmenting a region's productive capacity and by stimulating technological advances. Federal spending, such as defense procurement expenditures, may contribute directly to the stock of physical capital. Federal spending for educational programs may contribute to the growth of human capital. The case for federal spending stimulating technological advances is frequently illustrated by examining defense spending. In California and New England, generally acknowledged as leading innovation centers, defense spending is frequently said to have induced significant amounts of commercial innovation.[8] The importance of federal expenditures in adding to the capital stock and promoting technological advances across states has not been studied widely, however, so the final distribution of effects from federal funds flows, especially on state per capita income, remains uncertain.[9]

Even though a change in a state's federal funds flow has potential effects on its productive capacity, any discussion of the impact of the federal funds flow usually focuses on the demand side of a state's economy. If tax payments to the federal government were lower, a state's residents and businesses would retain more income that could be spent locally on consumption and investment goods or could be used to finance state and local government services. Similarly, the argument is made that higher federal expenditures in the state would directly boost state income and employment.[10]

For these reasons, a higher federal flow of funds ratio for a state is thought to be more stimulative than a lower one, other things equal.[11] In addition, this measure and its components (federal expenditures, federal tax payments) are the only available indicators of the comprehensive influence of the federal government on state economies and continues to be used by policymakers and researchers in evaluating how federal spending and taxes affect various states and regions.[12]

The following analysis of the association between federal fiscal policies and the increasing divergence of state per capita incomes proceeds in two steps. First, simple correlations of state per capita income with the federal funds ratio are discussed. Second, using a categorization of states according to how their growth rates and levels of per capita income affected the degree of inequality in the 1980s, we examine how federal fiscal policies have changed between 1981 and 1987 for states within these categories.

Federal Funds Ratio

Table 2 reports simple correlations of state per capita income with a state's federal funds ratio for the 12 periods for which data are

[8]Barff and Knight (1988) argue that increasing federal military spending starting in the late 1970s precipitated New England's economic upturn. Browne (1988) found that, while defense spending apparently spurred commercial high-tech development in Massachusetts and California, the experience of these states is unique. More generally, she found that defense spending in a state has had little effect on commercial innovation and high-technology development.

[9]Research on the impact of defense procurement on regional per capita income has yielded mixed results. Rees, et al. (1988) p.17, conclude that slower growth rates of defense procurement in the Sun Belt states compared with other regions during the 1980s was a causal factor in that region's slower per capita income growth. The validity of this conclusion is questionable, however, because no controls were made for other influences on regional per capita income growth. Bolton (1966), p. 14, found a positive, though weak, relationship between defense spending and state income growth between 1952 and 1962 but no relationship between defense spending and state per capita income growth in the same period.

[10]The openness of a state's economy tends to reduce these effects. Although lower federal taxes or higher federal expenditures leaves more income in the hands of state residents, a portion of these funds are spent for goods and services from outside the state. For example, defense procurement contracts are credited to the state in which the bulk of production is located, but some of this production is subcontracted to other parts of the nation.

[11]Advisory Commission on Intergovernmental Relations (1980), pp. 82-83, reported a positive relationship between a state's flow-of-funds balance and its per capita income growth between 1950 and 1975.

[12]See, for example, Advisory Commission on Intergovernmental Relations (1980), Erdevig (1986), Rymarowicz (1988), Weinstein and Wigley (1987) and Northeast-Midwest Institute (1988).

What Do Federal Flow of Funds Data Measure?

The federal funds ratio (FF) compares the federal expenditures received by those in a state in a given fiscal year with their federal tax payments. Ratios of each state's share of national expenditures to its share of tax payments are used rather than each state's levels. For a given fiscal year, the federal funds ratio is calculated as follows:

$$FF_s = [(FE_s/FE_n) / (TP_s/TP_n)] \times 100,$$

where the subscripts s and n denote an individual state (48 contiguous states) and the continental U.S. total, respectively. FE refers to federal expenditures made in states and TP refers to tax payments to the federal government. If a state has a FF greater than (less than) 100, it receives a greater (smaller) proportion of the nation's expenditures than it pays in federal taxes.

Percentage shares, rather than levels, are used in computing the ratio to minimize distortions caused by changes in data coverage in different years. Expenditures data for years before 1969, for example, include payments on the national debt to states by the federal government whereas these payments are excluded in more recent data.[1] By using shares of national totals, each state's expenditures and payments are more comparable than if levels were compared. Also, considering ratios of shares ensures that the national ratio equals 100, eliminating confusion due to the gap between expenditures and tax payments. The analysis excludes the District of Columbia, Hawaii and Alaska because of their unique relationship to the federal government.

Tax Payments

Tax payments include personal income taxes, corporation income taxes, excise taxes and social insurance taxes and contributions. Social insurance taxes and contributions include Social Security, railroad retirement, federal and unemployment insurance taxes. The table shows the relative size of each of the major components in fiscal year 1987. Individual income taxes and social insurance contributions account for more than four-fifths of the total. Individual income and corporation income taxes have declined slightly in relative size during the 1980s, while social insurance contributions have increased 5 percentage points since 1980 to 35.5 percent in 1987.

To allocate tax liability by state, estimates from the Tax Foundation, Inc. (1988) were used.[2] Individual income taxes were distributed among the states according to a state's actual tax liability for the most recent prior tax year available, adjusted by changes in personal income by place of residence. Corporation income taxes were based on the distribution of personal income (50 percent) and property income (50 percent). Excise taxes were based on consumption and population data. Most of the social insurance taxes were distributed by the distribution of personal income and personal contributions for social insurance and unemployment insurance taxes.

Federal Expenditures

As shown in the table, federal expenditures distributed by state included 81.6 percent of the approximately $1 trillion in federal government outlays for fiscal year 1987. Of the federal expenditures that the U.S. Department of Commerce (1988) was unable to distribute among states, the largest category was net interest payments on the national debt. Of the procurement contracts not distributed by state, most were defense contracts of less than $25,000.

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[1]Federal expenditure and tax payment data for the years prior to 1981 were from Advisory Commission on Intergovernmental Relations (1980). Later data were from U.S. Department of Commerce (1988), Tax Foundation, Inc. (1988) and for defense contract data, from U.S. Department of Defense (various years).

[2]Long and Settle (1982) found that the estimates from the Tax Foundation were "reasonably accurate indicators of the true distribution of financing burdens" (p. 459) and that, of the several methods tested, the Tax Foundation methodology minimized overall estimation error (p. 453). See Tax Foundation, Inc. (1988) for more detail concerning the methodology.

Federal Taxes and Outlays, Fiscal Year 1987

	Level (billions)	Percent Composition
Tax Payments (Receipts)	$ 854.1	100.0%
Individual income taxes	392.6	46.0
Corporation income taxes	83.9	9.8
Excise taxes	32.5	3.8
Other	41.9	4.9
Social insurance taxes and contributions	303.3	35.5
Total Federal Outlays	$1,003.8	100.0%
Net interest	138.6	13.8
Distributed to territories	7.3	0.7
Procurement contracts not distributed	19.5	1.9
Other outlays not distributed by state	19.6	2.0
Expenditures distributed by state	818.8	81.6
Direct payments	380.1	37.9
Procurement contracts	176.2	17.6
Defense department	132.5	13.2
Other	43.7	4.4
Salaries and wages	125.9	12.5
Grants to state and local governments	104.0	10.4
Other programs	32.6	3.2

Direct payments to individuals was the largest category of federal expenditures distributed by state. Most direct payments were for Social Security or Medicare. Three-fourths of procurement contracts, the next-largest category, were awarded by the Department of Defense. The Defense Department was also responsible for approximately half of all federal salaries and wages distributed among the states in 1987. The largest programs among grants to state and local governments in 1987 were Medicaid ($27.2 billion), the Highway Trust Fund ($11.2 billion) and Aid for Dependent Children ($10.5 billion). Almost half of the "other programs" category consisted of farm subsidy payments.

The Commerce Department was able to allocate federal expenditures among the states through reports from federal government executive departments and agencies. Procurement contracts are distributed according to the primary place of performance rather than the place of the prime contractor, but no adjustment is made for work performed in other states by subcontractors. Direct payments were allocated to the state in which the recipient resided, while salaries and wages reflect the state of employment.

available. A positive association, indicating that higher (lower) income states had larger (smaller) federal funds ratios, would be consistent with a federal tax and expenditure system that is contributing to divergent state incomes. The results indicate, however, a statistically significant negative association for all periods, suggesting that federal funds flow from higher to lower per capita income states.

It is possible, however, that federal fiscal policy could have contributed to the rising inequality if the degree of redistribution diminished in the 1980s. The evidence does not sup-

Table 2

Correlation Coefficients: State Per Capita Income with Various Fiscal Policy Measures

Year	Federal funds ratio	Expenditures[2]	Defense contracts[3]
1952	−0.64*	0.49*	
1959	−0.49*[1]	0.45*[1]	
1964			0.47*
1965	−0.62*[1]	0.15[1]	0.46*
1966			0.47*
1967			0.49*
1968			0.47*
1969	−0.60*[1]	0.29*[1]	0.47*
1970			0.43*
1971			0.42*
1972			0.36*
1973			0.38*
1974	−0.58*[1]	0.17[1]	0.35*
1975			0.33*
1976			0.29*
1977			0.30*
1978			0.30*
1979			0.34*
1980			0.38*
1981	−0.46*	0.32*	0.42*
1982	−0.45*	0.34*	0.46*
1983	−0.45*	0.37*	0.49*
1984	−0.46*	0.33*	0.53*
1985	−0.48*	0.34*	0.57*
1986	−0.58*	0.28	0.59*
1987	−0.57*	0.26	0.60*

[1]1959, 1965, 1969 and 1974 refer to three-year periods ending in years listed.

[2]Expenditures are per capita by state.

[3]Data are per capita by state and moving averages for the three years ending in year listed.

*Significantly different than zero at 0.05 significance level.

port such a conclusion. Rather than declining during the 1980s, the correlation coefficients in 1986 and 1987 are higher (in absolute value) than for the early 1980s and are roughly equal to earlier periods when the level of interstate per capita income inequality was declining.

For a closer examination of the distribution of federal funds in those states most responsible for the increasing per capita income inequality in the 1980s, we use a classification of states developed in an earlier article. The classification, presented in table 3, groups states according to their per capita income change between 1978 and 1987 and whether these changes tended to raise or lower per capita income inequality.[13] Ten states with above-average per capita income in 1978 experienced substantially faster growth between 1978 and 1987 than the average. We call these states "upwardly divergent." Ten states with below-average per capita income that experienced substantially slower growth than the average are called "downwardly divergent."

We have also identified 10 states whose income changes tended to reduce inequality. Four were states whose per capita incomes were below the average across states in 1978, but which have grown much faster than this average since then. These states are called "upwardly convergent." Six "downwardly convergent" states had per capita incomes above the average across states in 1978, but grew much slower than the average and thus contributed to reduced inequality. Finally, 18 states had relative per capita incomes that changed less than 5 percentage points between 1978 and 1987 and, therefore, had little effect on the recent changes in inequality.

We use these classifications to explore how the federal funds ratio has changed between 1981 and 1987 and whether the change is consistent with rising income inequality. The discussion will focus on federal funds flows in those 20 states in the two "divergent" groups because they were primarily responsible for the increase in inequality in the 1980s.

Table 3 reveals that the average federal funds ratio fell between 1981 and 1987 in upwardly divergent states (from 107.2 percent of the national average to 96.5 percent) and rose in downwardly divergent states (from 111 percent to 127.1 percent).[14] Neither of these changes is

[13]The footnotes in table 3 present the criteria for categorizing the states. See Coughlin and Mandelbaum (1988) for a more extensive explanation of the classification.

[14]Excluding New Mexico, in which extremely high levels of Energy Department contracts distort the data, the average federal funds ratio for downwardly divergent states rises from 102.6 percent of the U.S. average in 1981 to 119.7 percent in 1987. New Mexico received the highest per capita level of non-Defense Department procurement contracts of any state primarily because of the presence of the U.S. Department of Energy's Los Alamos and Sandia Research Laboratories. Since a portion of the funds go to subcontractors in other states besides New Mexico, the expenditure data probably overstate the amount spent in New Mexico.

Table 3

Federal Tax Payments and Expenditures by State

	Federal funds ratio		Per capita expenditures[1]		Per capita payments[1]		Per capita defense contracts[1,2]	
Upwardly Divergent[3]								
	1981	**1987**	**1981**	**1987**	**1981**	**1987**	**1981**	**1987**
Connecticut	105	83	134	124	128	148	389	301
Massachusetts	112	103	116	127	103	123	196	258
New Jersey	74	63	88	88	119	139	69	81
New Hampshire	99	75	96	84	97	111	101	95
New York	94	83	100	99	106	118	97	99
Virginia	146	154	141	155	97	101	180	199
Maryland	122	127	136	149	111	118	134	185
Rhode Island	111	101	109	102	98	101	72	80
Delaware	91	74	101	83	111	112	94	64
Florida	118	102	104	101	88	99	70	85
Group Average	107.2	96.5	112.5	111.2	105.8	117.0	140.2	144.7
Downwardly Divergent[4]								
Idaho	106	130	82	93	78	71	9	9
Montana	101	134	90	104	89	78	16	19
Louisiana	115	103	97	77	85	75	89	63
Utah	124	146	91	99	74	68	60	97
North Dakota	103	162	92	130	90	81	36	51
West Virginia	108	120	85	82	79	68	13	8
Oklahoma	99	106	91	90	92	85	46	35
Indiana	74	89	75	78	101	87	75	86
New Mexico	187	194	150	143	80	74	71	66
Texas	93	87	90	83	96	95	118	108
Group Average	111.0	127.1	94.3	97.9	86.4	78.2	53.3	54.2
Upwardly Convergent[5]								
Georgia	112	103	88	90	78	88	52	105
Maine	132	126	98	101	74	80	118	121
Vermont	111	92	88	79	79	85	76	44
North Carolina	99	93	76	76	76	81	35	30
Group Average	113.5	103.5	87.5	86.5	76.8	83.5	70.3	75.0
Downwardly Convergent[6]								
Wyoming	115	100	128	92	111	91	31	31
Nevada	96	97	104	100	108	103	24	31
Oregon	79	94	79	81	100	86	17	16
Iowa	70	105	69	88	99	84	30	36
Michigan	71	71	80	74	113	104	54	46
Washington	109	114	119	113	109	100	155	121
Group Average	90.0	96.8	96.5	91.3	106.7	94.7	51.8	46.8

(continued on next page)

Table 3 (cont'd)

Federal Tax Payments and Expenditures by State

	Federal funds ratio		Per capita expenditures[1]		Per capita payments[1]		Per capita defense contracts[1,2]	
No Substantial Change[7]								
Illinois	67	71	79	78	119	110	25	26
Ohio	79	89	82	85	103	95	50	80
South Dakota	116	154	92	110	79	71	14	21
Kentucky	102	114	81	81	80	71	22	23
Mississippi	161	164	103	97	64	59	110	95
Nebraska	83	112	81	98	98	87	19	24
Arkansas	122	131	86	89	70	68	18	59
Wisconsin	79	81	77	74	98	91	28	37
Kansas	89	106	94	103	106	97	99	130
Pennsylvania	93	96	93	93	100	97	54	61
Alabama	129	137	96	100	74	73	50	67
Colorado	101	109	101	109	100	100	63	113
Missouri	128	130	123	121	96	93	221	225
Arizona	118	124	101	108	85	88	93	142
California	104	97	115	106	111	110	177	180
South Carolina	124	124	88	89	71	72	34	27
Tennessee	118	116	95	92	80	80	33	35
Minnesota	83	92	83	91	100	99	77	100
Group Average	105.3	113.7	92.8	95.8	90.8	86.7	65.9	80.3

[1]Figures are indexed relative to a continental U.S. average of 100.

[2]Three-year moving average. Data for 1981 refers to three years through 1981, while 1987 figures are averages for 1985-87.

[3]States with above-average per capita income in 1978 and with a 5 or more percentage-point increase in per capita income as a percent of the state average. For Rhode Island, a state with below-average per capita income in 1978 and above-average per capita income in 1987, the rise in relative income resulted in the state's income absolutely further from the average in 1987 than in 1978.

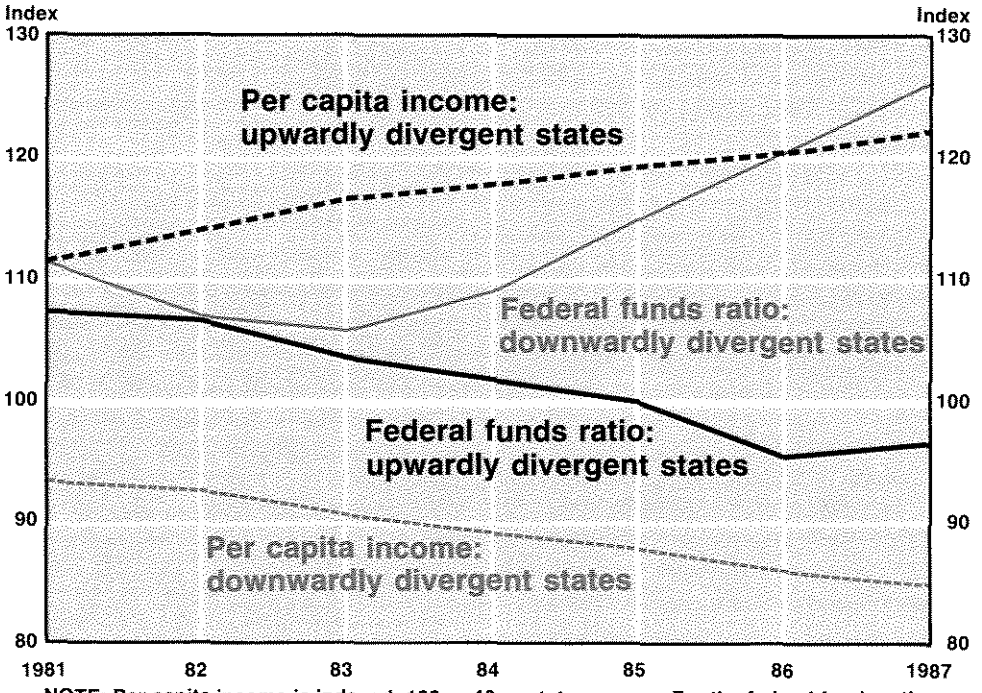
[4]States with below-average per capita income in 1978 and with a 5 or more percentage-point drop between 1978 and 1987 in state per capita income as a percent of the state average. For Indiana and Texas, states with above-average income in 1978 and below-average income in 1987, the drops resulted in the states' being absolutely further from average per capita income in 1987 than in 1978.

[5]States with below-average per capita income in 1978 and with a 5 or more percentage-point increase between 1978 and 1987 in state per capita income as a percent of the state average.

[6]States with above-average per capita income in 1978 and with a 5 or more percentage-point decline between 1978 and 1987 in state per capita income as a percent of the state average. For Wyoming, Oregon and Iowa, states with above-average per capita income in 1978 and below-average per capita income in 1987, the drop resulted in per capita income closer to the state average in 1987 than in 1978.

[7]States whose absolute percentage-point change in per capita income as a percent of the states was less than 5 percent between 1978 and 1987.

Figure 3
Per Capita Income and Federal Funds Ratios in Divergent States



NOTE: Per capita income is indexed, 100 = 48 – state average. For the federal funds ratio, 100 indicates that the share of federal expenditures received equals the share of federal taxes paid.

consistent with the hypothesis that changes in the distribution of federal expenditures and taxes have contributed to rising inequality. To be consistent with rising inequality, the federal funds ratios of upwardly divergent states would have risen, while that of downwardly divergent states would have fallen. In the upwardly divergent states, a rising federal funds ratio would have contributed to the relatively faster growth of these high-income states, resulting in greater inequality in per capita income. In the downwardly divergent states, a falling federal funds ratio would contribute to these states' relatively slow growth.

Figure 3 clearly shows the differing trends of the average federal funds ratio and per capita income in the two divergent groups of states. For the upwardly divergent states, the decline of the average federal funds ratio contrasts with the steady increases in per capita incomes. In downwardly divergent states, the federal funds ratio rose sharply since 1983, while per capita income fell relative to the state average.

Figure 3 also shows that the federal funds ratio is consistently higher in the downwardly divergent than in the upwardly divergent states. This is consistent with the negative correlations between state per capita income and the federal funds ratios indicating that states with lower per capita income tended to benefit more from the overall federal spending and taxation patterns than high per capita income states.

These findings suggest that neither the levels of, nor changes in, the overall flow of federal funds contributed to the divergence of state per capita incomes through their effects on the divergent states. In conjunction with the more general finding of consistently negative correlations between the federal funds ratio and state per capita income, this evidence suggests that, if it had any impact on per capita income growth,

changes in the distribution of the federal funds flow reduced, rather than increased, per capita income inequality in the 1980s.

Federal Expenditures in States

Much of the concern about federal policies that influence state economies involves the distribution of federal expenditures rather than the pattern of federal funds flows or the burden of federal taxes. The interstate distribution of federal spending, particularly defense spending, is seen as more discretionary than the federal tax burden. Although changes in the overall flows of federal funds among states do not appear to have contributed to the increasing inequality in the 1980s, it is still possible that federal expenditures were disproportionately spent in high-income states and contributed to increasing per capita income inequality.

Simple correlations between state per capita income and per capita federal expenditures received in a state are reported in table 2. The consistently positive correlations indicate that states with higher per capita incomes tended to receive higher per capita federal expenditures. During the 1980s, however, the evidence suggests that this relationship, if it has changed at all, has weakened. In fact, for 1986 and 1987, the positive association is not statistically significant at the 0.05 significance level.

Doubts about federal spending contributing to divergence are heightened when the states are categorized by their contributions to rising inequality. Table 3 shows that, on average, the share of federal expenditures received by upwardly divergent states declined slightly from 112.5 percent of the national average in 1981 to 111.2 percent in 1987. The direction of this change does not suggest that changes in spending patterns contributed to increases in inequality. Per capita expenditures fell slightly, while per capita income was growing rapidly. In downwardly divergent states, the direction in the change of shares is also inconsistent with rising inequality: average per capita expenditures rose from 94.3 percent of the national average in 1981 to 97.9 percent in 1987.[15]

While per capita expenditures were above the national average in upwardly divergent states in both 1981 and 1987, these expenditures were offset by relatively high tax payments. Thus, if one is willing to disregard the consistently high federal tax outflows made by these high-income states, it follows that high levels of federal spending in upwardly divergent states contributed to interstate income inequality in a particular year. The comparatively low per capita federal expenditures received by the downwardly divergent states also were offset by low outflows of federal tax payments.[16]

Defense Procurement Contracts

While the evidence that federal expenditures as a whole contributed to rising inequality is negligible, there is another possibility. Assuming that different expenditures have different effects on growth, changes in the distribution of certain categories of expenditures may have contributed to rising inequality. Among the major categories of federal spending, only defense contracts are significantly linked to the level of state per capita incomes.[17] The potential impact of federal procurement contracts on interstate income inequality has been magnified by their rapid growth. Procurement has been a rapidly growing component of those federal expenditures distributed among states, expanding at a 6.9 percent annual rate between 1981 and 1987,

[15]In both years, the extremely high expenditures in New Mexico raised the average of downwardly divergent states. Nonetheless, excluding New Mexico does not alter the fact that the share of per capita expenditures in these states rose between 1981 and 1987. If New Mexico is excluded, per capita expenditures in downwardly divergent states averaged 88.1 percent and 92.9 percent of the national figures in 1981 and 1987.

[16]Correlation coefficients indicate a close relationship between per capita income and per capita federal tax payments. The correlation coefficients across the 48 states were high, positive and statistically significant for each of the 12 periods since 1952 for which data were available. In addition, the results suggest that the relationship has not changed substantially during the 1980s, as correlations ranged from 0.94 in 1981 to 0.98 in 1987.

[17]No significant correlations (0.05 significance level) were found between annual state per capita incomes and the other components of federal spending (per capita grants, per capita salaries and wages and per capita direct payments) for any period since 1972. The lack of systematic relationships between state per capita incomes and federal grants-in-aid suggests that the positive relationship between a region's federal grants-in-aid and its per capita income discussed by Gross and Weinstein (1988) and Weinstein and Wigley (1987) does not exist at the state level. Our finding, however, is consistent with the results of a study by the U.S. Department of the Treasury (1985), pp. 197-202, which found no statistically significant relationship between state per capita income and per capita grants-in-aid for 1983.

compared with 6.3 percent for total federal expenditures. The rapid defense build-up during the Reagan administration was largely responsible for the increase in procurement.

Evidence suggests that the distribution of defense contracts may have increased interstate inequality since 1978. Simple correlations for each period between 1964 and 1987 of state per capita income with state per capita defense contracts are reported in table 2.[18] The positive association for each period suggests that high-income states receive above-average amounts of defense contracts, which is consistent with defense spending contributing to divergence. The association has tended to strengthen since the mid-1970s, a fact that suggests the 1980s are a continuation of a longer trend.

As table 3 shows, the average of per capita defense contracts in upwardly divergent states was well above the national average during both periods and increased from 140.2 percent in 1981 to 144.7 percent in 1987. This increase, however, is relatively less rapid than the income growth of these states. The upwardly divergent states are far from homogeneous, as about half of the states received below-average levels during both periods.

On the other hand, table 3 shows that nine of the 10 downwardly divergent states received below-average defense procurement contracts in the three-year periods ending 1981 and 1987. Per capita defense contracts in downwardly divergent states averaged slightly more than half of the national average. More importantly, the share of these states changed little between 1981 and 1987, a fact suggesting no change in the effect of defense spending on inequality.

For the convergent states, the changes in the distribution of federal defense contracts appear to have reduced income inequality. For example, between 1981 and 1987, the share of the nation's per capita defense contracts received by upwardly convergent states rose from 70.3 percent of the U.S. average to 75 percent, while the share of downwardly convergent states declined from 51.8 percent to 46.8 percent.

Thus, at least in the upwardly divergent states, defense spending may have contributed to increasing inequality. In view of the evidence from the other state categories, however, the case for changes in defense spending contributing to increasing inequality is weak.

SUMMARY

Overall, federal fiscal policy does not appear to have been a cause of the increasing inequality of state per capita incomes in the 1980s. The distribution of transfer payments and the burden of federal personal taxes were shown to lower the interstate inequality of income consistently since 1958, while the burden of social insurance contributions apparently had little effect.

The absence of a consistent time series before 1981 on the distribution of federal expenditures and taxes among states, as well as other data limitations, preclude firm identification of causal factors, but the flows of federal funds generally were not distributed in a way that benefited rapidly growing high-income states. On the contrary, upwardly divergent states received lower net inflows of federal funds than downwardly divergent states, and their net inflows declined during the 1980s. While upwardly divergent states tended to receive slightly higher levels of per capita expenditures than downwardly divergent states (largely because of the distribution of procurement contracts), their tax payments were substantially higher as well.

The pattern of change in per capita federal expenditures between 1981 and 1987 was opposite to those one would expect if federal expenditures contributed to the increase in interstate per capita income inequality since 1978. The evidence, however, is consistent with the argument that one major federal spending program—defense spending—could have been a minor factor in the rising inequality of state per capita income this decade.

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[18]Defense contract data are expressed in terms of three-year moving averages because of the volatility of the data and because the contracts sometimes reflect multi-year obligations of up to three years in duration.

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