

# The NBER Digest

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## State Budgeting in a Federalist Public Economy

Federal grants to the states are spent less on human services than on other programs, according to a recent NBER Working Paper (*No. 1562*) by **Steven G. Craig** and Research Associate **Robert P. Inman**. They further find that relaxing existing rules on state spending of federal dollars and reducing federal aid to the states would lower total spending by the states.

Federal aid to states and localities has risen dramatically since the 1960s. In 1965 there were 160 federal grant programs to states and localities; by 1976 there were 412 such programs. Furthermore, federal aid to states and localities went from \$66 per capita in 1960 to \$192 per capita in 1980 (measured in 1972 dollars).

Of this federal aid, 49.5 percent has gone into education and welfare programs, which are the focus of this paper. Nonetheless, Craig and Inman find that the states would prefer to spend their dollars on public projects that benefit their constituents more noticeably (such as roads or arenas).

Craig and Inman use data from the 48 mainland states for 1966–80 to estimate the effect of federal revenue sharing on the states. This program transfers money to states without requiring them to match the funds. Craig and Inman find that an additional dollar of federal general revenue sharing actually reduces state aid to education by 8¢ and welfare spending by 9¢. The net result is an increase of more than one dollar in state spending on other programs.

Even federal grants earmarked for welfare and education have only a small effect on state spending in those areas. An extra dollar of federal aid in the form of a lump-sum grant for welfare increases state

spending on welfare by only 7.6¢ and lowers state spending on education by 20¢. An additional dollar from a federal lump-sum grant injects about 43¢ into a typical state's education system and causes welfare spending to rise by 23¢.

Another type of federal aid, closed matching grants, requires states to match a limited amount of federal spending on certain programs. Craig and Inman calculate that "For the average income state . . . a dollar of federal aid must be matched by \$1.64 of state money. Thus \$2.64 [should] flow into the categorical program areas in education and welfare." However, Craig and Inman estimate that only \$1.03 goes to the targeted program: 98¢ in education spending and 5¢ in welfare assistance. The balance goes into other state programs.

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With open-ended matching, additional state spending on a target program—for example, Aid to Families with Dependent Children or Medicaid—is rewarded with unlimited additional federal aid. However, even when the assistance is targeted to the poor in this way, Craig and Inman find that other expenditures

and tax relief are the states' favored outlets for the money.

Based on their analysis, the authors conclude that tied federal aid does influence state spending in the direction of education and welfare. If federal aid were reduced and there were fewer federal requirements on state spending, state and federal budgets would both shrink; education and welfare programs would feel the brunt of the change.

## Gender Differences in Work and Income

Men still make more money than women and have more spare time. Despite the major advance of women into paid jobs, their access to goods, services, and leisure, relative to men's, was lower in 1979 than in 1959, according to NBER Research Associate **Victor R. Fuchs**.

In **His and Hers: Gender Differences in Work and Income, 1959-79** (*Working Paper No. 1501*), Fuchs notes that the past quarter century has witnessed extraordinary changes in gender roles, relationships, and expectations. "Better control over fertility and the growth of service industries and occupations contributed to a sharp rise in female employment," he writes. Women's share of the labor force grew from 33 to 43 percent between 1960 and 1980. Labor force participation increased particularly rapidly among married women with small children. According to Bureau of the Census samples, women between the ages of 25 and 64 worked an average of 572 hours at a paid job in 1959 and 873 hours in 1979.

Fuchs also estimates women's nonmarket (for example, childcare or housekeeping) hours of work for 1959 and 1979 using a University of Michigan survey of 674 individuals who recorded their use of time in diaries. He estimates that women worked between 1,685 and 1,854 nonmarket hours in 1959, but their nonmarket hours declined to 1,497 in 1979.

Men, in contrast, worked 1,875 market hours in 1959 and 1,764 in 1979. However, their nonmarket hours were 601 in 1959 and 595 in 1979. Combining

market and nonmarket hours, women worked 2,370 hours in 1979, while men worked only 2,359 hours. Moreover, women were working more hours relative to men in 1979 than in 1959. This trend was stronger for married than for nonmarried individuals, slightly stronger for blacks than for whites, and much stronger at the youngest and oldest ages than for persons aged 35 to 54.

Using pretax cash income and the imputed value of nonmarket production (childcare, housekeeping, garden work, and so on), Fuchs estimates that the women-to-men ratio of total income rose from .587 to .623. In other words, women are relatively a little better off for their extra hours of work. Under a different set of assumptions, though, Fuchs finds that there was a slight decline in this ratio, or that women are relatively poorer. No matter how it is calculated, the ratio rose appreciably for blacks. That is because of a sharp increase in the hourly earnings of black women relative to black men.

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Finally, Fuchs finds that the "full income" (money income, nonmarket production, and leisure) of women relative to men fell between 1959 and 1979 "for every possible combination of assumptions" about valuation of leisure, income sharing within households, and nonmarket hours of work. "This result cannot be automatically translated into a conclusion that women were 'worse off' in 1979 than in 1959 relative to men," he writes. "Women may, for instance, have gained independence and autonomy during those two decades, and these gains may have been worth more to them than the loss of some goods and services or leisure.

"In order for women to earn as much as men in competitive markets," he continues, "they will probably have to behave like men with respect to subjects studied in school, choice of jobs, postschool investment, and commitment to career. This could result in extremely low fertility or in large numbers of children receiving inadequate care."

Fuchs predicts that, as women gain political power at a rapid rate, there will be increasing pressures to help them economically—in effect transferring income from men to women. He cites the current campaign for "equal pay for work of comparable worth" as an example of such pressures. DF

## Productivity, R and D, and Basic Research

The slower growth of R and D and decline in basic research in the 1970s may have been very costly in terms of lost growth in output and productivity, according to NBER Research Associate **Zvi Griliches** (*Working Paper No 1547*).

R and D spending by manufacturing firms declined from 4.2 percent of sales in 1968 to 2.6 percent in 1979, recovering to 3.7 percent by 1982. Although R and D spending financed by the firm remained constant (as a percentage of sales), R and D spending financed by the government and spending on basic research fell significantly. In fact, federally financed R and D dropped from 55 percent of total R and D by industry in 1965 to 35 percent in 1982. Moreover, while the federal government paid for 32 percent of basic research performed by private industry in 1967, it financed only 19 percent in 1982. Partly as the result of these trends, basic research in industry declined from a peak of \$813 million (in 1977 dollars) in 1966 to a trough of \$581 million in 1975; it did not recover to 1960s levels until the early 1980s.

Although federal R and D spending fell throughout the 1970s, the rate of return to all forms of R and D did not decline. Griliches estimates that the gross rate of return on investment in R and D was quite high for private manufacturing firms and did not drop significantly between 1967 and 1977.

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Griliches also finds that those manufacturing firms that spent a lot on R and D were more productive than other firms. The level of spending on R and D by a firm seemed to affect the productivity of both the capital and the labor it used. Furthermore, the rate of return to basic research was higher than the return on R and D spending.

Griliches also finds that spending on R and D financed by the firm is more productive than federally financed research. He suggests that it is only plausible that the first would have a greater effect on the firm's own productivity than the second type: Presumably, the firm spends money on R and D in order

to raise its productivity and profits, while government-financed R and D is undertaken primarily to fulfill specific research contracts for which the firm is remunerated directly.

Griliches's work is based on a survey of approximately 1000 large U.S. manufacturing firms, developed from data collected by the Bureau of the Census for the National Science Foundation from 1957 through 1977.

## Aggregate Price Uncertainty and Output in Four Countries

The rate of inflation in the industrialized nations has bounced up and down rapidly over the last 15 years or so. Has this led to lower output and higher unemployment than otherwise would have existed, as several prominent economists over the past century have predicted?

The famous British economist, Alfred Marshall, hypothesized in 1896: “A great cause of the discontinuity of industry is the want of a certain knowledge of what a pound is going to be worth a short time hence.” Milton Friedman made a similar point in his 1977 Nobel Prize acceptance speech: price uncertainty would, for example, make businessmen more cautious in laying out money for new investments in plant and equipment.

To test this theory, NBER Research Associates **Richard T. Froyen** and **Roger N. Waud** (in *Working Paper No. 1460, An Examination of Aggregate Price Uncertainty in Four Countries and Some Implications for Real Output*) construct a model of the determination of the price level in four nations: Canada, West Germany, Great Britain, and the United States. They look at the 1960–82 period for Germany and 1965–83 for the other three nations. As their measure of uncertainty, Froyen and Waud use the variability of the error term from the model's one-period-ahead price prediction.

Froyen and Waud do find that the higher and more variable inflation of the 1970s—when OPEC quadrupled the price of oil in 1973–74 and again boosted

it enormously in 1979—increased uncertainty about the aggregate price level in Canada, Great Britain, and the United States. But the evidence for West Germany did not sustain a similar conclusion, they find. German prices were boosted by the first oil supply shock, and uncertainty rose temporarily. But during 1976–82, the West German inflation rate was within the range of 3.4 to 4.8 percent. Price uncer-

tainty declined back to, and at times below, its pre-1974 levels.

How does this changing price uncertainty affect output? Froyen and Waud find evidence of “a significant negative output effect” for Canada and the United Kingdom, the two nations with the greatest increase in price uncertainty. However, they find no significant effect in the United States or West Germany. DF

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