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## Are Inflation Rates Different for the Elderly?

From 1961-81, the cumulative cost of living and the annual inflation rates did not vary substantially by age, according to a recent study by NBER Research Associates **Michael J. Boskin** and **Michael D. Hurd**. In fact, the inflation experience of the elderly was quite similar to that of the general population during that twenty-year period. Boskin and Hurd base their conclusion, in *NBER Working Paper No. 943, Are Inflation Rates Different for the Elderly?*, on a price index that they calculate to account for the consumption patterns of the elderly, and the cost of housing.

The rate of inflation faced by the elderly is one important consideration in the calculation of Social Security benefits. To date, the consumer price index (CPI) has been used to proxy inflation for purposes of indexing benefits, but some have argued that it is not an accurate yardstick. For that reason, Boskin and Hurd calculate their own inflation index for the elderly and others and compare it to the CPI for 1961-81.

In the CPI, current expenditures on owner-occupied housing are calculated as the total purchase price of the house plus the total, undiscounted interest expected to be paid over half the life of the mortgage. Because of this technique, the relative weight of homeownership in the CPI was 23 percent by 1977. Boskin and Hurd's index of inflation estimates housing expense in terms of rental equivalent: that is, an estimate of what the house would rent for on the market. With this definition of housing expenditures and 1967 as a base year, they calculate cost-of-living indexes for 1961-81 for six age groups (using expenditure patterns for each group): 21-54, 55-59, 60-64,

65-69, 70-74, and 75 and older. They find that the CPI overstated the cost of living of each group by about 10 percent (compared to their index) by 1981, and that the difference was almost exclusively due to housing.

According to the authors' calculations, by 1981 the difference between the cumulative cost of living for any elderly group and the nonelderly was quite small, as was that difference among elderly groups. The largest difference was between those aged 60-64 and the nonelderly: less than 1 percent of the cumulative cost of living. They conclude, "Conditional on correcting for the overstatement of the cost of living in this period due to the peculiar treatment of housing in the CPI, the cumulative cost of living by 1981 was virtually identical for all age groups *despite* their substantial differences in expenditure shares."

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The results for inflation year-by-year (rather than cumulative) are quite similar. For example, in 1974 the inflation rate for the nonelderly was 10.4 percent, within two-tenths of one percentage point of the rate for any elderly group. The *average* difference between the inflation rate of each elderly group and the nonelderly population for the period 1961-81 was one-half of one percentage point or less. "Thus,

despite substantial differences in expenditure shares between the elderly and the nonelderly and within the elderly population as they age, the actual, historical inflation experience was quite similar for the elderly and the general population and for the different cohorts of the elderly in this twenty-year period," Boskin and Hurd observe.

Next, the authors consider variations among individuals in the inflation rates they face. Among 70-74-year-olds in 1980, the inflation rates varied from 7.5 to 19.1 percent; in 1981, the range was 7.2 to 14.6 percent. According to Boskin and Hurd, "This amount of variation within age groups is typical for these years . . ."

Finally, the authors estimate the extent of indexing to Social Security that would have occurred with their cost-of-living measure rather than the CPI. They estimate that, compared to using their measure, there was about "\$5.7 billion worth of cumulative overpayment from mid-1978 through mid-1981,"

## Private Pensions and Corporate Finance

"U.S. corporations do not manage the pension plans which they sponsor as if these plans had nothing to do with the corporation," according to a recent study by NBER Research Associate **Benjamin M. Friedman**. In *NBER Working Paper No. 957, Pension Funding, Pension Asset Allocation, and Corporate Finance: Evidence from Individual Company Data*, Friedman observes that "the evidence persistently indicates clear relationships between decisions about pension assets and liabilities and decisions about the other assets and liabilities of the firm."

Private pension funds are now one of the largest pools of investment assets in the U.S. economy, representing over \$300 billion. They are also large in relation to corporations' nonpension assets and liabilities, and thus are of interest to corporate stockholders and bondholders as well as to security issuers. For that reason, Friedman sets out to test empirically for relationships between corporations' management of pension plans and their management of the firms' overall financial structures.

Using data on individual companies gleaned from the IRS, U.S. Department of Labor, and Standard & Poor's Compustat files, Friedman constructs a sample of 7828 pension plans sponsored by 1836 companies and their subsidiaries for "plan year" 1977. He first considers pension plan liabilities and finds

that they depend positively on the firms' other liabilities, but that their funding depends negatively on the firms' other liabilities. Firms do not make decisions simply with respect to their unfunded pension liabilities, Friedman observes; rather they "fund their pension liabilities less than one-to-one at the margin." Finally, apart from such firm characteristics as labor intensiveness and the working-versus-retired status of its labor force, the basic aspects of the firm's risk-and-return position have no apparent effect on its choice of either total or unfunded pension liabilities.

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Next Friedman considers the possibility that firms use their pension contributions to smooth their stream of reported income. "For the entire sample of firms with defined benefit plans, 70 percent had before tax reported earnings streams that were smoother . . . than the corresponding earnings including pension contributions," he finds. "On an aftertax basis, with the included pension contributions adjusted for additional taxes that the firm would otherwise have paid, 70.5 percent had smoother reported earnings than consolidated earnings." However, such reporting appears not to be any more true of firms with underfunded than fully funded pension liabilities. "In sum," Friedman reports, "the evidence does show substantial prevalence of the timing of pension contributions so as to smooth reported earnings, but it does not support the hypothesis relating this activity to the funding status of firms' pensions."

Turning to the allocation of pension assets, Friedman finds that firms with more volatile earnings, or more highly leveraged balance sheets, invest pension assets so as to offset their risk by holding less equity and more debt securities in the pension fund. Firms holding high rates of return adopt the opposite allocation strategy: more equity and less debt. Decisions on the allocation of pension assets also depend on the current employment status of the pension beneficiary population. Firms with younger, currently employed potential beneficiaries invest less in equity and more in debt, as do defined benefit plans; firms with defined contribution plans and the same age profile of beneficiaries follow the opposite investment plan.

Finally, Friedman looks at the relationship between the firm's borrowing and its pension assets and liabilities. He finds that the amount of liabilities in the balance sheet is positively related to the firm's pension liabilities. However, what apparently matters for the balance sheet liabilities here is *unfunded* pension liabilities, not pension assets and liabilities separately.

## Productivity Growth and R and D

A corporate investment in research and development pays off handsomely in improved productivity, according to a recent study by **Kim B. Clark** and **Zvi Griliches** titled **Productivity Growth and R and D at the Business Level: Results from the PIMS Data Base**, *NBER Working Paper No. 916*. The productivity referred to here is "total factor productivity," which considers inputs of capital and purchased materials as well as man-hours of labor.

Earlier research that used broad, aggregate industrial data had indicated that the productivity payoff from R and D declined somewhat in the economically turbulent 1970s from that of the 1950s and 1960s. This, it was thought, might be a partial explanation for the decline in productivity growth in the United States in the last decade.

The two authors, both Harvard University economists, looked at more detailed data on some 924 individual, narrowly defined "business units," drawn from the Profit Impact of Market Strategies (PIMS) project of the Strategic Planning Institute (Cambridge, MA). The "units" are in many cases divisions or other portions of corporations that deal with a well-defined set of products and customers listed in the *Fortune* 500. Almost all of these corporations can be found in the *Fortune* 1000. With the use of this more detailed data, Clark and Griliches find that the productivity return on R and D actually did not drop in the 1970s as previously calculated from aggregated data. Instead, it averaged 18 to 20 percent, about the same as before.

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This new study also indicates that the productivity return on R and D was higher in businesses where significant technological change had taken place within the previous eight years—about 24 percent rather than the average 18 to 20 percent. Further, those businesses that have accumulated a significant stock of proprietary processes, shown by ownership of patents and "trade secrets," did have higher productivity growth rates than other business units with a lesser accumulation of such know-how. But there is no discernible difference in the productivity return on new investment in R and D for both these groups of businesses.

Although R and D continued to pay off handsomely in terms of higher productivity growth rates during the 1970s, the amount invested in R and D as a proportion of sales declined from 2.7 percent in the early 1970s to 1.9 percent in the late 1970s, according to the PIMS data. This decline, Clark and Griliches conclude, was one factor among others in the slowdown in productivity growth in the nation during the 1970s. Their calculations suggest that reduced R and D may have accounted for about 10 percent of the decline in productivity growth. Most of this effect, however, occurred in businesses with rapid technological change. In these business units, the ratio of R and D to sales fell from 3.9 to 3 percent, while total factor productivity fell from 4.1 to 3 percent. With an estimated return of about 24 percent to R and D investments, the fall in R and D intensity could explain close to 20 percent of the observed decline in productivity growth among such businesses in "high technical opportunity areas." DF

## Taxing Consumption Instead of Income

Strains on the federal budget have drawn new attention to tax reforms that could collect revenues more efficiently—that is, with reduced distortions to ensure the best use of resources. In *Working Paper No. 892, Replacing the U.S. Income Tax with a Progressive Consumption Tax: A Sequenced General Equilibrium Approach*, authors **Don Fullerton**, **John B. Shoven**, and **John Whalley** evaluate several such tax proposals.

In addition to considerations of equity and administrative simplicity, taxing consumption rather than income is intended to improve the efficiency of resource use over time and among sectors. Specifically, a consumption tax reduces present tax biases in favor of current over future consumption and in favor of owner-occupied housing over other forms of investment. Under an income tax, ordinary savings are subject to taxation when the initial income is earned, and again as the saved portion of earnings generates additional income. The authors point out, however, that "with 20 percent of savings in owner-occupied housing and an additional 30 percent in tax-deductible savings vehicles, the current U.S. tax system is roughly halfway between an income tax and a consumption tax already."

Using a model they had developed in earlier work, the authors track the overall effects of several tax changes, over time, on a dozen consumer groups with different incomes. This results in estimates of

the amount of income, in 1973 dollars, that would equal the (discounted present value of the) efficiency gains from each alternative tax system. Since any immediate revenue losses are assumed to be made up by rate increases, the net efficiency gains are largest if this offset is a lump sum tax rather than higher marginal tax rates (which still affect labor supply under a consumption tax).

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Because 20 percent of household saving is in housing, one option is to shelter the other 80 percent of household savings from personal taxation. This would provide an estimated efficiency gain of \$621–686 billion. Even with a proportional, lump sum tax increase to maintain the yield, all income groups would gain (in present value terms). If savings are highly responsive to net returns, as some studies suggest, then “the economy grows sufficiently more

rapidly with a consumption tax to permit a lower tax structure in future years.”

Another alternative is to integrate the personal and corporate tax systems and to index the taxation of capital gains on corporate stock. Together with the first option, this is roughly the same as a 1977 Treasury Department proposal. The total efficiency gain is estimated at \$1–1.4 trillion (in 1973 dollars)—equivalent to 2–3 percent of national income per year. Combining an even purer consumption tax with integration yields somewhat higher gains, while eliminating existing tax shelters for savings involves sizable losses even if tax rates are reduced.

The switch to a consumption tax initially reduces consumption, but the added capital stock eventually allows consumption to be higher than otherwise. Once the adjustment in relative prices is completed, the economy would have “a higher capital intensity and a lower relative return to capital.” Fullerton, Shoven, and Whalley estimate that these adjustments would be 80 percent complete after 30 years if savings were only moderately responsive to aftertax returns. Adjustment would be much more rapid if the response of savings was strong. They conclude that sheltering more saving from the U.S. income tax could improve economic efficiency even if marginal tax rates were raised to maintain government revenue.

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