Social Security and Private Saving: Another Look

In May 1978, the **Social Security Bulletin** published an article, "Effect of Social Security on Saving: Review of Studies Using U.S. Time-Series Data," by Louis Esposito, Division of Economic and Long-Range Studies, Office of Research and Statistics, Social Security Administration. The author reviewed four major empirical studies that investigated the effect of the social security program on aggregate private saving. He concluded that none of the studies support the hypothesis that the social security system decreases private saving. Because the author drew upon the research of four other economists, it was felt that they, in turn, should be permitted to comment on the conclusions drawn from their work. What follows are the responses of Robert J. Barro, Michael Darby, Martin Feldstein, and Alicia Munnell to a Social Security Administration inquiry about their reactions to the Esposito article.

Comments

Robert J. Barro *

I agree with Louis Esposito's basic conclusion that the U.S. time-series evidence does not support the hypothesis that the social security system depresses private saving. This conclusion also emerges from theoretical considerations and from the two other types of empirical evidence that are presently available: cross-country studies and analyses of individual cross sections in the United States.

The theoretical argument for a downward effect of a "pay-as-you-go" social security program on private saving is contained in a highly restricted "life cycle" model. Individuals view anticipated social security benefits during retirement as a substitute for their own preretirement savings and thus are motivated to diminish their accumulation of assets during their working years.

This conclusion emerges, however, only because the model assigns the Government a monopoly position in relation to intergenerational transfers. In fact, most individuals have numerous private opportunities for shifting income across generations. Parents make voluntary contributions to children in the form of educational investments, expenses in the home (including parental time), and bequests. Children—especially before the expansion of the social security program—provide support for aged parents. To the extent that private, voluntary transfers of this sort are operative (and casual observation suggests that such transfers in the appropriate broadly defined sense are pervasive) the main response to more social security benefits—that is, to more governmentally imposed intergenerational transfers—would be a shift of private transfers by an amount sufficient to restore the balance of income across generations that was chosen previously. When this type of private offset to social security benefits occurs, the downward effect on private saving would no longer be predicted.

Numerous other issues can be treated theoretically. In particular, the absence of a downward effect on saving does not eliminate the harmful economic effects of the social security system that involve distortions of labor-market decisions. For present purposes, however, the main conclusion is that economic theory provides neither an a priori argument for a strong depressing effect of the social security program on saving nor decisively rules out an important influence. The crucial issues are empirical.

Esposito has provided a good survey of the U.S. time-series evidence that demonstrates that Feldstein's

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original findings [1] are not robust when faced with a number of changes in specification. Another difficulty with the time-series work is the lack of resolution of the simultaneity of income determination and the consuming/saving decision. I have argued elsewhere that the inherent identification problems associated with isolating desired saving and investment effects and with the determination of income suggest that it would be preferable to use the time-series evidence to focus directly on reduced-form propositions that concern the determination of capital stock over time.[2]

It is suggestive in this context that Kendrick's data on net real stocks of reproducible capital (defined to include on a cost basis the value of structures, equipment, and inventories—whether held by businesses, households, or government—and capitalized values of education and research and development) indicate an approximately constant ratio of these stocks to net national product from 1929 to 1969.[3] The main changes have been shifts in composition—in particular, reductions in structures, equipment, and inventories in relation to education capital and a movement—especially in the period 1929–48—away from business and toward government ownership. The principal inference from observed capital-output ratios, based on a broad definition of net reproducible capital, is that the pattern of movement since 1929 does not seem to leave much room for a substantial downward effect of the social security program. In particular, one would have to isolate other forces (such as demographic changes or international capital flows) that have exerted substantial offsetting positive effects on capital-output ratios.

The basic puzzle is that, if Feldstein's estimates of saving effects from the social security system were remotely reasonable, why would the ratio to net national product of structures, equipment, inventories, and education and research capital be about the same in 1969 as in 1929? The most significant change in capital structure since 1929, which is associated with the general advance in the level of governmental activity, would seem to be the shift in ownership from business to government. It would seem reasonable to decry this and other aspects of the process of socialization, but the special role of the social security program in this process is unclear.

Evidence on the effects of the social security system on saving has also been examined for a cross section of industrialized countries during the 1950's. Feldstein claims again to have isolated an important negative influence of social security on saving, although examination of his own results indicates that the statistical basis for this conclusion is tenuous.[4]

In a consideration of related evidence, MacDonald and I found that either positive or negative social security effects on saving could be produced depending on the details of specification.[5] Notably, the time-series evidence from the sample of countries (associated with relations in which country-specific constant terms were included) suggested a negative influence of social security on saving, while the cross-section evidence (with each country constrained to have the same intercept term) actually indicated a strong positive effect. Sterling,[6] in a cross-sectional study that considers both industrialized nations and a much larger sample of countries, reports findings that are similar to those reported by MacDonald and me. As in the U.S. time-series case, an examination of the present cross-country evidence would conclude that no support is available for the hypothesis that social security depresses saving and capital accumulation.

A final body of evidence that has been considered is a cross section of individual households at a point in time in the United States.[7] The basic finding in these studies that is relevant in the present context is that an increase in prospective social security benefits reduces private asset accumulation during working years. This result may be correct (some difficulties occur in isolating independent variation in the social security variables in the samples), but it does not bear directly on the central controversy, which concerns the impact of the overall social security program on aggregate saving and capital accumulation. The individual cross-section findings correspond to a positive effect of relative social security benefit (net of tax) position on relative consumption—a relation that is consistent with the plausible hypothesis that more individual income means more individual consumption.

The argument for no aggregate saving effect of social security corresponds to the proposition that it

[1] Martin Feldstein, "Social Security, Induced Retirement, and Aggregate Capital Accumulation," **Journal of Political Economy**, September/October, 1974.

[2] Robert J. Barro, **Social Security, Saving and Capital Accumulation—A Brief Review of Theory and Empirical Evidence** (paper presented at the Southern Economic Association meetings, Washington, D.C.), November 1978.

[3] J. W. Kendrick, **The Formation and Stocks of Total Capital**, Columbia University Press, 1976.

[4] Martin Feldstein, "Social Security and Private Savings: International Evidence in an Extended Life Cycle Model," in **The Economics of Public Service** (M. Feldstein and R. Inman, eds.), London, Macmillan, 1977.

[5] R. J. Barro and G. MacDonald, "Social Security and Consumer Spending in an International Cross Section," **Journal of Public Economics** (forthcoming).

[6] A. G. Sterling, **An Investigation of the Determinants of the Long-Run Savings Ratio**, undergraduate thesis, Massachusetts Institute of Technology, May 1977.

[7] Alicia H. Munnell, "Private Pensions and Saving: New Evidence," **Journal of Political Economy**, October 1976, and Martin Feldstein and Anthony Pellechio, **Social Security and Household Wealth Accumulation: New Microeconometric Evidence**, unpublished, 1977.

is only one's relative social security benefit and tax postion—and not the absolute level of social security—that produces shifts in consumption. A change in the scale of the program increases benefits and liabilities by equal amounts (if the benefits and liabilities of descendants are fully counted) and thereby has no effect on consumption. A cross section of individuals at a point in time holds fixed the scale of the overall social security program while examining only the effects of changes in individual relative positions. These data therefore provide no variation in the pertinent variable —the scale of the overall program—essential for tests of propositions that concern aggregate saving effects.

My examination of the empirical results obtained to date leads to these conclusions: (1) Many problems of economic conception, statistical theory, and data severely limit the reliability of present estimates of the effect of social security on saving and capital accumulation; (2) no present evidence supports the view that the expansion of the social security system has sharply curtailed capital formation in the United States; and (3) the approximate constancy from 1929 to 1969 of the ratio of a broad concept of net reproducible capital to net national product indicates that a drastic depressing effect of social security on capital stocks is highly unlikely.

Michael R. Darby *

Louis Esposito's article excellently reviews and integrates the major studies of the effect of the social security system on saving based on the U.S. time-series data.[8] He presents in a fair, accurate way the main results and the reasons that different investigators have obtained different estimates. I disagree, however, with his statement: "The conclusion that seems incontestable is that the empirical results do not support the hypothesis that the social security program decreases private saving." This opinion overstates what has been learned from the time-series analysis.

The issues are ones of statistical inference or scientific method with respect to nonexperimental data.[9] Since controlled experiments on the social security system cannot be conducted, the existing natural "experiment" must be accepted to be able to see what the historical data tell us. If classical statistical techniques (hypothesis testing) are applied, stronger conclusions can be reached than can be justified by the data. It is preferable to see to what extent the data force revision of alternative existing beliefs about the effect of the social security program—that is, what previously reasonable beliefs seem unlikely to be true after reviewing the empirical evidence.

Hypothesis testing makes sense where strong beliefs exist that a certain hypothesis is true and it is desirable to see whether a particular set of data are unlikely, given those beliefs. If one strongly believes that the social security system has no effect on saving, then the two-tailed t test employed by Esposito makes sense. It shows that although an economically substantial decrease in saving is indicated by the empirical estimates, the estimate is so imprecise that it is plausible that the true effect is zero. The key here is that the effect is presumed zero unless proven otherwise. Such proof would be that the data are remarkably unlikely, given the "null hypothesis" of zero effect.

If someone instead starts out with a strong belief that the social security system reduced private saving by 25 percent, one cannot reject that belief either. Indeed the null hypothesis that saving is reduced 25 percent is more likely given the data, than the null hypothesis that saving is unaffected. Contrary to the Esposito quotation above, the empirical results do support the hypothesis that the social security program decreases private saving.

The problem is that the empirical results are not particularly unlikely whether one starts with a hypothesis of a large reduction, small reduction, no effect, or small increase in saving. The data simply are not very informative in the sense of changing existing beliefs. Very little convergence in views on the effect of the social security system has been seen as time goes on.[10] Feldstein need not give up his earlier belief in a large saving reduction any more than Barro and Esposito need give up their belief in no effect.

The "no effect" view has one special attraction, however: Scientific theory would be intolerably cluttered and therefore useless if every possible but unproven effect were incorporated. So an effect that is ambiguous as a matter of theory and unproven empirically is best ignored as a matter of strategy. But those with an earlier belief in a saving reduction can

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[8] It should be observed that the percentage reduction in saving for given levels of income and other variables has often been incorrectly identified with the reduction in the U.S. capital stock. In a closed economy, further reductions are due to reduced steady-state labor-force participation and income. In an open economy, reductions in saving affect the ownership but not the level of the capital stock. See Michael R. Darby, **The Effects of Social Security on Income and the Capital Stock,** American Enterprise Institute, 1979, chapter 5.

[9] The comments here are influenced by Edward E. Leamer, **Specification Searches: Ad Hoc Inference with Nonexperimental Data,** John Wiley & Sons, 1978.

[10] Compare the rapid rejection of the stable Phillips curve in favor of the natural-unemployment-rate hypothesis. There the historical "experiment" provided clear evidence that the unemployment rate was independent of the inflation rate in the long run. Earlier beliefs were drastically changed after examining the data.

base their belief upon use of other information on the magnitude of empirical parameters in the structural model.

In conclusion, the time-series studies analyzed by Esposito have thoroughly examined the U.S. time-series data and have been unable to rule out any plausible existing beliefs on the effect of the social security program on saving.

Martin S. Feldstein *

This paper reviews the studies by Robert Barro, Michael Darby, and Alicia Munnell, as well as my own earlier time-series study and presents new estimates using the revised national income-account data. The basic estimates of each of the four studies point to an economically substantial effect that is very unlikely to have been observed by chance alone. Although including variables like the Government surplus (Barro) or a measure of real money balance (Darby) can lower the estimated coefficient of the social security wealth variable, this paper explains their inappropriateness in the aggregate consumption function. Use of new data on national income and its components from the Department of Commerce improves my earlier estimates and shows that the unemployment variable does not belong in the consumption function once the level of income and its rate of change are included.

It is now well known that private pensions represent a substantial part of total saving, accounting for some 25 percent of personal saving during the past decade. Less generally recognized, but of great importance, is the common practice known as "integrating" private pensions and social security benefits. A private pension plan is said to be integrated with social security when the private pension to which an individual is entitled is reduced by the amount (or some fraction of the amount) of his social security benefit. The extent of such integration is, of course, taken into account in pension funding, with less funding required in more fully integrated plans. The tax laws and Employee Retirement Income Security Act rules explicitly recognize and permit this substitution of social security benefits for private pensions. Thus integration provides a specific mechanism by which the social security system depresses pension saving and, therefore, total private saving.

Social security can, of course, depress private pensions even when no formal integration procedure exists. For a worker who has had median lifetime earnings and who retires at age 65 with a dependent spouse, social security benefits now replace approximately 80 percent of final years' after-tax earnings. This high level of benefits leaves little incentive for any substantial additional private pensions or direct personal retirement saving.

Common sense and everyday observation make it clear that many middle- and lower-middle-income families do not provide any substantial amount for their retirement because they expect to depend primarily on social security benefits. This situation continues to be true, despite the doubling of real per capita incomes that has occurred in the past 30 years, because social security has more than kept pace with that income growth. Only families with incomes substantially above average—whose social security benefits replace a relatively small fraction of the income lost at retirement—generally save a significant fraction of their income. It is not the real income level, but the level of income in relation to future social security benefits, that appears to determine the extent of household savings.

I think the real issue is therefore not whether social security reduces saving but by how much it reduces saving.[11] The potential impact is very large. Social security taxes in 1977 were $91 billion while personal savings were only $67 billion. If the money paid in social security taxes would otherwise have been saved, the magnitude of the current social security program implies that personal savings would otherwise be more than double what it was in 1977. Even if half the money paid in social security taxes would otherwise have been saved, the volume of personal saving would have increased by 68 percent.

Economists are now using different bodies of data to estimate the impact of social security on saving. An aggregate time series for the economy as a whole was the first type of data to be used. What can we hope to learn with this type of information? During the late 1930's and the succeeding war years, economists generally expected that the saving rate would continue to rise as people became more affluent. A widespread fear among economists was that the difficulty of absorbing this extra saving would prevent full employment. The increase in saving did not materialize. Even as incomes rose substantially in the 1960's, the savings rate did not increase significantly. This 30-year period was also one in which the social security program was introduced and in which it grew rapidly. One possibility, predicted by some of the early Keynesians like Seymour

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[11] Theoretical arguments can be adduced that imply that the effect of social security on saving is ambiguous—Barro's theory of induced bequests, for example, or my own theory of the saving effect of induced early retirement. There is little reason to believe that these theoretical possibilities are powerful enough to alter the common-sense conclusion that social security discourages private saving.

Harris [12] and even by Keynes himself,[13] is that the growth of social security precluded the growth of private saving.

Multiple regression analyses of time-series data have been used to evaluate the extent to which the introduction and expansion of the social security program have influenced the patterns of savings and consumption over time. Two basic difficulties arise in using time-series data for this purpose. The first problem is finding an adequate measure of the public's expectations of the social security benefits that they will later receive. Surveys confirm that individuals do not have precise estimates of the likely value of their future social security benefits. Although legislative changes create benefit entitlements immediately, these new benefits are only recognized slowly by the individuals affected.

No completely satisfactory solution to this problem exists. In practice, all the researchers have used the variable "social security wealth"—that is, the present actuarial value of the future benefits to which the working population is entitled.[14] This overly precise measure cannot provide an accurate picture of year-to-year variations in the public's perception of the extent to which they can rely on the social security benefits but, it does capture, I hope, the broad sweep of changes including the original introduction, the major extensions of coverage, and the provision of dependents' benefits.

The second basic problem with time-series analysis is that many variables move closely together over time. Even if an equation is correctly specified—that is, has the correct variables and only the correct variables—it may not be possible to estimate the coefficients with useful precision because the variables are too closely interrelated. This "multicollinearity" problem is more severe when observations are relatively few and when there is relatively little independent movement of the variable that is of interest. This situation poses a problem when attempts are made to estimate equations describing consumer expenditure based on only about 40 annual observations. The problem is particularly severe when the sample is restricted to the postwar period with less than 30 observations and much less independent variation in the social security variable (that is, variation that is not just proportional to income). When the equation is misspecified by adding variables that do not belong, it is even harder to estimate the coefficients of the correct variables.

The importance of these problems is illustrated by the estimates presented in my 1974 paper. For the period 1929–71, the coefficient of the social security wealth variable was rather precisely estimated as 0.021 (with a standard error of 0.006), implying that an extra $100 of social security wealth reduces private saving by $2.10. But when the unemployment rate was added to the equation, too much intercorrelation prevented any precise statements: The coefficient of the social security variable fell to 0.010 while its standard error rose to 0.011, and the coefficient of the unemployment variable was 1.17 with a standard error of 0.89. When the sample was restricted to the postwar period, even less information was available and the coefficient of social security wealth was, as a result, less than its standard error. This change primarily reflects the fact that social security wealth has much less independent variation when the sample is restricted to the postwar period.

In his review, Esposito emphasized the fact that adding the unemployment variable to the equation (with the full sample, 1929–71) made the coefficient of social security wealth much smaller and not significantly different from zero at conventional probability levels. Esposito implicitly rejected my argument that the theoretical case for including the unemployment rate is much weaker than the case for including social security wealth and therefore that its insignificance implies that it should be omitted.

Without new data or a new approach, the analysis of the time-series data would be stalled at this point. Fortunately, shortly after the publication of my 1974 paper, the Department of Commerce published revised estimates of national income and its components that embody a number of improvements over the information previously available.[15] Analysis with this new and better data supports my original conclusion more strongly and substantially reduces the ambiguity introduced by unemployment.

The estimate of my preferred specification of the consumption function based on the revised national income-account data is presented in the following equation:

$$C_t = \underset{(0.061)}{0.604}\, YD_t + \underset{(0.040)}{0.111}\, YD_{t-1} + \underset{(0.076)}{0.194}\, RE_t + \underset{(0.005)}{0.006}\, W_{t-1} + \underset{(0.009)}{0.024}\, SSWG1_t + \underset{(80)}{338}$$

1929–40, 1947–74

$\bar{R}^2 = 0.99$

D.W.S. = 1.45

[12] See Seymour Harris, **The Economics of Social Security,** McGraw-Hill, 1941.

[13] A colleague, Richard Musgrave, recalls the occasion when Lord Keynes visited the U.S. Treasury and commented that the new U.S. social security program would prevent the excess saving that many economists then feared.

[14] The idea of "social security wealth" is introduced and described in Martin Feldstein, 1974, **op. cit.**

[15] "The National Income and Product Accounts of the United States: Revised Estimates, 1929–74," in **Survey of Current Business** (U.S. Department of Commerce), vol. 56, January 1976, pages 1–38.

where C is consumption, YD is disposable income, RE is corporate retained earnings, W is wealth, and $SSWG1$ is social security wealth.

The social security wealth coefficient of 0.024 is clearly statistically very significant and is quite close to the estimate of 0.021 in my 1974 paper. The earlier estimate is thus affected hardly at all by extending the sample period (which previously ended in 1971) and using the newly revised national income-account data.

As noted above, including the unemployment rate (RU) in this equation in 1974 had the effect of cutting the coefficient of the social security wealth variable by half (to 0.10) and to less than its standard error, while the coefficient of the unemployment variable was greater than its standard error. With the new Department of Commerce data, the inclusion of the unemployment rate has a much smaller effect on the social security wealth coefficient, and the unemployment variable is itself completely insignificant:

$$C_t = \underset{(0.070)}{0.619}\ YD_t + \underset{(0.053)}{0.127}\ YD_{t-1} + \underset{(0.118)}{0.236}\ RE_t + \underset{(0.006)}{0.005}\ W_{t-1} + \underset{(0.013)}{0.019}\ SSWG1 + \underset{(2.212)}{1.033}\ RU_t + \underset{(133)}{289}$$

1929–40, 1947–74
$\bar{R}^2 = 0.99$
D.W.S. = 1.43

In his study of the time-series evidence, Robert Barro made the useful suggestion that the unemployment rate should be specified as changing the marginal propensity to consume (that is, as a multiplier of YD_t) rather than as a separate linear term.[16] That suggestion is quite sensible since the linear specification of equation 2 has the implausible implication that a one percentage-point change in the unemployment rate altered per capita consumption by the same real dollar amount during the 1970's as it did in earlier years when incomes were much lower. With this suggested modification, the equation becomes:

$$C_t = \underset{(0.063)}{0.606}\ YD_t + \underset{(0.049)}{0.116}\ YD_{t-1} + \underset{(0.105)}{0.205}\ RE_t + \underset{(0.006)}{0.006}\ W_{t-1} + \underset{(0.012)}{0.023}\ SSWG1_t + \underset{(1.078)}{0.162}\ RU_tYD_t + \underset{(108)}{327}$$

1929–40, 1947–74
$\bar{R}^2 = 0.99$
D.W.S. = 1.44

The social security wealth coefficient is almost identical with its value in equation 1, while the coefficient of the unemployment variable is small and not significantly different from zero. This evidence with the new Department of Commerce data thus unambiguously supports the conclusion that the social security system substantially depresses private saving.

To be more precise, the value of social security wealth (SSWG1) of the population in 1972 was $1.85 trillion;[17] a coefficient of 0.024 implies that social security increased consumption (and thereby depressed private saving) by $44.4 billion. In 1972, total personal saving was $49.4 billion while corporate retained earnings were $25.9 billion; total private saving was therefore $75.3 billion. The reduction in saving of $44.4 billion implied by the data is thus equivalent to 59 percent of actual saving in 1972. To state this figure in a different way, the estimates imply that, without social security, saving would have been $119.7 billion (that is, $44.4 billion plus $75.3 billion) and that this $119.7 billion was reduced 37 percent by social security.

Esposito also discusses time-series studies by Munnell, Barro, and Darby.[18] As Esposito notes, Munnell's basic equation found a coefficient of social security wealth of −0.030 with a standard error of 0.019 in a study using personal saving as the dependent variable. The size of the coefficient in relation to its standard error indicates that the odds are greater than 15 to 1 against finding such a substantial coefficient by chance alone if the time coefficient were zero or positive.

Munnell's coefficient is larger than my estimate of 0.021 for about the same period and type of data because she includes a measure of retirement in the equation and thereby calculates the "gross" effect of social security before netting out the increased saving due to earlier retirement.[19] She also presents equations in which current social security taxes are used to represent expected benefits; the statistical insignificance of this tax variable should be regarded as evidence that social security wealth is a better measure than the tax variable and not, as Esposito suggests, as evidence that social security may not affect saving.

[16] See Robert J. Barro, "The Impact of Social Security on Private Savings," **The American Enterprise Institute Studies** (No. 199), 1978.

[17] Martin Feldstein and Anthony Pellechio, **Social Security Wealth: The Impact of Alternative Inflation Adjustments,** National Bureau of Economic Research Working Paper No. 212 (forthcoming in Colin Campbell (editor), **Financing Social Security).**

[18] Alicia Munnell, **The Effect of Social Security on Personal Saving,** Ballinger Publishing Company, 1974; Alicia Munnell, "The Impact of Social Security on Personal Saving," **National Tax Journal,** December 1974, pages 553–567; Robert J. Barro, 1978, **op. cit.;** and Michael Darby, **op. cit.**

[19] Munnell's coefficient is negative because she uses savings rather than consumption as dependent variable. If she had used consumption, her coefficient value would be exactly the same but with the sign reversed.

Munnell also attempts to isolate a component of personal saving that she calls "retirement saving" and that excludes such things as the values of stocks and bonds and residential real estate; she finds that social security has a statistically significant depressing effect on this component of saving but that it is absolutely smaller than the effect on total saving. I think the appropriate interpretation is therefore that social security reduces other forms of saving as well and that it is wrong to focus on only one component of total saving.

Barro added two variables to my initial specification: The value of the stock of consumer durables (DUR) and the Government surplus (SUR). Doing so reduces the coefficient of the social security wealth variable to 0.014 with a standard error of 0.010 (and also makes an unemployment-income interaction variable statistically significant). Even if Barro's specification is accepted, it should be noted that the odds against observing such a large estimated coefficient and standard error if social security did not depress saving would be greater than 10 to 1. The coefficient estimate of 0.014 implies a savings reduction in 1972 of $25.9 billion, or more than one-third of actual savings. Thus Barro's evidence actually supports the conclusion that social security significantly depresses saving.

A more detailed analysis of Barro's evidence indicates that the durables variable is irrelevant: Its coefficient is less than one-third of its standard error, and its presence does not alter the other coefficients in an important way. It is the highly novel inclusion of the Government surplus as a variable that changes the other coefficients.

I believe that this Government surplus variable does not belong in a properly specified consumption function. Although the variable appears to be statistically significant, I believe that that significance is spurious. The Government surplus is not an exogenous variable that directly affects consumption, as the Barro specification assumes, but an endogenous variable whose value changes with cyclical variations in consumption. What is really seen in the positive coefficient of the Government surplus variable is that an increase in consumer spending tends to expand the economy, raising tax collections and therefore increasing the Government surplus. This interpretation is confirmed by dividing the surplus variable into its two components (Government expenditure and tax receipts); the Government expenditure variable is then insignificant and only the tax-receipts variable is significant. Moreover, the correlation between cyclical variations in consumption and in tax receipts explains why including the surplus variable also changes the statistical significance of the unemployment variable.

Darby experiments by adding measures of real money balances and other variables to the specified consumption function. With one measure of money supply ($M1$), his estimated $SSWG1$ coefficient is raised above my own (to 0.024), while with a broader money supply variable ($M2$) the coefficient is reduced somewhat (0.017). The evidence is thus quite compatible with my findings. No reason appears, however, for regarding the real money balances as an exogenous variable to be included on the right-hand side of a consumption function: The households choose their desired level of such balance while the money balances of firms is totally irrelevant in the consumption function. It is also difficult to imagine how to interpret an equation that includes both the interest rate and real money balances among the regressors.

My summary of the evidence is thus quite contrary to Esposito's. I find that the basic estimates of each of the four studies points to an economically substantial effect that was very unlikely to have been observed by chance alone. Although including variables like the Government surplus (Barro) or a measure of real money balances (Darby) can lower the estimated coefficient of the social security wealth variable, I have explained their inappropriateness in the consumption function. The availability of the new Department of Commerce data on national income and its components has improved the earlier estimates and has shown that the unemployment variable does not belong in the consumption function once the level of income and its rate of change are included.

Data for the postwar period alone appear to be incapable of providing useful information on the effect of the social security system. In all of the studies, the standard error of the coefficient of the social security wealth variable is so large that no economically interesting hypothesis can be rejected. This result reflects not only the shorter period but also an inability to measure accurately enough the perceived changes in the public's expectations about future social security benefits. This inadequacy of the postwar data makes it important to examine other types of information, including studies of the time-series data on individual households. The evidence of this type that is becoming available tends to confirm the time-series conclusion, but the importance of the impact of social security on savings suggests that we will see many more studies on this subject in the future.[20]

[20] Cross-country evidence is reported in Martin Feldstein, 1979, **op. cit.**, and Martin Feldstein, **International Evidence on the Effect of Social Security Benefits on Private Savings,** forthcoming. Evidence on household wealth accumulation is reported in Martin Feldstein, "Social Security and the Distribution of Wealth," **Journal of the American Statistical Association** (vol. 71), December 1976, pages 800–807, and Martin Feldstein and Anthony Pellechio, **Social Security and Household Wealth Accumulation: New Microeconomic Evidence,** National Bureau of Economic Research Working Paper No. 206, forthcoming in **The Review of Economics and Statistics.**

Alicia H. Munnell *

Louis Esposito has performed an extremely useful service by reviewing and evaluating the time-series evidence on the effect of the social security system on saving. His conclusion that "the empirical results do not support the hypothesis that the social security program decreases private saving" seems valid. Exaggerated claims about the robustness of the time-series evidence have only diminished the importance of some interesting theoretical contributions in this area.

At the end of his article, Esposito concludes that either the social security system has had no effect on saving or that the effect simply cannot be isolated with U.S. time-series data. My current view, based primarily on intuition, is that the social security system in the past has probably not had a major impact on saving. To a large extent, the social security program probably replaced an existing system of intrafamily transfers. The reduced saving caused by social security benefits exceeding the level of voluntary transfers was probably offset by the induced retirement effect that encouraged individuals to save at a higher rate over their shorter working life for a longer retirement.

These historical results, however, are not particularly useful for predicting the effect of social security benefits in the future. First, social security benefits increased substantially during the 1970's. For the average retiring worker, the percentage of preretirement earnings replaced increased from 30 percent to 45 percent during the 1970's and will stabilize at 42 percent by 1982. Furthermore, the automatic cost-of-living adjustments that were introduced also raise the value of lifetime benefits. These higher benefits probably increase the portion of the population that will receive higher social security benefits than the level of intrafamily transfers that would have occurred in the absence of the social security program. That is, the automatic adjustment increases the probability of a negative benefit effect.

At the same time, future retirement patterns will most likely change. In view of rising social security costs resulting from demographic shifts, workers will probably be encouraged, through changes in social security regulations, to stay in the workforce for a longer period. The retirement effect, instead of being an offsetting influence, will therefore, reinforce the negative benefit effect. With later retirement, individuals will be able to reduce their savings rate over their extended worklife. In the future, in light of these two developments, it seems likely that the social security program will have a discernible negative impact on saving.

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