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THE FUTURE OF SOCIAL SECURITY: ONE ECONOMIST'S ASSESSMENT

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## Chapter II

### THE FUTURE OF SOCIAL SECURITY: ONE ECONOMIST'S ASSESSMENT

by

James Tobin

The first version of this chapter was prepared for and presented at the Symposium in Celebration of Fifty Years of Social Security held at Yale University April 12 and 13, 1985. A somewhat revised version was published by the sponsor of the Symposium, the National Conference on Social Welfare, Washington D.C. in August 1985. The present chapter is a substantial revision, completed in February 1986.

I am greatly indebted to many people whose comments, suggestions, and ideas improved it. Michael Taussig, who discussed its initial version at the April 1985 symposium, also provided very helpful detailed comments on my text. Others who helped and tried, with at least some success, to save this amateur in the field from error included Robert Ball, Merton Bernstein, Michael Boskin, Gary Fields, Ted Marmor, Alicia Munnell, Jerry Mashaw, Robert J. Myers, and John Shoven. Two undergraduates, Daphne Butler and Louis Thomas, assisted capably with data and diagrams.

To most Americans Social Security means federal pensions paid to old people, Old Age and Survivors Insurance (OASI) in technical lingo. That is my subject here. It is only one of the programs begun by the Social

Security Act of 1935, which also established our federal-state systems of unemployment compensation, assistance to needy old people, and assistance to families of dependent children, as well as various social services. From the beginning, OASI differed from the other initiatives in several respects. It was to be a federal program, uniform across the nation. Like unemployment compensation, its benefits to persons eligible because of required payroll tax contributions were not to be conditional on need but only on those contributions and on other personal circumstances, mainly age and substantial retirement. In several steps beginning in 1954, disability was added to those circumstances, and it is sometimes necessary to refer it as OASDI. In 1965 health insurance for the elderly, Medicare, was added and the comprehensive acronym became OASDHI. But OASI remains the giant Social Security program.

On its golden anniversary OASI is both successful, surely even beyond the dreams of its founders, and troubled. In the 1985 Economic Report of the President his Council of Economic Advisers credits OASI for the remarkably healthy economic position of the elderly. The other side of the same coin is the growth in the cost of the program, a source of considerable anxiety and alarm. Panic in 1981-1982 about the imminent "insolvency" of the trust fund was dissipated by legislation in 1983, a bipartisan compromise package of future payroll tax increases and benefit cuts projected to keep the fund in the black for several decades. Nonetheless Social Security continues to be a candidate for federal budget makers seeking ways to cut deficits in the overall federal budget. Moreover, the

1983 package may not forestall another and more serious insolvency threat in the twenty-first century.

#### Major Issues Facing OASI

Three interrelated issues must be faced in assessing the future of OASI. I shall discuss each in turn.

**Balancing Contributions and Benefits.** The overriding long-run issue about OASI is the balance between the tax contributions of the young and the benefits of the old.<sup>1</sup> The system is now geared to scale up benefits automatically so as to maintain the ratio of benefits to contemporaneous wages, the replacement ratio, at its historical level of roughly 40 percent. Payroll tax rates are the residual balancing item in the OASI financial equation. They have been raised steadily for years, and according to current projections they will have to be raised substantially next century if the replacement ratio is to be maintained. The generations involved, however, may at some point prefer to move to or toward a different option—freezing the tax rates and adjusting future benefits instead. This would mean that in the 21st century the benefit/wage ratio would fall: OASI benefits would still be rising in absolute purchasing power, but they would decline relative to the wages of active workers. It is not too soon to begin serious consideration of the options.

**Erosion of Confidence.** The confidence of young workers in Social Security has eroded in recent years. Some are worried that the system will go broke. Others perceive that their rate of return on the payroll tax

contributions they and their employers make will be quite low, in contrast to the interest rates they observe in financial markets today. They wonder why participation in such a system should be compulsory. The link between the contributions of, or on behalf of, any individual participant and his or her eventual benefits is quite loose, and quite mysterious. The system is a hybrid, mixing social retirement insurance with some intragenerational redistribution in favor of workers with low earnings. This is bound to diminish the rates of return high wage workers perceive they can earn through OASI.

Old issues return anew: Should OASI be made more purely an insurance program, letting the general federal budget handle redistribution via needs-tested transfers? Should the link between contributions and benefits be actuarially fair for individual participants? Should the benefit entitlements earned by past contributions be reported regularly and clearly to participants throughout their careers? Should compulsory participation be limited to defined levels of contributions and benefits? As Robert Ball recounts in Chapter I of this volume, the founders of Social Security confronted these questions and compromised. Compromises, even theirs, are not graven in stone. Times, circumstances, and attitudes change. At the end of this chapter I shall sketch, as an option worth considering, a system that links contributions and benefits more explicitly and tightly.

Financing Social Security. The issues just raised regarding the links between contributions and benefits for individual participants are related to questions about the financing of the system as a whole. Until now Social

Security has been mainly a pay-as-you-go system, using its current receipts from workers' contributions to pay its current benefits. Its trust fund, as its reserves are called, has been deliberately kept small. Under the 1983 legislation, this fund will be grow to unprecedented heights relative to annual outlays over the next 15 to 20 years. Thereafter it is projected to decline, and to vanish after midcentury.

A case can be made on macroeconomic grounds for a funded system in preference to pay as you go. Full funding would mean a trust fund commensurate to OASI's liabilities for the future benefits earned by the contributions previously paid in. The accumulation of such a fund, it can be argued, would add to national saving and investment enough productive capital to yield the promised benefits. That yield might well be a higher rate of return than pay as you go can offer.<sup>2</sup>

History cannot be rerun. A shift to funding would take nearly a half century to accomplish. Moreover, the proposal inevitably raises the question of the relation between Social Security trust funds and the overall federal budget. I shall discuss these financial issues, and in my sketch of possible reforms for the next century I shall describe how the long transition to a funded system might be managed.

#### Social Security on the Defensive

OASI has certainly done well for today's elderly. They have very little wage income, they retire earlier, and they live longer.<sup>3</sup> Yet the incidence of poverty among them is now no higher than in the population at

large. Figure 1 shows the decline in poverty among the elderly, compared with the total population. OASI coverage, 60 percent in 1937, now extends to virtually the whole labor force. Of persons of age 65 or more, 94 percent receive OASI pensions, up from 16 percent in 1950. (Figure 2) They account for 40 percent of the aggregate income of those senior citizens, and for more than half of the incomes of 59 percent of them.<sup>4</sup>

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Figures 1 and 2 about here

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The cost has risen too. Figures 3 and 4 show outlays for OASI benefits in percent of the federal budget and of GNP. Benefits are not expected to rise faster than GNP in the future. Social Security contributions, by employers and employees, have risen faster than employee compensation, and are projected to continue to do so. (Figure 5) OASDI payroll tax rates, employer and employee combined, were 2 percent from 1937 to 1949 and are scheduled to be 12.4 percent after 1989. The payroll tax burden is further increased by the levy for health insurance. The history and projections are shown in Figure 6.

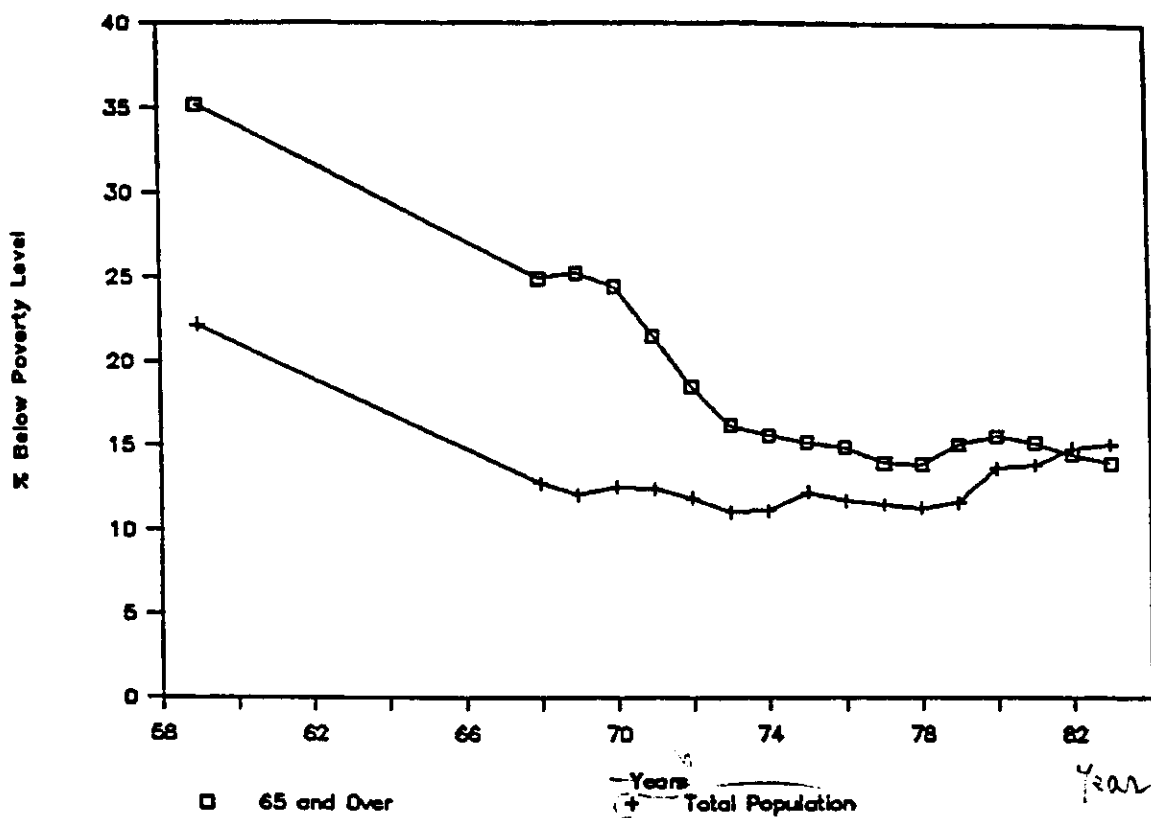
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Figures 3, 4, 5, and 6 about here

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In 1983 the prospect that OASDI would run in the red and use up the small kitty previously accumulated inspired the Congress and the President

Figure 1. Percent of persons in households with poverty incomes 1958-1983, persons age 65 or more compared to total population.



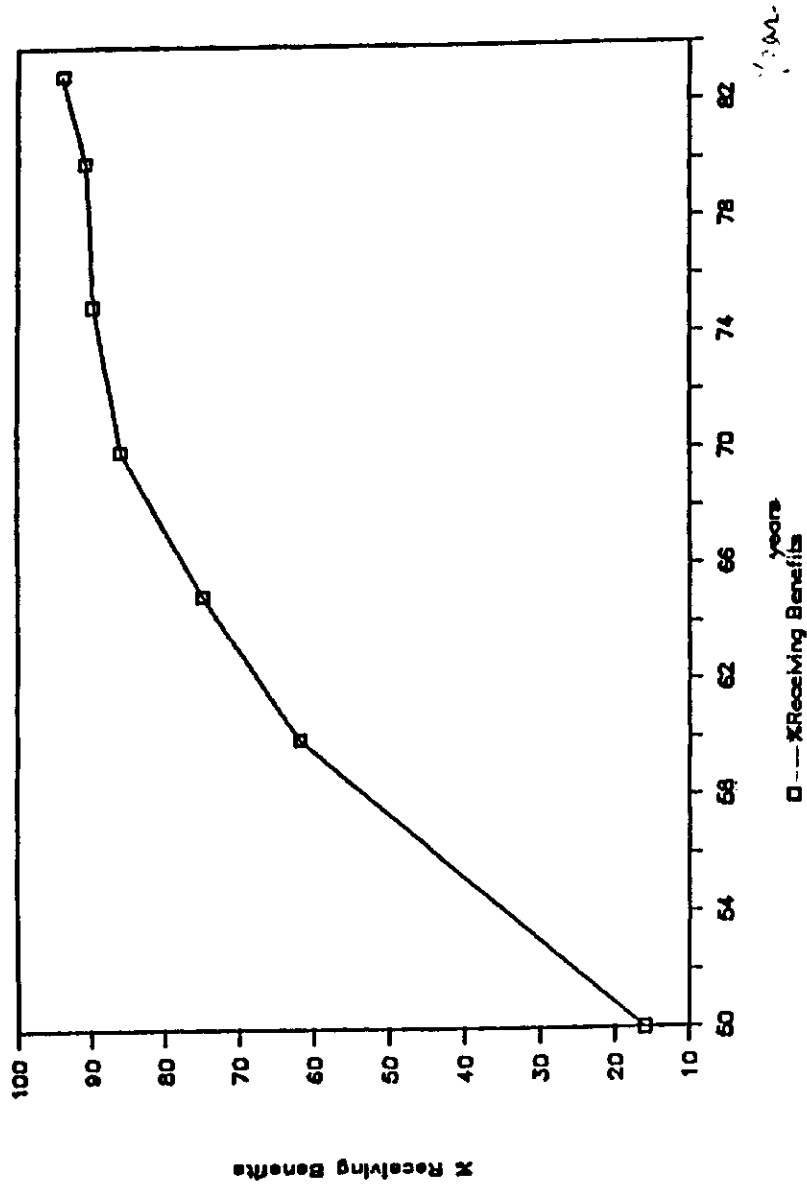
[Caption for Figure 1]

Note: No observations are shown for 1959-1967 because they are not available for the elderly population for those years.

Source: U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 130, 1979, table 1 and No. 147, 1983, table 3.

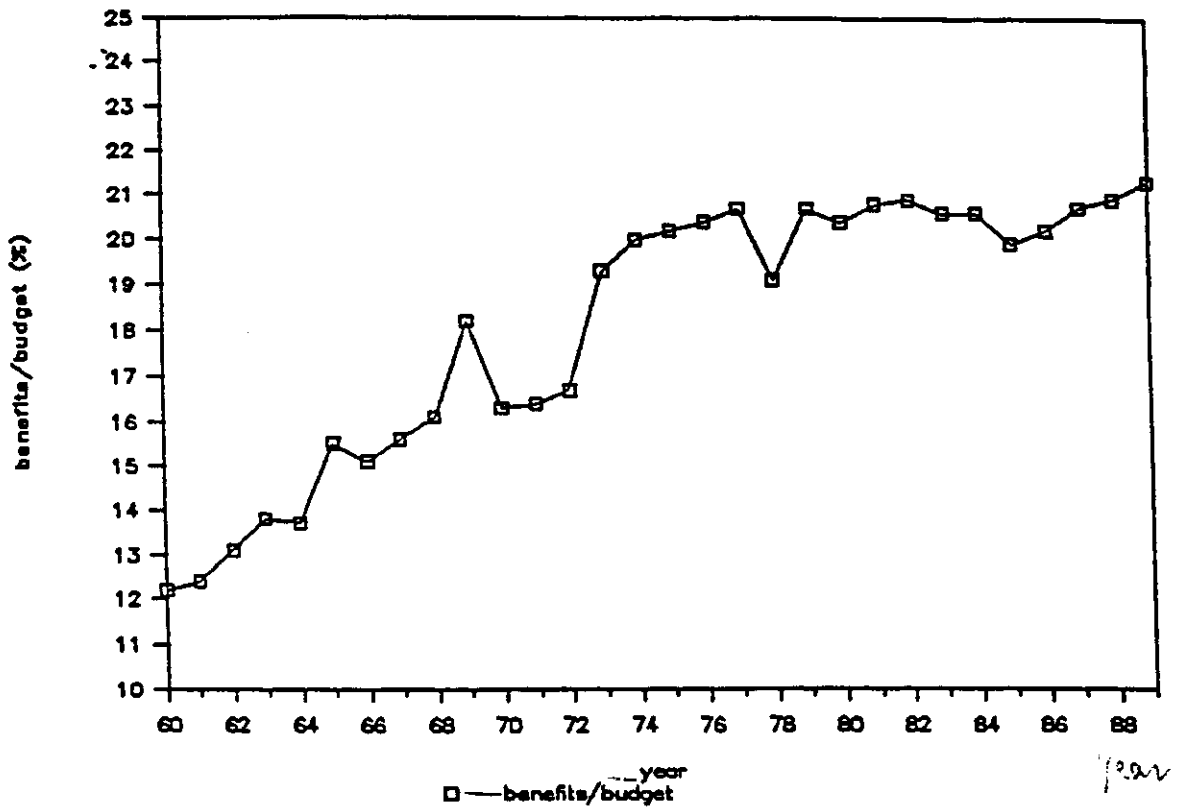


Figure 2. Percent of persons age 65 or more in households receiving OASI benefits, 1960 to 1983.



[Caption figure 2]  
 Source: Economic Report of the President 1985, Table 5-6, p. 174.

Figure 3. Aggregate OASI benefits as percent of federal budget outlays 1960-1989 (projections 1985-1989)

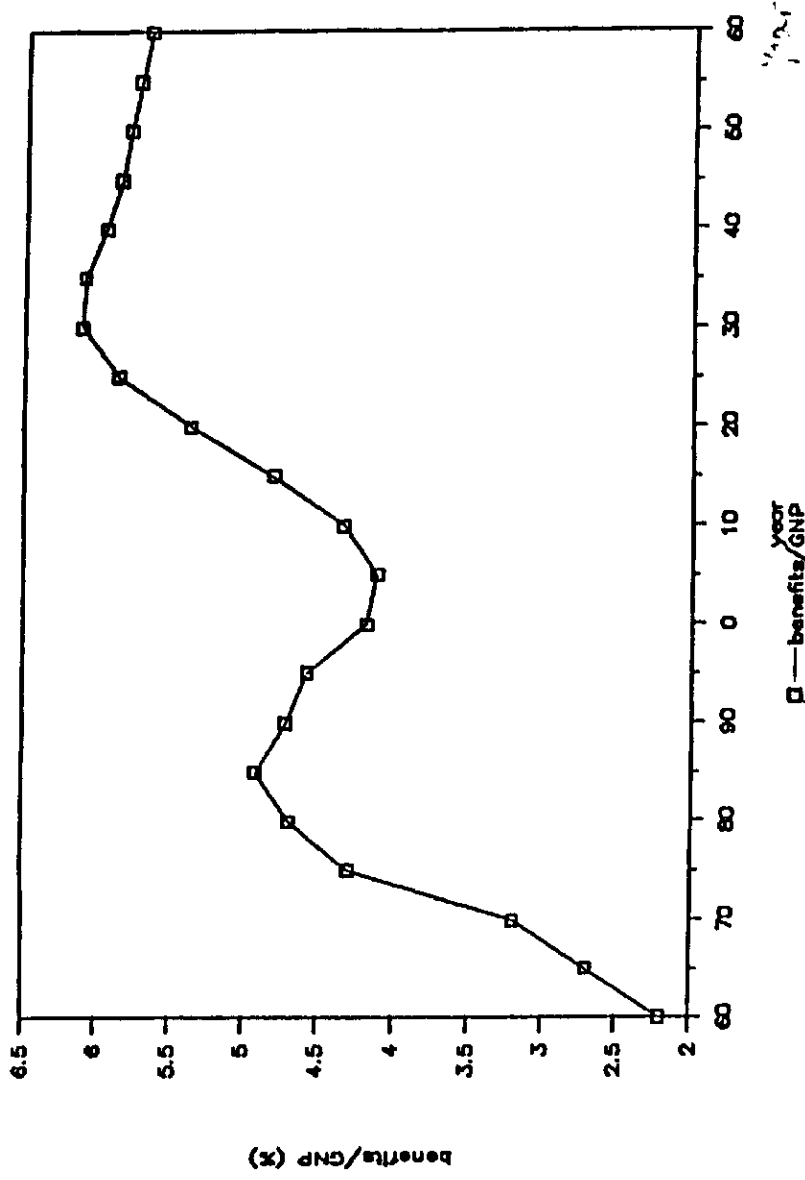


[Caption figure 3]

Source: Budget outlays: Economic Report 1986, Table B-72 and Congressional Budget Office, Economic and Budget Outlook Fiscal Years 1987-1991, February 1986, Table 1, p. xiv.

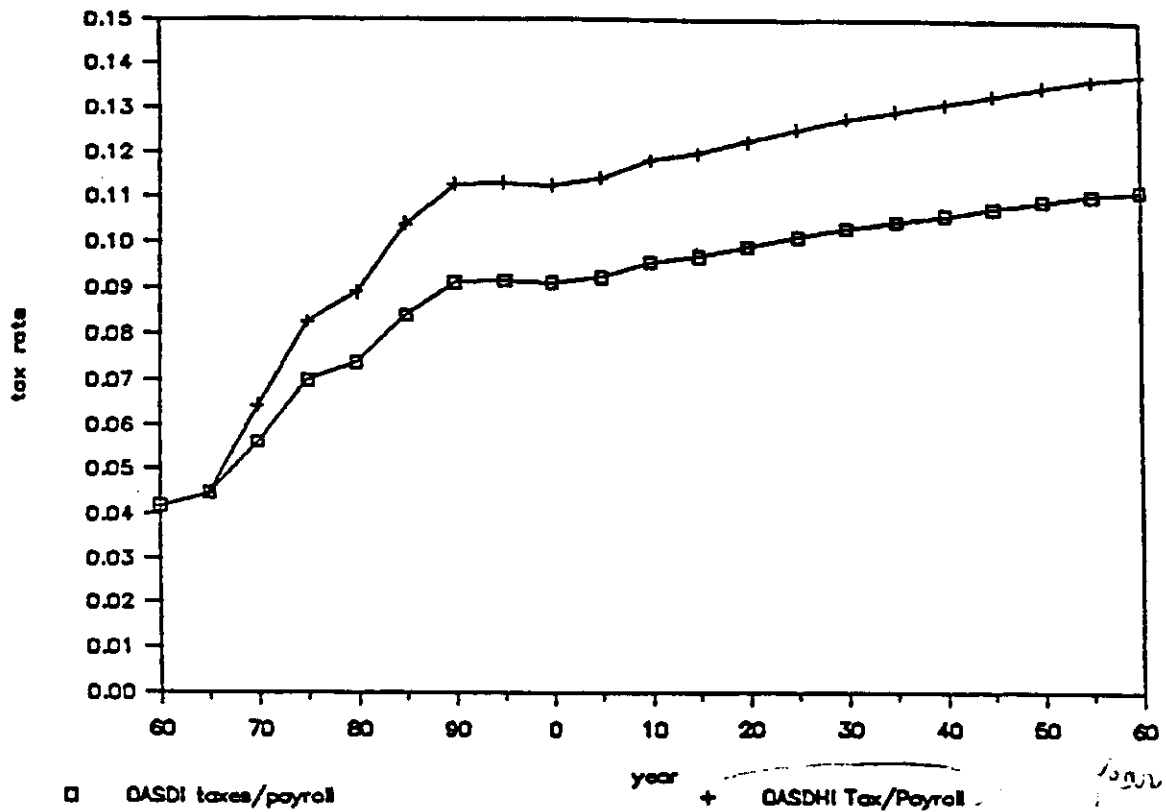
Benefits: Trustees Report, Table 25, p. 58 and Social Security Bulletin, Annual Statistical Supplement 1983, Table 18, p. 76.

Figure 4. Aggregate OASI benefits as percent of GNP 1960-2060, actual before 1985, projected 1985-2060.



[Caption figure 4]  
 Source: GNP: history, 1986 Economic Report, Table B-1; projections from GNP growth rates assumed in Alternative II-A, Trustees Report, Table 10, p. 28. Benefits: Trustees Report, Table 25, p. 58 and Social Security Bulletin, Annual Statistical Supplement 1983, Table 18, p. 76.

Figure 5. Aggregate Social Security payroll tax contributions relative to total compensation of employees 1960-2060.

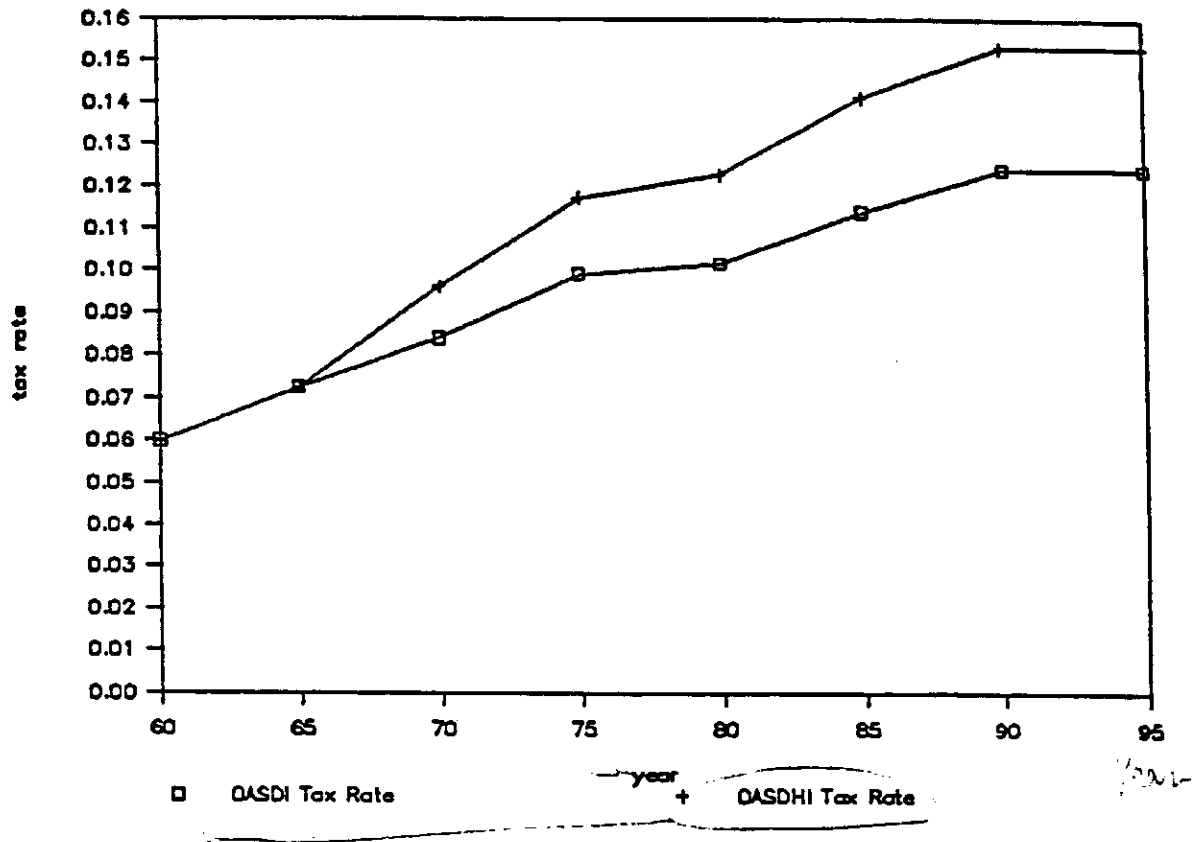


[Caption figure 5]

Note: These ratios are not the same as the contribution rates shown in Figure 6. Employee compensation is larger than taxable payroll because an employee's annual wage income is not taxed above a "cap" and fringe benefits are not taxed at all. Moreover, Social Security coverage is not quite complete. The projections beyond 1985 assume the tax rates scheduled in current legislation, graphed in Figure 6. It is probable that HI taxes, for Medicare, will be increased by legislation in the next few years.

The projections are for Trustees Report alternative II-A. The projections for the variables shown here had to be inferred from other information in the Report. From Table 10, p. 28 it is possible to infer projected growth rates of dollar GNP and nominal wages. Table A2, p. 81, gives projections of the ratio of taxable payroll to GNP. Thus the implied growth projected for taxable payroll can be calculated, and the scheduled tax rates (see note to Figure 6) applied to yield projected aggregate contributions. Similarly the growth of total employee compensation, based on the 1985 figure from Economic Report 1986 table B-21, can be estimated from the Trustees' Table 10, using the data there given on growth of earnings per worker, inflation, and employment.

Figure 6. Social Security tax rates on taxable wages and salaries, employee and employer combined, according to past and present legislation.

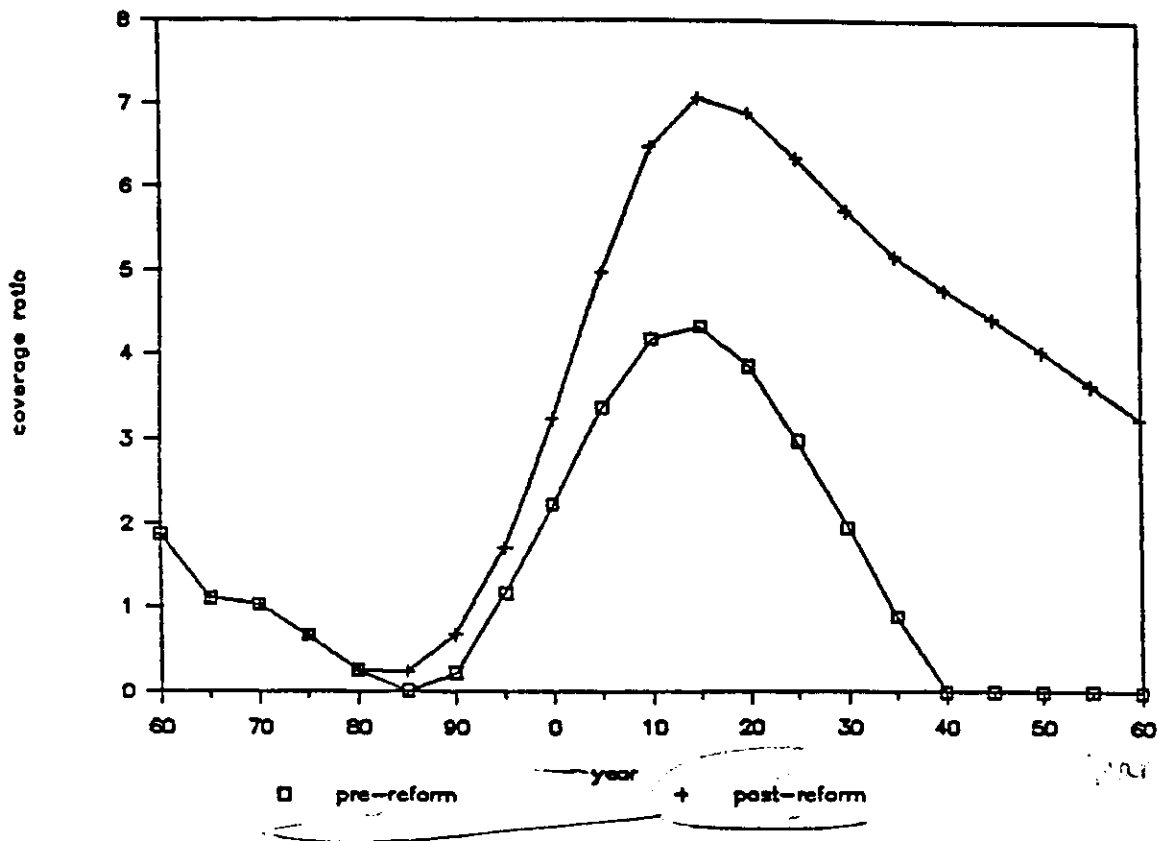


[Caption figure 6]

Note: Current legislation schedules the tax rates shown in the figure. Official Trustees Report projections assume no changes in OASDI tax rates after 1995. Further increases in HI (Hospital Insurance) tax rates, for Medicare, are likely to be legislated, in order to keep the HI Trust Fund, legally separate, in the black.

Source: Social Security Bulletin, Annual Statistical Supplement 1983, Table D, p.19.

Figure 7. Ratio of OASI Trust Fund to annual benefit outlays 1960-1980 and as projected 1985-2060 before and after 1983 Amendments to Social Security Act.



[Caption figure 7]

Note: The reforms of the 1983 legislation will have succeeded, according to Trustees' projections, in keeping the OASI trust fund in the black throughout the period, although it will be declining relative to benefits after 2010.

Sources: Prereform: Report of the National Commission on Social Security Reform, January 1983, Washington: Government Printing Office, Appendix A, p. 165; postreform: Trustees Report, Table 33, p. 70.

to patch together, with the help of a blue-ribbon commission chaired by Alan Greenspan, a bipartisan compromise of future payroll tax increases and benefit cuts. In addition, the more affluent beneficiaries must now pay personal income tax on some OASI income. This legislation is projected to keep the OASI trust fund in the black for 75 years, though it will begin to dwindle some 50 years from now.<sup>5</sup> Figure 7 shows sizes of the trust fund relative to annual benefit outlays, actual history and two projections, one before and one after the 1983 Amendments.

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Figure 7 about here

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This Greenspan-O'Neill-Reagan compromise did not lay the issues to rest. Cutting entitlements, especially in the politically less obvious way of suspending or limiting indexation, is regularly on the agenda as President and Congress struggle to limit or eliminate budget deficits. So far the political popularity of Social Security has protected OASI from cuts beyond those of the 1983 legislation. But OASI remains vulnerable to the national concern about the overall federal deficit and to the determination of President Reagan to solve that problem without raising federal taxes.

It has long been clear that the main fiscal priority of the Reagan Administration is to bring down the size of the unified federal budget relative to GNP, while sharply raising defense spending. Deficit reduction is a means to that end, not a priority in its own right. That is why tax increases are ruled out, and why indexed transfer payments are fair game

while indexed adjustments of personal income tax brackets are sacrosanct. If other budget programs do not yield sufficient deficit reduction, Social Security may again be asked to "do its share," in effect channeling trust fund surpluses to defense spending and to the preservation of the 1981 income tax reductions.

The well-advertised anxieties about the finances of OASI and the political struggles they inspired have led to considerable cynicism about the program, especially among the young. Proposals to cut Social Security, coming so soon after the compromise rescue legislation of 1983 and after the solemn promises of the 1984 Presidential campaign, were bound to reinforce prevalent cynicism about the sanctity of Social Security commitments. Only 18 percent of respondents in a 1981 poll thought Social Security was financially sound, and 68 percent said it was "in trouble." In another 1981 survey 54 percent of the sample, including 74 percent of those age 18 to 29, thought the Social Security System would not have the money to pay them benefits; only 30 percent of the total, including only 18 percent of the 18 to 29 group, thought it would.<sup>6</sup>

The young evidently expect to support their seniors by heavy payroll taxes and to get little or nothing of value in their turn. These expectations are not well informed. Both official projections and those of private experts show that despite its problems the system can deliver the promised benefits. Doubtless many people were misled by headlines about the vanishing trust fund, thinking erroneously that continuation of benefit payments depended on the fund. But the attitudes are important, even if



they are based on misperceptions. There is an ugly intergenerational conflict beneath the recent and current political debates on Social Security finance. Many young people regard the system as bankrupt, as budget-busting, and as catering to the self-interest of an affluent retired middle class.

#### How Social Security Got Into Trouble

Why and how did so successful and popular a program run into financial difficulties and come to encounter distrust among its future beneficiaries? There are several reasons in recent history, some related to the general economic and political environment and some intrinsic to the OASI system.

Stagflation. The American economy, along with the rest of the world, went sour beginning in 1970. The period since then has been an era of stagflation, OPEC shocks, four recessions, and low productivity growth. The most important symptom relevant to our topic is that real after-tax wage incomes, instead of rising at 2.5 to 3 percent per year as they had in the two previous decades, actually declined. A young man starting work in 1963 or 1973 has not experienced the progress toward the American dream that his father rightly took for granted a decade or two earlier. Indeed, from 1973 to 1983 his real wage income went down.<sup>7</sup> If young families nonetheless advanced their incomes during the 1970s, it was because both spouses worked and postponed or eschewed child-bearing. The commitment of today's young women to working careers in preference to motherhood also means that there will be few payroll taxpayers relative to OASI beneficiaries next century.

Meanwhile the living standards of the elderly not only were immune to the economywide setbacks but sharply improved. From 1970 to 1980, while average monthly real wages declined by 7.4 percent, average monthly OASI benefits rose in real terms by 37 percent. Generous improvements of benefits were enacted in the early 1970s, and were protected by automatic adjustment of the Consumer Price Index beginning in 1973.<sup>8</sup>

**The Political Climate.** The contrast of the stagnant 1970s with the prosperously growing 1960s was summarized by Lester Thurow in the term zero-sum society, implying intensified conflict over the distribution of a national pie that was no longer growing. Redistributions of income of all kinds via taxes and governmental transfers waned in popularity. Tax revolts mushroomed in local, state, and national politics. General trust in government was eroded by Vietnam and Watergate. Conservative economics and ideology gained influence. The public was receptive to the conservative diagnosis of the 1970s, which attributed the disappointing economic performance to the size and growth of government--expenditures, taxes, regulations--rather than to OPEC and other external misfortunes. The last two, maybe even three, Presidential elections have been won on the slogan "government is not the solution, it is the problem."

**Demographic Trends.** The age distribution has turned adverse to Social Security. Aged workers retire sooner and live longer. Births, low in the 1920s and 1930s, zoomed after the Second World War, began to decline in the 1960s, and now hardly suffice to replace parents. The trends are shown in Figure 8. The ratio of persons aged 20 to 64 to persons 65 and over is

falling, and so, of course, is the number of workers per OASI beneficiary.

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Figure 8 about here

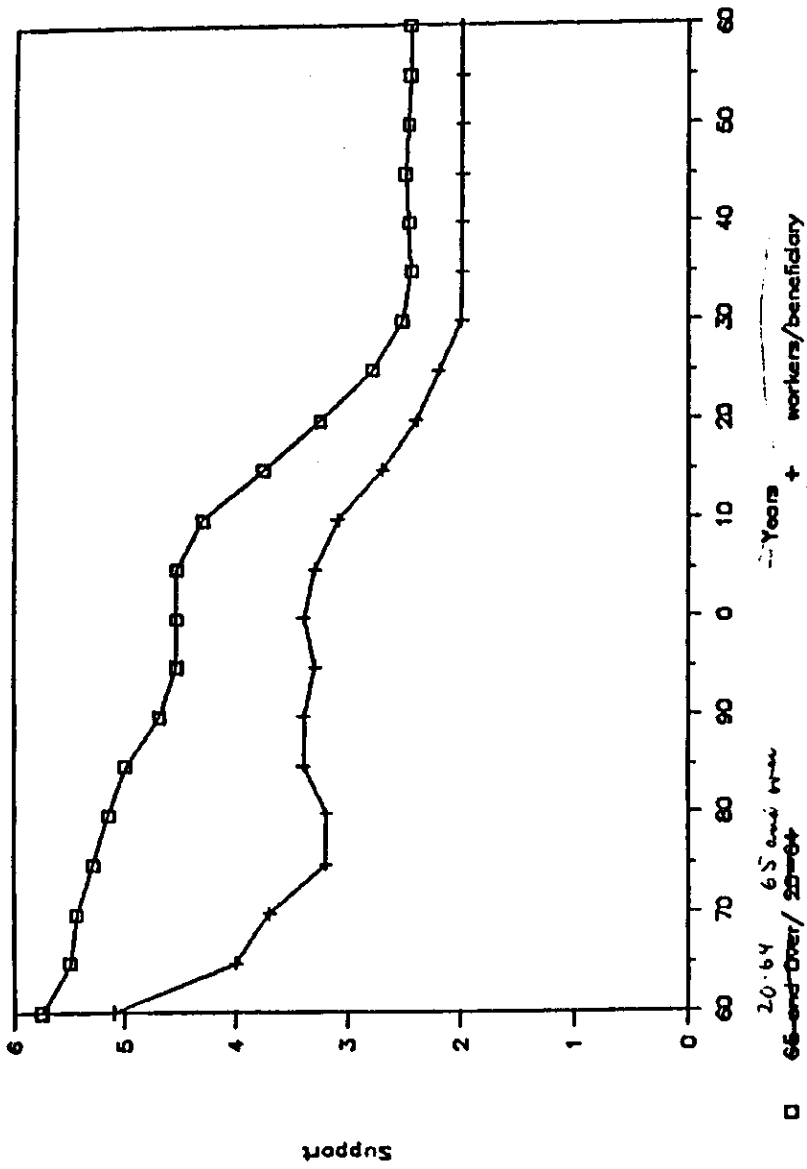
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These clouds have some silver linings. Official projections have gone wrong in the past, and the current ones may be unduly pessimistic. Lower natural population and labor force growth may open the doors to more legal immigrants, mostly young workers who will be paying in to the trust fund. Greater scarcity of labor might lead to faster growth of real wages--though given present uncertainties about capital formation and technological progress, this is by no means a sure thing. In any case, workers with fewer children will be able to afford either higher payroll taxes or additional saving on their own retirement.

The Maturing of the System. Some difficulties endemic to the OASI system became salient in the less benign environment after 1970, especially after 1973. Even though the climate is now improving, these problems once surfaced will not go away. They have roots in the history of OASI.

OASI took a long time to grow to maturity, and growing up was a lot easier than adulthood. The reach of the system, thus of the payroll tax, was gradually extended by legislation and by economic change (for example, migration from rural self-employment to nonfarm wage labor). Ratios of persons in covered employment any time during a year to average civilian employment for the year are indicative. They were .82 in 1950, 1.10 in 1960, 1.13 in 1984.<sup>9</sup> During this long period of expanding coverage, the

Figure 8. Measures of available workers to "support" the elderly: the ratio of persons age 20 to 64 to persons age 65 and over and the ratio of covered workers to OASI beneficiaries, 1960-1980 and as projected 1985-2060.



[Caption figure 8]  
 Source: Trustees Report, Table A1, p. 77 and Table 29, p. 65.

number of contributing active workers was growing more rapidly than the labor force, and of course the covered percentage of retired workers was always lagging behind. By the 1970s we were coming to the end of this road. The few remaining pockets of exempt private employment were being absorbed. (State and local governments still have discretion and are likely to continue successfully their resistance to compulsory inclusion.)

Growth of coverage combined with growth of labor force and productivity to swell the proceeds of the payroll tax, faster than the benefit payments committed by previous legislation. The surpluses might have been allowed to pile up in the OASI trust fund, the way an insurance company channels current premiums into reserves against its liabilities to future beneficiaries. This was not done. Even so, the taxes and benefits set in the original Act in 1935 would have built a substantial fund, estimated at the time to reach in 1980 \$47 billion (equivalent to about 300 billion actual 1980 dollars--compare 1980 benefit outlays of \$105 billion). In the event, the trust fund was \$23 billion in 1980. The 1939 Amendments deliberately scaled down the growth of the fund, aiming only at a modest contingency reserve. In addition, as surpluses loomed after 1950, Congress regularly increased the scope and size of benefits. The reforms were always very desirable improvements in the effectiveness and fairness of the system. Several generations of beneficiaries have, therefore, obtained excellent returns on their contributions, and I will too. But as the system approached maturity, these enlarged benefits could be continued only by

successive increases in payroll taxes. (See Chapter I of this volume for a detailed historical discussion).<sup>10</sup>

Indexation. In 1972 another fateful decision was made, the automatic indexing of benefits. At the same time, benefits were scaled up by 20 percent. Indexation was well intended. Indeed it was an act of political abnegation by Congress. The setting of benefits (including, but in practice not confined to, adjusting them for inflation) was taken off the regular political agenda. Moreover, there was every reason in past experience to believe that the move was financially prudent. OASDI revenues would grow with wages, benefits with prices. Wages grow faster than prices; anyway they always had. Came the OPEC rise in oil prices and the vanishing of productivity growth and this relationship was reversed. In this way the stagflation of the 1970s hit OASI finances very directly. The blow was compounded by an inadvertent technical error in the 1972 legislation, which in the circumstances turned out to overindex benefits; this was corrected in 1977.

In retrospect it is easy to see that indexing by the CPI is not a good idea, even in economic times less turbulent than the 1970s. It is not a good idea for government-paid benefits, and it is not a good idea for wage contracts. Such indexing immunizes the favored individuals from losses the nation as a whole cannot escape--in 1973-1974 and 1979-1980 the big rises in the cost of imported oil--and throws their costs onto unprotected fellow citizens. Likewise indexation in effect exempts its beneficiaries from paying increased taxes embodied in the prices that compose the index; others

must bear the burdens of the public programs financed by those taxes. It would be both possible and desirable to construct an index purged of these unintended implications and to mandate its use, not only in Social Security but wherever indexed commitments are made, before we run again into stormy weather like the 1970s.<sup>11</sup>

#### Social Security and National Saving

The issue of pay as you go versus funding is both more basic and more difficult than correcting for inflation. At the macroeconomic level the question is how OASI financing affects national saving and capital investment, and through them future productivity and standards of living. It is obviously related to the similar question about overall federal fiscal policies.

As noted above, Martin Feldstein has been the most prominent and insistent critic of pay-as-you-go financing. He argues that this system greatly diminishes aggregate national saving. Workers regard their payroll tax contributions as saving; the prospect of future OASI pensions spares them, at least in part, the need to provide for retirement on their own. But under pay as you go, the government treats receipts from those taxes like any other revenues and spends them. They are not channeled, directly or indirectly, through the capital markets into investment in productive capital assets whose yields could pay the future pensions. Feldstein estimated the national capital stock to be trillions of dollars smaller than it would have been with a funded system.

Feldstein's argument overstates the problem, both theoretically and empirically.<sup>12</sup> It probably is true that OASI taxes displace some voluntary saving. For example, some private pension plans, explicitly aiming at a target ratio of total retirement income to wage or salary, offset OASI improvements by lowering their own provisions. On the other hand, many workers are so constrained by their current liquid resources that they cannot offset OASI taxes by consuming more and saving less on their own. Moreover, many elderly pensioners do not consume all their pensions during retirement, as the Feldstein scenario assumes they do. Their benefits wind up, in part, in larger bequests to their children. Middle- and upper-income retired individuals typically save actuarially excessive amounts against the risk of prolonged high medical and custodial expenses, knowing that any unneeded amounts will end up in their estates.<sup>13</sup> Empirical studies provoked by Feldstein's work are inconclusive, but they indicate that the effects of unfunded OASI on voluntary private saving are at most much smaller than Feldstein asserted.

#### OASI Financing and Federal Fiscal Policy

The issue turns also on the effects of OASI financing on general federal fiscal policy, and of that policy on the economy and its rate of capital accumulation. Would the overall, "unified" budget deficit be smaller if, because of funding, OASI were in surplus? Or would the political and economic strategies that determine the budget offset the OASI surplus with a larger deficit in other transactions? A test may come in the 1990s



and 2000s, when thanks to the 1983 legislation the OASI trust fund is projected to grow to 10 to 20 percent of GNP with annual surpluses of 2 to 2.5 percent of GNP.<sup>14</sup> Moreover, we are about to return to the pre-1968 practice of focusing official attention on the "administrative" budget and deficit, thus separating the trust funds from the budget that it is presumptively supposed to balance.

My guess is that in the past the federal government would have run larger administrative deficits had the trust funds been raking in surpluses. Indeed this often would have been good macroeconomic policy, because fiscal stimulus was needed to avoid or overcome recessions and keep the economy close to full employment. Fund surpluses, if not offset by administrative deficits or by aggressively stimulative monetary policy, would frequently have meant greater unemployment rather than more capital accumulation. If we were to assume that nowadays Federal Reserve monetary policy calls the macroeconomic tune, so that national output and employment are always what the "Fed" wants and will permit, irrespective of fiscal policy, the situation would correspond more closely to Feldstein's assumptions. Conditional on monetary policy, we would get more capital formation the lower the federal deficit. And funding, combined with segregated accounting, probably would lower the overall deficit, although by less than the OASI surplus.

A truly funded system could be expected to yield on average a higher rate of return on participants' contributions. A mature pay-as-you-go system cannot do better than the rate of growth of real payrolls--the sum of

the rates of growth of employment and real wages. In the long run the growth of real wages is the growth of labor productivity. The formulas prescribed in 1972 and 1977 legislation pretty much guarantee that real benefits will grow along with real wages (i.e., with productivity). That is how earnings replacement rates are maintained. The formulas ignore trends in labor force and employment, which also determine the growth in real payrolls and thus in OASI contributions. As those growth trends decline, it will not be possible to pay the benefits the formulas generate without raising payroll tax rates. To make the same point another way, in those circumstances it will not be possible to hold tax rates constant without lowering earnings replacement rates.<sup>15</sup>

For the rest of the century, the growth of real payrolls looks to be about 3 percent per annum. Subsequently labor force growth will slow down. The baby-boomer bulge will subside, and the growth of the female labor force will decline as women's participation in the labor force approaches that of men. In official middle-range economic and demographic projections for the first half of the next century, real earnings per worker grow at about 1.8 percent per year and the covered labor force at a tenth of one percent, implying growth of taxable payrolls at well below 2 percent. The major uncertainty is productivity growth. The sources of its decline in the 1970s are still a mystery to students of the subject. Should labor productivity take off next century, the returns on the contributions of younger persons currently working or entering the labor force will be much better than they look now.

A funded system could in principle yield a rate of return equal to the economy's real interest rate, basically a reflection of the marginal productivity of capital. (Social Security trust funds, invested in federal securities, actually earn a bit less, because the federal government's borrowing rate is lower than rates on private securities. Those beneficiaries partially subject to income tax would earn still less, but this liability also reduces their return under pay as you go.) At present the pretax real rate appears to be 4 to 5 percent, thus higher than the current 3 percent growth rate of real payrolls. Over a working career, this difference compounds to a 20 to 50 percent advantage in benefits.

An advantage of this kind is not, however, an opportunity available to OASI participants without a long transitional period of extra saving to do the funding, at the expense of the consumption of taxpayers and/or beneficiaries. Moreover, the differential in favor of funding may not last. In the past, real rates of interest in financial markets often have been lower than the growth of real payrolls.

I shall return shortly to the funding issue. But first I need to take up some basic questions about OASI I mentioned in the beginning of this chapter. I shall do so under two headings: the compulsory nature of Social Security, and the relative roles of redistribution and insurance in the benefits provided.

## Why is Social Security Compulsory?

What is the rationale for compulsory universal participation? If yuppies think they could do better on their own, why not let them opt out? Why not let workers and their families arrange and finance their own retirements? Why not leave it to parents and children to define the obligations of generations to each other? In the polls previously cited, 56 percent favored voluntary Social Security, although 75 percent said they would participate anyway.

The perception that market returns are today higher than those likely to be earned on Social Security contributions is evidently a source of the disillusionment reported in polls: 58 percent of respondents say they could do better "at the bank," and only 22 percent think they could not do better on their own.<sup>16</sup> Of course, many workers, including respondents who think they could provide better for their own retirement than by contributing to OASI, would not in fact succeed in doing so. Indeed many would not in fact save the equivalent of their payroll taxes if they were free to choose.

There are several arguments for compulsion. First is simple paternalism. It shouldn't be lightly dismissed. Some citizens may not know what's good for them, or may be too short-sighted or weak-willed to act. Young people find it difficult to save for that incredibly remote time of old age. When it does arrive, they will be grateful in retrospect if Uncle Sam has made them save. Many people like such discipline and prefer that money never pass through their hands.

Second is a paternalistic argument with a different twist—society's interest in having individuals provide for their own old age. Society will not let the aged starve and die in the street—anyway I hope that is still true in this country. Society will use public resources to help the destitute even if their own past improvidence might be the reason for their plight, a possibility very difficult to substantiate in any individual case. Consequently, it is argued, the state has the right to protect society, as well as the individual, against such improvidence.

Third, there are what economists call externalities in universal participation. The government can provide a better retirement plan for most people than they could obtain on their own, provided everyone participates. Possibly some individuals could do better personally if allowed to opt out, but if everyone were free to do so few would do better. The government plan itself would be impaired by adverse selection—the withdrawal of the better risks and their premiums. Moreover, a universal and uniform plan has economies of scale which would be lost if participation were voluntary.

Fourth, a universal plan underwritten by the taxing and monetary powers of the central government can offer some guarantees that a decentralized system of private pensions and voluntary saving cannot. These include protection against internal inflation. A big advantage of OASI over private plans is that OASI is portable and vested, in the sense that rights and benefits once earned are not lost by changing jobs or residences or by leaving the work force. The founders of Social Security were very wise to establish it as a nationally uniform system, centrally governed and

administered. Thanks to their foresight, we avoided the distortions that a decentralized system would have introduced into workers' choices of jobs and residences and into employers' choices of locations. Such distortions occur because of differences among states and localities in unemployment compensation and welfare programs, and because of the incomplete portability and vesting of most entitlements to private pensions.

Fifth, in a highly interdependent modern economy, the intergenerational social compact is not solely among blood relatives. We recognize a general social obligation for the welfare, education, and socialization of children, an obligation that extends to citizens who have no children and to parents with more than ample means to care for their own. Likewise, active workers have some responsibilities for the elders in the society as a whole, whatever they may give to or receive from their own parents.

Intergenerational transfers are legitimate agenda of democratic politics.

Some may find these defenses of compulsion unconvincing; others may not have seen compulsion as problematic in the first place. I think there is a strong case for a compulsory system, but I do wonder whether it justifies compulsory accumulation of ever higher benefits, far above absolute minimal requirements for subsistence. OASI enthusiasts point with pride to the fact that its benefits now replace about the same percentage of the earnings of active workers as when the program began, about 40 percent. They use that statistic to counter critics who say present benefits are too generous. But this same replacement ratio provides now, and a fortiori in the next century, a much more comfortable retirement than it did half a century ago.

At some point the generations who will be working and retiring in the 21st century may wish to limit the growth of compulsory contributions and the benefits they buy, while inviting voluntary supplementary participation in OASI. Individuals, or employers and employees in concert, would be free to make additional voluntary contributions and obtain higher benefits. OASI could be an attractively simple channel for individuals' retirement saving and private retirement plans.

#### Insurance versus Redistribution

OASI was from its inception a carefully conceived compromise among several not wholly compatible objectives. Its overriding purpose, of course, was to enable older people to live decently and independently once they could no longer earn income from employment. OASI's reliance on contributions collected by taxing workers and their employers, and the absence of a means test for benefits, follow from the principle that participants earn benefits as a matter of right. The analogy to insurance benefits earned by premiums was deliberate; here the "risk" is living too long after wages stop, and the "premiums" buy "security" from destitution or dependence. But in fact the connection of benefits to contributions, within age cohorts and between them, has always been loose and uneven.

The variability of that connection comes from another objective: The system is intentionally redistributive among workers of any given birth date. (It is unintentionally redistributive across generations, as already noted.) High wage earners receive significantly lower pensions per dollar of

payroll tax contributions than do their lower-wage contemporaries. Consider, for example, three hypothetical workers retiring at the same age in 1982. One always worked at the minimum wage, one at the average wage, one at or above the wage at which payroll taxes are capped. Their Adjusted Indexed Monthly Earnings (AIMEs) reflect pretty closely their relative cumulative contributions. Their Primary Insurance Amounts (PIAs) reflect quite closely the relative sizes of their annuities. Here are PIAs as percent of AIMEs for these three workers: 57, 45, 40.<sup>17</sup> The differences among the three workers' ratios arise because the two numbers, AIME and PIA, are linked by a progressive formula, with three brackets, as illustrated in Figure 9.

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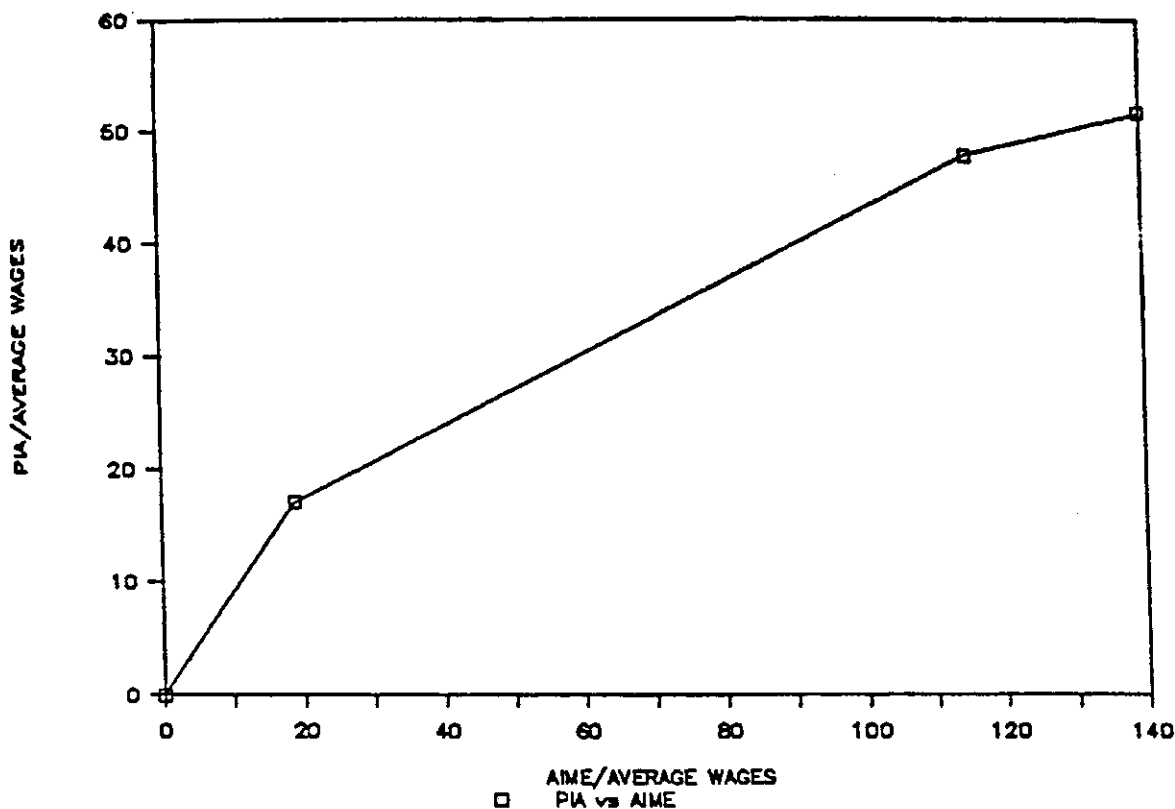
Figure 9 about here

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The progressivity of the formula does not tell us the full impact of the system on the distribution of income among contemporaneous participants. Some ancillary government policies enhance progressivity. At the low end of the income spectrum, Supplemental Security Income is a federal means-tested assistance program for the elderly, financed not from the OASI trust fund but from general revenues. It is a "safety net" for old people whose entitlements to Social Security do not meet minimal needs. At the affluent end of the income spectrum, the 1983 provision for partial income taxation of OASI benefits makes Social Security per se more progressive. On the other hand, AIMEs are not perfect indicators of income and wealth; low



Figure 9. Progressivity in the formula relating benefits to earnings before retirement: the relation of Primary Insurance Amount to Adjusted Indexed Monthly Earnings.



[Caption figure 9]

Note: AIME is an average of individual's earnings subject to payroll tax prior to retirement; earnings for each year included in the average are indexed to a common preretirement age by a national wage index. PIA is the base from which all OASI benefits, for spouse as well as for earner, are calculated prior to indexation during retirement by the CPI. The Figure shows both AIME and PIA in percent of average wages. Their dollar amounts both rise proportionately from year to year, thus from cohort to cohort, as average wages rise. The two breakpoints are at (19%, 17.1%) and (115%, 36.8%). The three slopes are .90, .32, and .15.

Source: Financing Social Security, Congressional Budget Office, November 1982, p. 20. Conversion to percents of average wage by the author.

cumulative contributions may have resulted from loose connection to covered employment rather than from low incomes during working years.

A more important point is that beneficiaries with higher AIMEs, thus with lower monthly benefits relative to lifetime contributions, tend to live longer and receive those benefits a longer time. On an actuarial basis, this longevity effect roughly, and serendipitously, offsets the progressivity of the AIME-to-PIA formula.<sup>18</sup> OASI pays virtually nothing except to living primary beneficiaries and their spouses. The "risk" against which OASI "insures" is that of living too long, and it makes no distinctions among its beneficiaries with respect to life expectancy. Private sellers of life annuities likewise make almost no distinctions of this kind. Individual OASI participants whose AIME-to-PIA conversions are the least favorable are unlikely to understand or appreciate the compensation they as a group receive by living and receiving benefits a longer time.

As is usually the case, equity and efficiency conflict. Use of the system's revenues to improve the lots of the poorer retirees and their families can create some perverse incentives. Participants can retire and begin receiving benefits as early as age 62. The weight of evidence is that the system has significantly reinforced the trend toward earlier retirement. Although a worker can gain higher monthly benefits by continuing to work, the gain has been actuarially inadequate, especially for postponing retirement age beyond the long standard age of 65. Under the 1983 amendments, this bias is being gradually eliminated. The legislation also

schedules a gradual increase after year 2000 in the normal retirement age in OASI calculus.<sup>19</sup> These changes seem quite appropriate. As the health and longevity of senior citizens improve gradually, it is a service to them, to their younger taxpaying contemporaries, and to the economy at large to employ their services.

In the past, a severe disincentive to work by the elderly has been the consequent total or partial loss of OASI benefits. Now, however, from age 70 OASI beneficiaries may work without losing any benefits. If they do work, however, they still pay Social Security taxes. This anomaly betrays an official attitude that those payments are just like other taxes, rather than contributions to earn retirement benefits. Working OASI beneficiaries should be excused from further contributions, especially now that earned income may make them liable for personal income taxes on their benefits as well as on the earnings themselves.

Serious disincentives prior to retirement are inherent in the size and growth of payroll tax rates noted above. Further increases—two to five percentage points—are likely in the 21st century, to handle the midcentury demographic crunch if benefit/earnings replacement ratios are maintained. Health insurance is also financed from payroll taxes. Total payroll tax rates have risen from 8.8 percent in 1967 to 14.1 percent now, and are scheduled to be 15.3 percent after 1989, probably even higher after the financing of Medicare is seriously reviewed over the next few years. In the middle of the next century total payroll taxes will have to be 21 to 26

percent of taxable payrolls, according to middle-range official projections.<sup>20</sup>

Payroll taxes, to the extent they are regarded as ordinary taxes rather than as contributions which earn full value in future benefits, are disincentives to work by employees. (For workers with annual earnings above the limit of the payroll tax, however, they are not a marginal disincentive discouraging extra work.) Likewise, if employers have to regard their payroll taxes as additional costs rather than as substitutes for wages, they are a disincentive to employment. High tax rates invite evasion and encourage substitution of capital and other inputs for labor--especially for low-wage and unskilled labor, all of whose earnings are taxable. If workers perceive no clear and fair link of contributions to benefits, the work and employment disincentives will be strong. But the disincentive to voluntary saving will be weak, because distrust of Social Security might lead participants to make other provisions for retirement.

#### Social Security and Income Redistribution

Twenty or thirty years ago, I recall, many economists looked on OASI as essentially a redistributive tax-transfer program disguised as social insurance.<sup>21</sup> They regarded the trust fund--the accounting designed to segregate OASI transactions from the general budget--as so much window dressing. They questioned the equity and efficiency of payroll taxes, especially with taxable wages capped, and wondered why more progressively levied general revenues should not be used instead. They wondered too about

the equity and efficiency of paying benefits without conditions on need, at least about their exemption from personal income taxation. This type of criticism has waned over the years, possibly because of some disillusionment with the general tax system and with the means-testing of other benefits. Moreover, economists have joined other social scientists in greater appreciation of the political and social values of a universal system somewhat separate from the general budget.

An opposite viewpoint is that insurance and redistribution should be clearly and explicitly separated.<sup>22</sup> Ideally, in this view, retirement insurance should be actuarially fair to contributing participants, so far as administratively feasible. In such a system it would be easy to cap compulsory contributions, while allowing voluntary supplements, as discussed above.

Redistribution would then be accomplished by extra assistance to those in need, paid from general federal revenues, like Supplemental Security Income. This approach would eliminate from OASI the actuarial anomalies and disincentives incident to redistribution within the system, on the assumption that the redistribution could be handled more efficiently through the general budget.

The issues of intergenerational redistribution and equity are even more difficult. As explained above, they are especially acute right now. Present beneficiaries and participants who will retire before the turn of the century are getting high returns on their past contributions because of the past unsustainable growth of the system and the indexation of benefits

in 1973. Many of them are much better off than many young payroll taxpayers are now or ever will be. Should the present fortunate elderly be asked to give up some of their windfalls either to enable payroll taxes to be reduced or to start building up a larger fund for the benefit of future retirees? Note that these purposes are intergenerational transfers within the OASI system. To accomplish them, deficit reduction targets for the remainder of the federal budget should remain unchanged. In any case, the problem is, as stated above, that immediate or early reduction of benefits, particularly so soon after the 1983 compromise, seems like a breach of contract, further weakening the trust of all generations in Social Security. Although further cuts of benefits could be phased in slowly, the windfalls of the luckiest cohorts of retirees would be untouched.

#### A Possible Funded System

No radical change of OASI is likely in the near future. The Greenspan compromise has assured its "solvency" well into the next century. No crisis is likely to return OASI to the urgent agenda of politics for a couple of decades, although it may continue to be vulnerable to budget cutters who try to resolve general fiscal imbalances without raising taxes or cutting defense. The trust fund surpluses anticipated in the 1990s might tempt Congress to sweeten benefits or lower payroll taxes, although the deficits anticipated some decades later should be an inhibition. The Greenspan Commission left unresolved the financial crunch projected 50 or 60 years from now. The generations involved have the time and opportunity to choose

among various ways of averting it. As a contribution to that debate, let me spell out what a funded system recast along purer insurance lines would look like. I shall draw in part on the proposals of Professors Boskin, Kotlikoff, and Shoven for "personal security accounts."<sup>23</sup>

1. Every individual participant would have a funded account, which would vest him or her with rights to pensions, and to ancillary insurance and benefits, from first covered job until actual retirement. The age of retirement (i.e., commencement of benefits) would be discretionary within a specified interval. Benefit claims would depend on the dates and amounts of contributions in the same way for all participants. The fund would grow during the participant's working career, not only by additional contributions but also by compound interest. The interest rate would vary with the government's borrowing rate, but would never be less than the rate of inflation of a suitable consumer price index (purged of the price effects of uninsurable shocks and indirect taxes).

2. At the time of retirement, this fund—less amounts charged to it for disability insurance, death benefits, and other ancillary items—will be converted actuarially into an indexed annuity, either for the life of the participant alone or with continuing payments to a surviving spouse, at the choice of the participant.

3. Contributions of married workers will be divided equally between the two spouses' accounts, as long as they are married. There will be no spousal benefits or benefits to a surviving spouse other than the optional survivor annuity mentioned above. But a married retired couple will receive

all the benefits the two of them earned by working or by being married to a worker. Changes of this type are overdue. The present system does not do justice to working spouses or to divorcees.<sup>24</sup>

4. During periods of registered unemployment, a participant's compulsory payroll contributions to OASI in his previous job will be credited to his account without payments by the participant or his previous employer. The government could also credit extra contributions to participants who worked at low wages or were registered as unemployed for, say, at least 40 weeks of a year. These extra contributions could be proportional to the shortfall of earnings from, say, half the earnings cap for the year. Thus could some progressivity be built into the system.

5. The system will be funded in aggregate. The trust fund will receive the payroll contributions and credits, and disburse the annuities and other benefits. The Treasury will pay the trust fund interest on its balance at the designated rates. Since the scheme is essentially a "defined contribution" plan, its solvency will not be a problem unless real interest rates are chronically so low as to bring into force the guarantees of purchasing power.

6. Transition to such a funded system could take place slowly, as follows: Following its adoption, only new participants below age 35 would play by the new rules. Their aggregate contributions and credits would build up a new trust fund, Trust Fund II. Everyone else would play out the game by the old rules, via existing Trust Fund I. That fund would be deprived of receipts from the Fund II participants. The Treasury would



"borrow" those receipts from Fund II and pay them out as necessary to Fund I beneficiaries. At the end of some 40 years of transition, Fund II would hold Treasury obligations equal in value to the accounts of its participants. From a macroeconomic standpoint, total receipts and payments throughout the transition would be virtually the same as if there were no new program. The difference would be simply that the government would now be acknowledging its liabilities to future beneficiaries, the Fund II participants. Present federal accounting does not reckon such liabilities as public debt, though they really are.

I do not want to be misunderstood. Accounting is not magic. It cannot produce the economic funding that Feldstein advocated unless the nation does some extra saving during the transition. This proposal does not assign that task to any particular generation, contributors or beneficiaries, but via the overall federal budget to the nation as a whole. Only if the gradual acknowledgment of the Treasury's debt to Fund II inspires Presidents and Congresses to lower their deficits on non-QASI transactions will the accounting reform have macroeconomic substance. At the end of the transition, QASI would be a funded system for its participants, but overall effects on national saving and capital formation would still depend on general fiscal and monetary policies.

The slow transition just outlined has the advantage of breaking the bad accounting news quite gradually. More important, it respects the legitimate expectations of everyone in the existing system. Faster transitions, under

which many beneficiaries would receive benefits from both Funds I and II, would cause too many confusions, anomalies, and inequities.

The trade-off between workers' contribution rates and beneficiaries' earnings replacement rates is likely to be painful in the next century. (See Appendix A.) The generations concerned have time to work out a solution. The present system biases the result to maintaining the replacement rate and raising payroll taxes as necessary to pay the ever higher benefits. The proposed new system would be an opportunity to choose other options. One of them is to freeze the payroll tax and adjust future benefits accordingly; there are many options in between.

The new system would be much less vulnerable to economic and demographic shocks of the kind that spawned recent "crises." Blind adherence to pay as you go seems to result in raising taxes to cover previously committed benefits whenever adverse events threaten to deplete the fund. Even when the problems are foreseen, action is postponed so long that benefits cannot be touched without violating commitments to those retired or about to retire. At the same time, the new system would give participants a fair, clear, and continuously reported link between their individual contributions and their benefit rights. Although the system as outlined could accomplish some redistribution in favor of poorer participants, that burden is placed mainly on the general federal budget.

Proposals of this kind are worth considering in the next national debate about Social Security. The questions they raise are not in my view liberal/conservative or Democrat/Republican issues. They are issues of

pragmatic management. Aging is a common human fate, irrespective of politics, ideologies, and generations. How people choose to trade consumption when they are young for consumption when they are old should not bring them to the barricades. It should bring them to face squarely economic and demographic realities. I hope the generations who will work out the structure of the system in the next century will do so in this spirit.

In concluding I want to stress that Social Security is viable and affordable in its present form. In suggesting possible changes for consideration, I am in no way departing from my conviction that the Social Security Act was one of the greatest triumphs of political, social, and economic architecture in the history of the republic, or from my admiration for its original designers and builders and for those dedicated public servants--like Robert Ball--who have maintained, repaired, and improved the structure these many years. Social Security deserves celebration of its golden anniversary.

## NOTES

1. This generational conflict, so prominently publicized, is somewhat, but only slightly, mitigated by the fact that some OASI benefits go to the young, mainly indirectly. They might otherwise have to contribute to their parents' support, and they might receive smaller inheritances. Also, elderly beneficiaries who work continue to pay Social Security taxes.

2. The most prominent critic of pay as you go and advocate of funding has been Martin Feldstein. His "Social Security, induced retirement, and aggregate accumulation," Journal of Political Economy vol 82 September-October 1974, pp. 905-26, stated his thesis and was followed by a series of other articles he published supporting and defending it.

3. The labor force participation rate of elderly (age 65 or greater) males declined from 26.8 percent in 1970 to 17.4 percent in 1983, and that of elderly females from 9.7 to 7.8 percent. Those elderly who are in the labor force are increasingly likely to work only part time; the part-time percent of elderly workers has increased from 35 in 1960 to 50 for males, and from 48 to 61 for females. (1985 Economic Report of the President, Chapter 5). Since 1960 life expectancy at age 65 has increased by 1.4 years for white

males, 2.9 years for white females, 1.2 years for other males, and 2.8 years for other females. In 1960 33 percent of elderly males and 35 percent of elderly females were aged 75 or more; in 1983, the figures were 36 and 46 percent respectively. (Statistical Abstract of the United States, Table 103, p. 69 and Table 33, p. 30).

4. Economic Report of the President February 1985, Washington, U.S. Government Printing Office, Annual Report of the Council of Economic Advisers, Chapter 5.
5. Report of the National Commission on Social Security Reform January 1983. See also 1985 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, Table E3, p. 123, subsequently cited as Trustees Report.
6. American Enterprise Institute Public Opinion, August-September 1981, pp. 35-37, reporting polls in 1981 by Tarrance Associates for the National Foundation of Independent Business and by CBS/New York Times.
7. Frank Levy and Robert Michel, "Are Yuppies Selfish?" American Demographic Magazine, April 1985.
8. Economic Report of the President, Chapter 5.

9. Covered workers, Trustees Report, op.cit., Table 29, p. 65; civilian workers, Economic Report, op. cit., Table B-32, p. 270.

10. See also, National Conference on Social Welfare, 50th Anniversary Edition of The Report of the Committee on Economic Security of 1935 and Other Basic Documents, 1985, especially Chapter 6 by Robert Ball, "The 1939 Amendments to the Social Security Act and What Followed." See also Robert J. Meyers, Social Security, 1985: Richard Irwin, pp. 357-8.

11. Indexation modified in the way described has been adopted in Austria and Sweden. For the United States, the appropriate index is conceptually a National Income and Product Accounts deflator for the personal consumption expenditures (PCE) component of Gross National Income. This is the deflator for the PCE component of gross national product modified to exclude changes in indirect taxes. It would measure changes in the dollar cost per unit of value added by payments of income to domestic factors of production in the making and delivery of consumption goods and services to domestic consumers. Increases and decreases in the dollar prices of imported consumption goods, or of imported materials used in making domestic consumption goods, would not be counted. Neither would changes in indirect taxes—mainly sales, excise, and payroll taxes. Although the Department of Commerce PCE "deflator" is closest conceptually to the desired index, the Bureau of Labor Statistics Consumer Price Index could be modified to approximate these exclusions. Between 1971 and 1981, the period of import price shocks, the

PCE deflator rose 10 percent less than the CPI; the difference would be somewhat greater if the deflator were purged of indirect taxes.

12. For review of the controversy see Henry Aaron, The Economics of Social Security, Washington: Brookings Institution 1982.

13. Regarding the saving behavior of the elderly and its departure from Feldstein's assumptions, see S. Danziger, J. van der Gaag, E. Smolensky, and M. K. Taussig, "The life-cycle hypothesis and the consumption behavior of the elderly," Journal of Post Keynesian Economics, vol. V, Winter 1982-83, pp. 208-227.

14. On the fiscal issues posed by these projections see Alicia H. Munnell and Lynn E. Blais, "Do we want large Social Security surpluses?" New England Economic Review, September-October 1984, pp. 5-21.

15. In Appendix A the tradeoff between replacement rates and tax rates is explained with some simple algebra and arithmetic, and illustrated in relation to projections well into the next century.

16. See note 6.

17. Congressional Budget Office, Financing Social Security: Issues and Options for the Long Run, November 1982, pp. 32-33.

18. Michael D. Hurd and John B. Shoven, "The Distributional Impact of Social Security," in David Wise ed., Pensions, Labor, and Individual Choice, University of Chicago Press for National Bureau of Economic Research 1985,

Chapter 7, especially Table 7.9.

Here and elsewhere actuarial calculations refer to values of streams of contributions and payments, allowing for probabilities of surviving and converting expected dollar amounts at past or future dates to a common date by compound interest.

19. On these changes see Social Security Bulletin, vol. 47, October 1984, pp. 11-12. Calculations by my research assistant Daphne Butler convinced me that for couples, assuming reasonable interest rates, these changes will virtually remove the bias against deferring age of retirement.

20. Trustees Report, op. cit., Table 1, p. 8; Table E3, p. 123.

21. This was the spirit of an influential book: Joseph A. Pechman, Henry J. Aaron, and Michael K. Taussig, Social Security: Perspectives for Reform, Washington: Brookings Institution 1968. In their introduction the authors say, "The originators and many current proponents of social security have placed considerable reliance on the "insurance" aspects of the system. Although there are many differences between social security and private insurance, the idea of social security as a form of insurance has widespread acceptance and appeal. The differences are significant, however, and this volume argues that the present program is more appropriately viewed as a system of transfers which, like any other government program, must be financed by taxes. This approach provides the conceptual basis for the analysis and for devising methods to improve the major features of the program." (p. 4)



22. See for example Michael J. Boskin, Too Many Promises: the Uncertain Future of Social Security, New York: Twentieth Century Fund and Dow Jones-Irwin 1986.

23. Michael J. Boskin, Laurence J. Kotlikoff, and John B. Shoven, "Personal Security Accounts: A Proposal for Fundamental Social Security Reform," presented to the National Commission on Social Security Reform, August 1982, unpublished. Revised version, unpublished, September 1985.

24. On this complex subject see Richard Burkhauser and Karen Holden, editors, A Challenge to Social Security, New York: Academic Press 1982.

Appendix A

THE SIMPLE ARITHMETIC OF OASI

The tradeoff between the contribution tax rate  $c$  and the replacement rate  $r$  under pay as you go is easy to see if it is assumed that every year benefits and contributions are strictly equal and that the trust fund is always zero. Such calculation also indicates starkly how the tradeoff worsens when, as will be happening next century, the number of contributing workers per contemporaneous retired beneficiary declines.

Let  $x$  be worker-support, the number of workers per beneficiary; let  $w$  be their real wage; and let  $b$  be the real benefit. The replacement rate  $r$  is by definition  $b/w$ . Pay as you go implies  $b = cw x$ , or  $r = cx$ . If  $x$  is lower, it takes proportionately higher  $c$  to keep  $r$  constant, or proportionately lower  $r$  to keep  $c$  constant. This is the political-economic dilemma discussed in the text.

Table A.1 gives some illustrative numbers.

Table A.1

	1984	2004	2044b	2044c
worker-support, $x$	3.3	3.2	2.0	2.0
replacement ratio, $r$	0.38	0.41	0.40	0.25
tax rate, $c$	.114	.124	.20	.124
real wage $w$ (1984=100)	100	136	302	302
real benefit $b = rw$	38	56	121	75
real benefit $b$ (1984=100)	100	147	318	197

Notes: Data from Trustees Report, projection II-A. Tax rates as now legislated in 2004. Two alternatives for 2044: 2044b holds replacement rate at present level, as will occur from automatic continuation of present benefit formulas. 2044c freezes tax rate at 12.4 percent; nevertheless real benefit is twice its 1984 amount. Under projection II-B, with less real wage growth, freezing the tax rate would bring a benefit in 2044 155 percent of that in 1984.