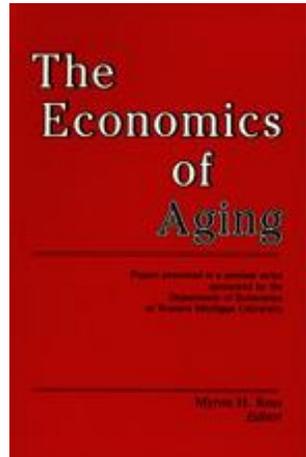

Upjohn Institute Press

The Outlook for Social Security in the Wake of the 1983 Amendments

Alicia H. Munell
Federal Reserve Bank of Boston



Chapter 2 (pp. 11-40) in:
Current Issues in Workers' Compensation
James Chelius, ed.
Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 1985
DOI: 10.17848/9780880995498.ch2

2 **The Outlook for Social Security in the Wake of the 1983 Amendments**

Alicia H. Munnell*
Federal Reserve Bank of Boston

Twice during the last ten years, social security's financial problems have thrust the system onto the front page of newspapers and the cover of weekly magazines. Questions were raised about the program's ability to continue to pay benefits and some observers predicted the system's imminent "bankruptcy." Yet now, only a year after the peak of the whoopla, the social security program is out of the headlines and few question its financial soundness. This seems like an appropriate time to explore what led to the recent financial crises, how the changes enacted in 1983 restored financial balance according to the intermediate assumptions of the system's Board of Trustees, and what are the major areas of uncertainty that necessarily attend any estimates of income and expenditures over a 75-year period.

I. The Social Security Program Today

The social security system consists of three programs financed through separate trust funds. The Old-Age and Survivors Insurance (OASI) program, which pays benefits to retired workers, their dependents and survivors, is the largest program and will dispense \$158 billion in benefits to 32 million beneficiaries in 1984 (see Table 1). The Disability Insurance (DI) program, which awards benefits to disabled workers and their dependents, will pay \$17 billion to roughly 4 million beneficiaries in 1984. The third program, Hospital

*The author would like to thank Robert M. Ball and Robert J. Myers for valuable comments.

Table 1
Benefits, Beneficiaries and Trust Fund Reserves under Old-Age and Survivors Insurance (OASI),
Disability Insurance (DI) and Hospital Insurance (HI), Selected Years, 1950-1984

Year	Benefits (\$ billions)				Beneficiaries ^a (millions)				Trust fund reserves ^c (\$ billions)
	OASI	DI	HI	Total	OASI	DI	Total	HI ^b	
1950	1.0	--	--	1.0	2.9	--	2.9	--	13.7
1960	10.7	0.6	--	11.3	13.7	0.5	14.2	--	22.6
1970	28.8	3.1	5.1	37.0	22.6	2.6	25.2	20.4	41.3
1980	105.1	15.5	25.1	145.6	30.4	4.7	35.1	27.6	40.1
1984	158.2	17.2	45.9	221.3	32.5	3.9	36.4	29.8	38.3 ^d

SOURCE: Social Security Administration, *1983 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (Government Printing Office, 1983), Table 20, p. 60, Table 22, p. 64, Table 28, p. 75, Table A3, p. 93, Table A4, p. 95; *1983 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund* (GPO, 1982), Table 6, p. 31; and data from Office of the Actuary and Division of Medicare Cost Analysis.

a. Beneficiaries with monthly benefits in current-payment status as of June 30th.

b. Includes both aged and disabled eligible individuals. As of July 1, 1973 hospital insurance protection was extended to disabled persons who had been on the disability rolls for 24 months.

c. Reserves in OASI, DI and HI trust funds at end of period.

d. Estimated by Office of the Actuary, November 16, 1983, using Intermediate Assumption II-B.

Insurance (HI), pays benefits to individuals covered by OASDI and the Railroad Retirement program. Benefit payments from this fund will amount to \$46 billion in 1984. Most HI beneficiaries also participate in the voluntary Supplementary Medical Insurance (SMI) program. The following discussion will center primarily on the Old-Age, Survivors, and Disability portion of the program, since this was the area addressed by the National Commission on Social Security Reform and subsequently by Congress in its deliberations on the 1983 Amendments.

The social security system is financed on a pay-as-you-go basis. The 120 million active workers and their employers pay taxes to finance the benefits for the 36 million retired and disabled workers and their dependents and survivors. The idea is not to build up a large reserve from which benefits will be paid, but rather to accumulate sufficient funds to provide a buffer against brief, unanticipated economic fluctuations. At one time it was thought that a reserve equal to one year's benefits would be appropriate, but since 1970 the trust funds have held substantially less than that amount.

Generally, the smallness of trust fund reserves should not be a source of concern in a social insurance program as it would in a private insurance plan. Because private plans cannot be certain of receiving future premiums, they must have adequate funding procedures to meet all prior and current commitments. In contrast, the social security system is a mandatory and permanent program which can rely on the government's taxing power to meet its obligations and can levy taxes on successive generations of workers to pay for retirement, disability, and hospital benefits. Thus, the system has evolved into a compact between generations, each generation depending on the next one to finance promised benefits.

II. Reasons for the Financial Problems

Pay-as-you-go financing, however, makes the financial status of the social security system sensitive to economic and demographic developments. Short-run problems can arise if economic fluctuations adversely affect receipts or outlays and contingency reserves are not adequate to cover the resulting deficits. Long-run financing problems can arise if the size of the beneficiary population increases relative to the working population and the full extent of this shift has not been taken into account in the financing provisions.

In 1983, the social security system faced both of these difficulties. The system was confronted with an immediate short term cash flow problem and a conceptually distinct long-run imbalance between revenues and outlays. The short-run difficulties were almost entirely the result of the unanticipated poor performance of the economy during the 1970s, while the long-run deficits were primarily attributable to projected cost increase associated with the rising ratio of beneficiaries to covered workers after the turn of the century.

Short-Run Financial Difficulties. The year 1972 is a useful point from which to trace the origins of the short-run financial cirses, since legislation passed in that year introduced a new social security financing and benefit schedule. For the first time, benefits would be adjusted automatically to keep pace with inflation and the taxable wage base would increase each year to reflect the growth in average wages. In retrospect, the 1972 legislation contained two problems.

The first was a flaw in the indexing procedure which, under assumptions of high future inflation rates, caused the replacement rate (the ratio of benefits to preretirement earnings) to increase over time. The second was a forecasting error which resulted in tax rates that were based on overly op-

timistic economic assumptions. Essentially, the social security Trustees assumed that the economy in the 1970s would operate at roughly the level experienced during the 1960s. A pay-as-you-go system with automatic indexing provisions is very sensitive to economic conditions, particularly to the relationship between the rate of price increase and the rate of wage growth. Tax revenues vary with the growth of wages, while benefits rise with increases in the consumer price index.

In order to understand the sensitivity of the social security system to forecasting errors, consider the effect on a trust fund (equal to one year's outgo) of first overestimating the growth of wages by 2 percentage points.¹ If wages grow by 2 percentage points less than projected, payroll tax revenues will fall 2 percent short of the anticipated level and, where balance had been predicted between revenues and expenditures, a 2 percent shortfall will emerge. This shortfall will be covered by drawing down trust fund reserves and the reserve ratio (the ratio of reserves on hand to annual expenditures) will fall by 2 percentage points from the level originally projected. Even if wages grow in all subsequent years by the rate forecasted, the level of average wages, and hence tax revenues, will continue to be 2 percent lower than projected. The revenue-expenditure gap will never close, and in each subsequent year the 2 percent shortfall will require a transfer from the trust fund, causing the fund ratio to be another 2 percentage points lower than projected. In other words, after four years the one-shot error in forecasting wage growth will cause the trust fund ratio to be 8 percentage points lower than projected.

Should the forecasting error persist, that is, actual wage growth continue to fall below projected growth for several years, then the financial health of the program deteriorates far more rapidly. The social security actuaries have developed a simple rule of thumb that relates the difference

between the actual and projected reserve ratio (ΔRR) in a given year (n) to the forecasting error (ERR) in each year (t):

$$\Delta RR = \sum_{t=1}^n (n-(t-1)) ERR_t$$

According to this rule, a persistent 2 percentage point discrepancy between actual and projected wage growth reduces the reserve ratio by 2 percentage points after one year, 6 points after two years, 12 points after three years and 20 points after four years.

On the other hand, if the error is one of overestimating the inflation rate by 2 percentage points, benefits, which are indexed to inflation, will be 2 percent less than projected. Thus, a one-shot error in forecasting inflation will allow the trust fund to increase each year by roughly 2 percentage points, while a persistent error will allow the trust fund to increase by 2, 6, 12 and 20 percentage points after the first, second, third and fourth year as discussed above.

As you can see, a 2 percent error in forecasting both wage growth and inflation would have largely offsetting effects and virtually no impact on the financial status of the program. In contrast, overestimating wage growth and underestimating inflation each by 2 percent would have a devastating effect on trust fund reserves. Hence, the key relationship is not the level of wage growth and inflation, but the difference between the rate of growth of wages and the rate of increase in prices. This number is generally referred to as the real wage differential.²

When the new tax and benefit schedules were established in 1972, it was assumed that the real wage differential would return to the trend rate of growth set in the 1960s (see Table 2). That is, the social security revenue and outlay projections were based on a real wage differential of 2.25 percent per year. Under this assumption, the reserve ratio would have re-

mained fairly steady at 80 percent. Over the next five years, however, that is, from 1973 to 1977, the real wage differential actually averaged -0.3 percent rather than 2.25 percent. Primarily because of this difference, social security began to run annual deficits, which required annual transfers from the trust fund, so that by 1977 the reserve ratio had fallen to less than one-half of the projected 80 percent.³

Table 2
Annual Percent Change in Prices and Average Covered Wages,
Real Wage Differential and OASDI Reserve Ratio
Selected Periods, 1950-1982

Year	Annual percent change		Real wage differential ^a (percent)	OASDI reserve ratio end of period ^b
	Covered wages	Consumer prices		
1950-59	5.1	2.1	3.0	180
1960-64	3.4	1.3	2.1	110
1965-69	5.4	3.4	2.0	103
1970-72	5.7	4.5	1.2	80
1973-77	7.4	7.7	-0.3	37
1978-82	8.0	9.7	-1.7	7 ^c

SOURCE: Social Security Administration, Office of the Actuary, *1983 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (GPO, May 1983), Table 10, pp. 37-38 and Table 14, p. 51; and *Social Security Bulletin, Annual Statistical Supplement*, 1982 (GPO 1982), Table 16, p. 21.

a. The difference between the percentage increase in average annual wages and the percentage increase in the annual CPI.

b. The ratio of reserves on hand at the end of one year to total expected expenditures the next year.

c. Excludes reserves borrowed from HI trust fund.

Legislation passed in 1977 dramatically revised the social security financing and benefit provisions in order to restore balance to the program. However, once again the tax schedule was set on the assumption that historical rates of

real wage growth would reappear, that is, that the real wage differential would averaged roughly 2.0 percent from 1978 through 1982. After 1977, however, the rate of price increase exceeded the rate of earnings growth producing persistent negative real wage differentials that averaged -1.7 percent over the 1978-82 period. With inadequate revenues, the system once again began to run annual deficits that resulted in a rapid decline in trust fund reserves, leading to the need for financing changes in 1983.

Long-Run Problems. Social security's long-run financing problems began to appear after 1973, when the social security actuaries started to incorporate developing demographic trends into the long-run projections. In the next few years, the projected 75-year deficit worsened steadily as the flaw in the indexing provision and high forecasted inflation rates caused continuing increases in projected replacement rates. The 1977 legislation stabilized replacement rates and thereby substantially reduced the long-run deficit (from 8.2 percent of taxable payrolls to 1.4 percent), but further revisions in demographic assumptions and lowered real wage growth projections after 1977 forced the 75-year deficit to increase gradually to a level of 1.82 percent of taxable payrolls by 1982. Thus, both demographic and economic factors determine the long-run financial status of the social security program.

The demographic factors are important because they determine the number of people who will be receiving benefits as compared to the number of workers who will be paying taxes. In the case of those people already born, the key demographic variable is the mortality rate. Although most of the startling gains in life expectancy during this century are attributable to a substantial reduction in neonatal mortality and diminution of childhood diseases, the life expectancy of older persons has also increased significantly.

The life expectancy for men at age 65 has risen from 11.9 years in 1940, when social security benefits were first paid, to 14.0 in 1980 and is projected to increase to 17.5 years by 2050 under the Trustees' intermediate mortality assumptions (see Table 3). The comparable figures for women are more dramatic, increasing from 13.4 years in 1940 to 18.3 in 1980 and projected to rise to 23.1 in 2050 under the intermediate assumptions. The Trustees' pessimistic projections, which ironically involve less likelihood of early death, assume that by 2050 both men and women will live roughly 3.5 years longer, while the optimistic assume they will die two years sooner.

The size of the future workforce that will be available to support the retired population is determined in large part by the fertility rate (the expected average number of lifetime births for women currently entering childbearing age). Since 1800, the fertility rate has declined persistently, although it deviated temporarily from this trend during the 1945-60 post-World War II baby boom. After 1960, the fertility rate resumed its decline, plummeting from its prevailing level of 3.65 to a low of 1.74 in 1976. Since 1976, the rate has fluctuated between 1.76 and 1.86.

Revised fertility assumptions introduced in 1974 had a major impact on the projected long-run costs of the system. For several years prior to 1974, total fertility was assumed to level off at an ultimate rate of 2.55 under the Trustees' intermediate assumptions. The 1974 Trustees' Report, however, incorporated the much lower fertility experience of the early 1970s and projected under the intermediate assumptions an ultimate fertility rate of 2.1, a rate that produces zero population growth. The intermediate fertility rate assumption was lowered again in the 1976 Trustees' Report, but was then raised back to the 2.1 level in 1977, where it remained through 1982. The most recent social security projec-

tions assume an ultimate fertility rate of 2.0 under the intermediate assumptions; under the more pessimistic scenario, the fertility assumption is 1.6 and for the optimistic 2.3.

Table 3
Fertility, Life Expectancy, and Beneficiaries per Hundred Workers
1940-1980 and Projections for 1990-2050, Selected Years

Year	Fertility rate	Life expectancy at age 65		Beneficiaries per 100 covered workers
		Male	Female	
1940	2.23	11.9	13.4	n.a.
1950	3.03	12.8	15.1	6
1960	3.61	12.9	15.9	20
1970	2.43	13.1	17.1	27
1980	1.85	14.0	18.3	31
Optimistic (Alternative I)				
1990	2.01	14.5	19.2	29
2010	2.30	15.0	19.9	29
2030	2.30	15.4	20.4	40
2050	2.30	15.8	20.9	37
Intermediate (Alternative IIB)				
1990	1.90	15.1	19.9	30
2010	2.00	16.1	21.3	33
2030	2.00	16.8	22.2	48
2050	2.00	17.5	23.1	50
Pessimistic (Alternative III)				
1990	1.75	15.7	20.7	31
2010	1.60	17.6	23.0	36
2030	1.60	19.2	24.9	58
2050	1.60	20.9	26.8	73

SOURCE: Social Security Administration, Office of the Actuary, *1983 Annual Report of the Board of Trustees of the Federal Old-Age and Survivor's Insurance and Disability Trust Funds* (GPO, May 1983), Table 11, p. 40 and Table 28, pp. 75 and 76.

n.a. = not available.

The seemingly small differences in the fertility and mortality rates that are incorporated into the alternative projections produce dramatic differences in the ratio of beneficiaries to workers when compounded over a long period of time. The intermediate demographic assumptions imply that the number of beneficiaries per hundred workers will increase from 30 in 1984 to 50 by the year 2050; the lower fertility and longer life expectancy incorporated in the pessimistic assumptions produce 73 beneficiaries for each hundred workers, while the higher fertility and greater mortality in the optimistic assumptions imply 37 beneficiaries per hundred workers. With a pay-as-you-go system, an increase in the beneficiary/worker ratio implies an proportional increase in costs as a percentage of payrolls.

Long-run cost increases due to demographic shifts could be offset, however, by greater productivity on the part of the working population. The difficulty has been that the increasingly adverse demographic projections have been accompanied by steadily worsening economic assumptions. The projected real wage differential has been reduced several times from 2.25 percent in 1973 to the present projection of 1.5 percent, reflecting the low levels of productivity growth experienced during the 1970s. With only modest projected increases in productivity, a consensus emerged that current fertility and mortality trends would result in a significant increase in social security costs and that additional funds would be required to finance the program in the twenty-first century.

III. The Social Security Amendments of 1983

In response to the continuing deterioration in both the short- and long-run financial position of the social security system and the inability of Congress to agree upon a solution, President Reagan in December 1981 established a bipartisan National Commission on Social Security Reform.

After more than a year of debate, the Commission finally proposed a delicately balanced package of tax increases, benefit cuts, and extension of coverage, which was projected to produce \$166 billion between 1983 and 1990. These changes also eliminated two-thirds of the long-run deficit that was projected under the intermediate assumptions to arise after the turn of the century as the baby boom starts to retire (see Table 4). In the process of adopting the Commission's recommendations, Congress also introduced an extension of the normal retirement age to close the remaining gap between outlays and expenditures over the next 75 years. Several other provisions were also adopted in an attempt to stabilize the financing of the system and prevent repeated short term crises.

Short-Run Impact: 1983-1989. The two largest producers of additional short-term revenues, each contributing nearly one-quarter of the total increase over the 1983-1989 period, were the proposals to delay for six months the automatic cost-of-living adjustment on retirement and disability benefits⁴ and the provision to accelerate the OASDI payroll tax rate increases that were already scheduled to take effect in 1985 and 1990.⁵ Another major contributor to the system's finances, accounting for roughly 15 percent of the total short-run revenues produced by the legislation, was the proposal to tax 50 percent of social security benefits—the half that is generally associated with the employer's share of the payroll tax—for higher income recipients and to direct the new receipts to the OASDI trust funds.⁶

The legislation produced another 10 percent of the short-run revenue increases by increasing the tax rate for self-employed people. While in the past the self-employed have paid taxes equal to about 75 percent of the combined employee and employer contributions for OASDI and 50 percent for HI, under the new legislation they will pay 100 percent of the combined employee-employer rate. In order to

allow for the portion of the self-employed tax that corresponds to the employer's share, the self-employed will be allowed to deduct one-half their payroll tax liability for personal income tax purposes.⁷

Table 4
Projected Cost Impact on the OASDI Program
of the 1983 Social Security Amendments

Change	Cost impact	
	1983-1989 (\$ billions)	Long-term (% of payroll)
Benefit reductions/tax increases		
1. Delay COLA from July to January	39.4	0.30
2. Accelerate scheduled rate increases	39.4	0.03
3. Tax 50% of OASDI benefits for higher-income people	26.6	0.61
4. Increase tax rate for self-employed	18.5	0.19
Coverage extension		
5. Cover all nonprofit employees and new federal workers	21.8	0.38
6. Ban withdrawal of state/local employers	3.2	0.06
Other		
7. Payment from general revenues for military service credits and uncashed checks	17.7	0.01
8. Benefit changes ^a	-0.4	-0.13
Total	166.2	+ 1.38 ^b
Extension of retirement age		
Total	--	0.71
Total	166.2	2.09

SOURCE: Social Security Administration, Office of the Actuary, *1983 Annual Report of the Board of Trustees of the Federal Old-Age and Survivor's Insurance and Disability Trust Funds* (GPO, May 1983); and unpublished data.

a. Benefit changes include the following: Eliminating windfall benefits for persons with pensions from noncovered employment; continuing benefits for remarried disabled widow(er)s and for divorced widow(er)s; indexing deferred widow(er)'s benefits based on the lesser of wages and prices; permitting divorced aged spouse to receive benefits when husband is eligible; and increasing benefit rate for disabled widow(er)s aged 50-59 to 71.5 percent of primary benefit. Also included in this figure, however, is \$1 billion increase in revenue that results from accelerating state and local tax collections.

b. Total effect of reforms on trust funds as percent of payroll is not the sum of individual percentages. Rather the total reflects the interaction of individual reforms upon one another, including the following additional reforms: taxation of certain salary plans, altering of the earnings test and adjustment of self-employment income.

Roughly 15 percent of the total increase in short term revenues was gained from extending coverage to new federal employees and the uncovered workers in the nonprofit sector⁸ and from banning future withdrawals of state and local employers.⁹ The remaining 10 percent of short term revenues came from the proposal to make a payment from general revenues to the OASDI trust funds to compensate the system for gratuitous military service wage credits granted before 1983 and to provide reimbursement for social security checks issues but never redeemed.¹⁰

The Long Run and Extension of the Retirement Age. In addition to raising a projected \$166 billion over the period 1983-1989, the National Commission's proposals enacted in the 1983 Amendments eliminated two-thirds of the 75-year deficit.¹¹ Although the Commission members who had voted in favor of the consensus package had agreed that the long range deficit should be reduced to approximately zero, they were unable to agree on a specific proposal to accomplish this. Members selected by the Democratic leadership supported an increase in contribution rates in 2010 (about 0.5 percent of earnings for the employee and a like amount for the employer), while the remaining designees favored a gradual increase in the retirement age.

Congress opted for extending the retirement age as a means of eliminating the long-run deficit. As a result of the 1983 Amendments, the retirement age will rise to 66 by 2009, then to 67 by 2027.¹² People can still elect early retirement at 62, but benefits paid to early retirees will be reduced by 25 percent in 2009 and by 30 percent in 2027. Early retirees are currently penalized 20 percent. Raising the retirement age reduces long-run costs by 0.71 percent of taxable payrolls, thereby creating a small surplus in the OASDI program over the 75-year projection period under the intermediate assumptions.

Revenue Stabilizers. The 1983 Amendments also contained three provisions designed to improve the system's ability to continue paying benefits on a timely basis even during adverse economic conditions. These include a speed-up in monthly transfers from the Treasury, an extension of inter-fund borrowing, and a revised indexing procedure.

Normalizing Transfers: To protect against potential cash flow problems created by the uneven way in which benefits are paid and taxes are transferred to social security, Congress introduced a revised procedure for crediting taxes to the trust funds. Under the previous procedures benefits were paid on the third of the month, creating the need for high balances in the OASDI trust fund during the first week. Taxes, however, were transferred to the trust funds daily, based on Treasury estimates of amounts collected. Under the revised procedure, the Treasury is authorized to estimate amounts to be collected in a given month and transfer such sums to the trust funds on the first or second day of the month. This technical procedure will help ensure that the cash is available at the time benefit payments are made.

Extending Interfund Borrowing: Amendments to the Omnibus Reconciliation Act, passed on December 29, 1981, authorized borrowing through December 1982 among the OASI, DI, and HI trust funds to finance deficits up to June 1983. The OASI fund borrowed \$17.5 billion from the other funds (\$5.1 billion from DI and \$12.4 billion from HI) in November and December 1982 in order to ensure benefit payments through June 1983. The 1983 Social Security Amendments extended the authority for interfund borrowing for calendar years 1983-1987 with the provision that all principal and interest be paid by the end of 1989.¹³

Revising the COLA: As noted above, the short term financing problem in social security was entirely the result of the unanticipated poor performance of the economy during

the past few years. Tax rates were set on the assumption that taxable wages would grow at the rate of increase in prices plus an additional amount for productivity growth. After 1977, however, the traditional relationship between price and wages was reversed and price increases exceeded wage growth. With prices rising faster than wages, benefits, which are linked to the consumer price index, increased faster than payroll tax revenues, which are dependent on the growth in wages. As a result, trust fund balances were rapidly depleted.

In an attempt to avoid this problem in the future, Congress established that if OASDI reserves ever drop below 15 percent (20 percent beginning in 1989) of the following year's planned outlays, the automatic cost-of-living adjustment would be based on the lower of the CPI increase or the increase in average wages until the trigger ratio is restored. Subsequently, when the reserves reach 32 percent of outlays, benefits would be adjusted to make up for any payments that were less than those called for by the price adjustment. The payback would occur only so long as reserves met the 32 percent standard. This change will help avoid a repetition of the recent short-run financial crisis.

IV. Some Uncertainties

With any luck in terms of the performance of the economy and demographic developments, the financial package enacted in the 1983 Amendments should ensure the solvency of the retirement and disability programs for the next 75 years. The need for luck, however, highlights the fact that some uncertainties surround both the short-run and long-run outlook for the social security system. These uncertainties have little to do with the intrinsic health of the program, but rather with the fact that tax rates are set on the basis of assumed economic and demographic developments and the revenues produced by these tax rates will provide inadequate or excessive if the actual performance of the economy differs

from that projected. In order to assess the reliability of the projections, it is useful to identify some of the major uncertainties and estimate the magnitude of their potential impact on the financial status of the program. This exercise should provide some comfort to those who continue to worry about the solvency of the social security program, since the analysis reveals that potential deviations from the assumed performance would require relatively minor increases in OASDI tax rates.

1984-1989: Economic Performance. For the period from now through 1989, the 1983 social security package was constructed so that the system would be adequately financed not only under the Trustees' intermediate economic assumptions, but also under the more pessimistic scenario. Most of the additional revenues under the pessimistic assumptions are attributable to the revised indexing procedure, whereby benefits are adjusted by the lesser of increases in prices or wages when trust fund reserves are low. The problem is that during the 1970s the economy performed even more poorly than the social security Trustees' pessimistic assumptions and, therefore, a legitimate question can be raised about whether the revenue and outlay projections for the rest of the 1980s are realistic.

In fact, no mechanism exists to answer that question; instead, the only basis for assessment is to compare the social security assumptions with those of independent forecasters. As of April 1983, the month the 1983 Amendments were signed into law, the projections of the private forecasters clustered around the social security Trustees' intermediate and pessimistic assumptions and updated forecasts from Data Resources, Inc. and Chase Econometrics show the private projections bracketing these assumptions. Thus, the social security forecasts appear to be based on reasonable assumptions about future economic trends (see Table 5).

Table 5
Comparison of Projections, as of Fourth Quarter 1983,
of the Real Wage Differential^a by Social Security
and Private Forecasters, 1984-1989

	Social security		Private forecasters ^b	
	Intermediate	Pessimistic	Chase	DRI
1984	1.1	-1.8	0.4	-0.6
1985	0.2	-0.3	0.0	-0.2
1986	0.9	0.1	0.2	-0.1
1987	1.2	0.7	1.9	0.5
1988	1.3	0.9	1.4	0.4
1989	1.4	1.1	1.9	0.7

SOURCE: Social Security Administration, Office of the Actuary, "Possible 'Automatic Operations' in 1984-85," memorandum (November 16, 1983), Table 1 and unpublished data; and Data Resources, Inc. and Chase Econometrics/Interactive Data Corp., projections based on data available before December 30, 1983.

a. The difference between the percentage increase in average annual wages in covered employment and the percentage increase in the annual CPI for all wage and salaried workers.

b. Since the private forecasters do not project wages in covered employment, wage growth is calculated on the basis of wages and salaries per worker in the private sector. For Chase and DRI standard long-term forecasts were used, moderate growth and tend, respectively.

Moreover, the really difficult period for social security financing is only the four years 1984 through 1987, since revenues will jump markedly in 1988, when a scheduled OASDI tax rate increase of 0.36 percent each for the employee and employer takes effect. (Another 0.14 percent increase becomes effective in 1990.) Little likelihood of an economic downturn exists for 1984 and while a serious recession in 1985 could cause some problems, such a development is very unlikely. By 1986, even with a repetition of the disastrous conditions of 1979 and 1980, the OASI and DI trust funds should have adequate reserves to continue payments through 1988 when the new revenues will be available. In addition to their own reserves, the OASI and DI

funds can borrow from the HI trust fund until 1988. The combination of borrowing capability, substantial reserves, and a reasonably health economic outlook makes the possibility of another short term social security financing crisis very unlikely.¹⁴

1990-2020 Accumulation of Trust Fund Reserves. In marked contrast to the 1980s, the outlook for OASDI financing for the period 1990-2020 has always been favorable. The primary reason is demographic. The low fertility rates during the late 1920s and the 1930s will be reflected in a considerable reduction in the rate of increase in the population over age 65 during the 1990s and the first decade of the twenty-first century. While the average annual increase in the number of persons over 65 will be about 600,000 during the 1980s, the net increase will drop to around 400,000 a year under the intermediate assumptions between 1990 and 2010 in spite of the improvement in the mortality rate. At the same time, the baby boom generation born after World War II will continue to swell the labor force. As a result, the ratio of beneficiaries to workers, which has increased continually since 1940, is estimated to remain stable for the next 20 to 30 years at its current level of roughly 30 beneficiaries per hundred workers. With a stable ratio of beneficiaries to workers, even modest productivity gains will reduce the cost of social security as a percent of payroll.

At the same time costs are projected to decline, revenues are scheduled to increase since a combined employee-employer payroll tax increase of 1.0 percent is slated to take effect by 1990. With lower costs and higher revenues, the retirement and disability program is projected to run substantial annual surpluses and the ratio of assets to outlays is estimated to increase from 38 percent in 1990 to 538 percent by 2020 under the intermediate assumptions. These accumulated reserves are then scheduled to be drawn down to cover annual deficits in the years between 2020 and 2057.

During the period 1990-2020, almost no uncertainties exist about the adequacy of social security financing. Even under the pessimistic mortality and economic assumptions the system will run surpluses until 2013 and have positive trust fund balances until 2020. Should the economy perform more poorly than the pessimistic assumptions, particularly should the real wage differential fall below 1 percent, revenues will still be adequate to cover benefit commitments, although not sufficient to produce substantial surpluses.

The uncertainty surrounding social security financing during the period 1990-2020 arises then not from possible adverse economic or demographic developments, but rather from the possibility of congressional action. The major question is whether Congress will allow a substantial accumulation of assets in the OASDI trust funds or whether it will divert scheduled payroll taxes to finance other programs or simply not allow the 1990 rate increase to take effect. If reserves are not accumulated during the period, then tax rates will have to be raised after 2020 in order to finance the annual deficits on a current cost basis. It is important to note, however, that the rate hike that would be required if reserves are not accumulated is fairly modest—roughly 1 percent each for the employee and employer under the intermediate assumptions (see Table 6).

The Role of the Hospital Insurance Program. A major obstacle to the buildup of assets in the OASDI trust fund may be the financial requirements of the Hospital Insurance program. Although the HI trust fund was a source of strength during the recent financial crisis, it faces serious financing problems in the near future. Unless further policy changes are implemented, the Congressional Budget Office projects the depletion of the HI fund by the end of the decade. The deficits would be small initially, but they would increase each year so that by 1995 the annual deficit would

be \$60 billion and the cumulative deficits would total over \$200 billion.

Table 6
Estimated Average Cost Rate, Average Total Income Rate
and Actuarial Balance for OASDI, and HI Trust Funds,
Under Three Assumptions, Selected Periods, 1983-2057

Period	Percent of projected taxable payroll		
	Average cost rate	Average total income rate	Actuarial balance
	(OASDI)		
1983-2057			
Pessimistic	16.56	13.04	- 3.51
Intermediate	12.84	12.87	+ 0.02
Optimistic	9.81	12.73	+ 2.92
1983-2007			
Pessimistic	11.44	12.53	+ 1.08
Intermediate	10.66	12.50	+ 1.83
Optimistic	9.22	12.45	+ 3.23
2008-2057			
Pessimistic	15.50	13.08	- 2.42
Intermediate	12.64	12.95	+ 0.32
Optimistic	9.80	12.83	+ 3.03
2033-2057			
Pessimistic	22.73	13.52	- 9.21
Intermediate	15.23	13.15	- 2.08
Optimistic	10.42	12.91	+ 2.49
	(HI)		
1983-2007			
Pessimistic	5.38	2.87	- 2.51
Intermediate	4.11	2.87	- 1.24
Optimistic	3.21	2.87	- 0.34

SOURCE: Social Security Administration, Office of the Actuary, *1983 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (GPO, May 1983), Table 31, pp. 79-80; and *1983 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund*, Table 11, p. 47.

Projected deficits could be substantially lower if cost-containment efforts are successful. For example, the Secretary of Health and Human Services has the power to set hospital reimbursement rates after 1985. If the Secretary decided to limit the increase in payments per admission to only 1 percentage point more than the rate of increase of hospital input prices, the depletion date for the HI trust fund would be postponed until 1992 and the cumulative deficit would amount to roughly \$85 billion by 1995.

Even with successful cost-containment efforts, therefore, some residual deficits appear almost inescapable. Hence, it is quite possible that Congress may decide to cover some of HI deficit by reallocating to the Hospital Insurance trust fund a portion of the payroll tax revenues now scheduled to go into the retirement and disability programs after 1990.

2020-2057: Demographic and Economic Assumptions. The financial solvency of the social security program after the year 2020 hinges crucially on demographic developments being in line with the social security Trustees' intermediate projections and to a somewhat lesser extent on productivity growth producing an adequate real wage differential.

Demographic Projections: The intermediate assumption of the social security Trustees, that the fertility rate will increase from its current level of 1.8 to an ultimate value of 2.0 by 2005, is slightly higher than the most recent projections by the Census Bureau. Until October 1982, the Census Bureau's "middle" series had assumed a long-run fertility rate of 2.1, the rate that produces zero population growth over the long-run. Now the Census assumes that fertility rates will remain fairly steady, increasing slightly from 1.80 to 1.96 in 2000 and then decreasing gradually to 1.9 births per woman in 2050. Supporting the somewhat higher social security projections, however, is the fact that data on expected births indicate that young women continue to expect to have more

than two children over their lifetimes. Thus, the social security intermediate projection of a long-run fertility rate of 2.0 appears more likely than either the optimistic or pessimistic projections of 2.3 or 1.6, respectively. That is, it would be very difficult to make a convincing case for a fertility rate assumption substantially different from that incorporated in the Trustees' intermediate projections.¹⁵

Economic Assumptions: While the central projections seem to be based on realistic demographic assumptions, they may incorporate a somewhat optimistic assumption about the rate of productivity growth. The intermediate projections of the retirement and disability funds are based on an assumed long-run real wage differential of 1.5 percent. Although this number is considerably below the 3.0 percent differential experienced in the 1950s and the 2.1 percent during the 1960s, it exceeds the average of 1.2 percent over the last 30 years. In addition, the real wage differential of 1.5 percent implies long-run productivity gains of 2.1 percent, which is somewhat higher than most estimates.¹⁶

The interesting fact, however, is that the long-run costs of the program are not all that sensitive to the real wage differential. For example, if the long-run real wage differential were 1 percent instead of 1.5 percent, the cost of the system in the 2020-2057 period would be roughly 1.0 percent of taxable payrolls higher and the cost of the program over the entire 75-year forecasting horizon would be 0.8 percent higher. This would mean that instead of being in long-run balance, the system would have a 75-year deficit of 0.8 percent of taxable payrolls. To put this deficit in perspective, it must be compared with the total cost of the program, which would be roughly 13.7 percent of taxable payrolls. Of this total cost, 12.9 percent would be covered by scheduled payroll taxes, while 0.8 percent would be unfunded. In other words, the deficit produced by a real wage differential of 1 percent rather than 1.5 percent would amount to only 6 percent of

program expenditures over the 75 years. Under the traditional rule of thumb adopted by the social security Trustees, the system is considered to be in close actuarial balance if revenues are equal to plus or minus 5 percent of planned outlays. Thus, even a substantial deviation from the assumed real wage growth will require only a relatively modest increase in the payroll tax rate to restore financial balance to the retirement and disability programs.

After 2057. To even discuss the outlook for social security after the year 2057 verges on the ridiculous. It is comparable to having concluded in 1909 that a program was adequately financed through 1984 and then worrying about what was going to happen in 1985. Nevertheless, for the sake of completeness, it is probably useful to mention two factors that pertain to the end of the forecast period. The first is that the reserves that are scheduled to accumulate during the period 1990-2020 will be exhausted by 2057. Hence, the OASDI payroll tax rate will have to be raised under the intermediate assumptions by roughly 1 percentage point each for employees and employers in the middle of the next century to cover the costs of the program.

The second factor is that because of the mechanics of calculating the long-run financial status of the program, future estimates will begin to show small deficits even if the intermediate assumptions turn out to be completely accurate. This will occur because the 75-year projection is a rolling average of individual years, and as time progresses the near-term years of projected surpluses will be replaced by the years of deficit after 2057, the end of the current projection horizon. The magnitude of this phenomenon is very small, however, and it will probably be dwarfed by other developments.

V. Conclusion

Congress passed major legislation in 1983 which raised taxes, reduced benefits, and broadened coverage in order to provide financial balance to the social security program over the next 75 years. The preceding analysis indicates that the 1983 Amendments have done the job. In the critical period between now and the 1988 rate hike, the system appears adequately financed even under the pessimistic set of economic assumptions. Moreover, the economic forecasts used by social security are consistent with those prepared by private firms.

Between 1988 and 2020, there is little question that revenues will be sufficient to cover promised benefits. Indeed, the major question is how large the trust funds will become as the system experiences successive annual surpluses. This depends somewhat on economic and demographic developments, but the determining factor will be Congress' willingness to deviate from pay-as-you-go financing and allow an accumulation of reserves. If funds are needed to finance the Hospital Insurance program, a decision might be made to divert some of the scheduled payroll taxes to finance HI. Even in the event of such a diversion, however, the system appears to have plenty of money for the next 40 years.

After 2020, the program starts to run annual deficits and a possibility exists that some additional financing might be required if either adequate reserves are not allowed to accumulate during the 1990-2020 period or the real wage differential turns out to be lower than projected. Even if either of these events should occur, however, the size of the tax increase that would be required to compensate appears relatively modest—perhaps 1 percent each for the employee and employer. Hence, the financing of the retirement and disability programs appears well under control for the foreseeable future.

NOTES

1. This discussion of the effect of forecasting errors is based on a presentation by Lawrence H. Thompson, "Social Security Financing: Recent Problems and Current Uncertainties," prepared for annual meeting of Industrial Relations Research Association, San Francisco, December 30, 1983 and on Dwight K. Bartlett and Joseph A. Applebaum, "Economic Forecasting: Effect of Errors on OASDI Fund Ratios," *Social Security Bulletin* 45 (1) (January 1982), pp. 9-14.
2. Because of the time lag in adjusting benefits, the level of inflation does have a small impact on the cost of the system even with a constant real wage differential. For example, the 75-year deficit would range from -0.33 percent of taxable payrolls to +0.36 percent as the underlying inflation rate ranged from 2 percent to 6 percent even with a constant real wage differential of 1.5 percent.
3. Other factors contributing to social security's financial problems were a higher-than-expected unemployment rate which further reduced revenues and an unprecedented increase in disability claims.
4. Since 1975 cost-of-living adjustments were made annually in June (payable in July) to reflect changes in the consumer price index (CPI), measured by the first quarter of the current year over the first quarter of the previous year. The legislation shifted the 1983 COLA from June to December and provided that all subsequent increases be awarded in December (payable in January), based on the level of the CPI in the third quarter of that year over the level in the third quarter of the previous year.
5. The 1983 legislation moved the scheduled 1985 OASDI rate increase to 1984 and part of the scheduled 1990 increase to 1988. As a result, the 1984 OASDI tax is 5.7 percent each for employers and employees and is slated to rise to 6.06 percent in 1988 and 6.2 percent in 1990. With a HI tax of 1.45 percent beginning in 1986, the total social security payroll tax will rise from its present level of 7.0 percent to 7.51 percent in 1988 and 7.65 percent in 1990. In order to postpone the impact of the 1984 increase until 1985, however, the legislation provided employees a credit of 0.3 percent of taxable wages so that net OASDI tax remains unchanged at 5.4 percent for 1984.
6. One-half of social security benefits are subject to taxation if 50 percent of the benefits, combined with other income plus certain nontaxable

income, exceed \$32,000 in the case of a married couple and \$25,000 for single individuals.

7. The deduction becomes effective in 1990. In the interim, the tax increase will be accompanied by a tax credit of 2.7 percent of taxable earnings in 1984, 2.3 percent in 1985 and 2 percent in 1986 through 1989.

8. Before the 1983 Amendments, the social security system covered 90 percent of jobs in paid employment. The 10 percent of workers who were not covered by social security included most federal civilian workers (2.4 out of 2.7 million), about 30 percent of state and local employees (approximately 3 million), and 15 to 20 percent of employees of nonprofit organizations (up to 1 million). The 1983 Amendments extended coverage to all newly hired federal civilian employees and to uncovered workers in nonprofit institutions. For these groups, this provision not only eliminates the windfall component of benefits that arises when formerly uncovered workers have minimum coverage and profit from social security's progressive benefit formula, but also improves the protection for many workers, particularly in the area of disability and survivors insurance. The windfall component for those groups who continue to remain uncovered is partially eliminated in the legislation by modifying the benefit formula for persons with pensions from non-covered employment.

9. Since 1950 social security coverage for employees of the states and localities has been available on a voluntary basis through agreements between the political entity and the Secretary of Health and Human Services. States could voluntarily terminate coverage with two years' advanced notice. Until the mid-1970s the number of employees leaving the system was always exceeded by the number of newly covered employees—in most years by 50,000 or more. After 1975, however, the number of workers for whom coverage was terminated exceeded the number of newly covered employees. These terminations not only reduced the payroll tax base, but also caused some employees to lose protection and created resentment on the part of other workers who were covered on a mandatory basis. To alleviate these problems, the 1983 Amendments prohibited state and local governments from terminating coverage after April 14, 1983.

10. The military have been covered under social security since 1957, but military personnel pay contributions only on the cash paid to them. The government pays the costs of the benefit credits made on the basis of nonpecuniary allowances for room and board. However, the government

did not make current payments for these credits, but rather transferred the money to the social security trust funds only when the benefits were paid. Moreover, prior to 1957, free credits of \$160 per month were granted for service in the armed forces. These credits, too, were paid only after the benefits were awarded, and the cost was amortized over a long period of time. The 1983 Amendments provided for the OASDI trust funds to receive a lump-sum payment from the Treasury to make up for the back amounts owed by the government. In the future the OASDI trust funds will be reimbursed on a current basis for the employee and employer taxes on the benefit credits made in lieu of allowances for room and board.

11. The relative importance of the specific proposals on long-run costs and revenues, however, differed somewhat from their impact on the system in the short run. The change that had the greatest long range effect was the proposal to tax one-half of social security benefits. While the income limits initially restrict the taxation to less than 10 percent of the population, eventually about half of all beneficiaries will be affected. The proposal to bring employees of nonprofit institutions and newly hired federal workers under social security also has a favorable long range impact. The saving arises because an estimated 73 percent of those involved would have qualified for sizable social security benefits as a result of other employment even without the extension of coverage. Also, federal employees tend to have wages that are higher than average and, therefore, are entitled to less heavily weighted benefits.

12. Specifically, the age for full benefits will be increased to 66 by two months a year for six years so that provision would be fully effective beginning with those attaining age 62 in 2005 (66 in 2009); maintained at age 66 for people reaching age 62 in 2006-2016; increased by two months a year for people reaching age 62 in 2017-2022; and maintained at age 67 for people reaching 62 after 2022.

13. The 1983 legislation puts restrictions on interfund borrowing, particularly: 1) interest must be paid monthly on any outstanding loans; 2) no fund can borrow from the other in any month in which the other's trust fund ratio is under 10 percent; 3) in 1983-1987, each fund must repay loans whenever its fund ratio at yearend exceeds 15 percent; and 4) in 1988-1989, the loan balance outstanding at the end of 1987 must be repaid in 24 equal monthly payments.

14. Some speculation has emerged that trust fund reserves may fall slightly below 15 percent in 1984 or 1985, triggering the revised indexing

procedure. Even if this should occur, it would probably have no effect on benefits, since wages will almost certainly rise faster than prices. Hence, no changes in benefits or taxes are likely in the short run.

15. On the other hand, the enormous fluctuation experienced in fertility trends would argue against being too complacent about any projection of future fertility rates. The hazards of forecasting population growth can be easily demonstrated by historical experience. In 1943 it was authoritatively estimated that the 1980 United States population would be perhaps as low as 146 million, or perhaps be as high as 179 million; in 1958 the corresponding low and high forecasts of the 1975 population were 231 million and 273 million; the event—a population of 228 million—confounded both these projections. See Warren S. Thompson and P.K. Whelpten, “Estimates of the Future Population of the United States, 1940 to 2000,” paper presented for the National Resources Planning Board (1943) and U.S. Bureau of the Census, *Current Population Reports*, “Illustrative Projections of the Population of the United States, by Age and Sex, 1960 to 1980,” series P-25, No. 187 (GPO, 1958).

16. An ultimate rate of productivity gains of 2.1 percent per year was derived from the projected real-wage differential of 1.5 percent per year by increasing it by 0.3 percent for the relative annual growth of fringe benefits; 0.2 percent for the average number of hours worked per week; and 0.1 percent for the average number of weeks worked per year.