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Facts and Fantasies about Transition Costs

by William Shipman

Executive Summary

One of the more common concerns about transforming Social Security's pay-as-you-go financing into a market-based structure is the transition cost. Critics claim that people would be unduly burdened because they would have to pay twice—once for their own retirement and once for those already retired. This double expense would be so prohibitive, it is argued, as to warrant rejecting privatization even if it were meritorious on other grounds.

Such arguments ignore the enormous unfunded liabilities of the current Social Security system. Any valid discussion of the costs of moving to a market-based Social Security system must compare those costs with the costs of maintaining the current system, including the costs of meeting those unfunded liabilities.

The mechanisms for paying those costs remain the same whether one attempts to prop up the existing system or shift to a new, market-based system—debt, additional revenue, reductions in spending within the program, or reductions in spending elsewhere in the government. Regardless of the mechanism used to pay those costs, moving to a market-based system will always be less costly than attempting to preserve the current system.

Therefore, redesigning Social Security as a market-based system of personally owned retirement accounts does not actually entail any new costs. Indeed, moving to a market-based system can ultimately result in substantial savings.

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Introduction

One of the more common concerns about transforming Social Security's pay-as-you-go financing into a market-based structure is the transition cost. Critics claim that people would be unduly burdened because they would have to pay twice—once for their own retirement and once for those already retired. This double expense would be so prohibitive, it is argued, as to warrant rejecting the idea of privatization even if it were meritorious on other grounds.

However, the transition cost need not be prohibitive or even greater than the benefits from the new system. Theoretically, a net saving relative to what the future holds under today's law could be realized. An illustration is the tradeoff in refinancing a home mortgage. Costs, such as points, title insurance, title search, attorneys' fees, credit report and the like, are associated with achieving a lower interest rate. The decision to refinance includes not only the lower interest rate, but these transaction costs as well. If the present value of the costs and the lower interest expense is significantly less than the present value of the existing mortgage interest expense, then there is a net benefit from refinancing even though costs were incurred to achieve it.

The transition cost need not be prohibitive or even greater than the benefits from the new system.

The home mortgage paradigm is useful in the Social Security reform debate. The cost of the present system is the forgone consumption, either by individuals or the government, necessary to pay future promised benefits. The cost of getting to a market-based structure is the forgone consumption required to invest in markets and pay some payroll tax.[1] If the latter is less than the former, then there is a net saving during the transition, even though costs were incurred to achieve it.

If the forgone consumption were in the form of a reduction in government spending, then there would be an added benefit, which is the efficiency gain from this choice. Although indeterminate, this gain may be significant.[2] Whichever path the country ultimately takes, the timing of the decrease in consumption can be managed through deficit finance, but it cannot be avoided.

One significant advantage of a privatized system is the greater retirement income earned from investing in markets. If this income, taking into account the cost of achieving it, is greater than Social Security's retirement income adjusted for the cost of maintaining it, then the goal of privatization seems worthwhile. If not, then the argument for reform is less persuasive. The starting point to determine which system is superior is Social Security's financial future under present law, which is detailed in the 1998 Trustees Report.[3]

The term *privatization* should be used with caution. The term is now so liberally employed that quantifying the price of getting there is a matter of much interpretation. Different privatization plans can produce entirely different results. This paper, therefore, presents a frame of reference that is useful in estimating the costs of making the transition to specific market-based structures. The analysis will show that moving toward market-based financing does not necessarily incur a cost over and above present law, and may produce a saving.

Social Security Today: Deep in Debt

Social Security comprises two different programs: Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI). Combined, they are called OASDI. This paper considers OASI only but not the taxes paid to or the benefits received from the Disability Insurance program.

In the OASI program one pays a payroll tax during working years and receives a monthly benefit check during retirement years. It is a system of money in and money out and can be compared with other money-in, money-out systems.

Actuaries estimate OASI's long-term financial health over a 75-year period.[4] They project annual revenues and expenses and adjust each for expected inflation. The difference, expressed in today's dollars, is how much the system is funded or unfunded. Projections assume three different economic and demographic scenarios: optimistic, pessimistic, and middle of the road. This paper compares privatization with the middle-of-the-road scenario, formally referred to as the Intermediate Assumption.

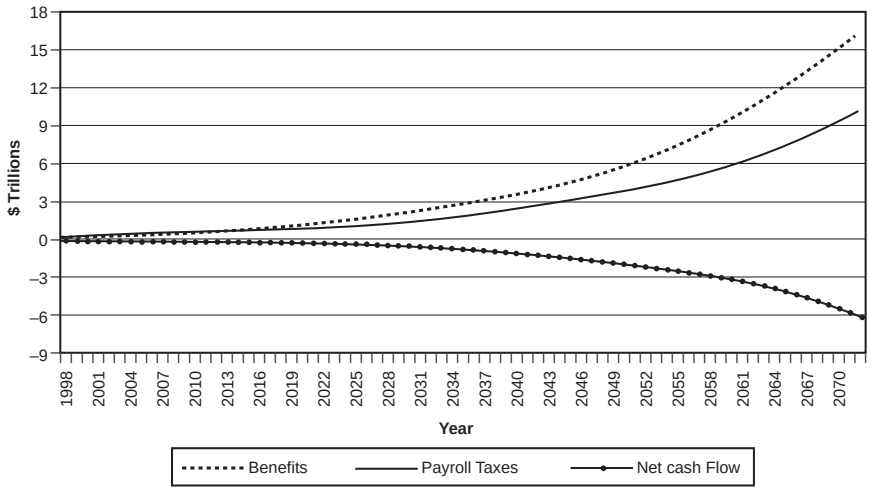
Cash Flows: OASI derives revenues primarily from a payroll tax. The payroll tax started in 1937 at 2 percent up to $3,000 of wage earnings and is now 10.7 percent up to $68,400.[5] The maximum tax, therefore, has gone from just $60 to $7,319 in 61 years, about a 950 percent increase in real terms. (Economists agree that

workers effectively pay both the employee's and employer's shares of the payroll tax.) The maximum wage subject to tax automatically rises on the basis of the increase in average wages. In just 10 years the OASI tax will apply to about $100,000 of wage income.[6] Starting in 2000 the tax rate falls to 10.6 percent. For 1997 the OASI payroll tax revenue was $349.9 billion.[7]

The Social Security system receives revenue from a tax on part of the Social Security benefits, but the revenue is proportionally small and not significantly variable over time. It is not included in this analysis. If it were, conclusions would not be materially different. The OASI Trust Fund is also credited interest income. This fund will be discussed in the next section.

OASI costs are benefit payments and relatively minor administrative expenses. Last year costs totaled $318.4 billion.[8] For 1997, therefore, OASI payroll tax revenues exceeded costs by $31.5 billion. In 2015 the tax revenue excess is expected to end, and cash flows will be negative for every year thereafter.[9] Figure 1 shows the trends of revenues, costs, and the resulting deficits for the next 75 years as projected by Social Security's actuaries.

Figure 1
Projected Social Security Cash Flow, 1998–2072



Note: The annual data are estimated from the *1998 Trustees Report.*

The OASI Trust Fund: The Social Security system did not always have a comfortable cash flow surplus. During the early 1980s the system had a deficit and had to borrow money from other government programs. In anticipation of this problem, in 1981 President Ronald Reagan established the National Commission on Social Security Reform, informally called the Greenspan Commission for its chairman, Alan Greenspan. The Commission was to review the condition of the Trust Fund, analyze potential solutions to ensure its financial integrity, and provide appropriate recommendations.[10] On April 20, 1983, the president signed into law the 1983 Social Security Amendments that resulted from the Commission's work. Some of the important amendments included the following:[11]

- New federal employees were required to be covered by Social Security.
- State and local governments could no longer opt out of Social Security.
- Up to half of the Social Security benefits would be taxed for higher-income elderly.
- The cost of living adjustments would be delayed for six months.
- The timing of the increase in the payroll tax rate would be accelerated.
- The age at which full benefits could be received would be raised from 65 to 67.
- Early retirement age benefits were reduced.

The new law was to make Social Security actuarially sound for the next 75 years; that is, all future benefits could be paid until 2058 without any further tax increases.

During the system's early period, the law worked according to plan. For the first 15 years taxes exceeded benefits. But as in previous periods when the system enjoyed a positive cash flow, the difference was not saved and invested for future retirees; it was spent by the federal government on goods and services not related to Social Security. Because of these expenditures, the government issued nonmarketable bonds to the OASI Trust Fund. The bonds, which are interest bearing, are backed by the full faith and credit of the United States government. If at some date OASI taxes are no longer sufficient to pay benefits, then Social Security will present the bonds to the government for payment. The government, which has no assets set aside for this contingency, would have to raise additional taxes, reduce other spending, or issue more debt to redeem the bonds. The bonds, therefore, are a potential tax liability facing American workers as well as an asset of the OASI Trust Fund. The bonds are not a store of wealth, but rather a government accounting convention. The year 2015 is when OASI is expected not to have enough tax income to pay benefits and, therefore, to

The cost of the present system is the forgone consumption, either by individuals or the government, necessary to pay future promised benefits.

begin cashing the bonds. The nominal value of the bonds, or alternatively their tax liability, was $589 billion at year-end 1997.[12]

How these bonds should be thought of is a matter of some debate. One perspective is that Social Security's financial condition should include the bonds but not the cost of redeeming them. After all, they are backed by the full faith and credit of the United States government, default is highly unlikely, and portfolios around the world hold government bonds and consider them assets. The OASI Trust Fund, in essence a portfolio, is no different and should be treated like all portfolios.

Others counter that considering the bonds wealth by not recognizing the offsetting tax liability is nonsensical.[13] This reasoning is analogous to suggesting that if the government were to issue each American a $1,000 bond financed by a $1,000 per capita tax, then each citizen would be $1,000 wealthier. If this were so, then the state could create individual wealth simply by issuing bonds to its citizens. And by the same logic the state could create Social Security wealth simply by issuing bonds to the Trust Fund. From this perspective, concerns about Social Security's finances would be over: The Trust Fund would be issued enough bonds to meet all future obligations or, alternatively, the bonds' credited interest rate would be increased by the same equivalent. The futility of this argument is that it rests on the neglected reality that taxes ultimately must finance the principal and interest when due on the Trust Fund bonds. For society as a whole, the bonds are not wealth; they are both an asset and a tax liability of equal magnitude.

In reality, and intergenerational issues aside, whether or not the bonds held by the OASI Trust Fund are included as an asset is irrelevant, as long as the offsetting tax liability is recognized if they are.

The Future: Funded or Unfunded? The Trust Fund is a retrospective view; it looks at past taxes and benefits and how they were accounted for. Social Security's financial future is analyzed differently. Actuaries estimate prospective taxes and benefits and employ two models to compare them.[14] One model is called the "open group"; the other is called the "closed group."

For the open-group model, actuaries estimate annual benefits paid and taxes received for the next 75 years from a population that includes not only those retired or working but also those too young to work and even those not yet born. Even a person born 50 years from now would be included because that person will be 25 years old at the end of the 75-year horizon and will have worked and paid taxes for about five years. A girl born today would also be included, because over the next 75 years she would pay taxes for a full working career and receive benefits for about 8 to 10 years. There is no political calculation made as to whether those not yet born would be willing to pay OASI taxes. The assumption is that they would.

The closed-group model differs in that the group is "closed" to those currently 15 years of age and older. The estimated taxes received from a 14-year-old over the next 75 years as well as the benefits paid are not part of the calculation.

In both models the annual difference between taxes received and benefits paid is adjusted for inflation and the time value of money. The present value of the 75 annual differences, either positive or negative, or stated differently, is the funded surplus or unfunded liability of the system. When calculated by using either model, the system is unfunded. The unfunded liability is the amount of additional capital the Social Security system needs immediately, not during the next 75 years, over and above the projected payroll taxes for all of the next 75 years to pay benefits already promised. Exclusive of the initial Trust Fund balance, the unfunded liabilities of the OASI open- and closed-group models are about $3 trillion and $8 trillion, respectively, or $29,700 and $79,200 for every American household.[15] And even if the capital could be raised immediately, it would be exhausted by the end of the 75th year, after which negative cash flows would recommence and, in today's dollars, equal about $440 billion[16] in the 76th year alone.

The Cash Flow View: Social Security's unfunded liability is sometimes characterized as merely a cash flow problem: too many benefits, not enough taxes. Indeed, the "Report of the 1994–1996 Advisory Council on Social Security" included some recommendations that seemed to agree with this view.[17] For example, some Council members supported increasing to 38 from 35 years the period over which the average indexed wage is computed. The effect of this increase would be to reduce benefits to all

retirees but reduce them even more to those who have worked fewer than 38 years. The report also suggested that increasing the eligibility age at which one receives full benefits should be accelerated, the effect of which would also reduce benefits. And a proposal was presented to alter the benefit formula in a way that would directly reduce benefits.

If the problem were just cash flow, it could be remedied by cutting benefits or raising taxes by the amount necessary to balance the system. Figures 2 and 3 show by how much.[18]

If balance were achieved through proportional benefit cuts across all income groups, then low-wage workers born in 1976 whose income is about $13,500 this year would have their expected monthly retirement benefit of $841 reduced to only $621. Given that Social Security is the only source of income for about seven million retirees, this reduction would be a significant drop in their financial well-being.[19] These workers are at the margin of subsistence, so even a $50-a-month reduction is critical; reducing monthly retirement benefits by more than $200 could be devastating. An average wage worker, one whose income is about $27,000 in 1998, would lose about $340 in monthly benefits. And future reductions would have to be even greater because the system's imbalance steadily widens over time.[20]

Raising taxes creates a different problem but one of comparable import. When a person born in 1976 retires, the payroll tax rate for those working at the time of that retirement would have to increase 43 percent from the current level just to finance benefits that would have to be paid under today's law. Thereafter the tax rate would have to increase further because of the system's progressively worsening imbalance. Increased taxes do not buy increased benefits. The poor return that already exists on today's lower taxes would gradually worsen and would never reverse course.[21]

Other proposals have been offered that improve the cash flows. Among them are raising the retirement age, reducing the cost-of-living adjustment, changing the benefit formula, and means-testing benefits. As different from each other as they may appear, they are all variations on the same theme of cutting benefits or raising taxes. Depending on how they are structured, the burden could be shared equally or unequally by income group and age.

Figure 2
Required Decrease in Benefits to Match Taxes

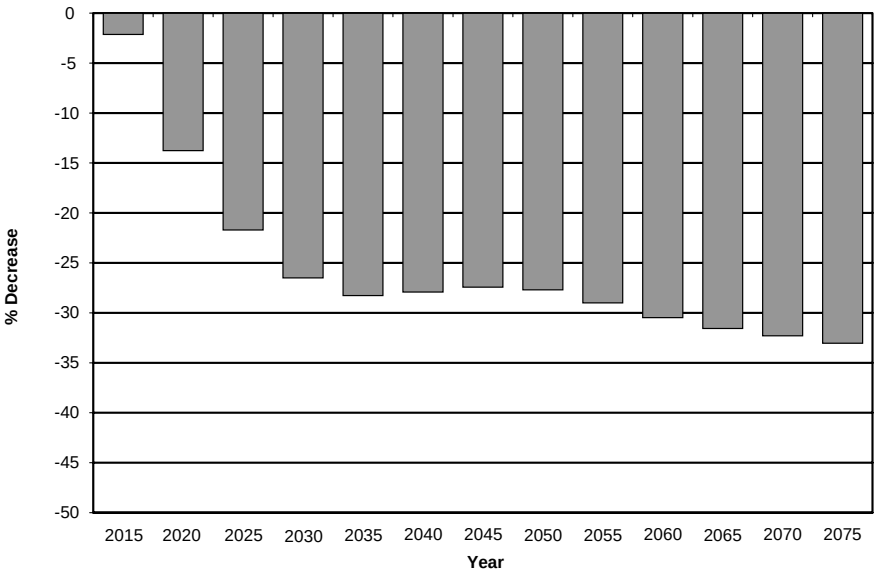
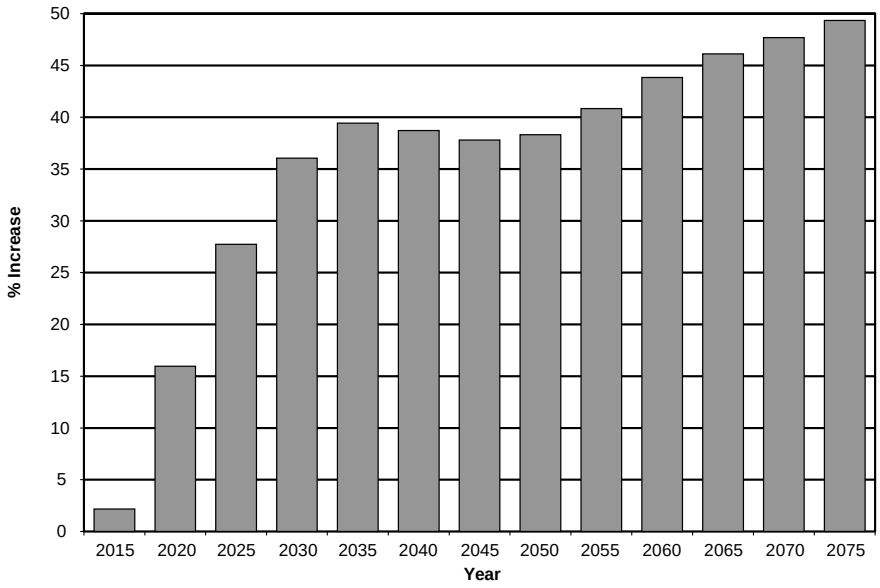


Figure 3
Required Increase in Taxes to Match Benefits



The 1.8 Percent Solution

Recently, some have advocated that the solution to Social Security's debt is to raise the payroll tax rate by 1.8 percent of payroll because, according to estimates in the 1998 Trustees Report, the OASI program is out of actuarial balance by only that amount.[22] One interpreta-

tion of this proposal is that if the tax rate were immediately raised from 10.6 percent to 12.4 percent, and if the positive cash flow were invested, then the system could pay benefits for just 75 years without any further tax rate increase until the 76th year. Proponents of this solution argue that increasing the payroll tax rate by this amount is a small price to pay to keep the system intact.

Another interpretation is that within the 75-year period the 12.4 percent tax rate would have to be raised whenever benefits exceed payroll taxes because the surpluses, as discussed earlier, are not invested. Table 1 shows OASI benefits and payroll taxes from a 10.6 percent and a 12.4 percent rate. According to these data, the tax rate would have to start rising again in 2020 (actually 2019), continue rising through the 75-year period, and end at a rate of about 17 percent.[23] And this interpretation may be conservative. According to a study by Kotlikoff, the rates most likely would have to be substantially higher in order to pay promised benefits.[24]

What is very clear, and presented in detail by Social Security's Trustees, is that keeping the system as it is currently financed will require workers to pay more than the currently stipulated payroll taxes if retirees are to receive their full benefits. This cost is not disputable. What is disputable is whether this cost is more or less than that required to finance the transition to a market-based alternative that ultimately solves the problem.

Table 1
Estimated Old Age & Survivors Benefits and Tax Revenue at 10.6 Percent and 12.4 Percent Tax Rates

Year	OASI Benefit	10.6% Payroll Tax	10.6% Tax Less OASI Benefit	12.4% Payroll Tax	12.4% Tax Less OASI Benefit
1998	$ 326	$ 368	$ 42	$ 427	$ 100
2000	351	393	42	459	109
2005	443	489	46	572	129
2010	592	629	37	736	144
2015	837	798	(39)	934	96
2020	1,202	999	(203)	1,168	(34)
2025	1,662	1,242	(420)	1,453	(209)
2030	2,229	1,551	(678)	1,814	(415)
2035	2,886	1,949	(937)	2,280	(607)
2040	3,618	2,448	(1,170)	2,863	(755)
2045	4,502	3,063	(1,439)	3,583	(919)
2050	5,658	3,822	(1,836)	4,471	(1,187)
2055	7,203	4,763	(2,440)	5,571	(1,632)
2060	9,210	5,936	(3,274)	6,944	(2,266)
2065	11,693	7,405	(4,289)	8,662	(3,031)
2070	14,768	9,234	(5,534)	10,802	(3,966)
2072	16,208	10,083	(6,125)	11,795	(4,413)

Note: All amounts are in billions of nominal dollars.

A Market-Based Alternative

Because eliminating the cash flow dilemma by either cutting benefits or raising taxes creates other and significant socioeconomic problems, reducing the unfunded liability should be accomplished differently, if at all possible. As a guide to considering different solutions, three principles of retirement finance that are valued by civil societies should be considered. They are as follows:

- The elderly are able to retire with financial security and dignity.
- Younger workers are able to keep more of the fruits of their labor.
- The economy is not unreasonably or unnecessarily burdened by achieving the first two principles.

The ultimate objective of retirement finance is to achieve all three principles and simultaneously eliminate both the cash flow problem and the unfunded liability permanently. A market-based system can achieve these goals. However, the plan design is critical to success because different market-based structures can yield entirely different results, some of which may be inferior to pay-as-you-go financing. The following plan structure is consistent with the three principles, ultimately eliminates the unfunded liability and the payroll tax, and increases retirement benefits significantly.

Choice

Each worker, regardless of age, would be free to stay with Social Security or move to the market-based structure. No one would be required to leave Social Security.

Benefit Integrity

For those staying with Social Security, benefits would not be reduced below what they may otherwise be because of the availability of the market-based alternative. This point is critical especially to the present elderly because they may be unable to adjust to change. "What they may otherwise be …" is worth pondering. In all

likelihood, if the existing system survives in some form, benefits will be cut. The intent of this analysis is that they would not be cut further because of introducing a market-based alternative.

Saving Rates and OASI Taxes

In 1998, both employers and employees pay an OASI tax of 5.35 percent of payroll up to $68,400. The combined 10.7 percent tax is scheduled to fall to 10.6 percent in 2000 and the wage base is scheduled to rise indefinitely. The market-based system would contain an employer tax and a mandatory employee saving deduction. The employer tax would continue to finance current benefits. The tax and saving rates influence the replacement rate, transition financing, timing of cash flow deficits and surpluses, personal disposable income, and the time it takes to extinguish the unfunded liability. Because so many variables are affected and in different ways, there is no correct set of tax and saving rates, but there are choices.

Benefits at Retirement—No Ceiling

Benefits at retirement as a percentage of one's last working year's wage, the so-called replacement rate, greatly depend on saving and investment rates (see Table 2). There would be no stipulated replacement rate ceiling as there is with Social Security.[25]

Social Adequacy—The Floor

Social Security's replacement rate is an income floor. For the average-income worker retiring at age 65 in 1998 the replacement rate is about 42 percent.[26] For low- and maximum-income[27] workers, the replacement rate is 56 percent and 25 percent, respectively. For simplicity, this paper refers to the 42 percent rate throughout, although the assumption is that the full range may apply.

One assumes that the market-based system would have a government-guaranteed replacement rate equal to Social Security's if one's accumulated wealth were insufficient to achieve it. For example, average-income workers who retire with a portfolio replacing only 37 percent of their last year's wage would receive from the government monthly benefits equal to 5 percent so that the total would equal Social Security's 42 percent replacement rate. This feature leaves nobody worse off and implicitly recognizes workers' taxes already paid to the system. Given a span of market assumptions, saving rates, and dates of birth, the probability that the government would have to honor the guarantee ranges from certain to remote.

Table 2
Market-Based Replacement Rates under Different Saving and Investment Assumptions

Employee Saving Rate	Pre-retirement Investment Return*			
	7%	8%	9%	10%
5.3%	48.4%	62.0%	80.2%	104.7%
6.0%	54.8%	70.2%	90.8%	118.6%
7.0%	64.0%	81.9%	106.0%	138.3%
8.0%	73.1%	93.6%	121.1%	158.1%

*Investment returns are nominal and inflation is 3.5%.

Investment Objective and Options

The investment objective is to achieve high-risk adjusted returns throughout both working and retirement years. This objective requires multiple asset classes, the returns of which are not highly correlated. At a minimum, portfolios should be diversified across domestic stocks and bonds, foreign stocks and bonds, and money market instruments to achieve reasonable diversification.

Ownership

Portfolio assets would be one's personal property, totally portable, and assets of one's estate at death.

Accessing Retirement Benefits

Assets necessary to fund a specified replacement rate or base level of income would be available only for retirement. Excess assets could be used for any purpose.

Financing the Transition

Under present law, OASI will enjoy a positive cash flow until 2015 after which it turns negative. Depending on the assumptions, a privatized system will incur a negative cash flow immediately, although temporarily, after which it turns positive. This analysis assumes that neg-

One significant advantage of a privatized system is the greater retirement income earned from investing in markets.

ative cash flows of both systems would be financed exclusively with debt. Therefore, it expresses the worst case scenario from the perspective of indebtedness.

Debt financing is assumed, in part, for simplicity. It allows for greater transparency in comparing Social Security's future under present law to a privatized alternative. It explicitly does not consider such options as raising the retirement age, reducing cost-of-living increases, taxing benefits, selling government assets, or cutting other government spending, all of which may be meritorious in their own right, and each of which would reduce borrowing costs.[28]

Resources must be made available both to pay the OASI tax and to save for retirement. These resources would have to come from persons' consuming less or the government's spending less than they would otherwise. This reality cannot be ignored; debt finance does not obviate the need for additional resources.

Also, additional resources are required if the system is not reformed. Under this condition, given that the OASI tax must rise endlessly, other personal consumption or government spending must fall endlessly.

No consideration is made for any estimate of increased economic activity due to privatization, most likely a conservative proposition.[29] Nor is any consideration made for any economic slowdown that may occur owing to the required increase in taxes to pay promised benefits under the present structure.

Sources and Uses of Funds

In the present structure taxes pay benefits, and any surplus is borrowed by the government and spent on goods and services not related to Social Security. In the market-based model, funds from taxes and/or saving would pay benefits, would be invested for future benefits, and would amortize bridge-financing debt incurred during the transition. None of the funds would be earmarked for any other purpose.

Assumptions Underlying Transition

For simplicity, the following transition analysis involves several assumptions: First, all workers choose the market-based alternative and are guaranteed the present Social Security replacement rate consistent with their wage histories. Second, the transition debt interest rate is the same that is credited to the OASI Trust Fund bonds. Third, individual saving, employer tax, and market investment rates are stipulated for each scenario.

The number of workers who would actually choose the new system is unknown, but if all workers did, annual deficits in the early years would be worse than under any other assumption. This scenario, although unlikely, is the most conservative from the perspective of near-term borrowing.

The need for the government to guarantee the replacement rate is critical in the early years although it lessens over time. For instance, a 64-year-old average earner will not be able to save enough before retirement to replace 42 percent of wages, but will be able to replace a small amount even with one year's saving. The guarantee would replace the remainder so that the total would equal 42 percent, the same as the existing law. For a 21-year-old average earner the market-based replacement rate would likely exceed 42 percent, as is shown in Table 2, in which case the need for the guarantee would be moot.

When a worker achieves 42 percent from saving and investing, the government's obligation to that worker ends. Over time, as more workers reach this point, the government's benefit payments fall and eventually reach zero. But, because of the bridge financing incurred during the transition, the employer tax continues until all of the debt is retired. At this point the employer tax ends. The steady state is no employer or employee tax but mandatory employee saving.

Defining the Objectives

In designing a transition plan, several factors and priorities must be considered, including the amount of unfunded liability within the system, the expected rate of return on investment, the guaranteed replacement rate, and the maximum tax or contribution rate. Depending on the objectives, plan specifics vary. Different saving, tax, and investment rates will yield entirely different results.

The examples below show how these factors interact. In each example the following factors are considered: the real rate of return earned by investments in the private accounts; the minimum desired replacement rate; the employer's payroll tax rate; the employee's mandatory con-

Table 3

Equal Tax and Contribution Rates That Increase the Replacement Rate but Hold the Unfunded Liability Unchanged

Pre-retirement Investment Return*	Employee Saving Rate	Employer Tax Rate	Ultimate Combined Tax and Saving Rates	OASI Open-Replacement Rate	Market-Based Group Unfunded Liability**	Unfunded Liability**
7%	6.20%	6.20%	12.40%	57%	$ 3.0	$ 3.0
8%	5.95%	5.95%	11.90%	69%	3.0	3.1
9%	5.75%	5.75%	11.50%	86%	3.0	3.0
10%	5.50%	5.50%	11.00%	110%	3.0	3.1

* Investment returns are nominal; inflation is 3.5%.

** All amounts are estimated in trillions of dollars, excluding the initial Trust Fund.

Table 4

Tax and Saving Rates That Retain the 42 Percent Replacement Rate and the Present Unfunded Liability

Pre-retirement Investment Return*	Employee Saving Rate	Employer Tax Rate	Sum of Employee/ Employer Rates	OASI Open-Group Unfunded Liability**	Market-Based Unfunded Liability**
7%	4.60%	7.00%	11.60%	$ 3.0	$ 3.0
8%	3.60%	7.25%	10.85%	3.0	3.1
9%	2.80%	7.45%	10.25%	3.0	3.0
10%	2.10%	7.70%	9.80%	3.0	3.1

* Investment returns are nominal, inflation is 3.5%.

** All amounts are estimated in trillions of dollars, excluding the initial Trust Fund.

tribution rate with his or her private account; and the amount of unfunded liability within the system. This unfunded liability represents the transition costs of this proposal and is compared with the unfunded liability under the existing Social Security system.

The first assumption is the amount of the benefits a worker would receive at retirement, that is, the replacement rate, will be increased. Table 3 shows possible scenarios that raise the replacement rate above 42 percent, but do not increase the unfunded liability and have equal employer tax and employee contribution rates. In each case, the only contribution rate yielding the desired replacement rate for a particular rate of return is calculated. When the employee's contribution is known, one can determine the necessary employer's tax rate to provide any given level of unfunded liability within the system.

For example, if workers contributed 6.2 percent of their wages to an individual account and the investments from that account earned a 7 percent nominal rate of return (a real rate of return of 3.5 percent), workers would receive retirement benefits equal to 57 percent of their pre-retirement income, significantly above the 42 percent replacement rate promised by Social Security. With the employer's payroll tax set at a matching 6.2 percent, the unfunded liability in a market-based Social Security system would be $3 trillion, the same as in the current system. If, however, investments from the individual accounts earned a 9 percent return, an employee contribution of only 5.75 percent would yield a replacement rate of 86 percent, nearly double Social Security's promise. And the higher return would require only a matching 5.75 percent payroll tax paid by the employer to keep the system's unfunded liability at $3 trillion.

However, if the objective is simply to preserve the current 42 percent replacement rate, while again not increasing the system's unfunded liability, then Table 4 shows the scenarios that achieve that outcome.

In this scenario, if investment returns are 7 percent, the employee must contribute 4.6 percent of his wages to the individual account to achieve a 42 percent replacement rate. Under this scenario, to hold the unfunded liability at $3 trillion, the same as under the current Social Security, the employer's tax rate must be 7 percent.

Table 5 shows that, if everything else were held constant but the employer's tax were increased to 8.05 percent, the unfunded liability under the market-based system would decline to $1.5 trillion, half that of the current Social Security system. Table 6 shows that increasing the employer's tax rate to 9.55 percent would completely eliminate the unfunded liability under the market-based system.

Tables 4, 5, and 6 also show that higher rates of return would require lower employee contributions to achieve the same results. In short, holding everything else constant, the higher the combined employer-employee contribution rate *or* the return on investment, the faster the decline in the unfunded liability. The reason is that both accelerate the advent of the 42 percent replacement rate, the point at which the government no longer has to pay Social Security benefits. The earlier that date, the less bridge financing.

In all three scenarios the government benefits cease during the 75-year period because for all practical purposes the 42 percent replacement rate is ultimately achieved for all workers through their individual accounts. The remaining market-based unfunded liability is the bridge financing not yet repaid. It is not a present value imbalance of OASI taxes and benefits. When the bridge financing is repaid, the employer tax ends.

The 1.8 Percent Solution Revisited

Now, the formula discussed above will be applied to the 1.8 percent solution described earlier. Although many better ways exist to finance the transition bridge than payroll tax increases, it is valuable to show that applying the identical finance mechanism both to propping the current system and to making the transition to a market-based system yields markedly different long-term results.

To compare the differences, one assumes that in both cases any revenue shortfall is financed with debt, the 42 percent replacement rate is retained, the pre-retirement nominal investment return ranges from 7 percent to 10 percent, and inflation is 3.5 percent. As shown in Table 7, the unfunded liability falls below the present $3 trillion in all cases. In fact, if the return on investments were 10 percent, there would be a significant surplus.

Table 5

Tax and Saving Rates That Retain the 42 Percent Replacement Rate and Reduce the Unfunded Liability by $1.5 Trillion

Pre-retirement Investment Return*	Employee Saving Rate	Employer Tax Rate	Sum of Employee/ Employer Rates	OASI Open-Group Unfunded Liability**	Market-Based Unfunded Liability**
7%	4.60%	8.05%	12.65%	$ 3.0	$ 1.5
8%	3.60%	8.30%	11.90%	3.0	1.5
9%	2.80%	8.50%	11.30%	3.0	1.5
10%	2.10%	8.75%	10.85%	3.0	1.5

* Investment returns are nominal, inflation is 3.5%.

** All amounts are estimated in trillions of dollars, excluding the initial Trust Fund.

Table 6

Tax and Saving Rates That Retain the 42 Percent Replacement Rate and Eliminate the Unfunded Liability

Pre-retirement Investment Return*	Employee Saving Rate	Employer Tax Rate	Sum of Employee/ Employer Rates	OASI Open-Group Unfunded Liability**	Market-Based Unfunded Liability**
7%	4.60%	9.55%	14.15%	$ 3.0	$ 0.0
8%	3.60%	9.80%	13.40%	3.0	0.0
9%	2.80%	10.00%	12.80%	3.0	0.0
10%	2.10%	10.25%	12.35%	3.0	0.0

* Investment returns are nominal; inflation is 3.5%.

** All amounts are estimated in trillions of dollars, excluding the initial Trust Fund.

A 9 percent rate of return eliminates the system's unfunded liability. Table 8 examines this scenario in more detail.

Column four is the difference between OASI benefits and taxes at the 12.4 percent rate. In 2019 the system's cash flow turns negative and then stays that way. In contrast, the market-based cash flow (column 8) turns negative in 2009, peaks in 2038, turns positive in 2047, and then stays that way. The reason that the market-based cash flows are temporarily negative is that the investment wealth is not close enough to the 42 percent replacement rate to reduce the government's costs below its revenues from the 9.6 percent payroll tax. As wealth builds, however, the government's contribution to the 42 percent replacement rate falls (see Figure 4). It never falls in the pay-as-you-go structure.

This means that, although in both systems the payroll deduction and the unfunded liability are the same, the market-based system produces a far superior long-term result. In the 75th year, the pay-as-you-go system will have a cash flow deficit of about 1.7 percent of gross domestic product (GDP) while the market-based alternative will have a surplus of about 3.5 percent of GDP. Taxes in the pay-as-you-go system will have to be about 17 percent of payroll to pay the current benefits under today's law. In the market-based system there will be no taxes but there will be a mandatory saving rate of about 2.8 percent. As time passes these differences widen further.

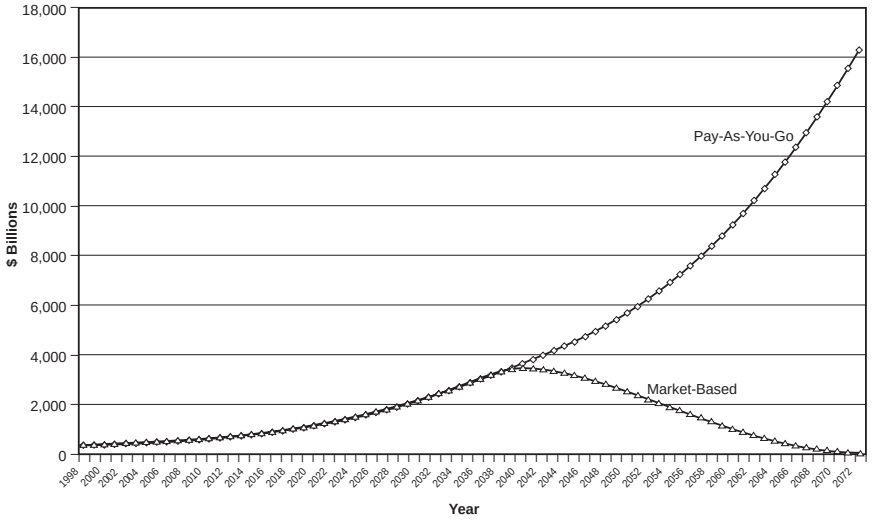
Again, no increase in payroll deductions is being advocated. Such an increase is totally unnecessary when there are other methods of financing the transition, such as reducing general revenue spending, selling government assets, and using projected general revenue surpluses. Several transition plans have been presented that do not include any tax increases. The important point of this analysis is that, *regardless of the transition financing mechanism*, moving to a market-based Social Security system will ultimately be less costly than trying to prop up the current program.

Table 7
The 1.8 Percent Market-Based Solution

Pre-retirement Investment Return*	Employee Saving Rate	Employer Tax Rate	Sum of Employee/ Employer Rates	Market-Based Unfunded Liability**
7%	4.60%	7.80%	12.40%	$ 1.9
8%	3.60%	8.80%	12.40%	0.8
9%	2.80%	9.60%	12.40%	0.0
10%	2.10%	10.30%	12.40%	-4.3

* Investment returns are nominal; inflation is 3.5%.
** All amounts are estimated in trillions of dollars, excluding the initial Trust Fund.

Figure 4
Long-Run Government Benefit Obligations Needed to Achieve a 42 Percent Replacement Rate Under a 12.4 Percent Pay-As-You-Go Tax vs. a Market-Based 12.4 Percent Payroll Deduction*



*Assumes a 2.8% savings rate, at 9.6% payroll tax rate, 9% nominal return, and a 3.5% inflation rate. Derived from columns 3 and 7 of Table 8.

Conclusion

Any discussion of the transition cost of moving to a market-based Social Security system cannot be conducted in a vacuum. The current Social Security system has unfunded liabilities of about $3 trillion and, in the absence of fundamental reform, those liabilities will continue to grow.

Transforming Social Security to a market-based system of individual accounts does require a transition period, a cost, and a change in the timing of cash flows. However, any cost is reasonably less than staying with the present law. Little if any reason exists to retard necessary reform because of this issue. Indeed, the relative transition benefits should be another incentive to move quickly toward reasoned reform.

Table 8

The 1.8 Percent Solution: Pay-As-You-Go Payroll Tax vs. Market-Based Payroll Deduction

		Pay-As-You-Go 12.4% Payroll Tax (Present Law + 1.8%)				Market-Based 12.4% Payroll Deduction				
Column	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Year	Projected GDP	12.4% Tax	OASI Benefit	Cash Flow	Cash Flow as % GDP	9.6% Payroll Tax	OASI Benefit	Cash Flow	Cash Flow as % GDP	Cash Flow Difference	Cash Flow Difference as % GDP
1998	$ 8,083	$ 427	$ 326	$ 100	1.24%	$ 330	$ 326	$ 4	0.05%	$ (96)	-1.19%
1999	8,384	441	337	104	1.24%	341	336	5	0.06%	(99)	-1.18%
2000	8,735	459	351	109	1.24%	356	350	6	0.07%	(102)	-1.17%
2001	9,119	478	366	112	1.22%	370	365	5	0.06%	(106)	-1.16%
2002	9,532	498	383	115	1.21%	386	381	5	0.05%	(110)	-1.15%
2003	9,981	520	401	119	1.19%	403	398	5	0.05%	(114)	-1.14%
2004	10,469	544	421	123	1.18%	421	417	4	0.04%	(119)	-1.13%
2005	11,002	572	443	129	1.17%	443	437	5	0.05%	(123)	-1.12%
2006	11,579	600	467	133	1.15%	464	460	5	0.04%	(128)	-1.10%
2007	12,202	632	493	139	1.14%	490	484	5	0.04%	(133)	-1.09%
2008	12,866	665	522	142	1.11%	515	512	3	0.02%	(139)	-1.08%
2009	13,540	699	556	144	1.06%	541	544	(2)	-0.02%	(145)	-1.07%
2010	14,253	736	592	144	1.01%	569	579	(9)	-0.07%	(152)	-1.07%
2011	15,000	774	632	142	0.95%	598	617	(19)	-0.13%	(160)	-1.07%
2012	15,779	811	675	136	0.86%	628	660	(32)	-0.20%	(167)	-1.06%
2013	16,571	851	724	126	0.76%	659	708	(50)	-0.30%	(175)	-1.06%
2014	17,393	891	778	113	0.65%	690	761	(71)	-0.41%	(184)	-1.06%
2015	18,255	934	837	96	0.53%	723	820	(97)	-0.53%	(193)	-1.06%
2016	19,145	977	901	76	0.40%	756	883	(126)	-0.66%	(202)	-1.06%
2017	20,077	1,022	969	53	0.26%	791	951	(160)	-0.80%	(212)	-1.06%
2018	21,041	1,069	1,042	27	0.13%	828	1,024	(196)	-0.93%	(223)	-1.06%
2019	22,048	1,118	1,120	(2)	-0.01%	865	1,102	(236)	-1.07%	(234)	-1.06%
2020	23,096	1,168	1,202	(34)	-0.15%	904	1,184	(280)	-1.21%	(245)	-1.06%
2021	24,185	1,221	1,288	(68)	-0.28%	945	1,271	(326)	-1.35%	(257)	-1.06%
2022	25,323	1,275	1,373	(98)	-0.39%	987	1,355	(368)	-1.45%	(268)	-1.06%
2023	26,503	1,331	1,463	(131)	-0.50%	1,031	1,443	(412)	-1.56%	(280)	-1.06%
2024	27,726	1,391	1,560	(170)	-0.61%	1,077	1,539	(463)	-1.67%	(292)	-1.05%
2025	29,017	1,453	1,662	(209)	-0.72%	1,125	1,640	(515)	-1.78%	(305)	-1.05%
2026	30,368	1,517	1,768	(250)	-0.82%	1,175	1,744	(569)	-1.87%	(318)	-1.05%
2027	31,777	1,585	1,876	(291)	-0.91%	1,227	1,850	(623)	-1.96%	(331)	-1.04%
2028	33,269	1,658	1,989	(331)	-1.00%	1,283	1,962	(678)	-2.04%	(346)	-1.04%
2029	34,860	1,734	2,108	(373)	-1.07%	1,343	2,078	(735)	-2.11%	(361)	-1.03%
2030	36,536	1,814	2,229	(415)	-1.14%	1,405	2,197	(793)	-2.17%	(376)	-1.03%
2031	38,300	1,899	2,356	(457)	-1.19%	1,470	2,321	(851)	-2.22%	(392)	-1.02%
2032	40,159	1,988	2,486	(499)	-1.24%	1,539	2,449	(910)	-2.27%	(410)	-1.02%
2033	42,120	2,081	2,619	(538)	-1.28%	1,611	2,578	(967)	-2.30%	(428)	-1.02%
2034	44,185	2,178	2,752	(573)	-1.30%	1,686	2,709	(1,022)	-2.31%	(447)	-1.01%
2035	46,339	2,280	2,886	(607)	-1.31%	1,765	2,840	(1,075)	-2.32%	(467)	-1.01%
2036	48,585	2,385	3,024	(638)	-1.31%	1,847	2,974	(1,127)	-2.32%	(487)	-1.00%
2037	50,939	2,497	3,166	(669)	-1.31%	1,933	3,119	(1,186)	-2.33%	(515)	-1.01%
2038	53,420	2,614	3,313	(699)	-1.31%	2,024	3,266	(1,242)	-2.33%	(542)	-1.01%
2039	56,037	2,736	3,464	(727)	-1.30%	2,118	3,335	(1,216)	-2.17%	(487)	-0.87%

Notes

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[1]See Peter J. Ferrara, "A Plan for Privatizing Social Security," Cato Institute Social Security Paper No. 8, April 30, 1997, p. 11.

[2]See Stephen J. Entin, *Social Security Transition: Maximizing Economic Benefits*, Institute for Research on the Economics of Taxation, Washington, May 29, 1998.

[3]*1998 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds.* (Washington: Government Printing Office, 1998).

Table 8—(Continued)

The 1.8 Percent Solution: Pay-As-You-Go Payroll Tax vs. Market-Based Payroll Deduction

		Pay-As-You-Go 12.4% Payroll Tax *(Present Law + 1.8%)*				Market-Based 12.4% Payroll Deduction					
Column	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	Cash Flow
Year	Projected GDP	12.4% Tax	OASI Benefit	Cash Flow	Cash Flow as % GDP	9.6% Payroll Tax	OASI Benefit	Cash Flow	Cash Flow as % GDP	Cash Flow Difference	Difference as % GDP
2040	58,770	2,863	3,618	(755)	-1.28%	2,217	3,370	(1,153)	-1.96%	(396)	-0.67%
2041	61,621	2,996	3,778	(782)	-1.27%	2,319	3,391	(1,072)	-1.74%	(287)	-0.47%
2042	64,586	3,133	3,945	(812)	-1.26%	2,426	3,346	(921)	-1.43%	(106)	-0.16%
2043	67,682	3,277	4,121	(845)	-1.25%	2,537	3,298	(761)	-1.12%	86	0.13%
2044	70,918	3,427	4,307	(880)	-1.24%	2,653	3,231	(578)	-0.81%	305	0.43%
2045	74,312	3,583	4,502	(919)	-1.24%	2,774	3,147	(374)	-0.50%	549	0.74%
2046	77,841	3,745	4,708	(962)	-1.24%	2,900	3,056	(156)	-0.20%	809	1.04%
2047	81,532	3,915	4,926	(1,010)	-.124%	3,031	2,947	84	0.10%	1,097	1.35%
2048	85,397	4,093	5,157	(1,064)	-1.25%	3,169	2,822	346	0.41%	1,413	1.65%
2049	89,444	4,278	5,400	(1,122)	-1.25%	3,312	2,693	619	0.69%	1,745	1.95%
2050	93,668	4,471	5,658	(1,187)	-1.27%	3,461	2,555	906	0.97%	2,097	2.24%
2051	98,077	4,672	5,932	(1,260)	-1.28%	3,617	2,399	1,218	1.24%	2,482	2.53%
2052	102,685	4,882	6,224	(1,341)	-1.31%	3,780	2,245	1,535	1.49%	2,880	2.80%
2053	107,516	5,103	6,533	(1,430)	-1.33%	3,950	2,101	1,850	1.72%	3,284	3.05%
2054	112,582	5,332	6,859	(1,527)	-1.36%	4,128	1,941	2,187	1.94%	3,718	3.30%
2055	117,873	5,571	7,203	(1,632)	-1.38%	4,313	1,782	2,531	2.15%	4,167	3.54%
2056	123,399	5,821	7,566	(1,744)	-1.41%	4,507	1,622	2,885	2.34%	4,634	3.76%
2057	129,182	6,083	7,948	(1,865)	-1.44%	4,709	1,457	3,252	2.52%	5,122	3.96%
2058	135,240	6,357	8,350	(1,993)	-1.47%	4,922	1,290	3,632	2.69%	5,630	4.16%
2059	141,614	6,644	8,771	(2,127)	-1.50%	5,144	1,128	4,015	2.84%	6,148	4.34%
2060	148,290	6,944	9,210	(2,266)	-1.53%	5,376	979	4,397	2.96%	6,668	4.50%
2061	155,283	7,258	9,667	(2,409)	-1.55%	5,619	841	4,778	3.08%	7,192	4.63%
2062	162,610	7,585	10,142	(2,557)	-1.57%	5,873	712	5,161	3.17%	7,723	4.75%
2063	170,283	7,928	10,637	(2,709)	-1.59%	6,138	592	5,546	3.26%	8,261	4.85%
2064	178,283	8,287	11,154	(2,867)	-1.61%	6,416	480	5,936	3.33%	8,809	4.94%
2065	186,755	8,662	11,693	(3,031)	-1.62%	6,706	380	6,326	3.39%	9,364	5.01%
2066	195,573	9,054	12,255	(3,201)	-1.64%	7,009	296	6,713	3.43%	9,922	5.07%
2067	204,814	9,464	12,842	(3,378)	-1.65%	7,327	253	7,074	3.45%	10,460	5.11%
2068	214,496	9,891	13,456	(3,545)	-1.66%	7,657	206	7,451	3.47%	11,024	5.14%
2069	224,609	10,337	14,097	(3,761)	-1.67%	8,003	156	7,846	3.49%	11,615	5.17%
2070	235,188	10,802	14,768	(3,966)	-1.69%	8,363	104	8,259	3.51%	12,234	5.20%
2071	246,246	11,288	15,472	(4,183)	-1.70%	8,739	49	8,691	3.53%	12,883	5.23%
2072	257,829	11,795	16,208	(4,413)	-1.71%	9,132	35	9,097	3.53%	13,519	5.24%

** All amounts in billions of nominal dollars.*
(Based on information from 1998 Trustees Report, intermediate assumptions)

[4]Ibid., p. 9.

[5]Ibid., Table II.B1., pp. 33–34.

[6]Ibid., Table II.E2., pp. 65–66. The contribution bases by Alternative I, II, and III in 2007 are $95,400, $96,000, and $103,800, respectively.

[7]Ibid., Table I.C1., p. 6.

[8]Ibid., Table I.C1., p. 6.

[9]Ibid., p. 108. By 2013 benefits will exceed revenue if the Disability Insurance (DI) portion of OASDI is included.

[10]For a thorough discussion see http://www.ssa.gov/history/reports/gspan4.html, chapters 1 and 2.

[11]For a comprehensive treatment of the legislation, see John A. Svahn and Mary Ross, "Social Security Amendments of 1983: Legislative History and Summary of Provisions," *Social Security Bulletin* 46, no. 7 (July 1983).

[12]1998 Trustees Report, Table II.F8., p. 97.

[13]Peter J. Ferrara, *Social Security: The Inherent Contradiction* (San Francisco: Cato Institute, 1980), p. 326.

[14]The Statement of Liabilities and Other Financial Commitments of the U.S. Government is compiled in accordance with 31 U.S.C. 331(b). The report discloses the liabilities, commitments, and contingencies of the federal government as of a September 30 fiscal year. Only the open-group model condition is reported.

[15]According to the U.S. Bureau of the Census the number of All Households is 101 million in 1998. See http://www.census.gov/population/projections/nation/hh-fam/table 1 n.txt.

[16]This amount is an estimate from the OASI income rate and cost rate imbalance and taxable payroll in 2072. See 1998 Trustees Report, Table II.F13., p. 108, and Table III.B1., p. 175.

[17]*Report of the 1994–1996 Advisory Council on Social Security*, Volume I: Findings and Recommendations, Washington, pp. 15–29.

[18]See 1998 Trustees Report, Table II.F13., p. 108. The percent change from the income rate to the cost rate is the required increase in taxes. The converse is the required decrease in benefits.

[19]See Peter M. Wheeler, *Fast Facts & Figures About Social Security 1997*, The Social Security Administration's Office of Research, Evaluation and Statistics (ORES), June 1997, pp. 7, 30.

[20]1998 Trustees Report, Table II.F13., p. 108.

[21]For a detailed discussion of Social Security's poor returns see William G. Shipman, "Retiring with Dignity: Social Security vs. Private Markets," Cato Institute Social Security Paper no. 2, August 14, 1995, and Melissa Hieger and William G. Shipman, "Common Objections to a Market-Based Social Security System: A Response," Cato Institute Social Security Paper no. 10, July 22, 1997. Also see Laurence J. Kotlikoff et al., "Social Security's Treatment of Postwar Americans," Merrill Lynch, New York, April 15, 1998. Also see Peter Ferrara and Michael Tanner, *A New Deal for Social Security* (Washington: Cato Institute, 1998).

[22]1998 Trustees Report, Table II.F15., p. 113.

[23]Ibid., Table II.F13., p. 108.

[24]See Kotlikoff et al., p. 7.

[25]These rates are ultimate replacement rates, that is, assuming one saves and invests for a full working career. They are inflation indexed and payable to age 80. If life expectancy increases, replacement rates decrease.

[26]1998 Trustees Report, Table III.B5., pp. 183, 184. The replacement rate at age 65 for all income workers is scheduled to decline. For a low-income worker it will decline almost 12 percent by 2075.

[27]"Maximum income" refers to wage income subject to the OASI tax. In 1998 it is $68,400.

[28]Ferrara and Tanner, pp. 175–204.

[29]For example, see Martin Feldstein and Andrew Samwick, "Two Percent Personal Retirement Accounts: Their Potential Effects on Social Security Tax Rates and National Saving," National Bureau for Economic Research, Cambridge, Mass., 1998.