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Social Security Reform: Economic Issues

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Summary

Social Security reform has been a perennial item on the congressional agenda. While Social Security originated as a Depression-era program aimed at alleviating the economic circumstances of the elderly, social insurance also corrects market failures in the annuity market (adverse selection), prevents free-riders (requires workers to provide for their retirement), spreads risk, and may correct for failure to optimize by shortsighted individuals. The system imposes costs on society as well, through distortions in savings and labor supply, and political risk.

The need for reform arises from projected financial shortfalls of the current system, a largely pay-as-you-go (PAYGO) transfer system. Trust fund assets cannot sustain the system. The assets were arguably not generated through real government saving (in light of the history of persistent budget deficits). The problem is not merely a blip that occurs as the baby boom retires. The worker/recipient ratio is projected to fall permanently and ultimately either taxes must be increased by about 50% or benefits must be cut by one third. Inaction would likely lead to significant tax increases in the future since it is difficult to cut the benefits of existing recipients. Reform now would allow future recipients to adapt to benefit changes and the economy to expand through saving, making the long run problem less burdensome.

Proposed reforms involve revisions to the present system, the introduction of individual accounts, or a combination of both. All else equal, raising taxes or cutting benefits increases government saving; most taxes would not significantly affect the private saving rate (especially wage and consumption taxes). Evidence suggests that some benefit reductions (e.g., raising both the early and full retirement age) are more likely to increase labor supply and the tax base than others. Investing trust fund balances in equities cannot, however, provide higher aggregate returns unless financed through higher taxes or lower government spending. Otherwise, gains from investment earnings will be offset by lower returns to private portfolios and higher government interest rates. This analysis suggests that increased government borrowing costs could largely negate the perceived gains to the government.

Individual accounts are often touted for their higher returns. However, these comparisons are not accurate: they do not account for general equilibrium effects on interest rates, transition costs of paying off existing liabilities, the increased risk for individuals, and — in some cases — the full cost of the current system's social functions (e.g. disability, transfers). If debt financed, individual accounts systems would magnify the crisis because transition costs would increase. Moreover, if a pure individual account system is to be successful in addressing market failures such as adverse selection and free riders, it must be made mandatory in participation, annuitization, and prudent investment. Two problems emerge even if these rules are followed. Individual accounts would redistribute away from the poor because of their shorter lifespan and would eliminate the explicit redistribution of the current system. Individual accounts would also expose cohorts of retirees to significant variation in benefits due to the vagaries of the stock market. Individual accounts, however, could reduce tax distortions and political risk and facilitate budgetary discipline. This report will not be updated.

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Social Security Reform: Economic Issues

Comprehensive Social Security reform has been an issue of debate in Congress for some time, but no major action has occurred. Reform proposals have been driven in part by a recognition that in the future the program is financially unsustainable under current policy. This report tackles the issue from an economic perspective that focuses not merely on reform that achieves programmatic sustainability (sustainability within the trust fund), but reform that achieves sustainability for the government and economy as a whole. Moreover, it stresses the importance of understanding the economic consequences of program changes if one is to understand who pays to achieve this sustainability and what type of changes might be consistent with the economic rationale for social insurance.

The Economic Rationale for Social Security

Before turning to the assessment of the current problem and the proposed solutions to that problem, it is worth taking a moment to consider why we have a Social Security system at all. Historically, of course, Social Security arose as a Depression-era program to alleviate the economic circumstances of the elderly. For that reason (and perhaps others) it began as a transfer rather than a fully-funded retirement system and the susceptibility of a tax and transfer system to demographic changes is the reason for the current problem. Today, Social Security is more than a retirement system; it provides disability payments (which account for about 15% of benefits) as well as benefits to survivors and dependents. (There is a companion program, Medicare, that provides for health benefits in retirement.) Social Security has also been a way to provide income redistribution that has lifted many elderly out of poverty without resort to explicit (and to some, demeaning) welfare programs. To some, these other functions of Social Security represent social goals that should be separated from the provision of retirement income. For others, they are an integral part of Social Security's role of insuring against the risks associated with old age.

Why not simply allow individuals to cope with their own retirement and other risks (such as disability) through private saving and insurance? Economic theory suggests several reasons that are discussed below.

Adverse Selection. One reason for an aggregated mandatory social insurance program is a problem called "adverse selection." Since individuals know more about their own circumstances than insurance firms, individuals who are more likely to benefit from insurance would tend to purchase it. For example, using one's life savings to purchase an annuity that pays a fixed amount per month over the rest of one's life would be most attractive to individuals who expect to live a long time (and unattractive to a person with a terminal disease). So the insurance industry will only offer to pay a smaller annuity than that justified by average life expectancy because

the companies know that their customers will more likely be those who expect a long life. These less advantageous terms lead annuities to be attractive to an even smaller group of individuals. The result is that markets do not provide attractive annuities to the average person. The problem can be avoided by the government mandating the purchase of annuities or by directly providing them through a tax and benefit system.

Moral Hazard. A second problem is one known as "moral hazard," which arises from behavioral responses to incentives. In this case, moral hazard arises if society has a safety net for only the poor. Individuals know that if they do not save for retirement, society will not allow them to be destitute, so there is an incentive to "free ride" on the program — to undersave, to take too many risks in saving choices, and to spend accumulated savings too quickly. By requiring individuals to participate in (and pay taxes into) a minimum retirement system that pays a lifetime annuity upon retirement that is not risky, this moral hazard problem can be avoided.

Incomplete Private Insurance Markets. A social insurance system also allows for the reduction of individual risk in saving for retirement, by spreading investment and other risks across individuals within a generation as well as across generations. Even if private insurance markets are complete within generations, they are unlikely to be complete between generations, implying that a social insurance system can lead to efficiency gains for society as a whole.[1] A prolonged slump in the stock market, for example, can be especially damaging to the generation reaching retirement age during that period.

Failure to Optimize. There are other reasons for a mandatory social insurance system. Individuals may not always do what is in their own best interest, insurance and annuity purchases are complicated, and the optimal lifetime savings plan is one susceptible to mistakes or myopia. Economists would call this problem a failure of individual optimization. The fact that so many individuals retire at their earliest age of eligibility is suggestive that such failures might occur. If the failure to optimize is the dominant reason for Social Security, then economic models and theories may have very little predictive power regarding the effects of reform.[2]

Economic Costs of Social Security. Social insurance programs also impose costs on society. If taxes are not directly tied to benefits, they can cause distortions in labor supply and other economic behavior. Since the current Social Security system is not fully funded, it may reduce national saving from its efficient level. It may be politically difficult to maintain an accumulated asset fund that is not viewed as permitting a greater degree of deficit financing in the remaining part of the

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[1] See Robert Schiller, "Social Insurance and Institutions for Intergenerational, Intragenerational, and International Risk Sharing," *Carnegie-Rochester Public Policy Conference Series*, Apr. 1998.

[2] Other economic explanations for Social Security have been advanced. See Casey Mulligan and Xavier Sala-i-Martin, *Social Security in Theory and Practice (II): Efficiency Theories, Narrative Theories, and Implications for Reform*, National Bureau of Economic Research, Working Paper 7119, May 1999.

budget. And even social insurance programs that are funded may not reflect the optimal choices in asset holdings.

Since the program is legislated, it can also expose participants to the political risk of arbitrary transfers among individuals. Note, however, that the potential future tax and benefit changes necessary to address the current solvency problem would not disappear in a system of private saving: political risk should be thought of as shifting costs and benefits among individuals and is not responsible for real risks such as the demographic changes that are creating the current financing problem.

These economic rationales for social insurance, and the costs associated with them, provide an important framework for analyzing alternative approaches to reform and will be referred to frequently in this report. To illustrate their importance, consider briefly what they imply about individual accounts, which have been proposed as a full or partial substitute for Social Security by some and which have the advantage of reducing economic distortions. Individual accounts (as a complete substitute for Social Security) would not address the problems of adverse selection and moral hazard unless they were mandatory (both with respect to contributions and to conversion to a life annuity) and prudently invested. If these restrictions were not introduced, then there is no economic advantage to government involvement in retirement decisions and such decisions could be left to the private market. They also do not permit explicit redistribution in favor of lower income individuals as the current system does. Indeed, given the higher mortality rates of lower income individuals, higher income individuals would actually enjoy higher benefits on average. (The longer expected life span of high income individuals give them an advantage in the current system as well, but explicit redistribution toward lower-paid workers offsets this effect.)

Therefore, individual accounts are caught on the horns of a dilemma: they cannot simultaneously satisfy the objectives of eliminating adverse selection and moral hazard and the distributional objectives of the current system. To maintain all of these objectives, individual accounts would need to constitute only a part of the Social Security system or the accounts would need to be subsidized for low income individuals.

What Is the Problem?

Social Security was, and largely remains, a pay-as-you-go (PAYGO) system in which current workers pay the retirement benefits of current retirees through a payroll tax.[3] There is no saving component to this type of system; from an economic perspective, it is a generational transfer system, not a pension or investment system. If benefits equal tax payments, as a pure PAYGO system implies, then total benefits can only grow at the rate that payroll tax revenues grow — with a stable population growth and age distribution, that will be the growth rate of the economy. Thus, for

[3] The economic incidence of the payroll tax is borne by the worker regardless of who has the legal obligation to pay. Thus, the incidence of the one-half of taxes paid by employers is no different from taxes paid by employees.

an average retiree who has spent his entire life contributing to a PAYGO, the "rate of return" on his payroll taxes would be about equal to the growth rate of the economy. But for a retiree in the early years of the system who lived part of his working life before the system's inception, the "rate of return" on his payroll taxes will be much higher because he receives the same benefits without making a lifetime of contributions.[4] According to one estimate, past and present generations will receive $9.1 trillion more in benefits than they paid in contributions in present value terms, which under current policy will be borne by future generations.[5]

When the number of retirees grows faster than payroll revenues, benefits per average retiree need to fall for the system to remain solvent, and the return on contributions would fall (and could become negative). Trouble arises in the future because the retirement of the "baby boom" generation, along with increasing life spans, cause the growth rate of retirees to greatly outstrip the growth rate of workers in the system. A pure PAYGO system could rectify this imbalance by increasing taxes in order to maintain the historical growth rate of benefits or by decreasing the growth rate of benefits to maintain taxes. Neglecting economic effects for the moment, the choice is simply a transfer of income: increasing taxes in the future constitutes a transfer from future workers to the baby boomers, while lowering benefits constitutes a transfer from the baby boomers to future workers.

The only other possibility would be to cover the difference through the issuance of government debt to the public. But this option would simply transfer the burden further into the future because the budget deficits would decrease the national saving rate and with it the future size of the economy; in the long run such an approach could not be sustained. In any case, the imbalance is large enough that debt issuance could not be a primary solution to the problem even in an intermediate horizon. CBO forecasts suggest that as the baby boomers retire, debt would quickly exceed 200% of GDP, primarily because of higher health care spending. It would be difficult for the government to convince its citizens to purchase debt at these levels.

The problem of the baby boomers' retirement is well appreciated. What may be less well-understood is that the financing problem is a permanent problem; it is not a decade-long blip while the baby boomers retire. A key to financing a PAYGO system is the worker to recipient ratio, and it is the level of the worker-recipient ratio that determines the revenues of a PAYGO system, not the change in the ratio. As seen in **Figure 1**, this ratio deteriorates markedly while the baby boomers retire, from 3.4 workers per recipient today to about 2.0 by 2040.[6] If the ratio then recovered as

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[4] For more information, see John Geanakopolis, Olivia Mitchell, and Stephen Zeldes, *Social Security Money's Worth*, NBER, Working Paper 6722, Sept. 1998.

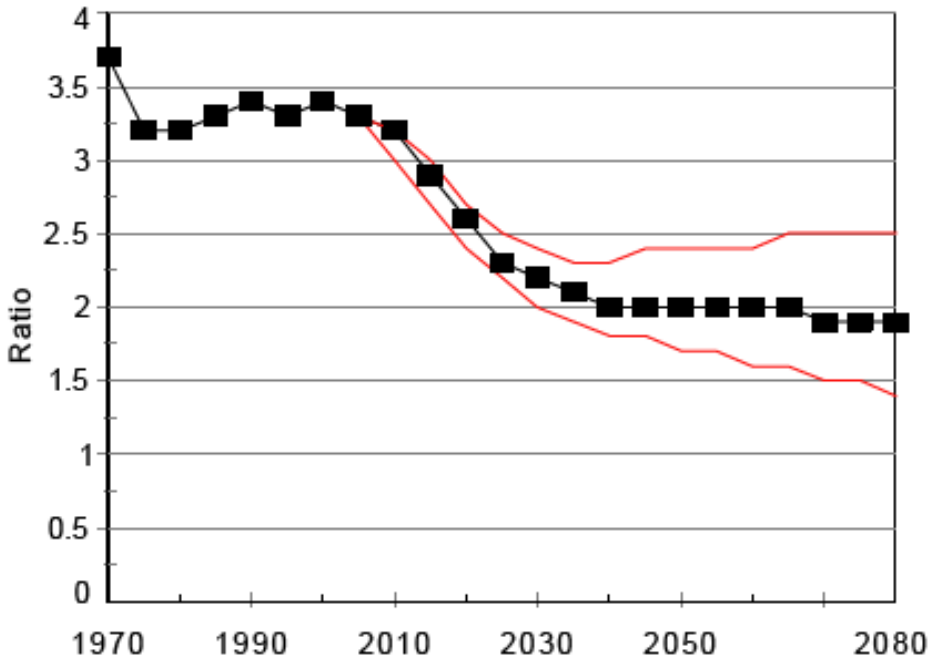
[5] Jagdeesh Gokhale and Kent Smetters, *Fiscal and Generational Imbalances* (Washington, DC: AEI Press, 2003), p. 26.

[6] It is always important to remember that forecasting is not a science, and any future estimates are only the most likely outcome of an uncertain event. As a projection moves further into the future, uncertainty increases. In their report, the OASDI Trustees address this issue by offering alternative high and low cost scenarios. Under the high cost scenario, the worker-recipient ratio would reach 1.8 by 2040 and under the low cost scenario, the ratio

(continued...)

the baby boomers died, the financing problem would be a temporary one whose cost could be spread by borrowing to generations before and after the blip. But the problem is permanent: the ratio is not projected to recover. Part of the reason for this effect is the increase in life expectancy after-9 retirement, which reflects assumptions about both longevity and earlier retirement.

Figure 1. Worker-Recipient Ration, 1970-2080



Source: Trustees of OASDI, *Annual Report*, 2006, Table IV.B2.
Note: Solid line based on Trustees' intermediate assumptions. Dashed lines represent worker-recipient ratio under optimistic and pessimistic scenarios.

One can contrast the past and future financial state of the Social Security system with the state that would have been achieved if a fully funded system had originally been instated instead of a pay-as-you-go system. In a fully funded system, current workers pay for their own future benefits (through either a collective account or individual accounts) instead of the benefits of current retirees. Until they retire, the proceeds are saved in real financial securities, allowing a fully funded system to achieve a "market" rate of return. How would outcomes differ under this type of system as opposed to a PAYGO system? Benefit levels and the "rate of return" on workers' taxes would no longer be directly related to the worker-recipient ratio (it would only change as the capital stock per worker is affected). Thus, the retirement of the baby boomers would not require reductions in benefits or tax increases because their benefits would come from their own contributions and the earnings on them.[7]

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[6] (...continued)
would reach 2.4 in 2040.

[7] Increasing longevity, however, would result in smaller annual annuities for a fixed amount
(continued...)

Where would the money come from to make this possible? It would come from the fact that early retirees who spent only a few working years under the system would have received little or no benefits. Instead, the money they would have received under a PAYGO system would have been saved and invested for later retirees. Because money has already been transferred to the early retirees in the current system, there is no reform to that system to achieve solvency that can avoid lowering someone's "rate of return."

The Social Security system has operated differently from a pure pay-as-you-go system retirement system historically in two important ways. First, unlike a pure PAYGO, the Social Security system has not always paid out as much as it has taken in. Social Security has always maintained a small reserve against short-term fluctuations. More importantly, changes to the system in 1983 led to Social Security surpluses that have grown to be 1.4% of GDP in 2006. From an accounting perspective, these surpluses have introduced a partial funding aspect to the system, and the Social Security trust fund has grown to $1,687 billion as a result. Unfortunately, the budget deficits of the government in most of these years have arguably prevented the surpluses from partially funding the system in an economic sense; indeed most years since the 1980s debt held by the public as a percentage of GDP increased.

Second, the average single retiree will not enjoy the PAYGO rate of return equal to the growth rate of the economy because a portion of his contributions are diverted to benefits unrelated to retirement. The current system also provides benefits to the disabled, survivors, and dependents; in 2003, these uses accounted for more than one-third of total benefits paid (18% for survivors, 15% for disability, and 5% for dependents). In addition, it explicitly redistributes benefits by earnings level, apparently further lowering the system's rate of return for higher paid workers. For example, a single worker retiring at age 65 in 2003 earning low wages would recoup the retirement portion of his and his employer's payroll taxes plus interest in 10.4 years, a worker earning an average wage would recoup them in 14.9 years, and a worker earning the maximum eligible wage would recoup them in 21.4 years.[8] (However, comparisons of the benefit structure overstate the actual degree of redistribution because of other factors, such as greater life expectancy for high income individuals).[9] It is important to factor in the resources devoted to these social

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[7] (...continued)
of contributions under a funded system; this effect cannot be avoided, but it does not affect the typical rate of return.

[8] CRS Report RL31034, *Social Security: The Relationship Between Taxes and Benefits for Past, Present, and Future Retirees*, by Geoffrey Kollmann.

[9] See Karen Smith, Eric Toder, and Howard Iams, "Lifetime Distributional Effects of Social Security Retirement Benefits"; and Lee Cohen, C. Eugene Steuerle, and Adam Carasso, "Social Security Redistribtuion by Education, Race, and Income: How Much and Why?" Both papers were presented at the third Annual Joint Conference for the Retirement Research Consortium, "Making Hard Choices About Retirement," May 17-18, 2001, Washington, DC. See also Alan l. Gustman and Thomas L. Steinmeier, "How Effective Is Redistribution Under the Social Security Benefit Formula?" Presented at Second Annual (continued...)

functions when calculating the return the system can earn for retirees. Even a funded system could not earn the return of a private saving account if it were to maintain these social functions.

How Big Is the Problem and What Role Do Social Security Surpluses Play?

This report defines reform as a measure that returns the system to long-term solvency. The first question to ask is: what is solvency? The narrow definition, used by the Social Security trustees, of preventing the Social Security trust fund from being depleted over 75 years seems unsatisfactory from an economic perspective. After all, the trust fund can be replenished in any number of ways that would not make it any easier for the government to meet its financing needs and would have no effect on the economy. For example, income tax revenues could simply be diverted to the trust fund anytime benefits exceed payroll tax revenues. But if the government wished to maintain its other spending without raising taxes, it would then have to borrow to finance spending that would otherwise be financed through income tax revenues. The government cannot borrow sufficiently to maintain current policy through the retirement of the baby boomers (largely because of the rapid projected growth of Medicare spending) because debt cannot grow faster than GDP without limit as current policy implies.

This analysis raises a further question: does the system become unsustainable when benefits exceed revenues, as is forecast to occur in 2017, or is it sustainable as long as there are assets in the trust fund to draw down, as will be the case until 2040? The latter option seems unsatisfactory when one considers that there are not any "real" assets in the trust fund at all. Since the Social Security trust fund holds U.S. Treasuries, the government owes money to itself. It is analogous to saying that one can afford to make a purchase because one's left pocket has an IOU from one's right pocket, even though one's right pocket is empty. What is in the left or right pocket by itself is irrelevant, it is total wealth that determines whether the purchase can be made. Similarly, it is the government's overall ability to meet the needs of retirees that determines the sustainability of the Social Security system when the baby boomers retire. The government's overall ability to pay benefits comes down to what benefits have been promised, how much overall tax revenue is being raised, and what is the size of the economy from which taxes are being raised. The answer to these three questions determines the underlying solvency of Social Security.

Because the decline in the worker to recipient ratio is projected to be permanent, the financing problem is permanent. This makes the trustees' estimate of the 75-year actuarial deficit of 2.02% of payroll a misleadingly low estimate of the system's financing problems — a trust fund that is solvent for exactly 75 years merely shifts the permanent tax increases to year 76 and offers no indication of how the

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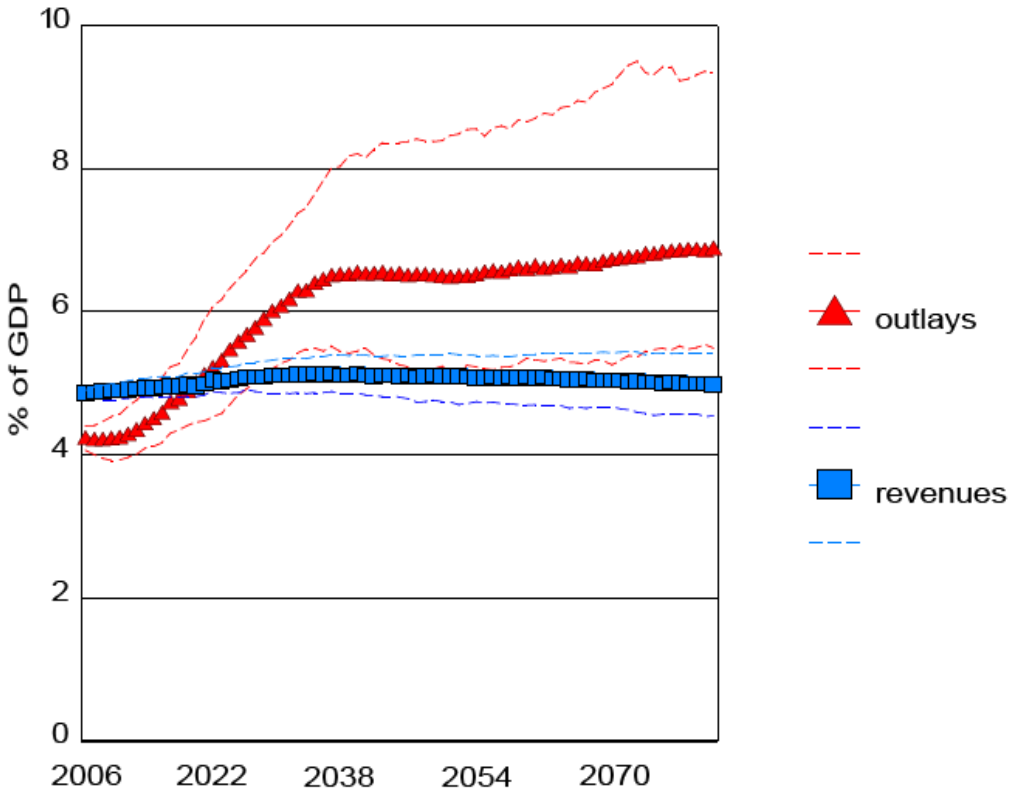
[9] (...continued)
Joint Conference for the Retirement Research Consortium, May 17-18, Washington, DC. Julia Lynn Coronado, Don Fullerton, and Thomas Glass, *The Progressivity of Social Security*, National Bureau of Economic Research, Working Paper 7520, Feb. 2000.

government will finance the redemption of trust fund assets.[10] The problem with current policy is that, mostly due to the projected rise in Medicare spending, the overall gap between revenues and outlays would place an unsustainable strain on the unified budget deficit.[11] For this reason, although the trust funds are assets to the Social Security system, it is doubtful that there will be general revenues available to honor those assets. Thus, the best measure to gauge the size of the problem is the difference between taxes and benefits paid over time under current policy, as shown in **Figure 2**. For the time being, focusing on this measure sets aside the issue of trust fund balances, which are not meaningful in an economic sense without considering total government assets or liabilities.

Figure 2. Projected Revenues and Outlays of the Social Security System, 2006-2080



Source: Congressional Budget Office
Note: Lines with markers represents projections under CBO's intermediate assumptions. Dashed lines represent projections under optimistic and pessimistic assumptions.

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[10] The measure of Social Security's financing shortfall most commonly cited is the actuarial deficit. The actuarial deficit is the size of the tax increase or benefit reduction, as a percentage of payroll, that would be required for the trust fund to exhaust its assets in 75 years. It does *not* measure the tax increase or benefit reduction needed to prevent cash deficits within the system over 75 years — the actuarial deficit assumes that cash deficits in any given year can be closed by drawing down trust fund assets.

[11] The indefinite maintenance of current policy implies that the national debt as a percentage of GDP would be projected to asymptotically approach infinity.

As **Figure 2** demonstrates, in the long run, paying benefits under current policy would require permanent tax increases, so that total revenues equaled 6.2% of GDP in 2030 and 6.9% of GDP by 2080 (the end of the projection period), ignoring for the time being economic effects.[12] Compared with current law, this percentage of payroll translates into a tax increase of roughly 50%. It would also be about 3½ times as large the Trustees' actuarial deficit of 2.02% of payroll. (Although this report addresses only Social Security, it should be stressed that Medicare and Medicaid face projected shortfalls that are even larger, and would require even larger tax increases to fund.)

The projections are extremely sensitive to underlying assumptions and should be treated with caution. Under the low-cost alternative scenario, the shortfall would reach 0.5% of GDP by 2030 and 0.9% of GDP by 2080. Under the high-cost scenario, the shortfall would reach 1.9% of GDP by 2030 and 3.9% of GDP in 2080. Thus, while the extent of needed changes is highly uncertain, even under the low-cost scenario, some tax increase or benefit reduction would be necessary.

If a tax increase or benefit reduction of nearly 1% of GDP is necessary by 2030 and 2% of GDP by 2080, but the system is currently in surplus, is there any reason to reform the system before it becomes insolvent? The worker to recipient ratio is nearly fixed, barring massive immigration or higher birth or death rates. Only the future size of the economy and the future state of government finances can be influenced today. *Thus, reform can ease the future financing burden only if reform causes the economy to grow faster and improves the government's finances.*[13] *These are macroeconomic problems that cannot be posed in terms of the Social Security system's trust fund.*

In these terms, according to standard economic theory, the crucial factor in determining whether the Social Security surpluses increase economic growth and improve the government's finances depends on whether they are saved. Saving by the government has two salutary effects. First, it increases national saving, which increases private capital accumulation, the future size of the economy, and with it the future size of tax receipts. In this way, saving budget surpluses is analogous to transferring resources from present to future generations. Second, saving frees up future government resources (by reducing interest payments and increasing tax revenues in absolute terms) that make financing future imbalances easier. By contrast, when the Social Security surplus is used to finance other government activities or tax cuts rather than being saved, the Social Security trust fund is increased but nothing is done to alleviate the government's future fiscal imbalance.

Of course, it is difficult to actually determine whether the Social Security surplus was saved because the budget that would have been in the absence of surpluses cannot be observed. But it is known that the government had deficits every

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[12] Congressional Budget Office, *Updated Long-Term Projections for Social Security*, June 2006.

[13] Reform in advance is also essential for approaches that involve benefit reductions so that workers have enough of their working careers left to adjust their personal saving behavior to the reductions.

year from 1983 to 1997 (and again beginning in 2002), when surpluses were appearing in the Social Security system, and that debt as a percentage of output increased during that period. If the Social Security surpluses were used to finance other spending, then running surpluses in the accounts has done nothing to address the crisis in a real sense. (The counter-argument is that the Social Security surpluses increased national saving because the historical budget deficits would have been even bigger in their absence.)[14]

From this discussion it should be clear that saving a surplus from *any* source will increase the future size of the economy and improve the government's future financial position, even though non-Social Security surpluses do not increase the Social Security trust fund. However, merely saving all of the projected Social Security surpluses, which are determined by budget accounting rules rather than the scope of the problem, is grossly insufficient to close the long-term financing gap.

A word of caution is in order. Simply increasing the size of the economy alone will not convert a permanently unsustainable system to a sustainable one. A higher wage base will increase tax receipts but because under current law benefits are linked directly to wages, benefits will increase as well. (Because it would not raise the benefits of those already retired, higher economic growth would improve the system's finances — but only temporarily.) What increased saving will do is make other changes (such as higher taxes or reductions in benefits relative to wages) easier because everyone will be better off. For example, if income is higher, a relatively lower tax rate will be needed to raise a given amount of revenue. Plans that aim to improve sustainability through economic growth would, therefore, be more effective if the link between wage growth and benefit growth were weakened.

Economic Effects of the Current System: Savings and Labor Supply

Before examining alternative reform proposals, this section begins with two important behavioral effects of the current system: effects on savings and the supply of labor. The Social Security system, like all tax and transfer systems, has potential effects on the size of the economy through effects on labor supply and capital accumulation. First, the tax and transfer system could alter savings decisions because it reduces income in the present and increases it in the future. Secondly, the payroll taxes themselves could alter labor supply as would be the case for any tax on labor income, with the effects depending on the linkage between taxes and benefits. In Social Security, there is a link between benefits and taxes, however, so payroll taxes are not taxes in a strict sense; workers may view them more as contributions that will later be recouped. Higher earnings during the working years result in higher benefits, albeit earning a much smaller return than would savings and perhaps reflecting forced

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[14] For alternative perspectives on the Social Security trust fund, see Kent Smetters, *Is the Social Security Trust Fund Worth Anything?*, The Wharton School, University of Pennsylvania, Working Paper, May 13, 2002.

savings.[15] Thus, the behavioral effects of a tax and transfer system occupy a middle ground between an ordinary tax and expenditures system and a pension system. Moreover, individuals may perceive the tax as different from other taxes; indeed, the payroll tax is a tax that has generally not been as unpopular as income taxes.

Social Security and Private Savings

To an individual, participation in the Social Security system appears to be a form of saving: it reduces disposable income in working years and increases it in the future. In certain models of household behavior over time (e.g., the life cycle model), such an income shift should reduce personal saving. A natural response is to rebalance consumption over time by increasing consumption today and reducing funds available in the future that are less needed. In a simple model where Social Security earns a normal return and borrowing is available, savings should fall by exactly the amount of Social Security taxes. This expected effect has been the basis for much criticism of the unfunded Social Security system. That is, the Social Security system can be seen as a system that provides effects similar to saving in a pension plan, except that no real accumulation of capital necessarily occurs. (The system has generated surpluses but this effect is not very meaningful for two reasons: first, most of the system is still pay-as-you-go and the surpluses are small in relation to the future size of the unfunded liabilities, and secondly, these surpluses may have permitted larger deficits in programs outside of Social Security, so that it is not clear that real savings has occurred).

However, this effect on savings is not certain for several reasons. First, to the extent that a Social Security system substitutes for pre-existing intergenerational transfers, no savings effects would be expected. For example, if, in the absence of Social Security, individuals expect to support their parents and expect, in turn, to be supported by their children, and that obligation is reduced or eliminated by Social Security, the transfer system is acting as a substitute for private transfers and would not necessarily reduce private saving. Similarly, if parents had expected to leave bequests to their children, the parents would have increased their bequests to offset the payroll tax, and children would wish to save that bequest to relieve their own children of the tax. (Most families do not leave bequests of any significance, however, so it is the former rather than the latter phenomenon that is more likely). At the extreme, it can be argued that if all individuals are connected through intergenerational transfers, anything the government does is offset by what individuals do (this phenomenon is referred to as Ricardian equivalence). Although such a model is obviously not entirely realistic (some individuals have no children, for example), some elements of it may be present in the U.S. economy.

In either of these models, outcomes may also be affected to the extent that some individuals are liquidity constrained; that is, they would like to consume more now but cannot. Liquidity-constrained individuals are affected only by cash flow effects; that is, taxes lower consumption and future income such as Social Security has no effect on current consumption. There is evidence that a significant fraction of

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[15] In the Medicare program, there is no link between the level of earnings and the level of benefits.

individuals falls into this category. People may also save for precautionary reasons because of future uncertainty and the potential for misfortune. Social Security may lower private saving by reducing uncertainty and the need for precautionary saving. (Then again, the family safety net may make precautionary saving largely unnecessary, so that the introduction of Social Security has little effect on precautionary saving.) Finally, this analysis of savings effects assumes that individuals are making optimizing choices. However, making the appropriate lifetime savings decision is not only complicated, it is done only once so people cannot learn from mistakes. Thus, the possibility for a significant error must be considered.

All of this discussion suggests that turning to empirical evidence to assess the effects on savings is necessary. Much of this approach has been based on time series studies, which examine the change in savings rates over time with changes in Social Security wealth. Unfortunately, the econometric evidence has been mixed.[16] An early influential study by Feldstein (1974) found Social Security significantly reduced private savings (actually increasing consumption). However, that study was found to have a programming error by Leimer and Lesnoy (1982), which caused the results to become smaller and generally statistically insignificant. Feldstein (1982, 1996) still found significant results with additional data: his findings suggested that Social Security reduced the saving rate by half in 1992. These results were questioned by Meguire (1998), who found a result about a tenth as large and by Coates and Humphreys (1999) who found results that tended to be smaller and, in some cases, in the opposite direction. A part of the problem with these studies is that it is very difficult to measure Social Security wealth; another is that it is difficult to control for other effects; and finally, the results tend to be sensitive to functional form. In general, studies have found some savings offset, but typically not enough for Social Security to offset private wealth dollar for dollar.

Some studies have used cross section data, and in most cases found some effect on saving, but considerably less than the full savings reduction implied by the life cycle modeling approach. Most of the effects were not statistically significant, however. These data are, in any case, quite questionable because Social Security rules are generally applied uniformly; thus, any variation is correlated with other characteristics (income, family status, age) that could independently affect savings.[17]

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[16] See Martin Feldstein, "Social Security, Induced Retirement and Aggregate Capital Accumulation," *Journal of Political Economy*, 82 (Sep./Oct. 1974), pp. 905-926; Dean R. Leimer and Selig D. Lesnoy, "Social Security and Private Saving: New Time-Series Evidence." *Journal of Political Economy* 90 (June 1982), pp. 606-629; Martin Feldstein, "Social Security and Private Saving: Reply," *Journal of Political Economy*, 90 (June 1982), pp. 630-642; Martin Feldstein, "Social Security and Savings: New Time Series Evidence," *National Tax Journal* 49 (June 1996), pp. 151-163; Philip Meguire, "Social Security and Private Savings," *National Tax Journal*, 51 (June 1998), pp. 339-358; Dennis Coates and Brad R. Humphreys, "Social Security and Savings: A Comment," *National Tax Journal* 51 (June 1999), pp. 261-268.

[17] See the review in *Social Security and Private Saving: A Review of the Empirical Evidence*, Congressional Budget Office, July 1998.

A final approach is to compare savings rates in countries with different Social Security systems. These results tend to not be very conclusive, finding both positive and negative effects, usually without statistical significance. But perhaps it is not surprising that it is difficult to detect results given the possible influence of cultural mores on saving.[18] In general, therefore, the evidence suggests a savings effect but one that is by no means large enough to be consistent with the life cycle model.

At this point, a word of caution is also in order, for predictions of the effects of Social Security reform that rest on simulation models. An example is the recent study that uses a dynamic model to estimate the effects of Social Security revisions.[19] This model is a life cycle model (although it allows for bequests, the bequest motive is not the type that leads to no effect of Social Security on savings). This study tends to find privatization an attractive option, in part because of its effect on saving. But this result is driven in part by the fundamental nature of the model. A different model would not have led to the same predicted effect.

It should also be recognized that if individuals are well-informed, rational, and optimizing, the projected insolvency of the Social Security system should already have an effect on the national saving rate. If people working today know that the system will be capable of paying only, say, two-thirds of their benefits as promised under current law, then they should be saving more than they would if the system faced no crisis. On the other hand, if individuals currently believe they will pay the taxes and receive the benefits promised under current law, reform could induce more private saving. This could happen because individuals are not well informed (e.g., they base their expected benefit on account statements from the Social Security Administration instead of the financial position of the system) or because they think that others will bear the burden of solving the problem (e.g., they believe taxes will be raised after they have retired).

The theoretical and empirical evidence suggests that Social Security has had a less clear cut effect on saving than is often assumed. If Social Security has not caused individuals to save less, then the PAYGO approach may not be necessarily faulted as discouraging savings. In any case, it is one thing to argue that had we originally introduced a fully funded system rather than a PAYGO system, we would have achieved higher national saving rates. But it is another to argue that now that we have had a PAYGO system for over 60 years, shifting to a funded system will raise the national saving rate. As discussed below, moving from a PAYGO to fully funded system involves a significant transition cost, and if this transition cost is financed through debt issuance, national saving will not rise. Thus, the move to a fully funded system is only likely to increase national saving if real resources are devoted to financing the transition in the form of higher taxes or lower benefits.

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[18] Ibid.

[19] Laurence J. Kotlikoff, Kent Smetters, and Jan Walliser, *Finding a Way Out of America's Demographic Dilemma*, National Bureau of Economic Research, Working Paper 8258, April 2001.

Labor Supply

Social Security systems can also affect labor supply. Economic theory suggests that wage taxes have the potential to reduce or increase work effort depending on offsetting income and substitution effects; these effects may be reflected in hours worked or the workforce participation rate. If the tax reduces hours worked or participation, raising payroll taxes themselves could have a negative effect on the size of the work force relative to the retired population and the size of the economy. Most evidence, however, suggests that labor supply is not very responsive to the wage rate, because of offsetting income and substitution effects. Indeed, for men the evidence suggests that an increase in net wages would slightly reduce work, while for married women the effect is a slight increase; both of these effects are more likely to reflect participation choices rather than choices of hours worked. Based on empirical studies that reflected taxes, the Congressional Budget Office puts the total response at an elasticity of between 0 and 0.3, meaning that a 10% reduction in wage might reduce work effort by up to 3%, reflecting a response of between -0.1 to 0.2 for men and 0.3 to 0.7 for married women.[20]

Social Security has some particular attributes for the effect on work that might modify these results in various ways. First, there is a link between payroll taxes and the size of Social Security at retirement that makes the payroll tax only partially a tax. Because of redistribution in the system and the PAYGO nature, this relationship is not perfect (i.e., the return earned is too low and variation in taxes does not lead to the same degree of variation in benefits), but the payroll tax is more directly linked to benefits than are other taxes. Secondly, there is a ceiling on covered wages, so that higher income workers do not experience the marginal tax effects that tend to lead to reduced work. Indeed, for such individuals (which would include higher income men), there is, if anything, an inducement to increase work from payroll taxes via income effects.

For married women, who have generally been viewed as most responsive to taxes in their labor supply, the link between taxes and benefits is lessened because they may receive spousal benefits even if they do not work. This latter link suggests that the benefits to contributing are smaller than would be the case for other workers, and the presence of the spousal benefit could reduce labor force participation. Benefits for a non-working spouse are essentially a transfer, and some have argued that such benefits should not be larger for non-working wives of higher income men; rather the payment should be a flat payment. A smaller flat benefit would increase the tie between Social Security contributions and benefits for married women who work, and should increase their labor supply. However, empirically estimating the labor supply responsiveness of women to wages is always difficult because potential wages of non-workers are not observed. Moreover, the responsiveness to Social Security benefits also depends on perceiving and expecting that working will result in losing the non-working spouse transfer; younger women particularly may be unaware of how spousal benefits are formulated. Empirical evidence that focuses particularly on Social Security is relatively limited. One study found a significant effect on labor force participation of the implicit benefit differential due to being

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[20] U.S. Congressional Budget Office, *Labor Supply and Taxes*, Memorandum, Jan. 1996.

eligible for a spousal benefit for older married women, but not for younger ones; another study found that the benefit differential led to earlier retirement.[21]

Perhaps the clearest effect of Social Security on work effort has been the increase in retirement of older men since the introduction of the system. Between 1950 and 1989, labor force participation decreased from 46% to 17% for those 65 and over, and from 87% to 67% for those 55 to 64; the median age of retirement for both men and women fell from around 67 years to about 62 years.[22] Labor force participation of men aged 62-64 fell dramatically after the introduction of early retirement at 62 in the early 1960s, even though there was an actuarial correction to prevent early retirees from drawing larger lifetime benefits. In 1963, 76% of these men worked; by 1985, only 46% participated (the number has roughly stabilized at that rate).[23] The fall in retirement age appears to have slowed down, and perhaps stabilized from the 1970s to the 1990s, however.

There are a number of factors that might affect this decline, but some of it is estimated to be due to Social Security, in part because Social Security makes retirement feasible, and in part because Social Security has an earning test that discourages work. In 2000, Congress repealed the test for recipients 65 and older; it is probably too early to measure the potential effects of this change. For those expecting not to live very long, retirement at 62 would be attractive despite the aggregate actuarial correction. Moreover, by setting a minimum age for benefit eligibility, Social Security may have contributed to setting some social norm.

Statistical studies have generally found an effect, although in some cases not a large effect, of Social Security on retirement age. Some researchers attribute a significant portion of the reduction in labor force participation to mandatory retirement policies adopted by businesses and only recently made illegal, and to features of private pension systems which encouraged retirement at a specific age.[24] As in the case of saving, studies that rely on cross sections within the United States may be questionable because Social Security wealth is correlated with other variables that may affect retirement. Moreover, the observation of a falling retirement age following the introduction of earlier retirement age eligibility and the dramatic fall in labor participation has also occurred in other countries that did not experience major changes in private pensions; older men's labor force participation has been

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[21] See Therese A. McCarty, "The Effect of Social Security on Married Women's Labor Force Participation," *National Tax Journal*, vol. 43 (Mar. 1990), pp. 95-110; Jessica Primoff Vistnes, "An Empirical Analysis of Married Women's Retirement Decisions," *National Tax Journal*, vol. 47 (Mar. 1994), pp. 135-156.

[22] See Andrew Samwick, "New Evidence on Pensions, Social Security and the Timing of Retirement," *Journal of Public Economics*, vol. 70 (Nov. 1998): 207-36; Murray Gendell, "Retirement Age Declines Again in 1990s," *Monthly Labor Review*, Oct. 2001.

[23] William J. Wiatrowski, "Changing Retirement Age: Ups and Downs," *Monthly Labor Review*, Apr. 2001.

[24] Ibid; also see Catherine Philips Montalto, Yoonkyng Yuh, and Sherman Hanna, "Determinants of Planned Retirement Age," *Financial Services Review* 9 (2000); 1-15, and Congressional Budget Office, *Raising the Earliest Eligibility Age for Social Security Benefits*, Jan. 1999.

declining in these countries as well. These studies suggest that a statutory early retirement age significantly influences the average age of retirement.[25]

If these studies are correct, an important method of raising the worker to recipient ratio may be to raise the age of early retirement (the "normal" retirement age is already being increased). Critics argue that early retirement reduces the pressure on disability insurance and that many individuals cannot easily work into older age. However, most occupations have probably become physically less demanding. They also argue that allowing earlier retirement prevents people from being thrust into poverty. The evidence suggests that about a quarter of men receiving early retirement had a self-reported work-limiting disability. Of all early retirees, fewer than one in ten were both disabled and had non-Social Security income below the poverty level.[26] Another study estimated that cutting early Social Security benefits would increase the probability of normal retirement by twice as much as the probability of disability retirement.[27]

The Solutions: Potential Social Security Reforms within the System

Approaches to the Social Security's financing imbalance fall into the following five major categories:

- doing nothing at this time
- raising current and/or future taxes
- decreasing current and/or future benefits
- investing the trust fund in higher yielding assets
- the adoption of individual accounts

Whichever approach is ultimately chosen, changes will have to be made to the system in one fashion or another. While this report does not provide a detailed quantitative analysis of the options, they are each discussed briefly in light of the objectives of social insurance, the distributional effects (both across generations and across income levels), and implications for economic behavior. The efficacy of any reform will depend on whether it limits the size of eventual tax increases or benefit reductions implied in current policy.

In some cases, the effects of specific revisions are not as clear as they are often portrayed. An illustration is a proposal to invest trust fund assets in the stock market rather than in government securities, thereby earning a higher rate of return.

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[25] See Jonathan Gruber and David Wise, *Social Security Programs and Retirement Around the World*, National Bureau of Economic Research, Working Paper 6134, Aug. 1997.

[26] Congressional Budget Office, *Raising the Earliest Eligibility Age for Social Security Benefits*, Jan. 1999.

[27] See Olivia S. Mitchell and John W. R. Phillips, *Retirement Responses to Early Social Security Benefit Reductions*, National Bureau of Economic Research, Working Paper 7963, Oct. 2000.

However, in the absence of basic increases in the supply of capital and labor, this change cannot be a free lunch: somewhere, someone will pay for these apparent gains. Another example is the potential effect of moving to voluntary individual accounts, which can result in higher interest payments and, in the presence of adverse selection and moral hazard, higher welfare costs in the rest of the budget. One of the most important effects of this proposal is that individual accounts are supposed to shift from pay-as-you-go finance to funded finance. To simultaneously solve the problem of financing promised benefits in the Social Security system and shift to a permanently pre-funded (even if only in part) system would require a great deal of new resources during the transition period.

Commentators tend to divide reform proposals into "sacrifice" approaches, such as benefit reductions or tax increases, or "investment" approaches such as equity investment by the trust fund or the introduction of individual accounts. This report suggests that policymakers cannot simply choose one approach or the other; they must be linked to other changes to succeed. Tax increases or benefit reductions at present are only useful if they result in a higher government saving rate; this effect can be accomplished through debt reduction or an investment approach. If changes lead to higher government spending outside of Social Security or to tax cuts, they will have increased the size of the trust fund without improving the government's ability to honor trust fund promises in the future. Likewise, investment approaches are only useful if they lead to a higher government saving rate, and a higher government saving rate is only possible through tax increases or benefit reductions. Otherwise, investment in the trust fund or individual accounts will be "debt financed" and have no positive effect on national saving.

To make the system sustainable or solvent after reform, Social Security should have roughly no effect on the unified budget balance every year. To achieve this if Social Security is to remain in its current (PAYGO) form would require that its cost rate be approximately equivalent to the income that has been designated to the program. It is also possible for some of the system's income to come from investment earnings, if the trust fund or individual accounts were invested, or for the system to be redesigned to receive revenue from on-budget sources, such as the proceeds of an increase in income tax revenues.

This definition of solvency may seem overly strict since there is nothing preventing the system from running deficits as long as the trust fund possesses assets and nothing preventing the government from supplementing the system with general revenues if it desires. Nevertheless, the definition used in this report is conceptually useful because it is the only definition that requires an explicit description of how the financing gap would be closed in each year. Reform options that include proposals such as the use of unidentified general revenue transfers, the redemption of trust fund assets, or the issuance of debt — on a temporary or permanent basis — implicitly depend on further tax increases, benefit reductions, or reductions in other government spending, but do not explain how they will occur. Again, it should be stressed that deficit financing does not impose a smaller burden than tax increases or benefit reductions; it simply shifts the burden forward to future generations.

Of course, reforms can only return the system to *projected* solvency, and the margin of uncertainty on projections is large. If the projections are too pessimistic,

then reforms could turn out to be overly harsh. If the projections are too optimistic, then further tax increases or benefit reductions would become necessary in the future.

Inaction and the Default Solution

Inaction itself does have some consequences. As stressed at the beginning of this report, the Social Security system is not sustainable in its current form, and inaction shifts the burden of fixing it to the future. Without action now, however, these future changes cannot be softened by preparation or warning. As noted above, given the permanent gap between income and outflow, eventually payroll taxes will have to increase by about one half or benefits be cut by about one third in order to match income and outflow. On the other hand, if Social Security cannot be more successfully insulated from the rest of the budget and gains from reform are used to finance other government spending or tax cuts as has happened in the past, inaction may be preferable.

A second reason to take action soon is that if benefits were to be reduced, it would be appropriate to determine those reductions in advance so that workers could plan for them. Policy makers are reluctant, for obvious reasons, to reduce benefits of those currently retired, and taking no action today may simply result in increased taxes in the future as a default condition.

Raising Taxes

Raising taxes now and saving the proceeds by improving the unified budget balance would raise the national saving rate and improve the government's finances. (The beneficial effect would not occur if taxes were raised and the proceeds were not saved.) Raising taxes now would impose part of the adjustment burden on current workers, including the baby boom generation, if this accumulation could occur without causing deficit finance in the rest of the budget. Increases in the capital stock result in a true improvement in sustainability, as wage income would rise. However, the improvement in solvency would be partly offset unless there were some reduction in benefits relative to wages. That is, one would need to keep benefits on the path they were already on which would effectively mean a cut in Social Security benefit relative to the larger economy. Raising taxes now and keeping them permanently higher as a method of achieving sustainability could convert the system to a partially funded system.

While tax increases are never popular, it should be noted that in this case — if one's goal is to maintain the current size of the Social Security system — raising taxes now is *more* economically efficient than raising them in the future. Since the deadweight loss of taxation grows exponentially as taxes increase, there is a smaller efficiency loss from raising taxes now than maintaining them for the time being and raising them to a greater extent in the future.

If the current payroll tax base were raised, there would probably be relatively little adverse effect on private savings or labor supply. Generally wage taxes are unlikely to have an effect on the savings rate (or private capital accumulation) in the economy through price effects. Its only effect may be that because any tax reduces

net income, it reduces the saving of those who save at a fixed rate. That is, some small part of any tax increase may come out of savings because individuals wish to spread the reduction in consumption over their lifetimes.[28] There are also concerns about the regressivity of Social Security taxes, which might argue for increases in the earnings base as well (currently there is a ceiling on wages subject to the payroll tax).

Alternatively, income taxes could be increased to help reduce the system's liabilities. These taxes are relatively progressive and fall on the elderly as well as workers, but they may have somewhat larger distorting effects on savings and even labor supply. Income taxes have mixed effects: they still have some effect on income in retirement, but they also have the potential for discouraging savings through effects on the rates of return. These offsetting effects may be the reason that substituting wage for income taxes typically has little effect on the economy in life cycle models.[29]

Some studies have proposed using a consumption based tax, such as a value-added tax, to supplement payroll taxes.[30] One argument for using such a tax is that it is less likely to adversely affect savings and labor supply. While payroll taxes fall solely on workers, consumption taxes also impose a lump sum tax (i.e., a tax that does not distort economic behavior) on older individuals because they fall on assets as well as on wages. In general, Social Security benefits are not affected since they are inflation-indexed, so that elderly individuals without income from wealth would not bear this burden. Moreover, because it falls on existing retired workers it can be imposed at a lower rate than a wage tax.

Another approach to raising tax revenue would be to change the tax treatment of Social Security benefits for purposes of the income tax to make it consistent with the taxation of private pensions, as discussed below. Currently, about two-thirds of Social Security recipients pay no income tax on their benefits. This approach could also be thought of as an effective benefit reduction. It would fall relatively lightly on low-income individuals who would be less likely to pay income tax because of standard deductions and personal exemptions in the tax system. Its impact would also be limited for higher income individuals who already pay tax on a larger fraction of their benefits.

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[28] There are economic models where such an effect would not occur, including infinite-horizon models with fixed labor supply, where taxes have no effects (only spending). However, in the context of these models, the government as well as the economy must be dynamically stable and one could view the taxes simply as a consequence of spending decisions.

[29] See Eric Engen, Jane Gravelle, and Kent Smetters, "Dynamic Tax Models: Why They Do the Things They Do," *National Tax Journal*, vol. 50 (Sep. 1997), pp. 657-682.

[30] See Laurence J. Kotlikoff, Kent Smetters, and Jan Walliser, "Finding a Way Out of America's Demographic Dilemma," National Bureau of Economic Research, Working Paper 8258, Apr. 2001. Note that their study shows very beneficial effects from VAT finance as opposed to finance via payroll or income taxes because in a life-cycle model saving tends to respond very powerfully to such a tax regime.

Cutting Benefits

There are many ways to cut future benefits, which this report defines as reducing benefits relative to current law rather than in absolute terms. Most proposals would make benefit cuts prospective, to provide time for adjustment, so little of the effect would be felt by the current elderly. A proportional, across-the-board, phased-in decrease could be used, or a slowing of indexation to prices and wages could be used. The advantage of the latter approach is that the savings to the government would grow over time, offsetting the growth in funding shortfall (although if carried out indefinitely, it would cause Social Security benefits to become extremely small relative to pre-retirement income). CBO estimates that one proposal along these lines could reduce outlays to 4.1% of GDP from 6.2% of GDP (under current law) by 2050.[31]

Two particular approaches to restoring solvency that could also induce economically beneficial behavioral effects are reducing benefits for dependents of high wage earners and increasing the retirement age. As noted earlier, one of the transfers in the Social Security system is a spousal benefit guarantee that rises with the payment to the primary worker. For a secondary worker, the existence of these benefits means that contributions paid into Social Security earn a lower return, and thus may have adverse behavioral effects more in the nature of pure taxes. Lowering the expected benefit to women who do not work increases the return to working and should, in theory, result in more labor force participation. Evidence (cited earlier) suggests that this treatment particularly has an effect on the labor force participation of older married women.

A second approach is to increase the normal (or full benefit) retirement age. Proponents justify this approach on the grounds that rising life expectancy means that retirees are collecting benefits for longer than previous retirees. The full benefit retirement age is already scheduled to increase to 67. Raising the full benefit retirement age would result in direct savings in terms of benefit reductions, either because of fewer delayed retirement credits or because of reductions in payments received in early retirement. CBO estimated that a proposal to raise the retirement age and reduce early retirement benefits would reduce outlays in 2050 from 6.2% of GDP to 5% of GDP.[32] Another study found that raising the projected retirement age by an additional three years would reduce the projected increase in spending on Social Security (as a percentage of GDP) by about 40%.[33] To the extent that workers delayed retirement because of these changes, output would be higher and more taxes would also be collected.

An alternative that might have a greater behavioral effect is to raise the age of early and full benefit retirement or to reduce benefits for early retirees. Such an

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[31] Congressional Budget Office, *The Long Term Budget Outlook*, Dec. 2003, p. 22.

[32] Congressional Budget Office, *The Long Term Budget Outlook*, Dec. 2003, p. 24.

[33] Ibid. After 75 years, costs (including Medicare) were projected to rise to about 0.264 from 0.137; instead they would rise to 0.209. These projections included some adverse labor supply and savings responses.

approach might have a larger effect on delaying retirement, which would also boost output and tax revenue. Raising the early retirement age should also reduce the amount of adverse selection in the system (the tendency of shorter-lived people to choose early retirement); reducing benefits to early retirees permits adverse selection but does not reward it as much. However, if early retirement decisions are not primarily driven by adverse selection, the behavioral effect of lower early retirement benefits may be limited. These proposals have a cost, in that the burden may fall disproportionately on demographic groups with lower life expectancy (including lower income individuals, men, and minorities) or those who work in arduous occupations, and it may increase claims for retirement based on disability.

Choosing Between Tax Increases and Benefit Cuts. Given that tax increases or benefit cuts appear necessary to restore the system to solvency, does analysis provide any guidelines as to what mixture of the two would be desirable? The answer to this question depends on the economically optimal size of the Social Security system, which in turn depends on the tradeoff between the system's costs and benefits.[34] The smaller the system, the less it is able to alleviate the market failures it was designed to cure — moral hazard, adverse selection, incomplete insurance markets, and failure of optimization. The larger the system, the more it distorts labor and saving decisions. Higher taxes have negative substitution effects, while benefit reductions have none. Thus, in economic models, benefit cuts would typically lead to better macroeconomic outcomes than higher taxes because there would be no negative effect on saving and labor supply.

Because evaluation of the costs and benefits of Social Security is so deeply embedded in value judgements, the optimal size of the system must ultimately be determined through the political process, and cannot be evaluated in this report. If the current size is too large, a reform should be directed more to a benefit cut, with private saving making up the difference; if the current size is too small, a reform should be more directed to a tax increase.

If the current system is assumed to already be the optimal size, however, at least some rationale exists for providing a mixture of relatively small benefit cuts and large tax increases. If individuals want to smooth the effects of reform over their lifetimes after reform is completed and adjusted to, they might prefer a roughly proportional effect on their standard of living. Since Social Security benefits are a larger fraction of retirement income than Social Security taxes are of workers' income, it could be argued that much of the adjustment might be made in tax increases. As an illustration, consider a case with a 10% contribution during a working period of 45 years, to finance an annuity for a retirement span of 10 years. Assume a 6% rate of return and a 2% growth in wages. If the retirement span doubled to 20 years, one could either increase the contribution by 55% or decrease the annual annuity by 35%. Suppose, however, one desired a proportional decrease in income for all years. To accomplish that would require a tax increase of about 47% and an annuity decrease of 4.7% — most of the adjustment (85%) would come on the tax side. The share

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[34] It can be argued that the solution to the system's funding crisis is not primarily an equity argument. If higher taxes or lower benefits affect the same people (at different points in life), then there is no equity rationale for favoring one approach over the other.

allocated to taxes would still be significant if the Social Security annuity represented only part of retirement income. For example, the average share of retirement income from Social Security is 51% for singles and 37% for married couples.[35] With these shares, the tax adjustment would be between about two-thirds and about three-fourths of the total adjustment, respectively (rather than 85%). This relative shift away from tax increases to benefit cuts occurs because a change in benefits now constitutes a smaller portion of overall retirement income.

Of course, to the extent that the cause of the crisis is greater longevity, individuals might also prefer a delay in retirement age (which is characterized above as a retirement benefit reduction, but which also increases the revenues available for benefits). In the illustration above, retirement would need to be delayed by about four years to maintain benefits. If increased longevity were accompanied by increased health during the foregone retirement years, then an increased workspan might also be an optimal solution. Nevertheless, it would be problematic for those whose health does not permit a longer working period.[36]

In sum, what this life cycle discussion suggests is that if Social Security were initially set at optimal levels, only a relatively small portion of an adjustment to reflect longevity should be in the form of a general benefit cut, and most of the adjustment should take place in either higher taxes or higher retirement age.

Investing the Trust Fund in Higher Yielding Private Assets

One proposal intended to alleviate the Social Security problem is to invest funds in higher yielding assets. Although most often associated with the development of individual accounts, other proposals have suggested that such investments be made by the trust fund itself instead. In either case, the results would be the same.

The key to whether this strategy provides any net national benefit rests on whether it is debt financed. If the investments were funded by raising taxes or lowering government spending, they will result in higher rates of capital accumulation, which would increase the future size of the economy and increase future resources. But if the investments were financed through the issuance of government debt or the use of existing surpluses, the exercise amounts to a mere shifting of assets into different portfolios. Since this shift results in no increase in net national savings, there would be no increase in the total capital stock, and the exercise would not create more resources for the nation as a whole. As will be shown in the simulation below, diverting funds out of non-marketable Treasury bonds and into equities would decrease returns to other investments and raise the government borrowing rate. Much of the improvement in the system's finances

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[35] Social Security Administration, Office of Policy, *Income of the Population 55 and Older*, Feb. 2002.

[36] One solution would be to shift more workers with poor health near normal retirement age into the disability program. Another solution would be to increase the normal retirement age, continue to allow early retirement with a reduced benefit on average, but provide subsidies to permit maintaining a minimum benefit so that these individuals are not thrust into poverty.

would be offset by higher interest payments in the overall government from the debt issued to finance the trust fund's investments. Moreover, increases in the cost of government debt would further increase the budget deficit. To the extent that the system's equities earn a higher rate of return than the government must pay on its additional debt, the government's overall finances would have improved at the expense of a burden placed on anyone who holds private equities, including the retired.[37]

Assuming the fund remained a defined benefit plan, any risk of lower return would also need to be made up, presumably by higher taxes. Estimates that find that investment in equities improves trust fund balances are based on expected returns. The variance of financial markets implies that in reality returns on assets could be higher or lower than their expected return. For example, one study found that if equity markets continued to perform as they have historically, there is a greater than 25% chance that the value of a trust fund invested in equities would be lower after 10 years than if it were invested in government bonds, as it is now. Over longer periods of time, however, the probability diminishes: after 75 years there is a less than 1% chance that the equity-invested trust fund would have a lower value.[38]

Numerical Simulation. A simulation will illustrate how investment by the trust fund affects financial markets and the government budget. In a simple model with only one type of debt and equity, the effects of shifting from holding debt to equity is clear, and the gain in earnings will be divided into an offsetting rise in government interest payments, and a fall in the return on equities. (This fall in the return on equities also reduces the return on trust fund assets, although this is a second order effect for a small change.) The same results would occur if the government introduced individual accounts with debt financing, and the accounts were invested in the stock market.

Moreover, one can estimate the basic magnitude of the effects (as discussed briefly in the appendix, using 2000 asset shares), which depend on the willingness of business to substitute debt and equity and the willingness of individuals to substitute in their portfolios. (The degree of willingness is called an elasticity; it is the percentage change in the ratio of assets divided by the percentage change in the ratio of asset returns.) The smaller these elasticities are, the larger the effect on government borrowing. For example, if both elasticities are 0.3 (and there is some

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[37] An extensive literature describes the presence of what economists call an equity premium in financial markets. That is, the spread between the returns on equities and the returns on bonds is larger than can be explained by models which attempt to weigh the tradeoff between risk and return. If the equity premium does (still) exist and it is caused by a failure to optimize, investment by the Social Security system (centrally or through individual accounts) has the potential to lead to an improvement in social welfare. By contrast, if the equity premium is the result of other factors (e.g., transaction costs) or mis-specification by economists, then there will be no increase in social welfare. Even if social welfare was increased, the reduction in the equity premium would still, by definition, lead to the same relative reduction in rates of return.

[38] Amy Harris, Noah Meyerson, and Joel Smith, "Social Insecurity? The Effects of Equity Investments on Social Security Finance," paper presented at National Tax Association Symposium, April 2001.

evidence to support small elasticities),[39] then 45% of equity earnings will show up as an offsetting increased cost of borrowing, so the government as a whole gains only about half of the amount projected. The public, in its role as a private investor, loses the remaining 55%. The amount that shows up as higher interest costs falls as elasticities rise, becoming 12% at elasticities of one.

This model is highly simplified, and one of the most important simplifications is that it assumes only two assets. The model would be richer if assets were divided into riskless government debt, risky private debt, and equities. The results for a three-asset model are presented in **Table 1**. As before, the outcome depends on assumptions about elasticities of substitution: the degree to which firms are willing to substitute debt for equity in their demands for capital (σ), the degree to which individuals are willing to substitute debt for equity in their portfolios (ε) , and the degree to which individuals are willing to substitute government for private debt (S). The limited evidence we have suggests that debt and equity are not perceived as close substitutes and we set those elasticities relatively low; we assume, however, that private and public debt is a much closer substitute and set those elasticities relatively high.

Table 1. Effects on Earnings, Federal Interest Costs and Rates of Return from Investing Trust Fund Assets in Equities, Simulation

Values of σ, ε, and S	Increased Earnings of Trust Fund (or Individual Accounts) (% of GDP)	Increased Federal Interest, as % of Col. 2	Percent Increase in Private Interest Rate (I_p), Equity Return (E), Government Interest Rate (I_g) and Total Private Return (R)			
			Ip	E	Ig	R
0.3, 0.5, 2.0	0.2136	59.0	-5	*	56	-1.1
0.6, 0.5, 2.0	0.2150	55.0	-7	*	53	-1.1
0.3, 0.8, 2.0	0.2155	59.0	-5	*	56	-1.1
0.3, 0.5, 1.5	0.2136	89.0	-5	*	85	-0.3
0.3, 0.5, 2.5	0.2136	43.0	-5	*	41	-1.5
0.3, 0.5, 1.01	0.2135	163.0	-5	*	156	1.8

Source: Author's Calculations.

Notes: σ, ε, and S refer respectively to the elasticity of substitution between debt and equity by firms, the elasticity of substitution between equity and a composite of government and private debt in individual portfolios and the substitution between private and government debt in individual portfolios. Results based on 2000 asset shares. See appendix for model details.

* Less than 1%.

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[39] See Jane G. Gravelle, *The Economic Effects of Taxing Capital Income* (Cambridge MA: MIT Press, 1994), p. 84 for a summary.

The results suggest that the substitutability between government and private debt is an important factor in determining whether the benefit of higher returns with a shift to equity primarily results in a decline in private returns or an increase in government interest payments. In the simulation, the effect on the return to equities themselves, is relatively small. With that elasticity set at 2.5, interest costs rise by 43% of the gain in the return to the trust fund, while the remaining 57% appears in a decline in private returns, mostly through a decline in private interest rates. With an elasticity of 1.01, interest costs rise by more than the gain in trust fund earnings and private returns rise.

This model is not definitive, but rather illustrative. It suggests that a potentially significant amount of the gain in earnings would be offset by an increased burden on taxpayers through higher interest rates. The results are the same whether assets are accumulated centrally by the government or in individual accounts, although in the latter case the investment returns would flow to account owners while the debt payments would be borne by the government.

Individual Accounts

Perhaps the most sweeping change is a proposal that Social Security move away from its collective, defined benefit format towards a system of defined-contribution individual accounts. Were these accounts to completely replace the current system, then the PAYGO system would be replaced by a fully funded system.

Other advocates have argued that individual accounts should augment rather than replace the current system. One of the key differences among competing individual accounts proposals concerns whether they would be "added on to" or "carved out of" the current Social Security system's tax and benefit structure. But pursuing either of these approaches alone would not reduce the system's unfunded liabilities. Add-on accounts that use additional revenues (in the form of higher taxes, general revenues, or voluntary contributions) to finance individual accounts but leave the current benefit structure of the system intact would not alter the system's future financing imbalance. Likewise, proposals for carve-out accounts that divert revenues from the payroll tax into individual accounts, and then lower benefits paid by the system to offset the diverted revenues only reduce the system's unfunded liabilities to the limited extent that the benefit offset is greater than the diverted revenues, as explained below. The unfunded liabilities can only be significantly reduced by raising ("adding on") taxes while holding benefits constant or cutting ("carving out") benefits while holding taxes constant.[40]

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[40] From an economic perspective, carve-out accounts would be unlikely to significantly affect public or private saving. Add-on accounts, however, could lead to some increase in national saving, and hence economic growth, but only if they did not supplant private saving. This would be the case for individuals who under-save. For individuals who planned their saving through optimization and were not liquidity constrained, add-on accounts would strictly supplant private saving unless they were subsidized, in which case they would instead reduce public saving.

The objective of the following discussion of individual accounts is to analyze the claimed merits of individual accounts, as well as explaining some of their disadvantages. For analytical clarity, consider the economic effects of a hypothetical proposal to move completely from the current PAYGO system to a fully funded system of pure individual accounts. (The report's conclusions apply to specific proposals only where explicitly noted.) Once the costs and benefits of a pure system have been identified, one can evaluate whether specific costs and benefits of a mixed system are attributable to its individual accounts or its government-provided PAYGO portion. A mixed system could address some of the market failures and social goals that a pure system of individual accounts could not, but would also reduce the benefits stemming from individual accounts. First, we begin by discussing a claim commonly made for individual accounts: that rates of return are larger than the return in the Social Security system and that these higher returns can help achieve solvency.

Rate of Return Comparisons

There is no doubt that expected returns are higher on private assets than benefits under the current system. Yields for current workers are expected to be small or even negative because of the fall in the worker-retiree ratio upon the retirement of the baby boomers. But even setting this demographic problem aside, and considering a sustainable steady state, if the economy is growing at a real rate of 2% per year, a dollar paid into a PAYGO system over, say a 25-year period, would permit a benefit payment of $1.64. A dollar invested in an individual account that yielded an expected 8% return would be expected to permit a benefit payment of $6.85. Such is the power of compound interest.

There are several important problems with this argument. The one noted in the previous simulation holds for individual accounts as well: without an increase in the capital stock, there can be no net gain to society. Gains in individual accounts will be offset by losses to other investors and to the rest of the government budget. By our calculations, it is certainly possible for half or more of the apparent gain from investing in equities to appear as an added interest cost in the general budget. While an individual account may appear to outperform Social Security, society as a whole (including individual account holders) cannot escape the unfunded liabilities of the current system.

There are other reasons that Social Security cannot earn a market rate of return. First, over one-third of contributions finance benefits for the disabled, survivors, and dependents. Contributions also redistribute income to lower income recipients. Second, individual accounts are likely to have higher administrative costs than Social Security. Finally, the risky returns offered by individual accounts cannot be meaningfully compared to the safer returns offered by Social Security since people willingly accept lower returns to avoid risks.

The economy-wide benefit to individual accounts would not come from the rate of the return that they earned. It would come from the stronger link between benefits and contributions that should reduce or eliminate the distortions arising from social insurance, such as effects on labor supply and savings. These distortions may not be completely eliminated as long as there are mandatory components to the system and

some individuals save more than they would otherwise prefer. But in general they should reduce distortions in private decisions to work and save.

Transition Costs. Furthermore, a reform plan based on individual assets will have to deal with the cost of paying off currently accrued obligations and making the transition to a funded system. This effect is far from trivial. Suppose all contributions were immediately shifted into individual accounts but the system was committed to make no one who had already participated in the system worse off. Existing retirees would still have to receive benefits, and working individuals would have to pay close to the existing 12.4% payroll tax, as well as set aside their new contributions, to finance those benefits. These payroll tax dollars would earn no return, even of principal, for their contributors.

What if a mixed system were introduced that diverted some of the payroll tax, say 2%, into individual accounts and used the rest to pay current benefits? Would this allow the future funding crisis to be diverted without tax increases or benefit reductions? To make this evaluation more concrete, we analyze the budgetary effects of the proposals of the President's Commission to Strengthen Social Security, based on the official estimates of the Social Security Administration (SSA) actuaries. The estimates make it clear that introducing 2% individual accounts without introducing a new stream of revenue to finance them would not prevent a funding crisis.[41]

The President's Commission on Social Security proposed three such plans. In Option 1, workers under 55 could elect to deposit 2% of their OASDI taxable earnings in an individual account, with an offsetting reduction in benefits based on diverted amounts compounded at a real rate of return 3.5%. It is the only option that relies solely on individual accounts. In the second, the amounts diverted were 4%, up to $1,000 per year, of taxable earnings with benefits offset by compounding at a real rate of return of 2%. This plan also included a benefit cut: to slow the growth of benefits by indexing to prices rather than wages. Option 3 allowed the diversion of 2.5% of earnings not to exceed $1,000 plus a required additional 1% of taxable earnings for which a refundable tax credit would be received. The diverted amounts would reduce benefits, compounded at a real rate of return of 2.5%. According to the trustees, Options 2 and 3 lead to a significant long-term improvement (but short-term deterioration) in the system's finances, while Option 1 does not.[42] None of the reforms achieve solvency according to this report's definition, however.

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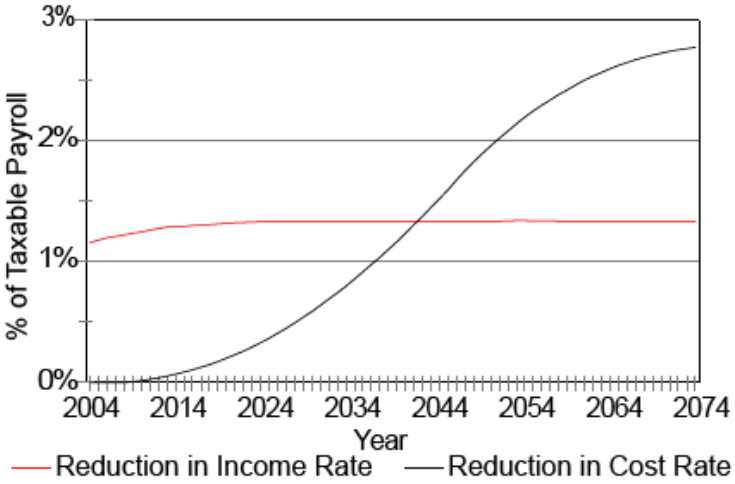
[41] See also Peter Diamond and Peter Orszag, "Reducing Benefits and Subsidizing Individual Accounts: An Analysis of the Plans Proposed by the President's Commission to Strengthen Social Security," Center for Budget and Policy Priorities and the Century Foundation, June 18, 2002.

[42] For the sake of brevity, many of the details of the commission's proposals are omitted here. For a detailed description of the commission and its proposals, see CRS Report RS21095, *Social Security: Report of the President's Commission to Strengthen Social Security*, by Dawn Nuschler.

Figure 3 illustrates the effect of introducing individual accounts on the income and costs of the Social Security system as a percentage of taxable payroll.[43] The estimates are based on the introduction of individual accounts under the Option 1 plan of the President's Commission on Strengthening Social Security. Option 1 makes the effects of individual accounts clearest because it is the only option that does not include benefit cuts. Roughly 40 years after the introduction of individual accounts, when enough retirees had spent their entire career making contributions, the accounts would indeed allow a larger reduction in Social Security benefits than the revenue lost from a 2% marginal payroll tax cut.[44] Over time, the savings to the government would get larger and larger and eventually become quite significant. Unfortunately, for the first 40 years after the introduction of individual accounts, the accounts would generate less revenue than was being diverted from beneficiaries.

Figure 3. Change in Social Security's Finances From Introducing 2% Individual Accounts



Source: Chief Actuaries of Social Security Administration, *Memorandum to President's Commission to Strengthen Social Security*, December 2001, p. 53.
Notes: Estimates based on Commission's Option 1 reform plan of an individual account with contributions equal 2% of payroll and a 66.7% participation rate. It assumes accounts are introduced in 2004.

Thus, individual accounts would exacerbate the financing problems of the Social Security system for roughly 40 years, but improve the system's finances from that point on. Whether this is desirable can only be determined by judging their

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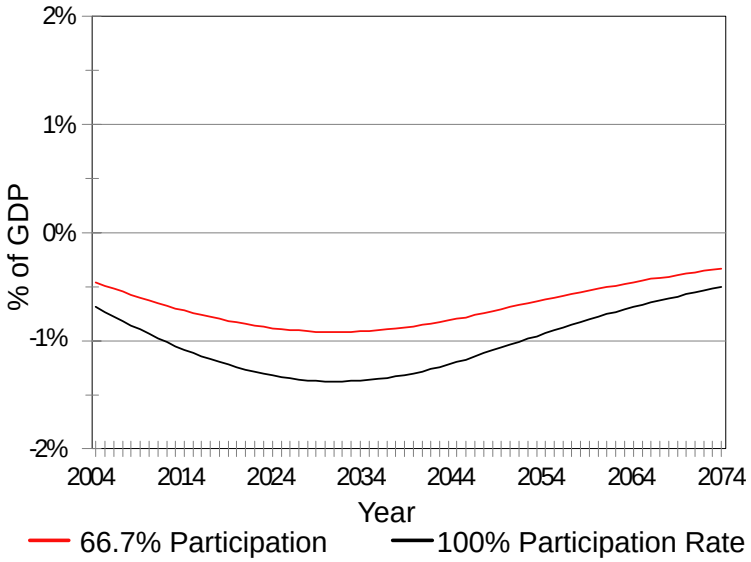
[43] This graph does not illustrate the overall income and cost rates under a system of individual accounts, but rather the *change* in income and cost rates caused by the introduction of individual accounts. Thus, the future financing crisis is not averted if the proposals generate additional revenues. It is only averted if the proposals generate enough additional revenues to cover the entire financing gap.

[44] This graph does not illustrate the revenue generated to the individuals who own the individual accounts. It illustrates the reduction in benefits that the government is obligated to pay because Social Security benefits are offset by an amount equal to the diverted payroll tax compounded at a 3.5% real rate per year.

effect on the economy and government as a whole. And such accounts improve the government's overall finances and national saving only if the revenue shortfalls caused by them in the first 40 years of their existence are financed through tax increases or benefit reductions. In this case, the improvement in the government's finances could be calculated by compounding the rising line in Figure 3 (reduction in cost rate). By contrast, **Figure 4** illustrates the effects the accounts have on the unified budget balance if the accounts are debt financed (i.e., introduced without an accompanying source of financing). As explained in the introduction, the effect on the unified budget balance is the most meaningful measure because it is the only one that clearly identifies the cost of reform to the government as a whole. It may surprise some readers to see that individual accounts, if debt financed, still generate less revenue than the current system for the entire 75-year projection window. *In other words, debt-financed individual accounts worsen Social Security's financing crisis for the next 75 years.*

Figure 4. Change in the Unified Budget Deficit From Debt-Financing 2% Individual Accounts

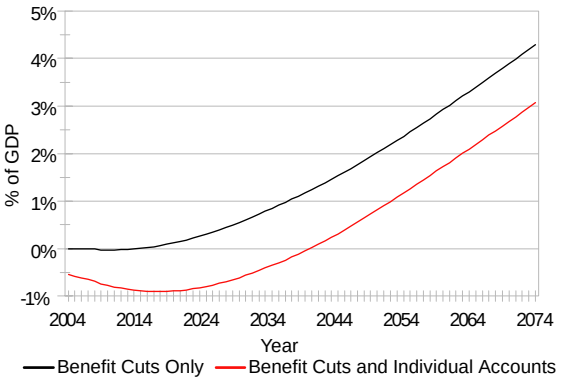


Source: Chief Actuaries of Social Security Administration, *Memorandum to President's Commission to Strengthen Social Security*, December 2001, pp. 53-54.
Notes: Estimates based on Commission's Option 1 reform plan of an individual account with contributions equal to 2% of payroll and a 66.7% participation rate. It assumes accounts are introduced in 2004.

Since the private assets in individual accounts are growing through the accumulation of interest, these results may seem puzzling. Although the assets in individual accounts are growing through the accumulation of interest, the debt issued by the government to finance the accounts is also growing because of interest accumulation. The individual accounts offset government benefits at a higher rate of return than the interest payments on government debt, so eventually (outside the 75-year window) the individual accounts save the government money. But because so much debt must be issued immediately, it takes more than 75 years before the accounts pay for themselves. In fact, the actuaries of the SSA make two sets of assumptions, both of which are illustrated in **Figure 4**. Since the accounts are voluntary, they estimated the costs under the assumptions (1) that 66.7% of eligible

individuals elect to participate, and (2) that 100% elect to participate. Comparing the results under the two assumptions leads to a surprising result: the best way to limit the costliness of debt-financed individual accounts is to reduce the participation rate.

Figure 5: Change in Budget Deficit From Debt-Financing Option 2



The President's Commission on Social Security made it clear that Option 1 would not avert a future financing crisis. For that reason, it also proposed two further options that coupled the introduction of individual accounts with benefit reductions. These two options, it asserted, would make Social Security solvent. In both cases, the actuaries of the SSA believe that a 66.7% participation rate is most likely, and the figures below are based on this assumption. The reforms do not make the system solvent, however, if solvency is defined as the avoidance of cash deficits throughout the 75-year forecast window; both proposals would greatly reduce the size of the deficits in the second half of the projection window, however. Under Option 2, the system would generate cash deficits from 2010 to 2059. Under Option 3, it would generate cash deficits from 2014 to 2072. In other words, additional unidentified funding would need to be found to pay benefits promised under reform, and this funding would ultimately come from further tax increases or reductions in benefits or other government spending. However, these options do achieve solvency if solvency is defined as achieving a cash surplus at the end of the forecast window. This means that — unlike reform proposals that achieve 75-year trust fund balance — they do not result in renewed crisis in 76 years.

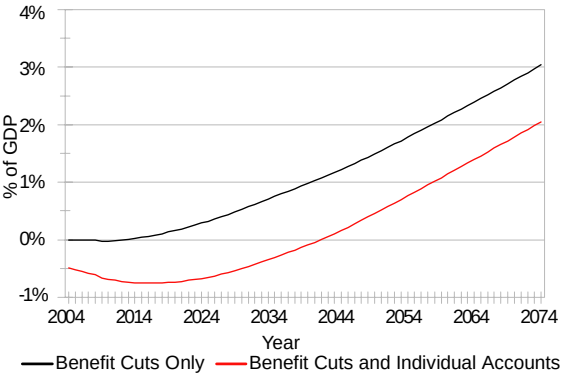
By examining **Figures 5** and **6**, which illustrate the effect these options would have on the unified budget balance, it can been seen that if the individual accounts are debt financed, only the benefit reductions are responsible for the improvement in the system's finances.[45] Indeed, a much larger improvement in the system's finances is possible if the individual accounts were excluded from Option 2 and 3 and only benefit reductions were made (assuming the proceeds were saved). In other words, the system's finances could be improved to the same degree with smaller benefit reductions than recommended in Option 2 and 3 if individual accounts were not implemented.

[45] Although the benefit reductions in Options 2 and 3 grow significantly over time, for the first half of the projection window they would generate insufficient budgetary savings to finance the individual accounts. For that reason, the creation of individual accounts would result in an increasing debt for roughly the first half of the projection period unless taxes were increased or other government spending were reduced.

Source: Chief Actuaries of Social Security Administration, *Memorandum to President's Commission to Strengthen Social Security*, December 2001, pp. 57-58.

Notes: Estimates based on Commission's Option 2 and Option 3 reform plan with 66.7% participation rate and contribution rates equal to 2.39% and 1.97% of taxable earnings, respectively. It assumes individual accounts are introduced in 2004 and are debt financed.

Figure 6: Change in Budget Deficit From Debt-Financing Option 3



Throughout this discussion, the report has focused on the effect of individual accounts on the government's finances. This may seem at odds with many other evaluations of individual accounts which center on whether there are gains to the worker. But the effect on the government's finances is quite separate from the effect on the worker. Government finances are affected because the benefits the government must pay are reduced by the presence of individual accounts (e.g., in Option 1, benefits are reduced by the amount of tax redirected to the account compounded at a real rate of 3.5%). The potential gain to the individual comes from the fact that the accounts are expected to be worth more than the amount the individual has lost in reduced benefits (e.g., under the assumptions of the SSA actuaries, the accounts would earn a real rate of return of 4.6% whereas benefits would be reduced by 3.5% in Option 1).[46] Debt financed accounts would only result in an (eventual) cash-flow improvement in government finances if the compounding factor used in the benefit offset is greater than the interest rate on government debt. This is not the case in Option 2 or Option 3, which call for offsets with real interest compounding factors of 2.0% and 2.5%, respectively, compared with a 3% rate of return on U.S. Treasuries.

The reason this report focuses on the effect on government finances is that the system's crisis centers on the fact that the government does not have enough money to pay promised benefits. In preventing that crisis, estimating the gain to individuals is largely irrelevant. Individual accounts could earn rates of return of 100% a year, but if they did not offset government-provided benefits, then the funding shortfall would be the same, and the same unidentified financial sacrifice would need to be made in the form of higher taxes or lower benefits. Furthermore, even if a reform proposal reduced the system's unfunded liabilities, if it did not eliminate them, then further unspecified sacrifices would have to be made at some point. Since those unspecified sacrifices would need to come from the same workers possessing the individual accounts, calculating the rate of return on the accounts gives only a partial picture of the proposal's overall effect on the individual.

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[46] Note that the SSA estimates do not take into account the negative effects on rates of return that portfolio shifts may cause, as suggested in the numerical simulation above. Thus, individual accounts may have a lower return than the SSA estimates suggest for any given portfolio.

Social Security's Social Functions. As discussed above, only 62% of the current system's income is paid out to retired workers. The other 38% is paid to disabled workers (13%), survivors (19%), and dependents (6%). These payments for "social functions" directly lower the "rate of return" available to healthy single retired workers. One, therefore, should make sure that, in comparisons, these social functions are being included in any comparisons of the return on social security and individual accounts. For example, if one contracted to invest and purchase an old age annuity, one would not be covered for disability or insurance payments for early death; the purchase of such insurance would use some of the investment that could grow in the annuity.

In addition, the "rate of return" available to wealthier retirees is lowered further because of the system's progressive benefit formula. The degree of this redistribution is not certain, because of offsetting factors. Higher income individuals tend to have larger ratios of retirement years to working years, largely because they live longer. They also tend to enter the workforce later because of more extensive schooling. Moreover, the distributional effect depends on whether one examines families or individuals. Higher income men who marry wives who do not work outside the home (a typical event in the past) receive benefits for their wives that are proportional to their own benefit levels, and if one includes these benefits, high income families have a higher return.

Another regressive feature of the current Social Security system is the tax treatment of benefits and payroll contributions. If Social Security is thought of as a retirement plan, contributions are (like other retirement plans) subsidized through the tax system compared to other investments. There is a subsidy because contributions made by employers are not subject to individual income tax at the time of contribution and because "earnings" (benefits in excess of contributions) are taxed only when received, and then taxed only partially. Social Security benefits are taxed differently from pensions, however. A fraction of Social Security benefits is taxed when income exceeds certain levels, with individuals with relatively high incomes paying tax on 85% of benefits, low income individuals paying no tax, and some individuals falling in between. Currently about two-thirds of all individuals do not pay a tax but the number covered will grow absent legislative change because the exclusions and phase-outs are not indexed. Pensions are taxed in a way that explicitly permits previously taxed benefits to be excluded (and many pension systems allow full exclusion of contributions from the income tax base).

Even though there are no aggregate assets in a PAYGO transfer system, there is a return from the perspective of the individual since benefits typically exceed contributions.[47] These tax benefits favor higher income individuals, and the subsidy per dollar of payroll tax is more pronounced, other things equal, the higher the individual tax rate, the longer the holding period and the higher the rate of return. Benefits are positive at any reasonable rate of return, and are also larger in absolute value for higher income individuals because they have larger contributions. **Table 2** shows the ratio of end-of-period value from an investment receiving Social

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[47] As explained above, the rate of return on contributions to a PAYGO system would average the economy's growth rate in the steady state.

Security's tax treatment compared to an investment subject to a normal tax for a variety of returns (including holding periods), depending on whether benefits are taxed. The current system offsets these effects through both direct redistribution and exclusions from benefit taxation, the latter of which favors middle income individuals but not the poor, whose ratio is one (i.e. who would pay no income tax in any case because of the income tax system's regular exclusions).

Table 2. Percentage Increase in Benefit Due to Social Security's Tax Treatment Relative to Taxable Private Savings

Income Tax Rate	Percentage Increase in Benefit for:					
	Asset Held for 35 Years			Asset Held for 20 Years		
	0% Yield	5% Yield	10% Yield	0% Yield	5% Yield	10% Yield
15%						
No Benefit Tax[a]	8.8	39.9	76.0	8.8	25.6	43.2
85% Taxed[b]	-5.1	22.2	53.5	-5.1	9.6	25.0
25%						
No Benefit Tax[a]	16.7	77.4	160.8	16.7	48.2	84.8
85% Taxed[b]	-8.2	39.7	105.4	-8.2	16.7	45.5

Source: Author's calculations.
Note: Calculated as $[0.5/(1-t) + 0.5][1-0.85at]\{(1+r)/[1+r(1-t)]\}^T - 1$ where t is the tax rate, r is the yield, T is the holding period and a is equal to zero with no benefit tax and one if 85% of benefit is taxed.
a. Assumes no part of Social Security benefits are taxed.
b. Assumes 85% of Social Security benefits are taxed.

A pure system of individual accounts would, therefore, tend to favor higher income individuals if the current Social Security system's tax treatment were applied to those accounts. The relative subsidy to higher income individuals would increase in the post-transition period as rates of return rise and the benefit exclusions are eroded through inflation. This tax subsidy differs from that of IRAs, which have fixed dollar rather than percentage-of-wage limits (constraining the benefit for high income individuals); the treatment is more like that provided for private pensions. One could offset that effect by withdrawing favorable tax treatment (taxing employer contributions and taxing account earnings as accrued) or by introducing offsetting subsidies, such as higher contribution levels or government matching contributions for low income individuals.

When all of these factors are taken into account, the magnitude of the distributional effects of the current system are not entirely clear.[48] Nevertheless, these observations suggest that individual accounts would place lower income individuals at a disadvantage compared to the current system because they would lose the explicit redistribution in the current system. It is also possible that they would place low income individuals at a further disadvantage if their tax treatment were similar to the current system, unless the accounts were subsidized by earnings. At the same time, because the poor do not live as long, individual accounts would maintain one of the redistributional disadvantages of the current system if beneficiaries were forced to annuitize (for the reasons discussed below).

Some proponents of the current system base their opposition to individual accounts on the fact that these social functions could not be incorporated into individual accounts — "ownership" of assets is incompatible with horizontal and vertical redistribution. While that is true, these social functions could be carried out through new government programs that were financed through general revenues.[49] What should be realized is that a comparison between the rate of return offered under the current system, which fulfills several social functions in addition to "paying back" workers' "investments" (payroll taxes), and the rate of return under an individual account system that does not finance such social functions is invalid. Stated differently, dropping Social Security's social functions would be one way to reduce its unfunded liabilities, but the option is not predicated on moving to a system of individual accounts.

Administrative Costs. Another factor reducing the rate of return that could be achieved by a system of individual accounts is the administrative costs that nearly all analysts agree would be higher than under the current system. Administering the system would be significantly more complex than the current system — individual account balances would need to be tracked, funds would need to be transferred between investment portfolios upon request, assets would need to be bought and sold, and so on. There is both an explicit cost to consider, in terms of the fees charged by the system's administrator (or funds appropriated if the system were administered by the government) and the implicit cost to employers and employees in terms of more complicated paperwork and higher compliance costs. The more choice that was allowed in the system, the higher the administrative costs would be.

The administrative costs of the current system equaled 1% of benefits paid in 2000. MIT economist Peter Diamond believes that the administrative costs of

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[48] See Karen Smith, Eric Toder, and Howard Iams, "Lifetime Distributional Effects of Social Security Retirement Benefits," presented at the third Annual Joint Conference for the Retirement Research Consortium, "Making Hard Choices About Retirement," May 17-18, 2001, Washington, DC., who find that the current system favors the lowest income group and projects redistribution to increase in the future under current policy. However, their paper does not consider the distributional effects of tax treatment.

[49] Survivor and disability benefits could be partially incorporated in a system of individual accounts through bequests and annuities. Maintaining the level of benefits available under the current system would require government subsidization, however. For example, personal accounts could not replace current survivor benefits when death comes before retirement age.

individual accounts could run four to five times as high as the current Social Security system.[50] The Thrift Savings Plan's (TSP) administrative costs are fairly low. As the retirement system for the country's largest employer, however, the centrally-administered TSP may enjoy economies of scale that would be unavailable to private sector firms if individual accounts were administered competitively. The TSP also offers relatively little investor choice (participants choose among five passive index funds). Thus, administrative costs could be higher for private firms than the TSP, and this additional cost would directly reduce the benefits paid to retirees.

Can Individual Accounts Fulfill the Objectives of Social Insurance?

As explained above, the economic rationale for Social Security rests in part on the presence of adverse selection, moral hazard, incomplete generational insurance markets, and non-optimization in the market for retirement planning. This section explores the restrictions that would need to be placed on individual accounts to correct for these factors. Without these restrictions, there would be no economic advantage to the government provision of individual accounts and retirement choices could be better left to the market. In the latter case, the government could pay off the outstanding obligations of the existing system and leave individuals on their own.

Restrictions on Choice. Many of the arguments for individual accounts and issues in their design revolve around how much choice individuals should have over their individual accounts. Many see an expansion of choice as a compelling moral argument in favor of individual accounts, compared with what they judge to be the paternalistic nature of Social Security. They argue that individuals should be able to choose how to deal with their own contributions: whether to participate, what to invest in, and whether to annuitize or withdraw their assets as they desire.

On the other hand, if the purpose of Social Security is to correct for the adverse selection, moral hazard, and non-optimization, then these restrictions on choice are fundamental to the system. They include not only mandatory participation, but also mandatory annuitization, restrictions on account withdrawals, and restrictions to ensure that investments are prudent. The problem is not only the lack of actuarially fair annuities, but also the possibility of free riders who do not save and rely on welfare to support them in old age. In a sense, choice is in fundamental conflict with the basic economic reason for social insurance.

Partial restrictions, such as requiring individuals to save but not annuitize, would also run afoul of both adverse selection and moral hazard issues. Adverse selection would lead to smaller annuities for those who take them, and still allow individuals to spend down their assets and then rely on welfare. As a simple example, in an economy where half of the individuals live five years and half live 20 years after retirement (assume all individuals know their own life span), an average monthly actuarially fair mandatory annuity would pay $970 per $100,000 of assets. If annuities were made voluntary, the individuals with five-year life spans would not

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[50] Peter Diamond, "Administrative Costs and Equilibrium Charges with Individual Accounts," Working Paper, Mar. 2000.

purchase an annuity and the annuity would fall to $454 per $100,000 of assets. But the need for mandatory annuities to avoid moral hazard and adverse selection also means that it would be impossible to rely completely on individual accounts without higher income individuals and women enjoying higher rates of return, on average, than lower income individuals and men since the latter have shorter life spans.

Minimum Benefit Guarantees and Moral Hazard. To reproduce Social Security's role as a dependable, safe portion of an individual's retirement portfolio (or for others, the only significant source of retirement income), some individual account advocates have suggested that the government should "guarantee" a minimum benefit to retirees in case their accounts suffer investment losses. It can be argued that such provisions, in effect, would defeat the purpose of individual accounts, which is to allow individuals to shoulder more risk if they desire and offer them more control over their retirement saving. Furthermore, many proponents of individual accounts state that individual accounts could help fund the system's unfunded liabilities by achieving higher rates of return. The introduction of a minimum benefit guarantee would make stand alone rate-of-return comparisons misleading because these guarantees pass on the benefits of higher returns to the retiree while leaving the government with the same liabilities to retirees as the current system.

In fact, the guarantees would increase the potential liabilities of the current system because of moral hazard. If individuals received all of the benefits of holding high risk/return assets, but assumed few of the risks (because they were guaranteed a minimum benefit), then they will shift their portfolio towards riskier assets than they would otherwise desire. This choice increases the expected value of liabilities to the government, since the presence of moral hazard makes it more likely that the government will have to pay minimum guarantees.

The moral hazard problem can be reduced — but not eliminated — by placing restrictions on investment decisions (e.g., limiting equities to, say, 60% of the portfolio) for a portion of the portfolio, although this approach would run contrary to the goal of promoting investment freedom. And the restrictions, by forcing investors to hold lower risk/return assets, would reduce the expected return on individual accounts and make their funding advantage over the current system less favorable. Individual accounts that entirely eliminate risk without creating moral hazard would have to be invested in much lower yielding assets than proponents typically use in rate of return comparisons.

Even without an explicit minimum guarantee, the government might feel compelled to use other government programs, such as Supplemental Security Income, Medicaid, or the food stamp program, to aid retirees whose life savings were lost. Thus, the moral hazard problem may not be avoidable even in the absence of an explicit guarantee because individuals may act in the belief that losses they suffer would be implicitly guaranteed for political reasons. If avoiding moral hazard is the motivation for individual accounts, however, why not maintain Social Security as a PAYGO system of a smaller size (that covers only a minimum benefit) and leave individuals free to make other investments if and when they choose? And while higher spending on other programs is not a "cost" to the retirement program, it is still a cost to the government that lowers the funding advantage of individual accounts.

Should Annuitization Be Mandatory? Aside from the volatility risk associated with private investments, retirees would face another risk with individual accounts that they do not face with the current Social Security system: the risk that they will outlive their assets, known as "longevity risk." Because one's time of death is uncertain, there is the risk that retirees will draw down their assets too quickly and be left impoverished in their last days. This risk can be avoided through annuitization, that is, through the exchange with a financial intermediary of one's assets for a promised stream of income. Unfortunately, annuities can currently be purchased in private markets only on terms unfavorable to retirees — on average, the expected value of the annuity benefit can be 15%-25% lower than life expectancy would suggest.[51] Since annuities would presumably be more desirable in the absence of the current Social Security system, the purchase cost might go down as the market grew, particularly if it reduced adverse selection. The only way to eliminate adverse selection completely, however, would be for the government to make annuitization mandatory. This would not prevent companies from attempting to "cherry pick" unhealthy retirees from each other, however — either government provision or regulation would be needed to prevent it.

The problem of moral hazard also argues for making annuitization mandatory. Here again, the government would need to weigh the benefits of allowing individuals greater freedom of decision-making (e.g., the ability to spend a large amount of wealth suddenly in response to a personal calamity) against the social desire to prevent people from becoming destitute because they ran down their assets too quickly. Even if it were in a person's best interest to buy an annuity, he or she may not do so if given the choice. And again, if annuitization were not made mandatory, the government might feel obliged to use other government resources to prevent individuals who had run down their assets from becoming destitute.

Yet mandatory annuitization introduces an element of risk that is not present in the current system: the problem of market fluctuations close to retirement undermining the value of an individual account. If the market were to fall dramatically before retirement, mandatory annuitization — particularly of accounts invested in equities — would "lock in" that low market value, whereas individuals might feel that they could regain some of that lost income as the market turned around if they were allowed to hold on to their portfolio into retirement. (Of course, their misfortune could be compounded if markets continued to fall.)

Should Bequests Be Allowed? With proponents' stress on the "ownership" qualities of individual accounts, a logical next question is whether individuals should be able to bequeath the balance of their account to their heirs upon death. Doing so would raise some problems. Since closing the current system's unfunded liabilities is one of the major justifications proponents raise for switching to a system of individual accounts, it is important to note that bequests would *increase* the unfunded liabilities of the system. That is because they would represent a new set of benefits that do not exist under the current system. The current system does pay survivor benefits to spouses and dependents, and to the extent that bequests

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[51] Congressional Budget Office, *Social Security Privatization and the Annuities Market*, Feb. 1998.

partially replaced those benefits, they would not represent a new liability. But the ability to transfer benefits to a broader circle of heirs upon death — particularly in the case of a premature death — is not possible under the current system and would represent a new liability.

In a pure system of individual accounts, allowing bequests would reduce annuities. For example, returning to our case where half of the individuals live for five years and half live for 20 years after retirement, guaranteeing a minimum 10-year stream of payments (with the heir to receive the payments in the case of premature death) would reduce the monthly annuity from $970 to $807 per $100,000 of assets. However, giving individuals a choice between a larger annuity with no bequest and a smaller annuity with a bequest would re-introduce the adverse selection problem, because healthy individuals would likely choose the former and sick individuals would choose the latter. This feature would lead to smaller annuities for the healthy than in the absence of choice.

Risk: Collective Social Insurance vs. Individual Accounts. Individual accounts differ from an aggregated system in the allocation of risk. There are different types of risk that face individuals in planning for retirement: some are unavoidable in any system, while some can be mitigated, or worsened, by collective provision. Before examining specific types of risks, it is useful to ask how risk affects individuals' preparation for retirement, both privately and through Social Security.

What Is the Role of Risk in Social Insurance? Generally in investment markets, higher rates of return can be enjoyed only by taking on greater risk. The fact that an aggregate social insurance system offers a relatively low return is not necessarily an undesirable feature of the system; nor in a funded aggregate system would a portfolio invested in low return/low risk securities (such as government securities) necessarily be undesirable. For most individuals willing to set aside adequate investments for retirement, Social Security is only one portion of their investment portfolio and most individuals would like to have some part of their retirement kept relatively safe. They are free to invest their private assets in more risky ventures. Other individuals (who fail to optimize) do not set aside adequate retirement savings, for whatever reason. Because they are relying primarily on Social Security in their old age, a strong case can be made that it should remain risk-free.[52]

How do the higher rates of return offered by individual accounts affect these two types of individuals? For those individuals who save adequately, is the current system keeping too much of their retirement income safe (and earning low returns)? Or if given the choice in an individual account, would they place an equal proportion of their overall portfolio in riskless assets? If that were the case, then the rate of return on their individual account would be no higher than their overall portfolio is at the present, after accounting for transition costs. For those individuals who do not save for retirement outside of Social Security, should society allow them to expose

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[52] Note that when using the term risk free, we are speaking of avoiding investment risk; demographic risks that are currently affecting the return to Social Security, such as increased life span, would affect any retirement plan, whether private or public.

their individual accounts to greater risk (and return), knowing that if they are unlucky they will have no other private source of income to fall back on and that it will fall to government transfer programs financed by all taxpayers to provide some minimum level of subsistence?

Investment Risk. A move away from the current PAYGO system towards individual accounts or trust fund investments in private assets introduces a new type of risk into Social Security: the risk of investment market volatility. The two approaches could theoretically distribute market risk very differently, however. Some market risks can be reduced relatively easily, for example through portfolio diversification (although it is not clear that all individuals reduce these risks optimally in reality). There are other market risks that are more difficult to pool, however, such as risk across time.

As explained above, a dollar invested in private assets by the Social Security system would have the same rate of return as a dollar invested in the same asset through an individual account. Obviously, the same amount of risk is associated with that investment in either case as well; losses associated with trust fund investments would ultimately result in lower benefits or higher taxes. But there is a significant difference in who bears the risk (and enjoys the profit) associated with any given investment between the two systems. In a system of individual accounts, the entire risk is placed on the individual who chose to make that investment. In a system with a collectively invested "trust fund" and benefits only indirectly tied to the system's income, those risks can be spread both among the members of a generation (because the system has "defined benefits" rather than "defined contributions") and between generations if the system is allowed to build up and draw down its assets over time.

Is the difference in risk-bearing between the two systems significant? **Table 2** demonstrates that, if the stock market performs in the future as it has in the past, the historical difference in outcomes would have been extremely large.[53] Historically, the stock market has frequently gone through long phases of doing extremely well (e.g., the 1990s) or extremely poorly (e.g., the 1970s), and this would be fully reflected in the value of accounts accrued during those times. The first column of the table demonstrates that if a system of individual accounts had been in place between 1927 and 2001, the value of the account invested entirely in the Standard and Poor's composite stock index would have varied from 22.8% (for a retiree in 1974) to 97.8% (for a retiree in 1999) of the value of Social Security benefits, depending solely upon the year in which the worker retired.[54] Of course, individuals could reduce risk by

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[53] For more information on the results in Table 2 and results under alternative assumptions, see CRS Report RL31324, *Social Security Reform: The Effect of Economic Variability on Individual Accounts and Their Annuities*, by Geoffrey Kollmann, Dawn Nuschler, and Patrick Purcell.

[54] The table is based on workers who have typical work patterns that produce the Social Security benefit of someone who always earned an average wage and who contribute 2% of pay for 41 years to individual accounts. In the first column, it is assumed that the accounts earn the same historical rate of return as the S&P 500 minus a 1% administrative fee; in the second column, it is assumed that 60% of the portfolio earns the same rate of

(continued...)

choosing a portfolio that mixed equities and bonds, but this would also reduce the rate of return they could enjoy, as demonstrated in the second column. In fact, even though risk would be reduced, more than 25% of the time the mixed portfolios of stocks and bonds would have underperformed the worst performing year for the portfolio of 100% equities.[55] This means that even if individual accounts matched the benefits paid by Social Security on average, absent government guarantee subsidies, some beneficiaries would do much better than under Social Security while others would do much worse.

Table 3. The Historical Performance of Hypothetical Individual Accounts

Statistical Measure	Percentage of Social Security benefit replaced for account invested in:	
	100% Equities	60% Equities, 40% Bonds
Mean (Average)	49.1%	26.2%
Minimum	22.8	15.3
25th Percentile	41.0	20.6
50th Percentile	47.9	26.7
75th Percentile	55.6	31.3
Maximum	97.8	40.7
Standard Deviation	15.7	6.1

Source: CRS Report RL31324, Tables 4 and 12.

Demographic Risk. Another type of risk that is already present in the current system is demographic risk, which cannot be avoided since mortality will always be unknown. In Social Security or individual accounts with annuitization, demographic risk comes from dying before one has received the value of one's contributions. In individual accounts without annuitization, the demographic risk comes from outliving one's assets. (Demographic risk could be avoided through annuitization with bequests, but would result in smaller annuity payments.)

A demographic risk that is part of the cause for the current insolvency of the system is the increase in life spans that is not anticipated in advance, and will leave individuals with smaller retirement accumulations and potentially smaller retirement incomes. Just as an individual facing such an increase must either save more or accept a smaller retirement income (or delay retirement), a social insurance system

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[54] (...continued)
return as the S&P 500 and 40% earns the historical return on long-term U.S. government bonds. The table assumes that the amount accumulated in the account is converted to a fixed life annuity based on the prevailing rate of interest on long-term U.S. bonds. It should be noted that volatility is higher if accounts are accumulated over shorter careers.

[55] Similar results are confirmed by Gary Burtless, *Social Security Privatization and Financial Market Risk*, Center on Social and Economic Dynamics, Working Paper 10, Feb. 2000.

must increase taxes or reduce benefits. Thus potential variability in taxes or benefits (which is sometimes characterized as part of the "political risk") is not a risk that can be avoided with an individual account system. And the large increase in taxes or decrease in benefits needed to restore the current system to solvency is still present in any shift to individual accounts. A pure system of individual accounts would still have to alter contribution levels or benefits in the face of increasing life spans. Another type of risk, changes in fertility, would not affect private accounts or a fully-funded social insurance system, but such changes might still affect private retirement incomes by altering the availability of private intergenerational transfers. Thus, these risks would not be avoided, but rather would be addressed in different ways.

Political Risk. A final type of risk that many argue would be diminished by individual accounts is political risk. Because there is no "ownership" of benefits in the current system, retirees and workers planning for retirement are always at the mercy of legislative change. Individual accounts would remove assets, income, and benefit flows from the government budget and create individual "ownership" of retirement benefits that would be less subject to manipulation through legislative changes. As a result, it might be more difficult to use surpluses in the retirement system to finance other government spending. It is important, however, to distinguish this political risk from actual risks such as demographic or investment risks discussed above. Only political risk, which involves shifting benefits and costs among individuals, is zero-sum for society as a whole.

Political uncertainty is a particularly compelling issue when one considers that the current system is unsustainable because of anticipated life span and fertility changes. At some point, either workers will see taxes raised or retirees will see benefits reduced from their current level. Since much of the political risk revolves around future uncertainty, the transition to a fully funded, pure individual account system would also have the benefit of forcing the question of who will bear the costs of reforming the system to be answered immediately. In other words, a pure system of individual accounts would bring the future funding crisis forward to the present by making implicit liabilities explicit. Then individuals would no longer be left uncertain of how they will be affected by reform in the future arising from information already available today. This argument does not apply to most current proposals, however, because the proposals do not call for pure individual account systems. They call for mixed systems, and many of these mixed systems do not increase the system's prefunding. Thus, proposals that do not address the issue of the system's current unfunded liabilities do not really reduce political risk, even if they have created individual ownership, because they make further, undefined reform in the future necessary.

The risk of credit distortion is another potential political risk present if a centralized trust fund were to make private investments, but avoidable in a system of individual accounts. If markets allocate capital among different types of investments efficiently on their own, then, from an economic perspective, any move towards investment by the government retirement system should preserve that market allocation or it would lower economic efficiency. A system of individual accounts would largely preserve the market allocation of capital because private individuals would continue to choose where they wished to invest their money. By contrast, if the government were to make private investments centrally through the trust fund,

there would be the possibility that investments would be made on the basis of political criteria rather than the profit motive. This potential risk seems relatively easy to avoid, however, by stipulating that the trust fund be invested on the basis of a passive index, similarly to some mutual funds and the TSP.

Of course, political risks are present in any sort of government intervention into the provision of a fully-funded retirement system. For example, ideally the government may be able to offer individual account holders actuarially fair annuities on more favorable terms than the private sector. But were the government to do so, there also would be the possibility that it would offer actuarially unfair annuities instead for political reasons (e.g., making annuities overly generous to win political support among the elderly). Such an outcome could create new unfunded liabilities that could undermine government finances in the long term. Similarly, in theory the government could equitably spread the risks of a centrally-funded trust fund over time, but it could also distort risk-spreading formulas in ways favorable to current generations which store up problems for future generations.

Conclusion

The analysis in this report points to two major conclusions. First, it reemphasizes the old saying: "There is no free lunch." Someone has to pay to address Social Security's funding imbalance, and while the burden can be distributed differentially across individuals and across generations, it cannot disappear.

Inaction continues uncertainty as to who will pay and when. Tax increases and benefit cuts provide at least a general picture of who might bear the burden. Some approaches, such as investing the trust fund (or individual account) savings in higher yielding assets other than government bonds, have the appearance of being costless, but the benefits to be gained from these higher yields appear as costs in other parts of the economy: higher interest rates on government debt or lower returns on private investment (which may include direct reductions in the returns to private securities in the accounts or trust fund), and changes in risk. Analyses of such approaches need to account for any declines in private returns to capital, and also address what taxes are to be increased, or government services to be cut, to pay for the increased government borrowing cost. None of the current proposals being discussed has provided such detail. Of course, one way to avoid an increase in interest costs would be to increase national saving but, again, such saving would mostly likely only be accomplished by some forced government saving plan, and the policies to accomplish it would need to be spelled out to clarify who pays.

Trying to judge the merits of alternative approaches based on which approach poses a smaller burden is not really meaningful: all plans face the same problem, that income does not cover cost. The only difference between plans is who bears the burden. Rather, they may be framed in terms of losses and gains in economic efficiency. If one rules out options that spread the costs to other parts of the economy, the choice between higher taxes and lower benefits primarily depends on the optimal size of the Social Security system. The smaller the system, the less it is able to alleviate the market failures it was designed to cure — moral hazard, adverse selection, incomplete insurance markets, and failure of optimization. The larger the

system, the more it distorts labor and saving decisions. The form of tax increases or benefit cuts can also have implications for economic behavior and distribution. Besides economic efficiency, the decision depends on social goals and distributional effects that may affect social welfare.

Funding the system can occur under either a centralized system or individual accounts since it is national saving, not saving in the accounts, that matters. The principal distinction between maintaining an aggregated system such as we have currently versus a set of individual accounts involves efficiency gains, and not differential rates of return. Many of the potential criticisms of individual accounts are mirror images of the rationales for social insurance. If individual accounts are to fulfill the objectives of social insurance, then they must be very much like an aggregate system in that they must involve mandatory contributions, mandatory annuitization, and requirements for prudent investment. But such requirements are in direct contradiction with the notions of choice and of the complete elimination of distortions induced by taxes; indeed, choice is itself in conflict with the rationale for social insurance.

From this analysis, it follows that if individual accounts meet the minimum requirements for the objectives of social insurance (that contributions and annuitization are to be mandatory and investment choice restricted), there are still two limits to individual accounts. First, they could not, by themselves, fulfill the current system's social objectives, which include redistribution and the provision of benefits to survivors, dependents, and the disabled. They could reverse the distributional objective of the current system, shifting income from the poor to the rich on average because of the latter's longer expected life span, and potentially through the tax treatment of the accounts. This effect could be addressed by subsidizing the poor and taxing the rich (e.g., government matching rates for low income individuals), but that revision would move away from a pure individual account system and its economic benefits. Second, they would introduce elements of risk, including risk across cohorts reflecting variations in returns and in stock market valuations. If the goal of reform were to move towards greater pre-funding, an aggregate system could be more successful at spreading risk among and across generations.

Nevertheless, it is important to also understand the advantages of individual accounts. Individual accounts do maintain a connection between marginal contribution and marginal benefit that can reduce distortions in private work and saving behavior (although the mandatory nature of the contributions may undermine this gain to some extent). Individual accounts also eliminate political risk, at least within the program itself, which makes the retirement plan itself less risky in some ways. Finally, individual accounts may impose more budgetary discipline by explicitly removing any Social Security surplus from government control, so that in reality, they may be more likely to lead to an increase in national savings than would be the case of the aggregate trust fund. But for this to occur, individual accounts must be financed through tax increases or benefit cuts.

Many proposals actually include a mixture of individual accounts and some smaller version of the current system. Such a mixed system might be used to address some of the problems with pure individual accounts discussed above, such as their

tendency to redistribute from the poor to the rich and the problem of moral hazard. Such a shift dilutes both the costs and benefits of individual accounts. In particular, it reduces the return to investment and it leaves a significant portion of the system as a PAYGO system. But it is the interaction between PAYGO financing and demographic change that is responsible for the current system's impending insolvency. There is a fundamental tension between the objectives of social insurance (to deal with adverse selection and failure of optimization as well as moral hazard and risk spreading) and the merits of individual accounts (choice and reduction of other behavioral distortions); any mixed system is giving up some of the benefits of the first to attain the benefits of the second. Evaluating a plan necessarily involves assessing those costs and benefits.

It is important to keep this trade-off in mind. For example, proponents of a mixed plan may argue that their plan does not suffer from moral hazard or undesirable redistribution; nevertheless, correcting these elements must reduce the rate of return for most individuals, constrain the degree of choice, and limit reduction in economic distortions that are the rationale for considering individual accounts in the first place. Thus, mixed plans do not address these problems without a cost.

Appendix. Portfolio Model

The portfolio model is based on a portfolio function for individuals, and a debt-equity trade-off for firms. Individuals maximize, acting as price takers:

$$(1)\quad P = \left(a\{ [bB_p^{(1+1/S)}+(1-b)D^{(1+1/S)}]^{(1/(1+1/S))} \}^{(1+1/\varepsilon)} + (1-a)E_p^{(1+1/\varepsilon)} \right)^{(1/(1+1/\varepsilon))}$$
$$\text{subject to } rW = r_bB_p + r_dD + r_eE_p$$

where B_p is government bonds held by the public, D is corporate debt, and E_p is corporate equities held by the public, W is a fixed amount of wealth, r is the average return to wealth, r_b is the interest rate on government bonds, r_d is the interest rate on corporate debt, and re is the return to corporate equity. S is the substitution elasticity between bonds and debt, and ε is the substitution elasticity between equities and the composite of interest bearing assets. In the case of the simple two asset model, the value of S is set to infinity and the initial interest rates are equated. However, for a three asset model, the return on government bonds is lower than the return on private bonds.

First order conditions with respect to B_p, D, and E_p lead to the following ratios

$$(2)\quad B_p/D = [(1-b)/b]^S \ (r_b/r_d)^S$$

$$(3)\quad D/E_p = (r_d/r_e)\varepsilon\, [(1-a)/a]^{\varepsilon}\, (1-b)^{-[(\varepsilon+1)S/(S+1)]} \{ [(1+b)/b]^S(r_b/r_d)^{(S+1)}+1\}^{[(\varepsilon-S)/(S+1)]}$$

Firms also choose sources of finance (debt versus equity) depending on their cost of debt and equity:

$$(4)\quad F = [\lambda D^{(1-1/\sigma)}+(1-\lambda)E^{(1-1/\sigma)}]^{(1/(1-1/\sigma))}$$

$$\text{Subject to } C = r_dD + r_eE$$

First order conditions with respect to D and E yield:

$$(5)\quad (D/E) = (r_d/r_e)^{-\sigma}\, [\lambda/(1-\lambda)]^{\sigma}$$

To complete the model we have the following constraints and identities:

Total equities are:

$$(6)\quad E = E_g + E_p$$

where the p subscript refers to equities held by the public and the g subscript to equities held by the Social Security trust fund. E_g is exogenously determined, and is zero under current rules, but equal to the total assets in the trust fund in the new equilibrium.

Total government bonds B equal:

$$(7)\quad B = B_p + B_g$$

where the p subscript refers to equities held by the public and the g subscript to equities held by the Social Security trust fund. All are exogenously determined, with Bg equal to the assets in the Social Security trust fund under current rules, but equal to zero in the new equilibrium.

(8) $K = D + E$

The private capital stock, K, is fixed, and is the sum of debt and equity finance, which are determined endogenously.

Since the private capital stock is fixed, so is the marginal product of capital:

(9) $F'(K)\ K = r_d D + r_e E$

Equations (2), (3), (5), (6), (8), and (9) are six equations in six unknowns: r_d, r_b, r_e, D, E_p and E.

For purposes of illustration, the model was calibrated for FY2000. Based on data at that time, and norming output to 1, the private capital stock (K) was 3.35, with 1/3 debt and 2/3 equity, the government debt held by the public was 0.34 and assets held in the Social Security trust fund were 0.10. Real interest rates on private debt, equity, and government debt were set at 0.048, 0.088 and 0.017 respectively.

For the two asset model, the model was differentiated and the interest rate set to approximately 0.04, a weighted average of government and private bonds.