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Peter Diamond

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Paper presented at NASI Conference -- Framing the Social Security Debate: Values, Politics, and Economics, January 29-30, 1998. I have learned a great deal from my colleagues while serving on the Technical Panel on Trends and Issues in Retirement Security of the Advisory Council on Social Security and the Panel on the Privatization of Social Security of the National Academy of Social Insurance. I am grateful to these colleagues. I am also grateful for comments from and discussions with Henry Aaron, Doug Arnold, Courtney Coile, Alicia Munnell, and Virginia Reno and for financial support from the National Science Foundation under grant SBR-9618698. Any mistakes in the analysis are my own. Any opinions expressed are those of the author and not those of the National Bureau of Economic Research or any individual, group, or institution with which the author is or has been associated.

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The Economics of Social Security Reform
Peter Diamond
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ABSTRACT

Economic analysis of reform centers on three questions - whether to have a defined benefit plan or a mixed defined contribution/defined benefit plan, how much funding to have and how to invest the funding. The paper begins by comparing a funded defined benefit plan with a funded defined contribution plan without any individual choice. The paper then considers individual choice of the form of benefits, with particular attention to possible effects on widows. Portfolio choice is considered for a central fund and in individual accounts, with particular attention to the costs of implementation. The paper then considers the implications of greater funding. Then, the implications of system design for the labor market are examined.

The major economic issues are, by and large, not controversial. More funding involves higher taxes (or lower benefits) in the near-term in order to have lower taxes (or higher benefits) in the long-run. More funding can reduce the frequency of needed adjustments to Social Security and can increase national savings. These economic effects are similar whether the system has individual accounts or not, although the politics will differ. The financial advantage of a diversified portfolio in terms of risk and return applies to a central fund, whether for a defined contribution or a defined benefit system. Indeed, a defined benefit system that adjusts well handles risk better than a defined contribution system. Economically, the case for diversification is clear; but political questions arise about the ability to invest well and to avoid improper interference in corporate governance. Having individual accounts and having them privately-organized are both responses to these political concerns. They also allow diversity in individual portfolios, but add to administrative costs and raise questions about the quality of individual investment decisions. They also raises the political question of maintaining redistribution in a mixed system. It is unclear whether individual accounts would make the labor market more or less efficient.

My bottom line is that a well-run defined benefit system is economically more efficient than a mixed defined contribution/defined benefit system. The real issue then becomes how well the US government can run a defined benefit system relative to how well it can run a mixed defined contribution/defined benefit system.

Peter Diamond
Department of Economics
MIT
Room E52-344
Cambridge, MA 02139
and NBER
pdiamond@mit.edu

Social Security reform proposals raise economic and political questions. The economic questions center on how well a particular reform would deliver retirement, survivor and disability benefits and how the reform would affect the overall workings of the economy. Political questions center on what might be legislated now and how a particular plan would evolve over time - changes could occur in response to changing political forces or as a political response to economic and demographic developments. This paper concentrates on the economic questions, identifying places where political arguments are important, but not exploring them.²

Economic analysis of reform proposals centers on three questions - whether the program should be structured as a defined benefit plan or a mixed defined contribution/defined benefit plan, how the funding for the retirement income program should

¹ I have learned a great deal from my colleagues while serving on the Technical Panel on Trends and Issues in Retirement Security of the Advisory Council on Social Security and the Panel on the Privatization of Social Security of the National Academy of Social Insurance. I am grateful to these colleagues. I am also grateful for comments from and discussions with Henry Aaron, Doug Arnold, Courtney Coile, Alicia Munnell and Virginia Reno and for financial support from the National Science Foundation under grant SBR-9618698. The views expressed here are my own, and not necessarily those of any individual, group, or institution with which I am or have been associated. The same goes for any mistakes in the analysis.

² More detailed analyses of the economics of reform proposals as well as analyses of the politics of reform proposals can be found in other papers presented at this conference and in Diamond (1997). Since all proposals call for restoring actuarial balance, the paper does not review the size of the imbalance nor the case for addressing it sooner rather than later. For the latest estimate of the actuarial deficit, see Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, 1997. For discussion of the importance of addressing the imbalance soon, see Technical Panel on Trends and Issues in Retirement Saving, 1997.

be invested, and how much funding the system should have.³ To organize the issues for these three questions, the paper begins with a discussion of a funded defined contribution plan with no individual choice about either the portfolio or the form of retirement income. This type of plan is then contrasted with a funded defined benefit plan, which also has no individual choice. The paper then considers individual choice about the form of retirement and survivor benefits, with particular attention to the possible effects on widows, who are, on average, much poorer than elderly couples. After considering portfolio choice for a central fund, the paper considers individual choice of portfolio, with particular attention to the costs of implementing different methods of individual choice. The paper then considers the implications of having greater funding. Then, the implications of system design for the labor market are examined.

The major economic issues in Social Security reform are, by and large, not controversial. More funding for Social Security involves higher taxes (or lower benefits) in the near-term in order to have lower taxes (or higher benefits) in the long-run.⁴ More funding can reduce the frequency of needed adjustments to Social Security and can increase national savings (beyond the increase that would occur with a traditional Social Security reform). More funding can improve the net financial position of future generations, but only at the cost of worsening the net financial position of current generations (referred to as "moneysworth").⁵ These economic effects are similar whether the system has individual accounts or not, although the politics will differ.

Just as individuals are generally advised to hold diversified portfolios, and not just Treasury bonds, the basis for that advice applies to the economics of the portfolio of a central fund. This applies to a defined contribution system and to a defined benefit system. Indeed, a defined benefit system that adjusts well to changing circumstances is better able to handle risk than is a

³ The focus is on alternative proposals which preserve the basic role of Social Security, not the logic of filling such a role. The paper does not consider proposals that eliminate redistribution within Social Security. The paper does not consider proposals to means-test (or affluence-test) Social Security. Such proposals, which relate Social Security benefits to annual income with large implicit taxes, represent taxation of individual savings. Significant taxation of savings does not seem to be a useful part of proposals to increase national savings. Moreover, such proposals would change the basic political status of Social Security.

⁴ The often-used term, "transition costs," does not convey the underlying issues of intergenerational equity implicit in the timing of tax increases and benefit cuts.

⁵ For a discussion of moneysworth calculations and the difficulties in their interpretation, see Geanakoplos, Mitchell, and Zeldes (1998).

defined contribution system. Portfolio diversification has economic advantages for Social Security participants and for the economy generally. Economically, the case for diversification is clear; but political questions arise about the ability of Social Security to invest well and to avoid improper interference in corporate governance. Introducing individual choice of portfolios and expanding the options beyond a set provided by the government are both responses to these political concerns. It also allows diversity in individual portfolios. In turn, such a move adds to administrative costs and raises questions about the quality of individual investment decisions. It also raises the political question of being able to maintain a mixed system with any given level of redistribution. People hold different values when assessing the importance of different levels of income redistribution and when assessing the importance of allowing additional elements of individual choice. It is unclear whether individual accounts would make the labor market more or less efficient.

My bottom line is that a well-run defined benefit system is economically more efficient than a mixed defined contribution/defined benefit system.⁶ The real issue then becomes how well the US government can run a defined benefit system relative to how well it can run a mixed defined contribution/defined benefit system. That is, the basis for genuine disagreement on system design rests on different values and different political expectations, not different economic evaluations.

I Benefit Determination with a Funded Defined Contribution Plan

In order to clarify the differences in risks between defined contribution and defined benefit systems, it is useful to start with the concept of a funded defined contribution system without any individual choice about the portfolio.⁷ For comparison purposes, assume that the accumulations in individual accounts are used to finance real annuities after retirement, given interest rates and

⁶ To be "well-run," a social security system needs more than just to be "well-administered." A well-administered system is a social security institution that administers the legislated social security system well. A well-run system is well administered and also has initial and subsequent legislation that are timely and of good quality for the underlying purposes of the social security system. The Social Security Administration has given us a well-administered system. Congress has a mixed record for making Social Security well-run.

⁷ A defined contribution system without any individual portfolio choice is called a provident fund system. A number of countries (including Malaysia and Singapore) have had provident funds.

mortality expectations at the time of conversion of an account into an annuity.⁸⁹

The goal of such a system is to accumulate a sufficient fund to support a target income for participants during retirement. The target is generally expressed as a replacement rate that gives the ratio of real benefits to real earnings toward the end of a worker's career. The required rate of savings for a given replacement rate depends on the rate of interest and the rate of growth of wages. Since both wage growth and real interest rates have varied greatly over time, so too has the savings rate required for adequate benefits. Thus a defined contribution system needs periodic adjustment in savings rate if it is to fulfill its social goal.

Once a savings rate is selected, however, a defined contribution system places the risks associated with fund accumulation squarely on the workers.¹⁰ Their ultimate benefits will depend on the growth in their earnings and on the returns earned on the portfolio held in their accounts.¹¹¹²

8 Other options include lump-sum withdrawals, phased withdrawals (where monthly amounts are limited by a formula), choice of different types of annuities, and combinations of the above.

Another dimension of variation is whether benefits are available at some "retirement age" or only if satisfying a retirement test. Moreover, individuals might have some choice as to when benefits begin, with some adjustment of benefits for the age at which they start.

9 Changing to a partially defined contribution system also requires adjustment of disability benefits. This is complicated since disability is an event that needs insurance and is not adequately dealt with by simple accumulation. The Advisory Council on Social Security (1997) has two proposals that have individual accounts and so a need to adjust disability benefits. Both the Individual Accounts (IA) and the Personal Security Accounts (PSA) proposals reduce disability benefits relative to retirement benefits, compared with current law. It would be good to have a detailed analysis of the merits of such a change.

10 This paper does not review different simulations and calculations that describe the magnitude of the risks and the variations in outcomes with different portfolios. For stochastic simulations, see Goodfellow and Schieber (forthcoming, 1998) and Olsen, VanDerhei, Salisbury and Holmer (1998). For calculations directly based on historical data, see Burtless (1997) and Thompson (1998).

11 Redistribution can be added to such a system by doing transfers among accounts either when deposits are made or when the accounts are annuitized.

12 One also needs rules for the accounts of workers who die before reaching retirement age. Using the 1991 period life table, 81 percent of 20-year-old males and 89 percent of 20-year-old females would survive until age 62. With a defined benefit system, the lack of benefits for workers dying before retirement age is used to increase the benefits of those who do survive. A defined contribution system could imitate this pattern, although the natural political response is to give the accounts to the estates

In addition to the risk during the accumulation process, workers also face a risk as they convert accumulated reserves into an annuitized flow of income during retirement. The value of the real annuity that can be financed by a given accumulation will depend on the mortality table and interest rate used in the conversion of the accumulation into a promised benefit flow. The mortality table expresses the probability that payments will still be made at different dates in the future, and the interest rate is used to discount those payments back to the date when the accumulation is converted into a promised benefit flow.

With a defined contribution system, the risk of interest rates at the time of annuitization is squarely on the individual worker. For a given accumulation, workers who retire when real interest rates are high will receive a larger real annuity than those who retire when real interest rates are low. This risk can be somewhat attenuated by annuitizing part of the fund in successive years near retirement age or by allowing the worker some choice as to the date of annuitization.¹³ Also the risk can be hedged by moving the accumulation portfolio to one predominantly of long-term bonds, which matches the portfolio used by insurance companies when pricing annuities.¹⁴

While the interest rate involves risk for the individual, mortality assumptions involve risk for society, as a cohort of workers might turn out to live longer than expected on average.¹⁵ Mortality improvements have been uneven over decades in the past, and projections for the future are highly controversial. A defined contribution system leaves that risk with the government if annuities are provided publicly, or with the market if annuity provision is privatized. Either way, a risk premium has to be paid, implicitly (by the government) or explicitly (through privatization).

In addition to consideration of mortality of the entire cohort, the question arises of whether to have different annuity prices for different members of a cohort. For example, one might use different tables for men and women, or for healthy and unhealthy workers. Any decision about different prices for different risk

of the deceased workers.

13 A more extreme version would have rolling annuitization on an annual basis, as was proposed by Boskin, Kotlikoff and Shoven (1988). Currently, US workers can delay claiming social security benefits after retiring until age 70 in order to receive a larger annuity, and some do. See Coile, Diamond, Gruber, and Joutzen (1998).

14 I am grateful to Stewart Myers for this point.

15 Blake, Burrows and Orszag (1998) have proposed that the government issue mortality bonds, bonds with a payment that varies with aggregate mortality, to help insurance companies bear this risk.

classes (either allowing them or not allowing them) contains implicit redistribution.¹⁶

The evolution of mortality rates has two aspects - the response of retirement benefits to the trend in mortality and to the uncertainty about the trend. If the savings rate and the retirement age are both fixed, a decreasing trend in mortality rates - that is, longer life expectancy - will require lower annual benefits. In other words, with increased longevity, a defined contribution system has steadily declining replacement rates unless it adjusts the savings rate or the retirement age or both.¹⁷

How the system should respond to the trend in mortality depends on the trend in the ability and interest of participants to continue working. This will vary with developments in health, in job availability and in lifetime earnings (since better-off cohorts are likely to prefer earlier retirement).¹⁸ Presumably both ability to work and interest in working should increase along with increased life expectancy, but not necessarily in lock-step. Thus, an optimal response to an increasing trend in life expectancy is likely to be a less-than-proportional increase in retirement age and therefore an increased need for savings for retirement. Thus, a defined contribution system would have an increasing early entitlement age and a tax rate that increases across cohorts.¹⁹ This raises a number of issues. While the economics of steadily increasing tax rates is straightforward, the politics of it may not be.²⁰

Separate from adapting to the trend in mortality is responding to the uncertainty in this trend. Over time, more is learned about the trend as it affects a particular cohort. If tax and early entitlement ages do not change, then only expected retirement

¹⁶ Combining men and women in a single risk class redistributes from men to women on average. However, having separate risk classes for men and women implies that a man with a given life expectancy has a higher benefit than a woman with the same life expectancy.

If annuity pricing varies with health, then, young workers do not know what risk class they will be in when older, an additional source of risk.

¹⁷ Increasing the Normal Retirement Age for Social Security is a method for cutting benefits; it may not change the average age at which benefits are claimed.

¹⁸ Costa (1998).

¹⁹ A separate question is whether a given cohort should have an age-varying tax rate, as is the case in Switzerland.

²⁰ With positive interest rates, increases in life expectancy require less-than-proportional increases in tax rates to finance a given replacement rate. Varying cohort-specific tax rates would complicate tax collection. In addition, a steadily increasing early entitlement age would result in increasing use of the disability program.

benefits change as this uncertainty is played out. If it is better to adjust tax and early entitlement age as well as benefit level, then periodic legislated changes are needed. While a defined contribution system can be left unchanged, it is not likely to balance taxes, benefits and retirement age optimally without legislative adjustments.

II Benefit Determination with a Funded Defined Benefit System

In order to appreciate the differences across systems, this section describes how a funded defined benefit system responds to returns on the trust fund portfolio and to both the trend in mortality and the resolution of uncertainty in mortality.²¹ With a defined contribution system, workers bear risks of accumulation and annuitization. As the system moves toward a defined benefit arrangement, it shifts risk from the retirees to other participants in the system. And since the past is always history, it also shifts risk forward in time.²² The central question for a defined benefit system is how benefits and taxes are adjusted over time in response to economic and demographic developments that affect trust fund size.

Defined benefit systems can be structured in a variety of ways. At one end of the spectrum, a defined benefit system can be legislated to be the same for all future cohorts until new benefits or taxes are enacted. An intermediate position is to legislate a set of future adjustments in benefits and taxes for later cohorts, who are presumed to have longer retirement lives. This has been the usual status of the U.S. Social Security program. And, at the end of the spectrum closest to a defined contribution system, benefits could be indexed to life expectancy as each cohort reaches early entitlement age.²³ These systems would respond differently to both the trend in mortality and information about the uncertainty about that trend. Thus, different defined benefit systems spread risks in rates of return and in mortality uncertainty differently from each other and from a defined contribution system. With a defined benefit system, the risks can be spread more widely, with the economic advantages that come from wider pooling of risks.

Currently legislated indexing for inflation and wage growth have decreased the frequency of significant Social Security legislation. Indexing of retirement ages to life expectancy would decrease it even further. Incorporating future tax and benefit changes into current law also can reduce the frequency of

21 Many studies have compared defined benefit and defined contribution systems; see, for example, Bodie, Marcus, and Merton (1988), Diamond (1995).

22 The analysis assumes that the already retired do not bear significant risk from benefit adjustments after retirement.

23 Sweden is enacting such legislation.

legislation. Nevertheless the program would still need periodic adjustment, even if infrequent, in order to respond to economic and demographic developments. Thus a central issue is how well a defined benefit system adjusts to economic and demographic realizations that are different from what was planned on. Legislative responses to deviations of trust fund outcomes from trust fund expectations can vary in several dimensions. One is the frequency in response - one can consider infrequent large adjustments and more frequent smaller adjustments. One can have phased-in adjustments or abrupt adjustments. One might have asymmetry in benefit increases and decreases (and also for taxes).

As a program for the entire working population (and their dependents), large abrupt changes in Social Security benefits would be hard on many people. Insulation from the short-term fiscal needs of the government and a forward-looking approach to legislation for actuarial balance would contribute to achieving gradual changes. The political mechanisms currently contributing to gradual changes are an earmarked tax and trust fund for Social Security and a highly visible, professional annual projection of the financial position of the program by the Office of the Actuary.

Thus there is a common theme - how well systems are adjusted to changing circumstances is an important dimension in evaluating arrangements. A defined contribution system does not require adjustment to avoid insolvency,²⁴ but it does require adjustment if it is to adapt to changing circumstances. Even an indexed defined benefit system will face circumstances that change beyond what was built into the indexing. If these adjustments are done well, a defined benefit system is economically more efficient at spreading risks than a defined contribution system. But the quality of the political adjustment of the system is central to the comparison of different systems. Without any adjustments, as mortality rates fall, a defined contribution system has shrinking replacement rates while a defined benefit system has growing revenue needs. The quality of both systems as providers of retirement incomes depends on political responses in terms of frequency and quality of adjustments.

III Annuitization and Family Protection

In the comparison above, it was assumed that annuitization rules were set by the government. A proposal might allow individual choice about annuitization or a proposal that tried to mandate annuitization might find it politically impossible to

²⁴ This statement needs to be modified by recognizing the potential for insolvency in the funds paying for annuities, whether held by private insurance companies or publicly through an earmarked trust fund.

implement.²⁵ Thus, it is important to consider the types of decisions that people are likely to make about annuitization of their accumulations.

This raises two issues. One is the extent to which people make good choices for themselves. The second is how annuity decisions will affect the longer-lived family member, most commonly a widow. Any movement toward individual choice needs to have its impact on the economic position of widows assessed very carefully. The poverty rates of widows are already much higher than those for couples (see Table 1) and women who become widows have a sharp fall in their ratio of income to needs (Holden, forthcoming 1998). Indeed, many analysts have called for greater protection of widows within the current Social Security structure.²⁶

Left to their own devices, people do not take much advantage of annuities. The current individual annuities market in the US is extremely small.²⁷ Adverse selection is part of the explanation, but the market is smaller than can be explained by adverse selection alone. Moreover, evidence from the UK suggests that people purchasing annuities do not purchase inflation protection when they have the opportunity. Even though real government bonds and real annuities have been offered for some time in the UK, individuals overwhelmingly choose nominal annuities.²⁸

25 The Advisory Council on Social Security (1997) has two proposals that allow individual choice in the form of benefit receipt. The Personal Security Accounts (PSA) proposal places no restriction on the form of benefit receipt. The Individual Accounts (IA) proposal mandates annuitization and allows a choice between single- and joint-life annuities. An intermediate position on annuitization, similar to the approach in Chile, could limit the size of monthly withdrawals for any part of the retirement account that is not annuitized.

26 See, for example, Burkhauser and Smeeding (1994).

27 Friedman and Warshawsky (1990), Mitchell, Poterba and Warshawsky (1997), Poterba (1997). It is important to distinguish between the actual purchase of a payment flow conditional on survival and "variable annuities," which are tax-favored savings vehicles with insurance companies that include an option to annuitize. This option appears to be infrequently taken (Treasurer, 1998), although I know of no published data to support this proposition.

28 "The majority of annuities sold in the UK are fixed-rate. Contacts of the Bank of England have told them that while there are no aggregate data, it is likely that more than 90% are fixed-rate. In particular, where individuals have discretion as to the type of annuity to buy, they appear to prefer fixed-rate annuities. Legal and General, one of the UK's largest insurers, sold no index-linked annuities to individuals in 1996, and less than 1% of their individual annuities in force are index-linked." Alex Bowen, personal communication, 1997.

Similarly, left on their own, many workers tend to select single-life as opposed to joint-and-survivor annuities, which would continue payment to a worker's spouse after the worker's death.²⁹ Single-life annuities were very popular in employer-provided retirement plans prior to ERISA (1974). This pattern began to change when ERISA provided for a 50 percent joint-life annuity as the default provision. Holden (1997) estimates that 48 percent of men with pensions beginning before 1974 had joint-and-survivor pensions, while 64 percent of those beginning after 1974 did so. Similarly, the US GAO (1992) estimates that the percentage selecting a single-life annuity dropped by 15 percentage points after the 1984 Retirement Equity Act (REA), which required notarized spousal approval before selecting a single-life annuity.³⁰ Thus, the degree of joint-life annuitization is very sensitive to system design.

The effects of annuitization choices can be seen in the New Beneficiary Data System.³¹ A sample of new Social Security beneficiaries was interviewed in 1982, and reinterviewed in 1991. While the median value of real pension income fell 23 percent for intact couples between the interview dates, the median value of real pension income fell by 75 percent for those couples where the wife was widowed between the interview dates.³²

In short, when evaluating a shift from today's defined benefit system to a defined contribution approach, it is important to consider not only the effect on the worker, but also on the worker's family. Although there has been considerable discussion of changing the treatment of the family within Social Security,³³ changes seem much more likely with a shift to individual accounts. Thus it seems important to highlight the fundamental contrast between a defined benefit system with auxiliary benefits and a defined contribution system where the annuity protection

29 Mitchell, Poterba and Warshawsky (1997) report on an unpublished LIMRA International 1993 survey of 26 companies selling these products. They report that only 7 percent elected a joint-and-survivor option.

30 Using data from TIAA-CREF, King (1996) found that the percentage selecting single-life annuities fell from 44 in 1978 to 26 in 1994, with nearly half the decline occurring between 1984 and 1986. While some parameter estimates, though large, are not statistically significant, Tegen (1997) finds drops from both ERISA and REA.

31 Courtney Coile prepared these tabulations.

32 The median in the percentage change in real pension income was 20 percent for intact couples and 69 percent where the wife was widowed. This was a period over which the real value of a dollar fell by 29 percent.

33 See, for example, United States Department of Health and Human Services, 1985, United States House of Representatives Select Committee on Aging, 1992.

for the family is paid for by the worker and may involve choice.³⁴ Without explicit redistribution to reflect family structure, such an individual account system would be a large change from our current structure, even if benefits were the same on average.³⁵ Any large change in structure will imply a different pattern of benefits across families, a difference that needs to be studied carefully.

IV Portfolio Choice for a Central Fund

Consideration of portfolio choice for a central fund involves two steps. One is the implication for the level and riskiness of benefits. The second is the impact on the rest of the economy. This issue is considered first for a funded defined contribution plan without worker choice; then for a funded defined benefit plan. In the next section the issues raised by worker choice of portfolio are considered.

The role of the government as portfolio planner for a defined contribution system should be to select the single portfolio that is best for the workers (on average). Current thinking of both academic and industry analysts would suggest a diversified portfolio with significant holdings of both stocks and bonds. In a closed economy, finance theory suggests as a first approximation holding the "market portfolio," which is the same fraction of all assets issued by capital using firms.³⁶ It would be very expensive to track down portions of all capital investment in the US; in risk-return terms, one can approximate this portfolio with a portfolio restricted to widely traded assets. One thing is clear - a portfolio exclusively of US Treasury securities is far from what finance theory suggests.³⁷

Unlike a funded defined contribution plan, the risks in the portfolio for a defined benefit system are spread over successive cohorts of workers. Thus, a possible stock market decline is spread more widely than just over the workers then invested in the market. As a result, workers covered by a defined benefit plan that adjusted well to market outcomes would be less averse to market risk than workers in a defined contribution plan. Thus, the portfolio appropriate for a well-run defined benefit system should be at least as risky as that appropriate for a defined

³⁴ A similar issue arises in the treatment of divorced spouses.

³⁵ In the mixed defined-benefit/defined-contribution proposals of the IA and PSA plans, the family structures of the defined benefit portions are similar to current law, but the defined contribution portion is different.

³⁶ Since the U.S. is an open economy, some investment abroad is desirable.

³⁷ Political issues in fund selection are discussed in other papers at this conference as are political concerns about government involvement in corporate decisionmaking.

contribution plan. Again, a portfolio exclusively of US Treasury securities is far from what finance theory suggests.

One can ask whether the size of Social Security relative to the economy argues for deviating from this rough guideline.³⁸ The argument has not been that such investments would be economically harmful to the economy. Rather, the argument has been that having the Social Security trust fund hold a balanced portfolio similar to those typically held by private plans may not be worth the trouble.³⁹ Alan Greenspan has testified that "unless national saving increases, shifting Social Security trust funds to private securities, while likely increasing income in the Social Security system, will, to a first approximation, reduce non social-security retirement income to an offsetting degree. Without an increase in the savings flow, private pension and insurance funds, among other holders of private securities, presumably would be induced to sell higher-yielding stocks and private bonds to the Social Security retirement funds in exchange for lower-yielding U. S. Treasuries. This could translate into higher premiums for life insurance, and lower returns on other defined-contribution retirement plans. This would not be an improvement to our overall retirement system."

This testimony does not acknowledge the dramatically different distributions of Social Security income, private pensions, and asset income among the elderly.⁴⁰ The differences can be seen by looking at the sources of income by quintile of the income distribution. For the bottom quintile, 81 percent of income comes from Social Security, while only 6 percent comes from pensions plus income from assets. For the top quintile, 23 percent comes from Social Security, while 46 percent is from pensions and assets - dramatically different percentages. Either Chairman Greenspan is arguing that those with little other wealth are so risk averse that their pension funds should not be invested in equities or he is suggesting that the distribution of retirement income among rich and poor is of no consequence. Neither of these propositions is right.

Greenspan's "first approximation" also does not recognize that spreading a given amount of risk more widely in the economy increases the efficiency of the capital markets, lowering the risk premium. The risk is spread not only by adding low-income and young workers to the risk-bearing pool, but also by being able to shift risk to future cohorts. This increase in efficiency lowers the risk premium - that is, the excess over the safe rate of interest that a borrower must pay because of the risk that the lender must

38 For discussion of these issues, see Munnell and Balduzzi (1998).

39 For example, those with large portfolios might simply alter the rest of their portfolio in response to a change in the Social Security portfolio, remaining with the same overall risk.

40 See Mitchell and Moore (1997), Social Security Administration, Office of Research and Statistics (1996).

bear. With a lower risk premium, borrowers are more willing to undertake risky investments.

In conclusion, widely diversified portfolios give a more efficient tradeoff of risk and return for both funded defined contribution and funded defined benefit systems. If the defined benefit system adjusts well to portfolio realizations, the defined benefit fund is better able to have a higher risk/higher expected return portfolio than is a defined contribution system.

V Worker Choice of Portfolio in Defined Contribution Plans

Following the trend in private retirement arrangements, the two partially defined-contribution proposals coming from the Advisory Council on Social Security (1997) allow workers to have some choice over their portfolios. The proposals differ in scale and in the form in which worker choice is provided and constrained. The Individual Accounts (IA) proposal models its defined-contribution element on current 401(k) rules.⁴¹ That is, the government selects a small number of funds and allows workers to allocate their accounts among them. The Thrift Savings Plan (TSP) for federal employees works this way. In contrast, the Personal Security Accounts (PSA) proposal models its defined-contribution element on current IRA rules.⁴² That is, individuals may choose among a wide variety of investment alternatives in the market, subject only to current restrictions on IRA investments. Since some reform proposals have more regulation than current IRA rules, the analysis also considers a more heavily regulated version of the IRA model, an approach that would be closer to the system in Chile.⁴³

Allowing workers to determine their portfolios increases administrative costs. The increase can be small as long as the government continues to hold all portfolios and provides limited services.⁴⁴ This approach allows different workers to hold different portfolios and individual workers to vary their portfolios as they age. Insofar as workers understand the

41 The IA plan has 1.6 percent of payroll going into individual accounts, with the accounts automatically annuitized when the owners reach retirement age. To preserve roughly the current degree of progressivity in the system, the remaining defined benefit system is adjusted to recognize the removal of a linear (nonprogressive) portion.

42 After the transition, the PSA plan has a two-tier system - a flat benefit and individual accounts that receive 5 percent of taxable earnings. The proposal places no restrictions on the form of retirement income once the worker reaches retirement age.

43 For descriptions of the system in Chile, see Diamond (1994), Diamond and Valdes-Prieto (1994), Edwards (forthcoming, 1998).

44 The Advisory Council assumed an additional charge of 10.5 basis points of accumulated assets.

principles of sound investment (which are themselves under dispute), they will be able to select portfolios better suited to their degree of risk aversion. Insofar as workers do not understand risk-return tradeoffs, they will make some investment decisions that can significantly lower the benefits of investment. Evidence on worker choice in 401(k) plans implies that individuals will differ greatly in portfolio allocations, ranging from completely in bonds to completely in stocks.⁴⁵ Since higher income workers are more likely to hold higher risk-higher expected return portfolios, they will usually receive higher returns and so have even higher retirement incomes relative to low income workers.⁴⁶

Some analysts are concerned that government selection of available portfolios - that is, the 401(k) approach leaves too much of the investment decision in the hands of the government. Shifting to the IRA model significantly lowers the role of the government in the capital accumulation process, but it also increases administrative costs and the scope for very poor investment choices.⁴⁷ One possible response to both of these concerns is greater regulation of financial intermediaries handling the accounts, which is considered below.

The Advisory Council assumed that the administrative charges for accounts with the PSA plan would be one percentage point of assets under management per year. The Council also assumed that the same percentage would apply for workers with different account levels. Yet a large part of the cost of account maintenance is a fixed cost per account - record keeping and communication with account holders. Collection and processing of deposits has a large fixed cost component as well. Thus, one would expect that, without subsidization, charges would be higher relative to assets for low earners than for high earners, as has been the case in Chile.⁴⁸ Moreover, if allowed, some workers would have accounts with several intermediaries, adding to total costs and reducing the average size of accounts.⁴⁹ Workers with

45 For evidence on 401(k) holdings, see United States General Accounting Office (1996) and Yakoboski and VanDerhei (1996).

46 These differences may generate political pressure for adjustment.

47 The two models may be different political environments for legislating rules about early access to accumulations and government mandates on annuitization.

48 Currently, many mutual funds have minimum size accounts, keeping out small accounts. Also, some mutual funds have higher charges for small accounts (by waiving some of the fees for larger accounts).

49 With the IA plan, the Social Security Administration would have a single account for each worker. Unless all revenues flow through the government, the PSA plan has no mechanism to combine accounts that workers might have placed with different intermediaries. Some people have argued that diversification across mutual funds is itself of value.

multiple jobs (simultaneously or with short employment spells) are particularly liable to start multiple accounts.⁵⁰ Indeed, this has been a problem in Australia. To see the magnitude of multiple jobs even within a year, note that in 1993 employers filed 223 million W-2 reports for 128 million wage and salary workers.

The importance of these fixed costs relative to the size of deposits is highlighted by the fact that the distribution of Social Security earnings has considerably more low earners than does the distribution of earnings of full-time adult workers (Table 2).

To gain some idea whether the assumption of 1 percentage point per year is a reasonable estimate for the IRA approach, it is useful to look at the experience of other countries. While many commentators have noted the high charges in Chile,⁵¹ the experience in the UK may be more relevant. In the UK, workers can opt out of the earnings-related portion of the government defined benefit plan (SERPS) for an "appropriate personal pension."⁵² The charges for these accounts are not regulated and appear in a wide variety of forms, not all of them visible to the workers. The pattern of charges has been described by the Government Actuary (Table 3). In addition to initial commissions, management fees and monthly charges, costs are also associated with early surrender, which Blake (1997) reports can be very large.⁵³ Costs are higher than assumed by the Advisory Council and include a sizable fixed component, although charges have been declining somewhat lately, a decline some attribute to the recent entry of index funds.⁵⁴ The complexity and magnitude of

50 With multiple accounts, one would expect that some would get "lost," with intermediaries unable to locate the owners.

51 See, for example, Diamond, and Valdes-Prieto (1994), Edwards (forthcoming, 1998), and Valdes-Prieto (1994). While some people have argued that it is the nature of regulation in Chile that has caused the high costs, I am skeptical of this conclusion. I have not seen a formal equilibrium model that would show that regulating the structure but not the level of charges leads to an equilibrium with high charges and high sales costs. Moreover, the charges are lower in Chile than in the UK, where similar regulation does not exist. I think that the high costs are inherent in reliance on individual choice in this kind of market.

52 Having an optional defined contribution plan replace part of Social Security has been suggested in the US. In the UK, the option has resulted in high-pressure sales tactics leading some people to switch inappropriately. Some suppliers have been reprimanded and have had to pay compensation. See Blake (1997).

53 "we found that surrender values for with-profits endowment schemes were on average 27% below maturity values when cashed in just 1 year to maturity." (Blake, 1997, page 289.)

54 With limited data, Blake and Orszag (1997) use a nonlinear regression to estimate the contribution charges and fund management charges of a typical worker. Using these estimated values, they calculate that a typical worker would pay about 20 percent of the value of the pension in charges, lower than the figure that the Government Actuary would find and roughly the same as would follow from the 0 contribution charge and 1 percent fund management charge assumed by the Advisory

charges would create considerable logic and pressure to regulate the form of charges.⁵⁵ This would be similar to the experience that led to regulation of allowable Medigap policies.

The wide variety of charges for fund management can be put into a common frame by comparing the ratio of the pension accumulation available at retirement with a given set of charges to the pension accumulation that would be available if there were no charges.⁵⁶ The charge ratio is defined as the percentage decline in account value as a result of the charges. As shown in Table 4, the charge ratio depends on the contribution history of the worker and the rate of return on the portfolio as well as the structure of charges.⁵⁷ For a worker with a 40-year career, exponential wage growth of 2.1 percent per year and a portfolio that earns 4 percent per year, a 1 percent management fee reduces the value of the account by 20 percent. Higher wage growth reduces the charge ratio, since more contributions are made later in the worker's career and thereby subject to the management fee for fewer years. A lower management fee reduces the charge ratio roughly proportionally over the relevant range. A shorter working career, ending at retirement, also lowers the charge ratio.

The next line in Table 4 shows that the charge ratio of a "typical provider" in the UK, not including the flat charge of 2.5 pounds per month, is 24 percent, higher than the 20 percent that would result from the 1-percent annual management fee assumed by the Advisory Council for the PSA plan.⁵⁸ The last three lines in the table illustrate that front loads result in a charge ratio which is equal to the front load.

Table 4 indicates the importance of comparing front-load charges to annual management fees in a consistent framework, since they differ greatly in importance for the same percentages. For example, the total administrative costs of the Social Security Administration are less than one percent of annual taxes collected. If all of this cost is attributed to the collection of contributions and record keeping, ignoring the cost of providing annuities, this can be considered a front load of 1 percent. This would result in

Council for the PSA plan. Blake and Orszag are currently redoing their estimate using a more complete data set.

55 Describing UK experience, Blake (1997, page 289) writes: "charges can be imposed in a bewildering variety of ways."

56 Blake and Orszag (1997).

57 Derivation of the equations used to calculate the table is in the appendix. In considering a rate of return, one needs to adjust for costs, such as brokerage commissions, that are normally deducted from reported returns rather than bundled with other charges.

58 This calculation also does not count other costs, such as the bid-ask spread, that are not quantified by the Government Actuary.

a charge ratio of 1 percent. In contrast, a 1 percent annual management fee has a charge ratio of 20 percent.⁵⁹

In addition to increased costs, the IRA approach also raises the issue of policing of funds to hold down misrepresentations and outright fraud. Fraudulent investment schemes have long existed and a large influx of inexperienced investors might result in a surge of both misselling and fraud.⁶⁰ In the UK, individuals face a variety of complex arrangements for their opt-out accounts. The attempt to use the market to serve a heterogeneous population will inevitably create the potential to confuse and take advantage of some of them.⁶¹ Whatever restrictions are introduced to protect consumers would be expected to be larger in a setting of mandated purchase rather than voluntary purchase.

Administrative costs could be held down by limiting them as a condition of accepting such deposits.⁶² The government could introduce a cap on administrative charges as a percent of the size of the account. However, different types of funds have different cost structures, and would need different caps (stock vs bond, index vs nonindex, domestic vs foreign investments, direct investment vs holding financial assets). One would also need to be diligent about the different ways in which charges can be introduced into portfolio management; for example, the charges on CD's are built into the interest rate offered. With a restriction on charges, firms may try to refuse to accept particular (small) accounts. This would be likely to become a political issue as well as affecting economic outcomes.

More generally, it might be possible to ease both the administrative cost and the poor choice of investment problems by much tighter regulation of allowable portfolios. For example, the government might restrict allowable investments to widely diversified mutual funds agreeing to low administrative charges. But, moving in this direction reintroduces the concerns that have been expressed about direct government selection of available funds. It is not clear whether the political issues would be larger or smaller with heavy regulation than with direct government design and holding of portfolios.

In addition to the administrative costs that would be borne by the workers, additional costs would arise in getting withheld

⁵⁹ In comparing defined contribution and defined benefit systems one needs to include a charge for the conversion of an accumulation into an annuity as well.

⁶⁰ In addition to the impact of misselling and fraud on retirement incomes, they could affect the political stability of a privatized proposal.

⁶¹ Just as we do not want a nirvana theory of government behavior, we should not use a fantasy theory of the workings of markets.

⁶² Dickson (1997), Goodfellow and Schieber (forthcoming, 1998).

funds from employers (and the self-employed) to the financial intermediaries.⁶³ While these transfers could be tacked onto existing 401(k) plans for roughly one-quarter of the population at any time, rules for mandated savings are likely to differ from current 401(k) provisions. In any event, new arrangements would be needed for the rest. The cost of these arrangements would depend on how frequently the deposits were made into individual accounts.⁶⁴ At present, neither the Social Security Administration (SSA) nor employers need to track individual payroll taxes more than once a year.⁶⁵ Yet individuals are likely to want their withheld payments deposited more quickly. If payments to funds were done privately, then firms would need to send payments to many institutions, although clearinghouses would probably arise to handle payments.

Currently the IRS and SSA are responsible for assuring that withheld taxes reach the Social Security trust funds and that individual taxable earnings are correctly recorded. Each year SSA processes W-2 reports for roughly 220 million employees from about 6.2 to 6.5 million employer reports. Of these reports, over 5 million are on paper, with employers filing on paper averaging about 12 employees. SSA finds mismatches between what employers report as names and Social Security numbers of their employees and what Social Security has in its records. SSA has computer routines to pick up common mistakes - transposed digits in the Social Security number or common variations in spelling names. After this, SSA ends up with 6 million cases (out of about 220 million, roughly 3 percent) each year of W-2 reports with missing information or an inability to match. In these cases SSA corresponds with the employee or employer. A question is who would play this role in a system of individual accounts if payments to funds were done privately.

Another issue arises with tax payments that are not made, as is the case with some firms approaching bankruptcy. Currently, the cost falls on the Social Security, not on the individual workers, since benefit determination is based on taxable earnings, not on tax payments received. Presumably a similar guarantee would not be present with private payment mechanisms. So someone would need to police this system. Unless the money flowed through SSA, some of the economies of scope now present would be lost.

63 Pozen (1997).

64 Charges by financial institutions will also depend on the frequency of deposit into the accounts. Many mutual funds have minimum deposit amounts as well as minimum account sizes.

65 While employers make frequent tax payments, they only need to allocate those taxes to individual workers once a year. Until 1978, quarterly reporting of individual records was required. This was changed to annual reporting to ease administrative burdens on employers.

In addition to the costs of generating and monitoring the flow of money, a system of individual accounts with worker choice would need worker education. Many firms that have 401(k) plans provide education in investment for their workers. Such education does affect worker portfolio choices.⁶⁶ Who will control the nature of the education offered and who will pay for it are issues.

A further issue comes from the interaction between Social Security and the SSI program. The SSI program guarantees a minimum income to the elderly, subject to an asset test. Thus a poor worker near the point of eligibility for SSI has little to lose and much to gain from holding a high-risk portfolio. Without further regulation, the PSA plan places no limit on the risk that can be found in the market. Such activity could raise the cost of SSI, making it more difficult to increase the basic support level, a move that some analysts think would be worthwhile.

To summarize, adding individual portfolio choice to a defined contribution plan without choice involves additional costs, large ones if the government does not hold the portfolios. The possible economic gains from such a change depend on the balance between a better match of portfolios with individual preferences for some investors and an inferior portfolio choice by some people who are inexperienced, make mistakes, or are taken advantage of in the market.

VI Building a Larger Trust Fund

It is possible to build and maintain a trust fund considerably larger than has been the experience with Social Security either within the current structure or within a system of individual accounts.⁶⁷ Interest in a larger fund comes from two sources. From the perspective of Social Security, a larger fund implies a

⁶⁶ Bernheim and Garrett (1996).

⁶⁷ As is well known, in a steady state the rate of return to participants in a strictly pay-as-you-go social security system is the rate of growth of the economy, while the rate of return in a fully-funded system is the rate of interest. With a funded system, if the rate of growth exceeds the rate of interest and is expected to remain higher for the rest of time, then the economy is oversaving and can have a Pareto gain by decreasing funding. It is important to note that the converse is not true. Having the rate of growth be less than the rate of interest, does not imply an opportunity for a Pareto gain by increasing funding. Indeed, in this case, the simple comparison of the rate of growth and the rate of interest is not a sufficient statistic for considering the advantages of increased funding. When considering funding, one must consider both the generations paying to build the fund and the generations benefiting from the existence of a fund built earlier.

more favorable return on Social Security for later generations at the expense of a less favorable return on Social Security for current workers (and possibly retirees).⁶⁸ From the perspective of the entire economy, building a larger fund is a way to increase national savings by having a larger net flow of revenues to Social Security.

Building a fund requires taxing some workers (or retirees) now in order to benefit other workers who come later.⁶⁹ Anyone pointing out the benefits of a higher trust fund and then softly saying that there will be some "transition costs" is not giving equal weight to the two sides of this tax and transfer. Building a fund makes Social Security financially more valuable to workers coming later, at a cost of making Social Security financially less valuable for those paying the tax to build the trust fund. This is the mirror image of the historical fact that Social Security has been made less valuable for current workers as a result of having been made more valuable for earlier cohorts.

Within a defined benefit system, any additional amount of funding can be selected. If the defined benefit portion of a mixed system is continued on a contingency reserve basis, then the degree of funding overall in a mixed defined contribution/defined benefit system depends on the size of the defined contribution portion. The larger the degree of funding, the greater the combination of benefit cuts and tax increases needed to accumulate such a fund. The larger the benefit cuts, the smaller the tax increase needed. In addition to the size of funding sought, the speed with which the fund is built up affects the size of initial tax increase needed and the distribution of the cost of building such a fund across different cohorts. For example, the PSA plan, which allocates 5 percent of the 12.4 percent FICA tax to individual accounts, calls for a 1.52 percent payroll tax increase for 72 years (along with borrowing \$1.9 trillion from the Treasury and repaying it with interest). If the proposal had a different pattern of benefit cuts, it would need a different tax rate. If it had a shorter "transition period," it would need a larger tax increase. If the funded portion were smaller, the tax increase needed would be smaller.

When considering how much additional net revenue to accumulate in Social Security, it is important to consider the

68 A larger trust fund would also alter the economics and the politics of future adjustments of the system. Different institutional designs may affect the political stability of maintaining a larger fund.

69 It is the building of a trust fund that is relevant here, not the form of social security or of asset management. Insofar as the trust fund is able to earn a higher rate of return by changing its portfolio (beyond the necessary compensation for bearing risk), this additional return can also be saved to benefit future generations and to increase national savings and so wealth.

tradeoff, per dollar, between costs to those paying additional taxes or receiving lower benefits and the benefit to those receiving a better funded Social Security system. One way to put this question is how much a trust fund buildup now can reduce the steady-state payroll tax in the future, benefits held constant. A number of factors will influence that tradeoff.⁷⁰ Moreover, the tradeoff can be considered within the context of Social Security and then in the context of the entire economy. As a starting place, assume that Social Security tax changes and the induced fund buildup do not change labor supply, wages or the interest rate. In this simple model, each dollar of trust fund accumulation reduces steady-state taxes by the excess of the rate of interest over the rate of growth of the economy. That is, the additional amount in the trust fund earns the rate of interest. However, the trust fund must grow by the rate of growth of earnings in order to maintain the trust fund relative to benefit expenditures. Thus the steady-state payroll taxes are reduced by the difference between these two rates times the amount of increase in the trust fund. In an economy with a rate of interest of 4 percent, average wage growth of 1 percent and labor force growth of 1 percent, an additional dollar placed in the fund will earn 4 cents, of which 2 cents are needed to keep pace with economic growth, while 2 cents can be used to lower taxes.

Since some of any steady-state payroll tax reduction is saved, capital is increased by more than one-for-one with the increase in the trust fund. This tendency is diminished to the extent that some people do not save, to the extent that corporate pensions might decline (beyond any offsetting private savings), and to the extent that other government spending increases net of other taxes. Indeed the politics of the response of the rest of the government budget to changes in Social Security is likely to be the single most important element in determining the impact of Social Security changes on national savings.

Whatever the size of the capital increase after adjusting for these factors, the increased capital will increase wages and decrease the interest rate. These feedbacks directly change government revenues and change savings propensities. A decline in the interest rate lowers the return on the trust fund, decreasing the gain to Social Security. The increase in the wage increases payroll tax revenue and the cost of supplying benefits for a given replacement rate. Net, these two effects lower the gain to Social Security from the simple effects described above. Without detailed computer simulated modelling, it is hard to evaluate the

⁷⁰ A natural starting place for this analysis is a two-period overlapping generations model. For details, see Bohn (1997, forthcoming 1998), Diamond (1998).

full impact on Social Security and one should be very skeptical of calculations without the full set of feedbacks.⁷¹

A trust fund buildup and induced drop in the steady-state payroll tax rate also has an impact on the rest of the economy. So let us examine the impact on the rest of the government budget, continuing to assume no direct response in the rest of the government spending or in tax rates.⁷² Three pieces are central in considering the rest of the government budget (and these three pieces each involve feedbacks on equilibrium). Any increase in capital accumulation as a result of the trust fund build-up will increase revenue from the taxation of capital income. In addition, the increase in capital reduces the interest rate, which decreases both income tax revenue and the interest burden of the national debt. Increased capital raises the wage, increasing revenue from the income taxation of earnings. Thus the impact on the unified budget and the impact on Social Security are quite different. Since Social Security is a system financed by an earmarked revenue source and since the burdens of Social Security taxes and of other taxes are distributed differently, this distinction is important. Moreover, this raises the obvious point that if the nation wants to increase national savings by raising taxes, this can be done through the income tax as well as through the payroll tax.

A larger trust fund is a way of making Social Security more valuable for future generations at a cost of making it less valuable for current generations. It is also one way, among many, of increasing national savings by raising taxes or cutting benefits.

⁷¹ Feldstein and Samwick (1997) use a 9 percent rate of interest in their calculations for individual accounts. The analysis in their paper applies as well to the buildup of a trust fund, with the exception that a central trust fund would have lower administrative costs, and so a higher rate of return. They estimate that a temporary increase in the payroll tax to fully fund the system would permanently lower the payroll tax rate to 2.02 percent. One can quarrel with their quantitative estimates. It seems to me unreasonable to make the combination of assumptions that all of marginal savings end up in the corporate sector, that a 34 percent increase in the capital stock has no effect on the rate of interest, that there is no market power in the corporate sector (so that the average and marginal returns to capital are the same), that the federal government can obtain the property tax revenues of local government for social security, that the administrative costs of individual accounts (under the IRA model) would be only 30 basis points, and that real annuitization can be accomplished by the private market using average mortality and the same 9 percent interest rate. Moreover Disability Insurance is ignored in their calculations, both disability benefits and the payment of OAI benefits to retired workers who were previously receiving DI benefits.

⁷² Alternative models of the behavior of Congress will naturally produce different levels of long-run capital accumulation.

Any restoration of actuarial balance is likely to reduce concern about whether Social Security will be there for young workers. The greater the degree of funding, the more the concern will be reduced.

VII Implications for the Labor Market

Some claim that switching from a defined benefit to a partially defined contribution system will improve the efficiency of the labor market by "tightening the link" between taxes and benefits. However, consideration of the effects of all components of proposals provides little support for the contention - it is not simple to compare labor market effects of different types of social security systems. Labor market concerns arise on two fronts - retirement decisions and the labor supply of younger workers who pay Social Security taxes.

It is evident that Social Security affects retirement decisions. Perhaps the largest impact is that the availability of retirement income permits retirement for those who would not have saved enough otherwise. Indeed the large fraction of workers retiring and claiming benefits as soon as they can supports the importance of this effect. The fact that the implicit taxation of continued work is small (and for some even a subsidy) at age 62 is evidence that income availability and not labor market distortion is critical for many 62 year old workers.⁷³ Nevertheless, the earnings test certainly affects the labor market behavior of some workers.⁷⁴

An earnings test provides less in benefits for those who are still earning substantial incomes, in order to finance larger benefits for those who have stopped earning and for the later years of those still working.⁷⁵ Some of the people retiring early have had a loss of good earnings opportunities, while others are choosing to retire early despite the continuation of good opportunities. Naturally, this source of insurance against the loss of good earnings opportunities distorts the labor supply of some who still have good opportunities, just as all insurance with asymmetric information distorts some decisions. But the goal is not to avoid all labor market distortions, but to balance the labor market distortions with the improved insurance that is only

73 Diamond and Gruber (forthcoming 1998).

74 Friedberg (forthcoming 1998).

75 Individuals differ in work and retirement plans. Any individual faces uncertainty about future health, job satisfaction, and job opportunities. Both individual differences and stochastic realizations result in an enormous variation in lengths of working life. Just as we are concerned with both redistribution and insurance for earnings levels, we are concerned with both issues relative to the length of working life. Thus a retirement system has considerable scope for providing redistribution and valuable insurance of this risk.

possible with some distortions. Estimates of the impact of changing Social Security on average retirement ages generally show small effects. Moreover, one need not have a defined contribution system just to avoid an earnings test.⁷⁶

With regard to younger workers, economists have raised the issue of the extent to which the payroll tax distorts the labor market. Suggestions that switching to a defined contribution system will produce large efficiency gains are overblown. Distortions depend on the entire Social Security system, not just the portion in a defined contribution system. Any redistribution will create some labor market distortion, whether the redistribution is located in the benefit formula or in another portion of the retirement income system.

For example, the redistribution in the PSA plan comes from the one-half of the retirement portion of the payroll tax that finances the flat benefit. This half of the tax is purely distortionary.⁷⁷ With the progressive benefit formula in Social Security, the redistribution comes from marginal subsidies on low-income people and marginal taxes on high-income people, with different implicit taxes at different ages and for people with different age-earnings profiles.⁷⁸ Sorting out the optimal way to balance the distortions imposed at different places in the income distribution is a difficult problem - one that allows no simple assertions as to what system is better. The answer depends on both income distribution needs and elasticities of labor supply at different places in the income distribution.

In addition to the labor market distortions that come from redistribution, defined contribution systems have two further sources of distortion - one shared with defined benefit systems and one that is not shared. Society mandates taxation to finance retirement income because it believes that many workers would not save enough on their own for retirement. If some workers would not save, then they may undervalue the savings they are forced to do (whether through taxes or mandatory savings). If they undervalue the savings, then they view part of mandated savings as an implicit tax.⁷⁹ If people have high discount rates (whether from myopia or liquidity constraints) a dollar set aside

⁷⁶ The politics of an earnings test are likely to be different with different social security systems.

⁷⁷ Similarly, the SSI program has 100 percent marginal taxation of social security benefits from the earnings of low earners. A system with greater reliance on a guaranteed minimum pension amount for its redistribution, as in Chile, has higher distortion on low earners and a lower distortion for the rest of the population.

⁷⁸ For calculations of Social Security incentives for an additional hour of work, see Feldstein and Samwick (1992).

⁷⁹ While shadow prices may not be consistent across different decisions (Thaler, 1985), we would expect some of the distortion to carry over.

for future benefits that earns a market return is worth considerably less than a dollar. For example, one dollar compounded for 20 years at an 8 percent market rate and discounted back at an 18 percent subjective rate is only worth \$0.17. Thus, it is impossible to require higher savings without distorting labor supply, whatever the type of social security system.

Calculations of labor market incentives commonly assume that all workers survive until retirement age. Yet, with mortality rates in the 1991 period life table, 19 percent of 20-year-old males and 11 percent of 20-year-old females would die before age 62. Many people place a higher value on having consumption should they survive than on their estates. A defined benefit system gives larger benefits to those reaching retirement age, financed by the estates of those who do not reach retirement age. In contrast, for someone who does not value bequests at all, the accumulation in a mandatory savings account is of no value if he or she dies before reaching retirement age. Thus a defined contribution system involves distorting taxation of those with lesser interest in bequests. For example, a 30-year old male has an 18 percent probability of receiving no retirement benefits from mandated savings that become available at age 62.

In addition to variation in the actual links between earnings and future benefits, the form of pension provision may affect the perceptions of implicit marginal taxation. With a complicated benefit formula, people will not have fully accurate perceptions. They may well undervalue the return to work at some ages and overvalue it at others - particularly if the workers have in mind private pensions that are often based on earnings over a short period at the end of working life.

Defined benefit and defined contribution systems differ in their economic impact on labor supply, but share the necessity of distortions if they are to accomplish our goals for Social Security. There is little reason to think that a switch to individual accounts will significantly improve the labor market.⁸⁰

VIII Concluding Remarks

Americans differ in values, in prognoses of future politics and in estimates of the economic implications of alternative reform proposals. This paper has argued that the economics of different reforms shows individual defined contribution accounts to have lower returns (from increased administrative costs) and less satisfactory risk sharing than a well-run defined benefit system. Thus the heart of the reform debate is based on different values and different prognoses of politics, not substantial economic disagreements.

⁸⁰ No significant improvement has been observed in Chile; see James (1997).

People give different weight to individual choice relative to shared security. People have different levels of concern for income distribution outcomes and so the level of redistribution desired. People differ in their forecasts of how well either a central trust fund or individual accounts can be insulated from political pressures that would weaken their role as providers of retirement incomes. People differ in the importance they give to increased national savings and in the forecasts of how well the political process can respond to perceived needs for more national savings. Clarifying the economics of different retirement systems can help identify and frame the discussion on the real issues in dispute.

Appendix

We do the calculation in continuous time. Consider a worker who earns w_s at time s , assumed to grow exponentially at rate g :

$$(1) \quad w_s = w_0 e^{gs}.$$

The tax rate on these earnings is t . There is a proportional front-load charge of f , so that $t(1-f)w_0 e^{gs}$ is deposited at time s . This accumulates until retirement age T . The accumulation occurs at rate $r-c$, where r is the rate of return and c is the management charge per dollar under management. Thus deposits made at time s have accumulated to $t(1-f)w_0 e^{gs} e^{(r-c)(T-s)}$ at time T . The total accumulation at time T is the integral of this expression from time 0 until time T . Integrating, the accumulation depends on f and c and (for $g+c$ unequal to r) is equal to:

$$(2) \quad A[f, c] = t(1-f)w_0 e^{(r-c)T} \{e^{(g+c-r)T} - 1\} / (g+c-r).$$

For $g+c=r$, the accumulation satisfies

$$(3) \quad A[f, c] = t(1-f)w_0 e^{(r-c)T} T.$$

For r unequal to both $g+c$ and g , the ratio of the accumulation to what it would be without any charges satisfies:

$$(4) \quad \begin{aligned} AR[f, c] &= A[f, c] / A[0, 0] \\ &= (1-f) e^{-cT} \{ (e^{(g+c-r)T} - 1) / (e^{(g-r)T} - 1) \} \{ (g-r) / (g+c-r) \}. \end{aligned}$$

The charge ratio is one minus the accumulation ratio:

$$(5) \quad CR[f, c] = 1 - AR[f, c].$$

Sample calculations are shown in the table.

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Tables

1 Poverty Rates of the Elderly by Age, Sex, and Marital Status, 1992.

Source: United States House of Representatives Committee on Ways and Means, 1994, Overview of Entitlement Programs, 1994 Green Book, page 860.

2 Distribution of social security earnings

Source: Social Security Bulletin, Annual Statistical Supplement, 1996, page 190.

3 Personal pension charges in the UK

Source: United Kingdom Government Actuary and Secretary of State for Social Security, 1996, page 7.

4 The effect of charges on account accumulation

Source: author's calculations.

TABLE 1

Poverty Rates of the Elderly by Age, Sex, and Marital Status: 1992

		65 and over	65 to 74	75 to 84	85 and over
Male	Total	8.9	8.1	9.7	13.2
	Married	6.6	6.0	7.5	10.5
	Widowed	15.0	13.7	15.7	16.7
	Divorced/Separated/Never Married	17.6	18.1	16.5	NA
Female	Total	15.7	12.7	18.9	22.7
	Married	6.4	5.6	8.0	NA
	Widowed	21.5	18.9	23.2	23.8
	Divorced/Separated/Never Married	26.0	25.6	27.0	NA
Total		12.9	10.7	15.3	19.8

NA – Not available due to unreliability of estimate. Percentage base represents fewer than 250,000 persons.
 Source: March 1993 Current Population Survey (CPS). Table prepared by CRS.

Source: United States House of Representatives Committee on Ways and Means, 1994, Overview of Entitlement Programs, 1994 Green Book, page 860.

TABLE 2

Distribution of Annual Earnings under Social Security, 1993
Wage and Salary Workers

EARNINGS LEVEL	NUMBER OF WORKERS (IN MILLIONS)	PERCENT DISTRIBUTION
Total	128.2	100
Less than \$8,400	42.1	33
\$8,400 - \$13,199	15.4	12
13,200 - 17,999	14.0	11
18,000 - 22,799	12.2	10
22,800 - 27,599	10.0	8
27,600 - 32,399	7.8	6
32,400 - 37,199	6.2	5
37,200 - 41,999	4.8	4
42,000 - 46,799	3.6	3
46,800 - 51,599	2.7	2
51,600 - 57,599	2.5	2
57,600 (maximum)	7.0	5

Source: Annual Statistical Supplement to the Social Security Bulletin, 1996, page 190.

TABLE 3

Expense Loadings

4.7 A review of the charges levied by providers on unit-linked APPs indicates the following typical range of charges:

Initial charge: 5% to 10% of the invested rebate

Annual charge: ½% to 1¼% of the invested monies, with most providers levying an annual charge in the range ¾% to 1%.

Flat-rate charge: £1.50 to £3 a month irrespective of whether rebates are continuing to be paid to the APP account. This charge will generally increase each year in line with an index of prices or an index of earnings.

It is noted that not all providers levy all these charges: in particular, a number of providers levy no flat-rate charges.

Having regard to the range of charges levied on APPs, I consider that it would be reasonable to take the charges levied by a typical provider to be:

Initial charge:	8% of the invested rebate
Annual charge:	0.9% of the invested monies
Flat-rate charge:	£2.50 a month

Source: United Kingdom Government Actuary and Secretary of State for Social Security, 1996, page 7.

TABLE 4
Charge Ratio

INTEREST RATE (%)	WAGE GROWTH (%)	CAREER LENGTH	FRONT LOAD (%)	MGMT FEE (%)	CHARGE RATIO (%)
4	0.1	40	0	1	21.6
4	1.1	40	0	1	20.7
4	2.1	40	0	1	19.6
4	3.1	40	0	1	18.6
4	4.1	40	0	1	17.5
4	2.1	40	0	1	19.6
4	2.1	40	0	0.5	10.5
4	2.1	40	0	0.1	2.2
4	2.1	40	0	1	19.6
4	2.1	30	0	1	14.8
4	2.1	20	0	1	9.9
4	2.1	10	0	1	5.0
4	2.1	40	8	0.9	24.5
4	2.1	40	1	0	1
4	2.1	40	10	0	10
4	2.1	40	20	0	20

Source: Author's calculations - see Appendix