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TRANSITION TO A FULLY FUNDED PENSION SYSTEM: FIVE ECONOMIC ISSUES

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ABSTRACT

This paper provides a relatively nontechnical discussion of the effects of shifting from a pay-as-you-go system of Social Security pensions to a fully funded plan based on individual accounts. The analysis discusses the rationale for such a shift and deals with five common problems: (1) the nature of the transition path; (2) the effect of the shift on national saving and capital accumulation; (3) the rate of return that such accounts would earn; (4) the risks of unfunded and funded systems; and (5) the distributional effects of the shift.

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Transition to a Fully Funded Pension System: Five Economic Issues

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Reforming the current pay-as-you-go pension systems is the most important fiscal issue facing governments around the world. The current systems involve high and rising marginal tax rates that reduce real incomes and distort economic incentives. A failure to make significant reforms can lead to a withering of political support for existing programs and therefore a decline in the incomes of retirees. Appropriate reforms can raise real incomes of all employees, protect the incomes of retirees, and enhance overall economic performance.

The current paper discusses the process of replacing the existing pay-as-you-go (PAYGO) pension programs like the U.S. Social Security program of Old Age and Survivors Insurance with a prefunded system based on mandatory individual accounts.[1] My emphasis is not on the details of any particular plan but rather on how a prefunded plan can deal with five important practical issues:

(1) How expensive would the transition be? That is, to what extent do the employees during the transition years have to "pay twice," paying for their own retirement and for the benefits of existing retirees?

(2) How would replacing a PAYGO system with a prefunded system that delivers the

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[1]This paper draws on research with Andrew Samwick that has been reported in Feldstein and Samwick (1996, 1997). That research is part of a larger project on Social Security at the National Bureau of Economic Research.

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same level of benefits affect national saving and capital accumulation?

(3) What rate of return does the nation earn on this additional capital?

(4) How can individuals deal with the risks inherent in a funded system of individual accounts?

(5) What are the distributional affects of replacing a PAYGO system with a prefunded system?

Before looking at these five issues, I will discuss three more basic questions: How would replacing a PAYGO system with a prefunded system affect economic welfare? What are the reasons for preferring a mandatory system to a purely voluntary arrangement and a system based on individual accounts to national investment fund?

1. Why Prefund Old Age Pensions?

Many popular discussions of replacing the U.S. Social Security system with a system of prefunded benefits have based their case on the idea that the existing system is "bankrupt" and "unsustainable." Neither of these is true and the real reason to prefund lies elsewhere.

Consider the notion that Social Security is bankrupt because the trust fund will be empty by the year 2030. While that would constitute bankruptcy for a private pension, it is not relevant for a government program. Since there are no trust funds for defense spending or education, there is no discussion about the "bankruptcy" of those programs. The ability of the Social Security program to continue to pay benefits depends on political support rather than trust fund balances.

The argument that the current system is unsustainable is partly correct: either benefits must be reduced or taxes raised. It is however possible to sustain the level of future benefits specified in current law by raising taxes. In the United States, the payroll tax devoted to old age pensions would

have to rise from the current 12.4 percent [2] to about 16 percent after the year 2030 if the existing benefit rules are to be maintained and eventually to about 19 percent, an amount equivalent to raising the payroll tax from 5 percent of GDP to 7 percent of GDP.[3] Such a tax increase would be feasible even though it would obviously cause a significant rise in the distortions caused by the existing tax system.

The real reason for shifting from a PAYGO system to a prefunded program is that doing so would raise the economic welfare of the population. The key to this is the fact that the rate of return in a funded system is very much higher than the implicit rate of return that is produced by a PAYGO system. That in turn implies that the funded system can provided any given level of benefits at a much lower cost to working-age people than a PAYGO system can.

Although a PAYGO system does not earn a rate of return on invested funds, the increase of the tax base that results from a growing labor force and increasing average wages implies that retirees in a PAYGO system can get back more in benefits than they paid in taxes during their working years. Looking ahead, this implicit real rate of return on PAYGO contributions is likely to be two percent or less (reflecting labor force growth of about one percent and growth in real wages per worker of an additional one percent). In contrast, additions to the stock of private capital earns a real rate of return of about 9 percent.[4]

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[2]This includes disability and survivor benefits but excludes health care.

[3]The tax rate increase required to maintain existing benefit rules would be substantially greater in Germany and would come on top of existing total taxes that are already a substantially higher share of GDP.

[4]See Rippe (1995) and Poterba and Samwick (1995). I return below to some caveats about this rate of return.

To see the impact of this on the cost of providing a given level of retirement benefits, consider a simple example in which individuals work from age 25 to 65 and retire from age 65 until death at age 85. To make the calculation transparent (albeit an approximation), represent the working years by the midpoint at age 45 and the retirement years by age 75. Thus the individual saves in a prefunded system at age 45 and dissaves 30 years later at age 75. With a 9 percent rate of return, each dollar saved at age 45 grows to $(1.09)^{30} = 13$ dollars at age 75. In contrast, each dollar contributed to a PAYGO system with an implicit 2 percent rate of return grows to $(1.02)^{30} = 1.8$ dollars at age 75.Thus it takes 7 times as many dollars paid at age 45 in a PAYGO system to buy the same benefits at age 75. This calculation implies that the long-run Social Security payroll tax rate of 19 percent could therefore be replaced by a prefunded system with a contribution rate of 2.7 percent.[5]

The lower contribution rate to fund the same benefits has two advantages. First, replacing a 19 percent tax with a 3 percent mandatory contribution reduces the distortions to labor market decisions about labor force participation, the number of hours worked, effort, choice of occupation, and the form of compensation. Second, even if there were no labor force response to lower tax rates, the lower contribution rate would mean more disposable income and therefore a higher level of consumption.

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[5]A detailed disaggregated calculation based on demographic projections of the U.S. Bureau of the Census and the actuarial assumptions of the Social Security Administration implies that the 19 percent PAYGO payroll tax could be replaced in the long run by a contribution of only 2 percent to a funded system that provides the same level of benefits. The primary reason for the difference is that the Social Security actuaries project a PAYGO rate of return that is even less than 2 percent.

Of course, this comparison refers only to the long-run values associated with the PAYGO and prefunded systems. In the near term, the shift to a prefunded system requires taxes to finance the benefits of existing retirees as well as savings for the self-funded retirement of transition generation employees. The shift to a prefunded system therefore only raises overall economic welfare if the future gains exceed in present value (taking into account the declining marginal utility of consumption as incomes rise) the extra payments made by the transition generations. It can be shown that this is true and the present value of economic welfare is increased if three conditions are satisfied:

(1) the marginal product of capital exceeds the rate of growth of the wage base;

(2) the rate at which future consumption is discounted (the social time preference discount rate) exceeds the rate of growth of the wage base;

(3) the economy is growing.

For a discussion of why there are necessary conditions, see Feldstein (1995, 1996a).[6] The first of these conditions has already been discussed and the third condition is obviously true. The reason for the second condition and the explanation of why it is satisfied is presented in Feldstein (1995, 1996b) and will not be discussed here..

In short, substituting a prefunded system for a PAYGO system raises the present value of economic welfare under conditions that are very likely to prevail in modern industrial countries.[7]

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[6] A revised version of Feldstein (1995) appears as an appendix to my introductory chapter in Feldstein (1996b).

[7]Note that the rise in the present value measure of economic welfare does not imply that the shift from PAYGO to prefunded would be a Pareto improvemnt that makes all generations better off. Although Feldstein and Samwick (1997) shows how a transition can be designed that

2. Why Make Participation Mandatory?

It would in principle be possible simply to abolish the existing system, compensate employees for the present actuarial value of either the taxes that they have already paid or the benefits that they can expect under current law (net of the future taxes that they would pay) , and allow them to make whatever arrangements they want to finance their own retirement consumption. As a practical matter, however, there are two objections to this approach.

First, some individuals are too short-sighted to provide for their own retirement. A society that made no provision for helping those who had no resources when they were to old to work would leave them to private charity and a standard of living that many in society would regard as unacceptably low. Second, the alternative of a means tested program for the aged might encourage some lower income individuals to make no provision for their old age deliberately, knowing that they would receive the means tested amount. For individuals with low enough income, that combination might provide higher lifetime utility than saving during their working years. A mandatory system of individual saving would prevent poverty in old age while avoiding the temptation to "game" the system in that way.

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does indeed make all generations better off. An examination of Kotlikoff 's (1996) Pareto improving transitions shows that they also are a combination of fiscal reforms (which generate the Pareto improvements) and PAYGO replacement. But a Pareto improvement is too demanding a standard for policy analysis. The case for the transition is that the gains to the gainers are larger in present value (taking into account the decline in marginal utility of consumption) that the losses to the losers.

The options that I have studied therefore always assume that individuals would be required to save some fraction of their wage and salary income up to some limit.

3. Why Individual Accounts?

A common feature of "privatized" pension systems is that they permit individuals to contribute their mandatory saving to individual accounts that can be invested in private financial assets, accounts that I have called Personal Retirement Accounts (PRAs). Some advocates of mandatory saving have proposed an alternative of requiring the funds to be held and invested by the government. Although none of the benefits of the higher rate of return would be lost by this alternative type of investment, there are other disadvantages that strengthen the case for the private individual PRA accounts.

Private accounts would reduce the political risk that the government would want to direct the investment funds or to preclude certain kinds of investments (e.g., in certain products like cigarettes or in certain countries with which the United States is currently having disagreements). If the government controlled the accounts, there would be less prospect of innovative products — e.g., minimum guaranteed rates of return, mixtures of defined benefits and defined contribution payouts, etc. Government controlled accounts could also easily be shifted into a defined benefit system, giving politicians the opportunity to redistribute funds toward favored groups just as the current U.S. Social Security system redistributes from the young workers to older workers, from two-earner households to single-earner households, etc.

Although this administrative arrangement is very important, I will not discuss it further in this paper. I turn instead to the first of the five issues listed above.

4. The Nature of the Transition

Although many proposals for pension reform assume a combination of a universal PAYGO pension and a mandatory prefunded "private" pension, for simplicity and clarity I have analyzed a pure prefunded system without a PAYGO portion. More specifically, I assume that in the long run the existing PAYGO system would be completely replaced by a fully funded one based on individual Personal Retirement Accounts (PRAs). The combination of PAYGO benefits and funded annuities during the transition and the level of the funded annuities after the transition is complete would be set to equal to level of future benefits specified in the current Social Security law.

There are many possible transitions to such a system but there are only two basic alternatives: immediate transition with "recognition bonds" and a gradual substitution from PAYGO to a prefunded system.

The method of recognition bonds that was pursued by Chile substitutes new government bonds for the existing implicit claims of retirees and current employees. Individuals receive these recognition bonds, the Social Security system is eliminated, and employees are required to save in special mandatory saving accounts. Individuals may be required to use these recognition bonds as assets of the mandatory saving accounts or may be allowed to sell them and place the proceeds in the new mandatory accounts. The government could service the recognition bonds or pay them off over some horizon and could do so with different possible taxes. This is essentially the approach studied by Kotlikoff (1996) who studies different tax possibilities but does not explicitly require a mandatory saving account since he assumes that individuals are rational life cycle savers who make appropriate provision for their old age once the existing PAYGO system is eliminated.

Andrew Samwick and I have calculated the value of the recognition bonds that would be

given to these individuals in the United States based on obligations at the end of 1995 (Feldstein and Samwick, 1997). If future benefits (net of the taxes that remain to be paid before retirement)are discounted at a real discount rate of 4 percent, the value of the newly created debt would be $7 trillion, about equal to GDP and twice the size of the existing national debt as conventionally measured. If the future obligations were discounted at a real rate of two percent (about equal to the historic real yield on U.S. government debt), the present value of the claims would be equivalent to debt of $12 trillion.

Recognition bonds may be an appealing method of transition in countries where the existing system of PAYGO pensions is seen as a failure. In the United States, however, Social Security pensions are a very popular program. We therefore analyze a gradual transition that keeps the existing structure of the Social Security pensions. Indeed, the transition studied in Feldstein and Samwick (1997) can be thought of as a plan in which the government guarantees the Social Security retirement benefits that are projected under current law but uses a transition to a fully funded system to pay for these benefits.

More specifically, existing retirees would receive benefits that are funded exclusively on a PAYGO basis using the existing payroll tax. During a long transition period, future retirees would receive a mixture of PAYGO benefits and benefits based on the assets accumulated in individual mandatory PRA accounts. In the long run, the PAYGO system would be completely replaced by a fully funded system of individual PRAs.

The key problem of any transition is that the employees during the transition period must pay the PAYGO taxes to support the existing retirees and at the same time accumulate assets for their own retirement. This creates the false impression that existing employees would pay twice as much

during the transition years as they would have paid if the PAYGO system were continued unchanged. That is false for two reasons. First, the amount that individuals have to save for their own retirement is far less than the amount that they must pay for the PAYGO taxes that support existing retirees. As the illustrative calculation earlier in this paper indicated, a PAYGO system that requires an 18 percent payroll tax could be replaced in the long-run by individual savings equal to less than 3 percent of the same payroll tax base. Thus in the transition the maximum amount that individuals would be require to save in addition to their contribution to the PAYGO system would be that 3 percent. Second, over time the cost of the PAYGO system declines as the initial retirees die and the new retirees substitute an annuity financed by the mandatory accumulated assets for PAYGO benefits.

Feldstein and Samwick (1997) present a transition that begins with a 2.0 percent mandatory saving in addition to the exiting 12.4 percent PAYGO tax, a combined mandatory payment of 14.4 percent of the payroll tax base[8].[9] As the initial retirees die and are replaced with individuals who receive annuities based on the mandatory savings in their PRAs, this 14.4 percent declines (in spite of the increasing ratio of retirees to working age population). The combined mandatory payment declines from 14.4 percent in the first year of the transition to 13.8 percent by the 10th year of the

[8]This simulation, based on the actuarial assumptions of the U.S. Social Security actuaries and the demographic projections of the U.S. Census Bureau, is designed to maintain the relation of retirement benefits to preretirement income the same that it is current Social Security law. The 12.4 percent is the current employer-employee payroll tax for the Old Age, Survivors and Disability programs; it excludes the tax to support the Medicare portion of the Social Security program.

[9]Since the payroll tax base is about 40 percent of GDP, this is equivalent to a bit less than 6 percent of GDP.

transition and to 13.2 percent by the 15th year of the transition. In the 19th year the combined mandatory payment is less than the 12.4 percent that would be required under the existing PAYGO system.[10] The combined mandatory payment then declines rapidly from 10.7 percent of payroll in the 25th year to 6.9 percent in the 35th year and eventually to 2.02 percent of payroll.

5. The Effect on National Saving and Capital Accumulation

The ability to reduce the PAYGO taxes and still provide the same retirement benefits reflects the fact that the mandatory savings increase the nation's capital stock and that the rate of return on that capital is much higher than the rate of return implicit in the PAYGO program. This section discusses the nature of the increased capital accumulation while the next section discusses the rate of return that can be earned on that incremental capital.

The transition analyzed in Feldstein and Samwick (1997) keeps the government's budget deficit unchanged. That is, the PAYGO benefits are financed out of current payroll taxes. Similarly, all of the taxes that result from the incremental mandatory saving are contributed to the mandatory PRA saving accounts. Thus, there is no increase or decrease in the national debt relative to the baseline that would prevail with the unchanged PAYGO system.

If the shift to the prefunded system of Private Retirement Accounts does not alter other private saving, the increase in national saving is equal to the net flow into the PRAs. In addition, the return on the investment in the PRAs would also be an addition to national saving. How large would that increase in national saving be?

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[10]This assumes that nothing would be done under the existing PAYGO system to enhance the trust fund and postpone the date at which the funds are exhausted and the tax rate must jump to the new higher equilibrium, currently rejected at about 18 percent in the year 2030.

The PRA contributions start at 2 percent of payroll, the difference between the 12.4 percent existing payroll tax and the 14.4 percent combined payment referred to earlier. In the Feldstein-Samwick (1997) analysis, that mandatory saving rate remains between about 1.5 percent and 2.0 percent of the covered payroll throughout the 75 year simulation period. That mandatory saving represents the gross inflow to the PRA accounts. After the first year the net inflow is smaller because retirees are receiving annuity payments from these accounts. Indeed by the 25th year the annuity payments are more than twice as large as the 1.5 percent payroll tax inflow, implying a net outflow of 1.7 percent of payroll. But the return being earned on the accumulated balances from earlier net contributions causes the total assets of the PRAs to grow. That asset growth represents net national saving and therefore a net increase in the nation's capital stock. The accumulated balances in the PRA accounts increase from 2 percent of covered payroll in the first year of the transition to 25 percent of payroll after 10 years and 82 percent of payroll after 25 years. In the long run, the PRA balance stabilizes at about 2.3 times covered payroll, an amount equal to about the future level of GDP. Stated differently, the PRA balances increase the nation's capital stock by about 6 percent after 15 years, 18 percent after 35 years, and 34 percent in the long run.

What if other private saving responds to the shift from the PAYGO system to the prefunded system? Any such induced changed in other private saving would change the net impact on national saving and the capital stock.

To consider the likely change in other private saving, note first that the shift to a mandatory prefunded system does not alter the benefits that individuals would receive in retirement. The transition has been calibrated to keep the combination of PAYGO benefits and PRA benefits equal to the PAYGO benefits specified under current law. The shift to the prefunded PRA system therefore

does not induce individuals to reduce private saving because of an expected increase in retirement income. The primary reason for the change in other saving is the effect of the transition on the level of disposable income during pre-retirement years.

Consider first how private saving would be expected to respond in the long-run when the prefunded system has fully replaced the PAYGO system. While the retirement benefits from the PRAs would be the same as the PAYGO benefits would have been, the mandatory contributions to the PRAs during the working years would be far less than the PAYGO taxes would have been. This implies that the disposable income of individuals in their preretirement years would increase while the disposable income during retirement would remain the same. Instead of increasing consumption only during the preretirement years, individuals would spread the higher disposable income during their working years between higher consumption at that time and in retirement, i.e., they would save some of it. The response of private voluntary saving would therefore increase the national saving rate and the resulting rise in the capital stock in addition to the increase that comes directly from the balances of the PRA accounts.

During the early part of the transition, the extra mandatory saving (i.e., the combination of the PRA contributions and the PAYGO tax) would exceed the baseline PAYGO tax, causing a decline in disposable income. In the first year, for example, individuals would experience a decline of disposable income equal to 2 percent of GDP. Individuals who experienced such a decline in disposable income during their working years (while their expected retirement benefits remained unchanged) would presumably want to reduce some of their saving in order to cushion the decline in consumption and spread the consumption decline between their working years and their retirement years. However, this effect is likely to be very small because most individuals have little

or no saving that can be reduced in this way. Even at age 60, the median financial wealth of households in less than six months earnings. Even that is generally wanted as a precautionary balance to be available for uncertain events and would therefore not be reduced to spread the income decline.

Thus the rise in saving during the early transition years would be less than the previous discussion implied and the rise in saving in the long run would be greater. There is, however, no doubt that the net effect of the transition from the PAYGO system to the prefunded PRA system would be a rise in national saving and therefore a larger capital stock and a higher level of real national income.

6. The Rate of Return on the PRA Accounts

The lower cost of providing benefits by a prefunded system reflects the difference between the rate of return on the assets of the PRA accounts and the implicit rate of return of the PAYGO system. The example used to illustrate this advantage in Section 1 of this paper assumed a real rate of return of 9 percent on the PRA assets and that same 9 percent was used in the detailed simulations of Feldstein-Samwick (1997). What is the basis for using such a rate? And why might the appropriate rate be lower?

The relevant rate to use is the real rate of return that the nation earns on the additional capital accumulated in the PRA accounts. That return includes the interest, dividends and capital gains that accrue on the assets in those accounts plus the additional taxes that the government collects as a result of the rise in the capital stock. In short, the relevant rate of return is the real pretax return on capital.

Several statistical studies have concluded that the real pretax rate of return on additions to the nation's stock of nonfinancial corporate capital has averaged about 9 percent over the past several decades (Poterba and Samwick, 1995; Rippe, 1995). These calculations do not involve share price performance but compare the sum of interest, profits and taxes paid to the reproduction value of the corporate capital stock. Although there are year to year fluctuations in this rate of return, there appears to be no trend. If anything, the rate of return in recent years appears to be higher than this historic average.

A real 9 percent rate of return is of course higher than most investors experience, even in untaxed pension accounts and Individual Retirement Accounts. A portfolio of stocks and bonds balanced to reflect the debt-equity mix that companies use to finance themselves has earned a real rate of return of about 5.5 percent over both the postwar period and the entire period since 1926. However, while such pension account returns are not subject to personal income taxes, the corporate earnings that finance dividends and that lead to capital gains are earnings after the taxes paid at the corporate level. The Federal, state and local taxes paid at the corporate level have averaged about 40 percent of the pretax return to capital (Rippe, 1995). The net 5.5 percent return therefore corresponds to a return of slightly more than 9 percent before all taxes, confirming the estimate obtained directly.

In using a 9 percent rate of return on the assets in the PRA accounts I have implicitly assumed that the government would use the additional tax revenue that it collects because of the PRA accumulation to supplement the returns in the PRA accounts. That is, the government would provide a matching contribution equal to about 3.6 percent of the value of the assets in each PRA account.

Since this is the amount of the extra tax revenue collected by the government on the profits earned on the incremental capital stock, it would not increase the budget deficit.

Although a 9 percent return is the rate that researchers have inferred from the historic experience, there are several reasons for assuming a lower rate of return:

(1) The increase in the capital stock would reduce the rate of return on capital. (The 34 percent long-run rise in the capital stock referred to above would be expected to reduce the historic 9 percent real rate of return to about 7.2 percent.)

(2) Not all of the 3.5 percent return that government collects would be available as a matching contribution to the PRA accounts. This would be particularly true of the taxes collected by state and local governments. Of course, although those funds are not given to the PRA accounts, they are of value to the nation as a way of funding additional state and local spending or reducing the taxes levied by state and local governments.

(3) Administrative costs for operating the PRA accounts and the associated annuities might reduce the available funds by as much as a full percentage point (Mitchell, 1996; Poterba, Mitchell and Warshawsky, 1997).

(4) Not all incremental saving flows into the corporate sector. Some of the increase in the national capital stock would enlarge the stock of owner-occupied housing. Because of the particularly favorable tax treatment of such housing, the pretax rate of return on such housing is less than 9 percent.

(5) To the extent that some of the incremental saving goes abroad instead of

being invested in the domestic capital stock, the resulting corporate tax revenue is collected by foreign governments rather than by the US treasury. Although this may be important for some of the smaller economies of Europe, the historic experience implies that about 80 percent of sustained increases in saving in the United States tend to remain and be invested in the United States (Feldstein and Horioka, 1980; Feldstein and Bachetta, 1991; Mussa and Goldstein, 1994).

(6) Not all of the tax collected from corporations may reflect a return to incremental capital. To the extent that that tax revenue reflects a tax on such things as profitable ideas or brand images, the 9 percent overstates the total return on capital.

These issues deserve further exploration. But to get a sense of what a very much lower rate of return on capital would imply, consider the implication of substituting for the 9 percent a return of only 5.4 percent, the rate of return that investors earn after the corporate income tax. While substituting 5.4 per cent for 9 percent in the detailed calculations and simulations would change the specific quantitative estimates, there is no change in the general conclusion that a prefunded PRA system could deliver the same benefits as te PAYGO system with much lower constitutions during working years.

To see this, consider again the example of an individual who saves at age 45 and dissaves at age 75. Recall that with a 2 percent PAYGO implicit rate of return a dollar saved at age 45 would grow to 1.8 dollars at age 75. In contrast, with a 5.4 percent real rate of return, a dollar saved at age 45 would grow to 4.8 dollars at age 75. If a PAYGO system requires a payroll tax of 18 percent, a

prefunded system with a 5.4 percent rate of return would require contributions of only 6.8 percent. While that would not be as attractive as the 2.5 percent contribution that would be possible with a 9 percent real rate of return, it clearly represents a substantial reduction in cost relative to the PAYGO alternative.

7. Risk

The analysis of the choice between a PAYGO system and prefunded system should address the issue of the risks born by retirees under the two alternatives. While this is sometimes characterized as a problem of the riskiness of portfolio returns, it is important to bear in mind that the unfunded PAYGO system is itself very risky in a different way.

The unfunded PAYGO system is very risky because the level of future benefits depends on the willingness of future voters and future Congresses to support the taxes required to provide such benefits. In the past, the unfunded PAYGO system was a popular one with the relatively low rate of tax and the high implicit rate of return made possible by an expanding system. But in the future the PAYGO system is likely to be much less popular as the payroll tax rate rises and the implicit rate of return declines. The level of benefits that the political system will support in this context is very uncertain.

During the past 15 years, the effective level of U.S. Social Security benefits has been reduced by making benefits taxable (above a certain fixed nominal income level) and then reduced again by increasing the fraction of benefits subject to tax. The real value of future benefits was also reduced by postponing the normal retirement age from 65 to 67. More recently, there was much discussion about slowing the growth of benefits by reducing the rate of inflation adjustment relative to the official Consumer Price Index. Other proposals include subjecting benefits to a means test that

would further lower the net benefits paid to higher income individuals.

These political risks are likely to increase over time as the financing problems of the Social Security program grow. There is moreover no way that an individual can hedge these political risks.

A prefunded program involves the risks of fluctuating portfolio returns. Individuals can protect themselves against these market fluctuations by saving somewhat more in their PRA accounts than would otherwise be required, thus providing a higher expected accumulation of retirement benefits to act as a cushion against the risk that the actual return would be less than the expected return. The analysis in Feldstein-Samwick (1997) shows that the additional PRA saving required to be virtually certain of receiving an annuity equal to the benefits specified in the current Social Security rules is quite small..

More specifically, detailed simulations indicate that a prefunded system with a 9 percent rate of return can finance an annuity equal to the Social Security benefits in current law with a PRA contribution rate of 2 percent of payroll. If the value of the PRA assets is subject to market fluctuations, there is a 50 percent chance that a 2 percent PRA contribution rate will lead to a retirement annuity that is less than the desired level. However, even with the substantial volatility implied by the historic experience of fluctuating equity prices (an average year to year fluctuation of about 18 percent in the average value of share prices), the Feldstein-Samwick calculations imply that raising the contribution rate form 2.0 percent to 2.7 percent is enough to provide a cushion that makes it virtually certain that the individual's annuity will at least equal the Social Security benefits projected in current law.[11]

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[11]By "virtually certain" I mean that in 1000 simulations based on the historic volatility experience, the funded benefits were at lest as large as the Social Security benefits in all 1000

In short, risk appears to be a quite manageable problem in a prefunded system in which individuals invest in a broad index of stocks and bonds.

8. Distributional Questions

The shift from a PAYGO system to a funded system involves three kinds of distributional issues: During the transition, which are the age groups that win and which are the age groups that lose? How would replacing the PAYGO system with a prefunded system affect the relative income of typical employees and high income individuals? How can the poor be protected in a system of individual accounts?

Impact on Different Age Cohorts

Because the existing PAYGO tax rate is not sufficient to finance the benefits specified in the current Social Security law, there must eventually be a change in either the taxes or the benefits or both. The mix and timing of the changes determines the PAYGO baseline to which the transition to a funded system can be compared. One simple but politically unlikely assumption is that no change would be made until the trust fund is exhausted in 2030 and that at that time taxes would be raised from 12.4 percent to the 16 level needed to fund the benefits specified under current law . Such a baseline would leave the expected incomes of everyone who would retire by 2030 unchanged, i.e., everyone born before 1965 would be unaffected. In contrast, a transition to a PAYGO system would temporarily raise the combined tax rate and mandatory PRA contribution for those who are not yet retired. The increased combined rate would continue until the reduction in the PAYGO tax exceeds the mandatory saving. In the specific transition studied in Feldstein-Samwick (1997), this

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simulations when the PRA saving rate was raised from 2.0 percent to 2.7 percent.

occurs after 19 years. Such a transition (in which mandatory PRA contributions begin at age 30) has the following distributional consequences: Those who are retired when the transition begins are completely unaffected. Those who are at least 45 years old will always face a higher combined mix of taxes and PRA contributions. Those who are younger will face a higher mix for 19 years and then a lower mix. The younger they are, the more likely that the present value of the combined payments will be lower in the transition than in the baseline.

Alternative modifications to the current PAYGO system would create different baselines and therefore different relative distributional effects. For example, a combination of benefit reductions and a gradual tax increase under the PAYGO system would cause the transition to a funded system to be relatively favorable to exiting retirees and those who would retire in the near future.

Effects on Middle and High Income Individuals

After the transition to a funded system, the average employee would be very much better off than under the existing PAYGO system while high income individuals would generally be worse off. Consider first the average employee who would pay a 20 percent effective income tax and who under the PAYGO system would face a combined employer-employee social security payroll tax rate of 19 percent. Each $100 of gross wage would produce a net take-home wage of approximately $61.[12] The shift to a fully funded system would have two effects. By increasing the capital stock, it would raise the productivity of labor and therefore the wage rate. The 34 pendent rise in the

[12]This is an approximation because it ignores the fact that the employer's portion of the payroll tax is excluded from the individual's taxable income. It also excludes the Medicare portion of the payroll tax which could be very large, increasing the effect described in the text.

capital stock referred to above would imply an increase in real wages of about 7 percent. Each $100 of gross wage would become $107. More important, however, the payroll tax rate of 19 percent would be replaced by a PRA contribution of less than 3 percent. Applying the sum of the 20 percent income tax rate and the 3 percent PRA contribution to the $107 gross wage yields a net take-home wage of $82, an increase of 34 percent from the $61 take-home wage with the PAYGO system. The source of this gain is of course the large increase in the capital stock which is owned by these wage earners and used to finance their retirement.. I find it impossible to think of any other government policy that could have such a large and favorable effect on the disposable incomes of average working individuals.

The increase in the total capital stock makes capital less scarce and drives down its return; the calculation referred to in section 6 above implies that the pretax rate of return on capital would decline from 9 percent to 7.2 percent. This 20 percent decline in the rate of return on capital would cause a decline in the income of high income individuals for whom capital income is relatively important and for whom the level of taxable wages is only a small part of total compensation.

Protecting the Poor

In a government defined benefit program, whether funded or unfunded, the benefits can be set to achieve any desired degree of income redistribution and income maintenance. In contrast, in a funded system based on individual accounts, each individual's retirement benefits depends on the amount that he or she earned and saved during the working years. It is of course possible, however, to introduce an element of redistribution to protect the poor. During the transition, the PAYGO system continues to operate and provides the same protection of the poor as under the pure PAYGO system. After the transition, the very high rate of return in the funded system relative to the PAYGO

system makes it very easy to provide at least this amount of income maintenance for the poor while leaving all others much better off than they would be under the PAYGO system.

As an example of this, Feldstein-Samwick(1996) calculated that the PRA annuities of all retirees could be raised to at least 50 percent of the median annuity (a higher standard of income maintenance than the current Social Security system achieves) by levying a 5 percent tax on all PRA accounts at age 65 and redistributing the funds to those whose PRA pensions would otherwise be less than 50 percent of the median. Since the PRA contributions during working years that would be required to fund a PRA annuity equal to the projected Social Security benefits is only 2.0 percent of covered wages, this redistributive function could be financed by increasing the PRA saving rate from 2.0 percent to 2.1 percent.

9. Concluding Comments

The transition from unfunded PAYGO pension systems to fully prefunded or partially prefunded systems is now taking place in many countries around the world. The countries that have already begun this process are as different as Chile and Australia, Mexico and England.[13] The specific rules and transition arrangements differ from country to country but they all have the common feature of creating individual accounts in which mandatory saving is accumulated and invested in private financial assets to finance retirement benefits. The increased longevity of the population in every country implies that the alternative to such a prefunded system is a PAYGO system with a much higher rate of tax than currently prevails.[14]

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[13]For descriptions of several of these systems, see Feldstein (1996).

[14]Note that the cause of the increased cost of PAYGO systems is increased longevity and not a temporary "baby boom" retirment bulge.

The analysis summarized in the current paper shows that such a system can provide a substantial reduction in taxes while maintaining or increasing retirement benefits. The funded system avoids the political risks of an increasingly costly and unfavorable PAYGO program. Although the returns on a funded portfolio are also risky, the potentially adverse consequences of the fluctuations in asset prices can be avoided by a relatively small increase in the mandatory saving rate. The high rate of return on the funded assets means that the retirement income of the poor can be protected at relatively low cost.

While further analysis can indicate options for improving the transition to a prefunded system, the key missing ingredient now is the political will to imposes the short-run costs that would produce such large long-run benefits.

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