

Summary

**Maintaining Social Security Benefits and Tax Rates
through Personal Retirement Accounts:
An Update Based on the 1998 Social Security Trustees Report**

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A program of Personal Retirement Accounts (PRAs) funded by deposits equal to 2.3 percent of earnings (up to the Social Security maximum) would permit retirees to receive more income in retirement than with the current Social Security program while at the same time making it unnecessary to increase the 12.4 percent payroll tax in response to the aging of the population. The gross cost of these deposits, approximately 0.9 percent of GDP, could be financed for more than a decade out of the budget surpluses currently projected by the Congressional Budget Office.

By the year 2030, the additional corporate tax revenue that results from the enlarged capital stock financed by PRA assets would be able to finance fully these personal tax credits. During the intervening years (about 2020 to 2030), a reduction of other government spending or an increase in taxes would be needed if budget deficits are to be avoided.

If implemented, the PRA program would not only increase retirement income and stabilize the Social Security payroll tax, but would also substantially increase national saving and GDP.

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*This paper updates the simulations in our article, *Two Percent Personal Retirement Accounts: Their Potential Effects on Social Security Tax Rates and National Saving*, (*Tax Notes* (May 4, 1998): 615-620; also NBER Working Paper 6540), to match the assumptions in the 1998 Social Security Trustees Report. We are grateful to Gary Burtless, Elena Rangelova, Steve Zeldes, and participants at the twentieth annual APPAM conference for helpful suggestions. Any errors are our own.

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Combining the existing pay-as-you-go unfunded Social Security system with a modest program of investment-based individual accounts can eliminate the need for any future increases in the payroll tax rate while also providing a higher level of retirement income than is implied by the existing Social Security law. In contrast, continuing the existing pay-as-you-go (PAYGO) system alone would require permanently raising the Social Security payroll tax rate (for retirement, survivor and disability benefits) from the current 12.4 percent to more than 18 percent, according to the Social Security actuaries.

This article analyzes a specific proposal¹ to create Personal Retirement Accounts (PRAs) in which 2.3 percent of each individual's earnings (up to the Social Security earnings limit, no \$72,600) would be deposited.² In effect, the individual would receive a tax cut equal to 2.3 percent of earnings on the condition that the tax cut is saved in a Personal Retirement Account.³

¹ See Martin Feldstein, "Don't Waste the Budget Surplus," The Wall Street Journal November 4, 1997; Martin Feldstein, "Let's Really Save Social Security," The Wall Street Journal February 10, 1998; and Martin Feldstein, "Savings Grace," The New Republic, April 6, 1998. These articles can be found at www.nber.org/~msfeldst. Several related proposals to use the budget surplus to finance personal retirement accounts have recently been discussed by Congressional leaders including Bill Archer, Pete Domenici, Phil Gramm, Judd Gregg, John Kasich, Bob Kerrey, Daniel Patrick Moynihan and Bill Roth.

² In the original version of this paper, Feldstein and Samwick (1998), PRA contributions of 2 percent of payroll were sufficient to restore solvency to the system. That paper was based on the forecasts in the 1995 Social Security Trustees Report. As a result of changes in forecasted revenues in the 1998 Trustees Report (principally, greater near-term wage growth relative to long-term wage growth), the required PRA contribution is now 2.3 percent of payroll to avoid a zero balance in the Trust Fund. As a consequence of the higher PRA contribution rate, there is also a substantially larger Trust Fund available in the final years of the simulation.

³ The deposits to individual accounts could in principle be some combination of an equal lump sum amount for everyone and a proportion of earnings less than 2.3 percent. Our calculations reflect only the fact that the aggregate deposits are equal to 2.3 percent of aggregate earnings. Using a lump sum would make the distribution more favorable to low income earners but would not have the same favorable effect on reducing the marginal tax rate.

These PRA funds would be invested in mutual funds chosen by each individual just as IRA and 401(k) deposits are today.⁴ Although we originally discussed a plan involving deposits by each individual to his or her PRA account financed by a refundable tax credit, it would be administratively simpler and less costly for the government to send funds directly to fund managers to credit to individual accounts.⁵

When the individual reaches retirement age and withdraws payments from his or her PRA, the individual's Social Security benefit in that year would be reduced by 75 cents for every dollar of PRA withdrawal.⁶ The individual would therefore have a combined benefit that is equal to the full amount of the Social Security benefit in current law plus 25 percent of the PRA annuity. Every retiree would therefore receive more than the benefits promised in current law. With the historic rate of return on a conservatively invested PRA account (60 percent in stocks and 40 percent in bonds), this plan would be sufficient to prevent the Social Security trust fund from being exhausted (as it would be in 2032 with the existing pure PAYGO system) and would permit

⁴ The government might impose more stringent regulations, requiring for example that the funds be invested in diversified mutual funds or bank deposits. A government fund similar to the Federal Employees Thrift Saving Plan might be available as a "default" option for those who do not make another choice.

⁵ See Goldberg and Graetz (1999) for a discussion of ways to minimize administrative costs associated with personal retirement accounts.

⁶ Because individuals' net retirement income therefore increases by only 25 percent of the value of the accumulated PRA assets, individuals may be tempted to make riskier portfolio choices than they otherwise would have made. While this may help to offset the extremely conservative investment strategies that have characterized many IRA and 401k investors, the possibility of excess risk taking suggests that the proper regulation of investment options in the new accounts deserves careful attention. As a starting point, any benefit guarantees could be based on the investment performance that would have been achieved had the individuals invested in a standard plan (e.g., 60 percent in a broad equity index and 40 percent in a corporate bond fund), rather than their chosen plans.

the current 12.4 percent payroll tax rate to continue indefinitely without any increase.⁷

Because the earnings base to which the credit would apply is equal to about 40 percent of GDP, the 2.3 percent tax credit is equal to approximately 0.9 percent of GDP, less than the currently projected budget surpluses. When the projected budget surpluses end after about the year 2020, a portion of the 0.9 percent of GDP would temporarily have to be financed by new tax revenue or reduced government spending until about the year 2030 when the PRA plan itself would generate a sufficient budget surplus to be self-financing. We return to this budget arithmetic below.

The simple accounting calculations that underlie these statements are the subject of the present article. We begin by describing briefly the assumptions on which the calculations are based. We then report the evolution of aggregate PRA deposits and withdrawals and the consequent effects on the Social Security payouts, tax rates and trust fund balances. The analysis assumes no change in the gross Social Security benefits (i.e., the benefits before the offsets in response to PRA withdrawals). We also present estimates of the effects of the PRA program on national saving, on the level of gross domestic product (GDP), and on the government budget.

1. The Social Security Simulation Model⁸

The estimates presented in this paper use an accounting model developed in the course of our research in a broader National Bureau of Economic Research project on Social Security reform.⁹ This model is calibrated so that with the current Social Security rules it closely

⁷ Preserving the solvency of the Social Security system without any tax rate increase could also be achieved with a 50 percent offset (instead of the 75 percent offset) if some other change in benefits (like a future change in inflation indexing) was also made.

⁸ Readers who want to go directly to the results of the analysis can skip this section. Those who want more details about the simulations should consult Feldstein and Samwick (1997).

⁹ For more information on the model, see Feldstein and Samwick (1997).

approximates the basic time series of benefits, revenues, and trust fund assets predicted in the 1998 Social Security Trustees Report.

The unit of analysis in these simulations is the individual. Benefits for spouses and survivors, as well as disability benefits, are subsumed in the individual benefit projections.

We incorporate the actual current age structure of the population, the Census Bureau projections of future births through 2050, and the projected cohort specific life tables for individuals born through that year. To reflect the net inflow of immigrants, we scale up the projected population at every age to coincide with the aggregate projections of the Social Security Administration.

The simulations simplify by assuming that individuals enter the labor force at age 21 and work until the year before they attain the Social Security normal retirement age legislated for their birth cohort (or death if that occurs sooner). The normal retirement age is currently 65 but will soon begin increasing gradually to 67. Since not everyone in the population actually works during those years, we adjust the labor force participation rate to obtain the number of covered workers in each year specified in the Social Security Administration projections.

We use the historic data for Social Security taxable payroll in years before 1998 and follow the forecast for taxable payroll based on the intermediate assumptions in the 1998 Social Security Trustees Report for subsequent years. According to that forecast, the average real wage rises at 0.9 percent per year in the long term. The movements in the average real wage are assumed to reflect changes in the age structure of the labor force and differences among age groups in the rate of increase of wages as well as the overall rate of increase of age specific wage rates.

The investments in the Personal Retirement Accounts are assumed to earn a real rate of return of 5.5 percent after inflation. The average return on a portfolio invested 60 percent in the Standard and Poor's 500 portfolio of common stock and 40 percent in a portfolio of corporate

bonds during the postwar period through 1995 achieved a return of 5.9 percent.¹⁰ We deduct 0.4 percent per year to reflect the administrative costs of PRAs. Note that 5.9 percent is the return after the payment of corporate and property taxes. The full rate of return earned before all taxes during this same period was about 8.5 percent (Poterba, 1998). We return below to the implications of the taxes collected on incremental capital but not included in the return earned on PRA accounts. We follow the Social Security Trustees in assuming that the real return on the Social Security trust fund will decline gradually from the current level to a 2.8 percent real interest rate in the future.

Because we are interested in total benefit payments and not in their distribution by income and family type, we base our calculations on average taxable earnings in each year and do not distinguish income levels or family structures. Although we therefore cannot apply the actual Social Security benefit rules, we can calculate aggregate average benefits by attributing an implicit rate of return on the taxes paid by individuals in each birth cohort.¹¹ The cohort specific rates of return are estimated in a way that produces the same aggregate benefit amounts that the Social Security Trustees project for future years on the basis of current law.

2. Personal Retirement Account Deposits and Benefits

Our analysis assumes that the Personal Retirement Account (PRA) deposits begin with the year 2000. The PRA deposits in that year are projected to be \$81.2 billion (at the 1998 price level). The deposited amounts increase over time as earnings grow, reaching \$94.2 billion in 2010, \$116.8 billion in 2030, \$144.6 billion in 2050 and \$175.6 billion in 2070, the final year of our analysis. All of these amounts are in 1998 dollars. These figures are shown in column 1 of Table 1.

¹⁰Including the more recent period would increase this rate of return.

¹¹These estimates are a modification of the original estimates developed in Boskin, et al. (1987).

We assume that individuals receive payments from their PRAs at their normal retirement ages in the form of an annuity that earns the same 5.5 percent real rate of return. The first annuities are paid to the individuals who become 65 in the year 2001 and total only \$80 million.¹² Total annuities grow rapidly, reaching \$1.3 billion in 2005, \$5.9 billion in 2010, \$129.1 billion in 2030 and \$826.0 billion in 2070, all in 1998 dollars. These figures and the amounts for selected intervening years are shown in column 2 of Table 1. The rapid rise in the annuity amounts reflect increases in the number of annuitants and rapid increases in the average annuity amount, which in turn reflects the increased number of years of PRA contributions.

These annuity withdrawals are shown in column 3 of Table 1 as a percent of the covered earnings of all individuals in each of the selected years. This amount rises from 0.14 percent of covered earnings in 2010 to 2.54 percent in 2030, 7.65 percent in 2050 and 10.82 percent in 2070. Each dollar of annuity that retirees receive reduces their regular Social Security benefits by 75 cents. Even with this Social Security benefit reduction the retirees are better off than they would have been without the PRA program. Their original PRA deposits were completely financed by dollar-for-dollar tax credits (making the deposit essentially free to the individual) while the individual's net retirement income increases by 25 percent of the annuity amount.¹³ The projected reductions in Social Security outlays as a percentage of covered earnings are shown in column 4 of Table 1.

Note first that in the long run (i.e., in the year 2070) the reduction in Social Security

¹²In practice, the program might require a minimum of, say, five years of deposits to avoid very small annual payments.

¹³In reality, the return on PRA accounts is uncertain and some individuals will earn more than a 5.5 percent return while others earn less. Individuals who had higher returns would have a higher combined PRA-plus-Social Security income than those with lower rates of return. All retirees would be better off than they would have been with Social Security alone. For simulations of a PRA programs that incorporate risk more explicitly, see Feldstein and Rangelova (1998) and Feldstein, Rangelova, and Samwick (1999).

outlays is 8.11 percent of total covered earnings, i.e., three-fourths of the 10.82 percent of earnings that annuities are projected to be in that year. Since the payroll tax rate required in a pure pay-as-you-go system with the current relation of benefits to past earnings (i.e., with no change in the current system) would be 18.70 percent in 2070, the reduction in benefit outlays of 8.11 percent of earnings reduces the amount to be financed by a pay-as-you-go tax to 10.59 percent of earnings. This figure is 1.8 percent of earnings less than the current 12.4 percent tax rate, suggesting that the PRA contribution can be lowered in the latter part of the simulation. It is set as high as 2.3 percent so that, during the early years, sufficient PRAs are accumulated to accommodate the rapid retirement of the Baby Boom generation. In later years, the 2.3 percent PRA contribution could be reduced; if it is maintained, the pay-as-you-go tax rate could be lowered from 12.4 percent.

The evolution of the Social Security trust fund itself is traced in column 5 of Table 1. In the early years, the trust fund grows because the sum of the pay-as-you-go tax rate and the interest on the existing trust fund (at the 2.8 percent real rate projected by the Social Security Trustees) exceeds the cost of the gross Social Security benefits (i.e., before any offsetting reductions) expressed as a percentage of earnings. The impact of the reductions in Social Security outlays in response to the PRA annuities is shown in column 4 of Table 1. This reduction of Social Security outlays is virtually irrelevant in the early decades of the program. But by 2030, when the Social Security trust fund would be nearly exhausted under current law, the 75 percent offsetting reductions have added a cumulative amount of \$797 billion (again at 1998 prices) to the trust fund. These net additions, plus the resulting increase in the trust fund's interest income, raise the trust fund in 2030 to \$1285 billion or 25.32 percent of taxable earnings.

Note that even with the reduced benefit outlays the trust fund does decline from its peak in

2018. But the decline does not cause the trust fund to be exhausted because the reduction in Social Security outlays, shown in column 4 of Table 1, continue to grow in relative terms. This slows the decline of the trust fund and permits it to be an increasing share of earnings in the long-run if the pay-as-you-go tax rate is maintained at 12.4 percent.

If the benefit offset rate were less than 75 percent, the pay-as-you-go tax rate required in the long-run to finance the net benefits would be greater than 12.4 percent. For example, with a 50 percent benefit offset rate, the pay-as-you-go tax rate can be maintained at 12.4 percent with a PRA contribution rate at 3.5 percent rather than 2.3 percent.

3. National Saving and Increased GDP

PRA's would increase national saving and capital accumulation. Unlike other tax cuts that might be financed with the projected budget surpluses, the PRA tax credits would be added to national saving.¹⁴ Although some individuals might be tempted to reduce other saving in response to this new form of accumulation, the vast majority of Americans have too little in financial assets to do any such offsetting. In any case, the 75 percent benefit offset implies that 75 percent of the PRA balance "belongs" to the government and only 25 percent of the assets in the PRA accounts are net wealth of the individuals. Even if individuals reduced other saving by the full amount of their share of the PRA deposits (i.e., 25 percent of total PRA deposits), the growth of the nation's net capital stock would be substantially greater than it would otherwise have been. This section reports results under the assumption that the nation's capital stock increases by the full growth of the assets in PRA accounts; readers who believe that individuals would reduce their other saving

¹⁴We assume that in the absence of the PRA program the government would use the projected budget surpluses to finance various tax cuts and spending increases, bringing the economy back to budget balance. If the government used the entire budget surplus to retire existing national debt, the national saving rate would rise by an equal amount.

can decrease these amounts by up to one-fourth of the total value.¹⁵

The aggregate value of the assets in the PRA accounts grows over time because of the difference between the PRA deposits and the annuity withdrawals. The primary source of the increase after the early years is, however, the 5.5 percent return that is earned on the net assets in the PRA accounts.

The magnitude of the PRA deposits and annuity withdrawals are shown in columns 1 and 2 of Table 1. The resulting growth of the PRA assets is shown in column 1 of table 2. These assets grow from \$81 billion in the year 2000 (the first year of the program) to \$1240 billion in 2010. By the year 2020, the assets are \$3.1 trillion and by 2040, they are \$8.7 trillion. These amounts are all in 1998 dollars. To put these numbers in perspective, they are expressed in column 2 as a percentage of the projected GDP. The ratio of assets to GDP rises from 12.0 percent in 2010 to 26.6 percent in 2020 and 57.3 percent in 2040.

What is the impact of this asset accumulation on economic growth and GDP? An increase in the PRA assets raises gross domestic product because the incremental capital that those assets represent earns a substantial rate of return. Using the 8.5 percent real rate of return on nonfinancial corporate capital that the United States has experienced during the past half century¹⁶ implies that real GDP is increased by \$105 billion in 2010 (i.e., 8.5 percent of the \$1,240 billion increase in assets), by \$267 billion in 2020 and by \$738 billion in 2040. These figures are shown in column 3 of Table 2 and are expressed as percentages of the baseline projected GDP in column

¹⁵Some readers may believe that individuals will be stimulated by these accounts to recognize the value of saving and will actually increase their other saving. We should note again that the impact on national saving assumes also that in the absence of the PRA program the projected budget surpluses will be used to cut taxes or increase government spending in ways that do not add to national saving.

¹⁶The increase in the capital stock would reduce the real return on capital by increasing the ratio of capital to labor. But even after 70 years when the additional capital is estimated to be 70 percent of the baseline GDP, this would only raise the currently projected capital stock by about 20 percent. A standard economic analysis would imply that this reduces the rate of return from 8.5 percent to about 6.9 percent. The lower capital income would be balanced by higher wage income, essentially maintaining a GDP increase equal to the 8.5 percent rate of return.

4. These calculations imply that the PRA program raises real GDP by 2.3 percent in 2020, by 4.9 percent in 2040 and by 6.0 percent at the end of the 70 year forecast period. This is equivalent to an increase in the real rate of growth of about 0.08 per cent per year for 70 years.¹⁷

4. The Budget Impact

As we noted earlier, the taxable earnings on which the 2.3 percent PRA savings are based are currently equal to 40 percent of GDP. The PRA deposits therefore have a budget cost equal to 0.92 percent of GDP. The Congressional Budget Office now projects that the budget surplus will average 2.2 percent of GDP from 2000 to 2009 (the last year of their official budget forecast) when it will reach 2.8 percent of GDP. Although official annual CBO figures for the surplus after 2009 are not available, the CBO projects surpluses until after 2020. This implies that the PRA deposits of 2.3 percent of taxable payroll (0.92 percent of GDP) can be financed without a tax increase, a reduction in other government spending or a budget deficit until well past 2010. Before considering what happens when the increasing outlays for Social Security and Medicare bring the projected budget surpluses to an end, consider what happens in the more distant future.

The 5.5 percent real rate of return that the PRA accounts are assumed to receive has been the historic rate of return earned by portfolio investors after the corporations have paid corporate profits taxes and property taxes to federal, state and local governments. Since the total pretax return is 8.5 percent, the extra revenue collected by federal, state and local governments is equal to 3.0 percent of the PRA assets. Taking that extra revenue into account implies a more favorable overall budget impact of the PRA program.

The Federal government share of that revenue could be used to finance the tax credits for the PRA deposits. To get a sense of the potential importance of this additional tax revenue,

¹⁷It is of course possible that the real rate of return earned on the incremental capital generated by the PRA assets would be less than 8.5 percent because some of those funds are used in housing construction (which earns a lower rate of return) or because some of the funds are invested abroad where the United States earns only the return net of the foreign corporate taxes.

consider the implication of assuming that the federal corporate tax on pretax earnings will be equivalent to 2 percent of the PRA balances in a given year. This corresponds to an effective tax rate of $2/8.5$ or 23.53 percent, which is substantially below the statutory rate. This is the fraction of the 8.5 percent increase in GDP shown in columns 3 and 4 of Table 2 that we assume will be recovered by the federal corporate tax. By the year 2020, this revenue would be 0.53 percent of GDP, enough to finance more than half of the cost of the PRA tax credits (equal to 0.92 percent of GDP); see columns 5 and 6 of Table 2. By 2030, the extra corporate tax revenue would be 0.86 percent of GDP, essentially enough to finance the entire cost of the PRA tax credits. After that year, the additional corporate tax revenue would be more than enough to finance the PRA tax credits and could be used to expand the size of the PRA programs, raising retirement incomes, or further reducing the required pay-as-you-go tax rates.

5. Summary

A program of Personal Retirement Accounts (PRAs) funded by deposits equal to 2.3 percent of earnings (up to the Social Security maximum) would permit retirees to receive more income in retirement than with the current Social Security program while at the same time making it unnecessary to increase the 12.4 percent payroll tax in response to the aging of the population. The gross cost of the deposits, approximately 0.9 percent of GDP, could be financed for more than a decade out of the budget surpluses currently projected by the Congressional Budget Office. By the year 2030, the additional corporate tax revenue that results from the enlarged capital stock financed by PRA assets would be able to finance fully these personal tax credits. During the intervening years (about 2020 to 2030), a reduction of other government spending or an increase in taxes would be needed if budget deficits are to be avoided. If implemented, the PRA program would not only increase retirement income and stabilize the Social Security payroll tax. It would also cause a substantial increase in national saving and GDP.

Table 1
Effects of PRA Deposits and Annuities on Social Security Outlays

Year	PRA Deposits (\$ Billions)*	PRA Annuities (\$ Billions)*	PRA Annuities (% of Payroll)**	SS Outlay Reductions (% of Payroll)**	SS Trust Fund (% of Payroll)**
2000	81.15	0.00	0.00	0.00	25.46
2010	94.21	5.87	0.14	0.11	41.33
2020	106.05	40.88	0.89	0.66	43.85
2030	116.78	129.11	2.54	1.91	25.32
2040	130.66	273.01	4.81	3.60	4.37
2050	144.62	481.30	7.65	5.74	3.14
2060	159.23	690.77	9.98	7.48	19.42
2070	175.60	825.98	10.82	8.11	43.06

Notes:

These figures correspond to Feldstein and Samwick (1998), Table 1, updated to the 1998 Trustees= Report.

* Billions of dollars at the 1998 price level.

** Percentage of Social Security taxable payroll.

Table 2
PRA Assets, Increases in GDP, and Corporate Tax Revenue

Year	PRA Assets		GDP Increase		Corporate Tax Revenue	
	(\$ Billions)*	(% of GDP)**	(\$ Billions)*	(% of GDP)**	(\$ Billions)*	(% of GDP)**
2010	1239.68	11.98	105.37	1.02	24.79	0.24
2020	3140.83	26.55	266.97	2.26	62.82	0.53
2030	5728.44	43.14	486.92	3.67	114.57	0.86
2040	8679.73	57.30	737.78	4.87	173.59	1.15
2050	11542.09	67.53	981.08	5.74	230.84	1.35
2060	13718.59	71.51	1166.08	6.08	274.37	1.43
2070	15224.45	70.60	1294.08	6.00	304.49	1.41

Notes:

1) These figures correspond to Feldstein and Samwick (1998), Table 2, updated to the 1998 Trustees= Report.

2) GDP Increases are equal to 8.5 percent of the PRA assets.

3) Corporate Tax Revenues are equal to 2 percent of the balance in Personal Retirement Accounts.

* Billions of dollars at the 1998 price level.

** Percentage of baseline GDP forecast

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