University of Michigan Retirement Research Center

Working Paper
WP 2005-105

Retirement, Saving, Benefit Claiming and Solvency Under a Partial System of Voluntary Personal Accounts

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MRRC

Project #: UM05-02

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October 2005

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Acknowledgements

This work was supported by a grant from the Social Security Administration through the Michigan Retirement Research Center (Grant # 10-P-98358-5). The findings and conclusions expressed are solely those of the author and do not represent the views of the Social Security Administration, any agency of the Federal government, or the Michigan Retirement Research Center.

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Abstract

This paper is based on a structural model of retirement and saving, estimated with data for a sample of married men in the Health and Retirement Study. The model simulates how various features of a system of personal Social Security accounts jointly affects retirement, saving, the choice of whether benefits are taken as an annuity or lump sum, taxes paid and the course of benefits with age. Among our findings: Under a system of partial personal accounts, the fraction of 62 year olds at full time work would decline by about 22 percent compared to retirements under the current benefit formula. If the current system were replaced completely by personal accounts, the fraction at full time work would decline by about a third. If all benefits from personal accounts could be taken as a lump sum, the fraction not retired at age 62 would fall by about 5 percentage points compared to a system where there is mandatory annuitization of benefits. Unless annuitization is mandatory, there would be substantial diversion of benefits to age 62, reducing benefits received in one's 70s and 80s by 20 percent or more.

Authors' Acknowledgements

An earlier version of this paper was delivered at the 7th Annual Joint Conference of the Retirement Research Consortium, "Towards a Secure Retirement System," August 11-12, 2005, Washington, D.C.

This paper investigates how introducing personal accounts into a program of Social Security reform is likely to affect retirement, saving, lump sum payouts and the course of benefits with age, taxes and related outcomes. We use a structural model of retirement and saving to estimate the likely effects of design features adopted by different proposals on outcomes of interest. The interplay between the income effect of personal accounts, the additional crediting of benefits for work at older ages created by the accounts, the demand for liquidity and role of time preference in determining the timing of the cash out decision for personal accounts, all create links to the timing of the retirement decision, and to the flow of benefits and taxes.

Three important design features are considered –whether participation in personal accounts is voluntary or mandatory; whether the accounts partially or fully replace the current benefit system; and whether lump sum payouts are permitted, or benefits must be annuitized. Alternative approaches to these and other design features differentiate the proposals by President Bush's Commission to Strengthen Social Security from earlier proposals, such as those contained in a series of papers by Martin Feldstein and Andrew Samwick (1998a, 1998b, 2001). The choice of annuitizing benefits or taking them partially or fully as a lump sum is a crucial design feature that has not received much attention in earlier studies, but is a significant determinant of the course of benefits throughout retirement.

Section II estimates the structural model of retirement and saving that underlies our analysis. Section III uses the model to examine the effects of alternative proposals that the introduction of carve out personal accounts will have on the course of retirement, participation in personal accounts, whether benefits from personal accounts are taken in the form of lump sums or annuities, and the flow of retirement benefits and taxes. Section IV concludes.

II. A Structural Retirement Model of Retirement and Saving.

The model estimated here jointly explains retirement and saving, allowing for heterogeneity in time preference and tastes for leisure. In the basic model, the individual is assumed to maximize a utility function of consumption and leisure over time:

$$U = \int_0^T e^{-\rho t} \sum_{m=0}^{2} [s_{m,t} (\tfrac{1}{\alpha} C_{m,t}^{\alpha} + h_t L_{m,t})] \ dt$$

Here, C is consumption and L is the utility value of leisure. t indexes time over the individual's adult life, and ρ is the time preference rate. m indexes three survival states for a married individual: both spouses are alive; only the respondent is alive; or only the spouse is alive. $s_{m,t}$ is the probability that the couple is in the survival state denoted by m at time t.

The relative value of leisure at time t is represented by the term h_t, where h_t is given by

$$h_t = e^{X_t\beta + \varepsilon}.$$

X_t contains a constant, an age variable, an indicator of poor health, and the birth year. The age variable increases the value of leisure smoothly over time as work becomes less attractive with age. As the value of leisure increases, at some point it surpasses the utility of the consumption that continued work makes possible, and the individual retires. It is important to note that the effects of age are gradual, and that unlike many models of retirement, in this model there are no terms in the preference function which would make retirement suddenly more desirable at specific ages such as 62 or 65. The parameter ε in the expression for h_t varies among individuals and reflects the fact that some individuals give leisure more weight than others. It is presumed to come from a normal distribution with zero mean and standard deviation σ_ε.

Individuals working more than 30 hours per week and more than 1560 hours per year are classified as full-time. Those working more than 100 hours per year but less than 25 hours per week are classified as part-time. Individuals who fall between full-time and part-time or between part-time and retired are classified on the basis of self reports.

The utility value of leisure takes on a value of 0 for full-time work and 1 for full retirement. For partial retirement it should take on a value L_p between 0.5 and 1. We assume that each individual gets a random draw of L_p from the relevant part of the exponential distribution $k\,e^{\delta L_p}$. k is a constant necessary to normalize the distribution to integrate to unity between 0.5 and 1. In order to reflect that partial retirement becomes relatively more common at older ages, we allow this distribution to shift as the individual ages by specifying that $\delta = \delta_o + \delta_a$ Age. Thus the entire distribution of the preferences for partial retirement increases over time, although everyone maintains their relative position in the distribution.

These preferences allow for three types of heterogeneity. The time preference parameter ρ is treated as a fixed effect whose value makes the wealth implied by the model consistent with the observable wealth in 1992 for each individual. The other two types of heterogeneity are ε, the general preference for leisure, and L_p, the relative attractiveness of partial retirement. They are treated as random unobserved effects within the model, coming from distributions characterized by σ_ε, δ_o and δ_a.

This utility function is maximized subject to the constraint

$$A_t = (1 + r)\, A_{t-1} + W_t\,(1 - L_t) + E_t + B_t - C_t\,.$$

In this equation, A_t is the level of assets at time t, and r is the real interest rate. The next term $W_t\,(1 - L_t)$ is earnings, with the wage rate being either the full-time wage or the partial retirement real wage rate depending on the choice of L_t. E_t is the earnings of the spouse, including any pension benefits. B_t is the sum of the individual's own pension benefits and family Social Security benefits, both of which may be influenced by the individual's previous and current work decisions. C_t is consumption at time t. The Social Security benefits are determined by applying the current benefit formula to the individual's own earnings history, augmenting earnings records available through 1991 by self reported earnings and information on Social Security coverage reported in the survey instrument. Note that the pension and Social Security amounts are actual benefits, not accruals. This means that Social Security and pension wealth are not explicitly calculated but rather are implicitly determined by the fact that the benefits enter the asset constraint in future periods.

Among other factors, we specify the budget constraint to include minimum hours constraints requiring full time work or none at all on long term jobs and lower wage offers in partial retirement jobs. Also included are nonlinear benefit accrual profiles in defined benefit pension plans, reflecting incentives to accept early retirement and other features of DB plans, and the nonlinearities created by various provisions affecting the traditional Social Security benefit.

Estimation is based on the general method of simulated moments. We base estimates on random draws of parameters, and then simulate the model 10,000 times.

B. Data Source:

The analysis is based on data from the first six waves of the Health and Retirement Study, collected biannually from 1992 to 2002, including restricted Social Security and pension data collected in the initial year of the survey. Simulations include married men only. The simulations use a real interest rate of 4.31 percent per year as the assumed return on investments in personal accounts. This is the average compounded rate from 1926-2002 of an asset basket of 50 percent large cap stocks, 5 percent long-term bonds (treasury bonds) and 45 percent treasury notes, as measured by Ibbotson Associates.

C. Parameter Estimates

Table 1 reports parameter estimates. Appendix Table 1 indicates reasons for deletions of observations from the sample. There are 46 moments in the estimation, leaving 38 degrees of freedom. The cutoff points of the chi-squared distribution are 53.15 for 5 percent, so the model is not rejected at the 5% significance level. The coefficients are of similar magnitudes to those in our earlier estimates. Everything except the vintage coefficient is significant. A key to understanding these results is in the time preference rates. These rates are heterogeneous, with 45 percent of the population exhibiting time preference rates above 5 percent, and one third exhibiting time preference rates of 20 percent or greater.[1]

Table 2 reports observed retirement outcomes, and simulated retirement outcomes under the current program, with each included individual having the work history actually experienced, and reflected in own Social Security earnings record and reported job history. Comparing these two tables, the spike in retirements from full time work at age 62 is approximately the right height, although the spike at age 65 is 1 to 3 percentage points too low. Comparing the flow into full retirement, the spikes at both 62 and 65 are a couple of points too low.[2]

III. Policy Simulations.

For the policy simulations, we use current law projections, meaning that the population is assumed to have been covered over their full lifetimes by the final set of Social Security rules now on the books. These rules include a normal retirement age of 67, a delayed retirement credit of 8 percent, and a payroll tax contribution of 10.6% of wages.

[1] Distribution of Time Preference Rates

0-.05	.05-.1	.1-.15	.15-.2	.2-.25	.25-.3	.3-.35	.35-.4	.4-.45	.45-.5	.5-.55
474	759	170	59	29	22	12	10	4	8	4
.55-.6	.6-.65	.65-.7	.7-.75	.75-.8	.8-.85	.85-.9	.9-.95	.95-1	>1	
2	1	4	2	1	1	2	1	2	664	

[2] To match the flow of retirements at 65 may require an additional explanation. The availability of Medicare at age 65 reduces the value of employer provided health insurance after that age. At 65, there essentially is a reduction in the wage of an employed person. It is important to recognize that the missing influence of health insurance does not reflect the effect of health insurance coverage per se. Those who are sufficiently well informed could obtain Cobra coverage at age 63.5 that would last until they became eligible for Medicare. So if the absence of coverage were the key determinant of retirement, instead of the net wage, and if workers were sufficiently well informed about COBRA, there would be a secondary spike in retirement at age 63.5, rather than at age 65. We have investigated the role of employer provided retiree health insurance and found that role to be minor. This finding has been supported in the work of Blau and Gilleskie (2005) and others.

The policies are simulated by altering the budget constraint described above to build a baseline partial, voluntary personal account system, and then to simulate the effects of changing various features of the system. Under each policy alternative, the individual is simulated to maximize lifetime utility. The incentives created by each alternative proposal generate behavioral responses. Given the resulting earnings histories and the choice to participate in a personal account, there is a string of tax contributions to the conventional system and to the personal accounts. Payments from the account depend on the extent to which annuitization is required or lump sum payments are permitted, and the behavior governing the claiming of the lump sum and the annuity from the personal account. The course of the conventional benefits depends both on the offset rule adopted for reducing conventional benefits when a person chooses to participate in a personal account, and again on claiming behavior.

Alternative policies will create different substitution and wealth effects. Under the current system, a person who has been working 35 years enjoys a gain in benefits from another year of work that depends on the relation of earnings in the marginal year to the lowest indexed earnings used in computing Average Indexed Monthly Earnings among all previous years of work, and on earnings in other years. But if the interest rate on the personal account exceeds the discount rate used to reduce (offset) conventional benefits, a personal account allows some of the taxes to be used to raise future benefits. Any enhanced substitution effect created here will encourage delayed retirement. As long as benefits are higher with the personal account than without it, there also will be a wealth effect; but that will encourage earlier retirement.

Because individuals differ importantly in their time preference, some individuals will value lump sum benefits over an actuarially fair annuity (Gustman and Steinmeier, 2005a). In the initial specification of the model, lump sum benefits have only an indirect effect on retirement. When a lump sum benefit is claimed, that reduces the marginal utility of consumption around the time of claiming, especially for those with a high time preference rate whose consumption is constrained by a lack of liquid wealth. This reduces the value of continued work and encourages retirement. Those with high time preference rates will claim their lump sum immediately because they will value immediate cash over future benefits that are increased on an actuarially fair basis using an interest rate that is well below the time preference rate of the individual. But this claiming behavior will not affect retirement as long as the person is free to claim the lump sum and the earnings test at age 62 does not affect the lump sum benefit.

Some initial caveats should be mentioned. There is no agreement about how best to balance the finances of the Social Security system. Depending on how one weighs the resulting distribution, one may favor reducing benefits or increasing taxes. Without any clear guidance on how the finances of the system will be balanced, we focus on first round behavioral responses to personal accounts – but do not include benefit or tax changes that would balance the system. We do not analyze the additional effects of introducing balance into the finances of the Social Security system[3] Because we are focusing on first round behavioral responses, we do not require the different policy changes we consider to have the same financial consequences for Social Security. That is, to understand the effects of various features on retirement and other outcomes, we relax one feature at a time, but do not then change the overall benefit in such a way as to be comparing programs with identical deficits. The second major caveat pertains to the absence of adjustments for risk. The additional benefits resulting from the higher return on personal accounts are not risk adjusted. We use a long run historical return for a mixed stock and bond portfolio that is meant to be reasonably conservative, but we do not assume here that when choosing whether to participate in personal accounts, participants treat any additional returns to stocks over bonds as due solely to risk. It is important to note that there is some balance in our assumptions. Although there is no risk adjustment for the returns to the personal accounts, we also do not discount benefits under the conventional formula to reflect perceived political risk. Only one type of risk is explicitly taken into account. Respondents do value the insurance provided by the annuity.

A. Structure of Baseline Personal Accounts

We begin by specifying a baseline personal account, and then explore the effects of changing some of its key characteristics. The baseline personal accounts are presumed to work the following way. At the time the individual registers for benefits, the PIA is reduced to take

[3]In this paper we assume the future course of benefits is determined by current law, so that behavioral responses examined here are due only to the introduction of particular provisions of personal accounts. The proposals by the President's Commission to Strengthen Social Security would reduce benefits from those called for under current law. One effect is that the Commission's proposal would increase labor supply (Gustman and Steinmeier, 2005b).

into account the contributions to the personal accounts.[4] The resulting amount is the modified PIA. The personal account is divided into two parts. One part is required to be annuitized into a real annuity at the real interest rate and brings the total of the PIA plus the required annuity up to a minimal level. The other part is allowed either to be taken as a lump sum or annuitized, as the individual prefers. Further details of the process are contained in the following paragraphs.

The baseline accounts are financed with a 4 percentage point payroll tax rate taken from current payroll taxes. It is assumed that the accounts are voluntary. Accordingly, total utility is calculated both with and without the personal accounts, and the individual is presumed to choose whichever yields the most utility. This is an either / or decision; either the individual eschews personal accounts completely or invests in them to the permissible amount. We do not examine the case where the contribution decisions can differ year to year. Nor do we examine cases where the wife's participation decision is different from the husband; if the husband chooses personal accounts, the wife does as well.

In the baseline package, there is a minimum required annuity. The sum of the traditional benefit (PIA) plus required annuities from the personal accounts for the two spouses must reach the family poverty level. After that the beneficiary is free to take the payment as a lump sum, beginning at age 62.[5] At the time of the individual's application, the sum of the individual's PIA plus the spouse's then current PIA is subtracted from the family poverty level. The difference is what the two required annuities must cover. The required annuity for the individual is the total required annuity times the ratio of the individual's PIA to the sum of the two PIA's.

There are other assumptions underlying the specification of the basic package of personal accounts. The earnings test is assumed to apply proportionately to the two benefits. That is, the

[4] We assume that benefits in the traditional account are reduced via a prorata method. The pro-rata method uses two hypothetical accounts. The first accumulates cumulatively the contributions to the private accounts at the offset rate of 2.5 percent real, which is the interest rate specified in the President's Commission's model 3. The second accumulates cumulatively the contributions to the traditional system, also at 2.5 percent real. Benefits are reduced by the percentage of the sum of the cumulative accounts that is due to the contributions to the private accounts. In the current law projection case, with partial accounts this is 4.0 / 10.6 = 37.7%, which is the amount by which traditional benefits are reduced. This applies to the individual's own benefits and the spouse's spouse and survivor benefits which are due to the individual's earnings.

[5] We also consider the effects of requiring the sum of the adjusted traditional PIA plus the required annuities to reach the single person poverty level; or the sum of the adjusted traditional PIA plus the required annuities to reach the unadjusted traditional PIA level (which is the amount that would be calculated from the current formula). The larger the required annuity, the less influential lump sum benefits are on retirement and retirement benefits.

test is applied to the sum of the traditional benefits plus the required annuities to calculate the percent of benefits that are lost.[6]

Any sum accumulated in the personal accounts above the required level of annuitization is presumed to be available as a lump sum payment at age 62.[7]

B. Participation in Personal Accounts

Simulations include a number of outcomes – retirement, the percent of individuals choosing personal accounts vs. traditional benefits only, the percent choosing annuities vs. lump sums for the part of the personal accounts above what is required to be annuitized, annual benefits broken out between benefits from traditional Social Security and benefits from the personal accounts, and the total values of benefits and taxes. Each simulation is done twice, one in which personal accounts are available and one in which they are not. The one with the highest lifetime total utility is presumed to be chosen. Since there is no uncertainty regarding the returns, almost all of the middle and high income households choose personal accounts, and most of the low income households do as well, especially those who retire at younger ages.

Participation in these personal accounts is very high. This is not a behavioral outcome, but is the result of the construction of the model. We have assumed away uncertainty in the returns to the account. When we tabulate the proportion who choose personal accounts, since there is no stock market investment risk in this model, most people choose to participate. Only

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[6] It is difficult to conceive of a system that would apply the earnings test to the lump sums, since the lump sums are almost by definition amounts that are above the amounts required to achieve the desired level of annual benefits. Similarly, the fate of any new contributions to the personal accounts depends on the status of the accounts.

If the required annuities do not exhaust the accounts, then the contributions would be available, plus interest, in the next year. If, however, the accounts are insufficient to bring the total annuities up to the required levels, then any new contributions would go to purchase additional annuities to narrow the shortfall. For instance, suppose that traditional benefits are $8,000 and the required annuities from the personal accounts are $4000. If the earnings test limit is $6,000 with a $1 reduction for every $2 in earnings above that amount, and if earnings are $20,000, then $7,000 [= 0.5 * (20,000 – 6,000)] in benefits are lost. Two thirds of this ($4,667) are lost from the traditional benefits and one third ($2,333) is lost from the required annuities from the personal accounts, since the unreduced traditional benefits are two-thirds [= 8,000 / (8,000 + 4,000)] of total unreduced benefits. The lost traditional benefits increase later traditional benefits in the usual fashion. For the benefits that are lost from the required annuity, the lost benefits are invested at the real rate of return, and the following year the amount is annuitized and added to the previous required annuity.

[7] We also analyzed whether the required and optional annuities purchased from the personal accounts are to be single life or joint and two-thirds annuities. The presumption is that the eventual regulations would probably require joint annuities, but this investigates whether there is any substantial change in behavior as a result. When single annuities are permitted, there is little change in retirement. But total benefits are higher under single annuities. A disproportionate amount of these benefits are taken at age 62, so that benefits received in one's late 70's or 80's are lower than in the basic package, despite the fact that total benefits are higher.

about 2 percent of all husbands from two-earner households choose not to participate, and among the bottom third of earners, 5 percent choose not to participate. When the individual is allowed to fully withdraw benefits in the form of a lump sum, participation in personal accounts rises to above 99 percent, with 98 percent of the low earners choosing to participate.

C. Retirement Outcomes

Table 3 presents retirement outcomes *at age 62* under alternative specifications of systems of personal accounts. The first three columns report the cumulative levels of the fractions of married men who are not retired, partially retired and fully retired. The last column reports the percent retiring from full time work at age 62.

For purposes of comparison, line 1 of Table 3, and subsequent tables, reports retirement outcomes assuming provisions of current law were fully implemented for the entire work lives of the sample of married HRS respondents. By age 62, almost 44 percent of the population of married men is projected to be fully retired, with almost 42 percent reporting themselves as not retired. At age 62, column 4 indicates that 15.6 percent of married men are retiring from full time work.

Line 2 indicates retirement under the baseline reform package of personal accounts. As seen by comparing lines 1 and 2 of Table 3, the base package of personal accounts substantially increases retirements by age 62, raising the percent fully retired from 43.8 percent to 57.6 percent, while reducing the fraction not retired by 9.1 percentage points, and reducing the fraction partially retired by 4.7 percentage points.[8]

There are a number of major forces operating to influence retirement under the baseline system of personal accounts. First, there are the conventional substitution and income effects. Given the higher return to investment, the system of personal accounts raises total benefits in retirement, creating an income effect encouraging earlier retirement. On the other hand, there is

[8] There is a secondary spike at age 70, but that is an artifact of the simulations, which assume that all individuals retired at that age.

Although the returns on personal accounts can average out over time, there is a problem when the accounts are annuitized. If the annuities are variable annuities, similar to the annuities TIAA-CREF offers, the value of the benefits will fluctuate year to year, sometimes by substantial amounts, and this runs counter to having a reliable income stream during retirement. If the annuities are fixed in real terms, then it may make a great deal of difference when the annuitization takes place. An individual who annuitized in 2000, for instance, would have twice the annuity as another individual with similar lifetime earnings and contributions who annuitized in 2003. The unequal treatment of roughly equal individuals would make the differences involved in the "notch generation" debate small by comparison, and that debate generated a fair amount of heat. This annuitization problem may be substantial.

a greater reward to continued work for higher income people who otherwise would be in the 15 percent PIA bracket. For those with high time preference -- especially those in the population with a time preference rate well above the interest rate who accrue little saving, and will value a lump sum benefit over an annuity that is of equal present value when evaluated at the market interest rate -- allowing lump sum payouts may create a stronger incentive to retire early. When a lump sum is claimed by those with little other saving, it is likely to be consumed over the next few years, driving down the marginal utility of income from work. As a result, many of those with a high rate of time preference will leave work at age 62. Thus column 4 of Table 3 shows that the fraction leaving full time work increases from 15.6 percent under the current system to 21.6 percent under the basic voluntary system.

Row 3 of Table 3 reports retirement outcomes under a system where the conventional Social Security payroll tax may be entirely converted to a personal account. Comparing lines 2 and 3 thus allows comparison of a system with partial conversion to personal accounts, that is a system based on 4 percentage points of a payroll tax, with a system where the full 10.6 percent payroll tax may be converted to a personal account. While the fraction fully retired at age 62 is 57.6% under a system where the account may include up to 4 percentage points of the payroll tax, it is 63.2% where the full payroll tax may be included in the account. The fraction not retired would decline from 32.8% under a partial system of personal accounts, to 27.9% if the full payroll tax could be included in the personal account, and there would be a .7% difference in the fraction partially retired.

Lines 4 and 5 of Table 3 clarify effects on retirement of allowing lump sum benefits. The simulation in line 4 pertains to a system requiring that all benefits from personal accounts be fully annuitized. The higher return to personal accounts once again creates a wealth effect that exceeds the substitution effect, and thus encourages earlier retirement. The underlying interest rate is well below the time preference rates estimated above for an important fraction of the population, so these individuals will retire early just as they did when facing the conventional benefit structure. However, they do not receive a lump sum benefit, and thus place a higher value on work around age 62 than they would if a lump sum benefit were available. Requiring complete annuitization of benefits from the personal account would reduce the fraction fully retired at age 62 down to 48.3 percent.

Remember that the availability of lump sum benefits at age 62 is not conditioned on whether a person is working. The earnings test applies only to benefits from the conventional system plus benefits from the annuities paid out of the personal account. The present simulations do not provide a mechanism for clawing back any lump sum payments at age 62 should the individual continue working in a job offering long term employment.

Comparing rows 1, 2 and 4 helps us to decompose the decrease in retirement when transitioning from the current system to the baseline system of partial personal accounts. This comparison suggests that 9.3 percentage points of the increase in the fraction fully retired (column 3, row 2 minus row 4) results from the depressing effect of the lump sum payment at age 62 on the marginal utility of work, and 4.5 percentage points of the increase in retirements (row 4 minus row 1) is due to the income effect from receiving higher retirement benefits, net of substitution effect resulting from a higher reward to work at later ages. Analogously, the fraction retiring at age 62 is 18.9 percent when full annuitization is required, up from 15.6 percent under the current system, but would rise to 21.6 percent under the basic, voluntary partial personal account plan. There is a further effect from introducing personal accounts. Specifically, a 4.7 percentage point reduction in the fraction partially retired appears to be almost entirely due to the effects of making lump sum payments available at age 62, with their depressing effects on the marginal utility of consumption for those with high discount rates, rather than to the wealth effect of the higher returns to personal accounts. When the package of personal accounts is introduced, partial retirement falls from 14.3 percent to 9.6 percent. Accordingly, introducing personal accounts reduces work effort by reducing both full time work and partial retirement.[9] However, 15 percent of the population chooses partial retirement when personal accounts are introduced, but lump sum benefits are not available, so the income effect from personal accounts explains almost none of the decline in partial retirement.

Alternatively, as seen in Row 5 of Table 3, if complete lump sum withdrawals were permitted, that is, even those with below poverty incomes were not forced to annuitize a minimum benefit, full retirement would rise to 60.3 percent, with only 31.2 percent not retired at age 62.

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[9] The increase in the lifetime value of personal account benefits when the personal account must be fully annuitized is a reflection of the effect of additional work on earnings, and thus on benefits.

We also conducted a number of other simulations. We found that the choice of offset method used to reduce traditional benefits has little effect on retirement outcomes.[10] Further simulations show the larger the required annuitization, and thus the smaller the lump sum benefits that can be claimed, the lower the retirement rate as a result of adopting personal accounts. Lastly, exempting the annuities from personal accounts from the earnings test will slightly increase work effort.

D. Retirement Saving Under Alternative Plans

In the context of a life cycle model of saving behavior, our assumption of a 4.31% real return to these accounts means that personal accounts will reduce the incentive to save outside of Social Security.[11] Simulated differences in wealth accumulated by age (unadjusted for mortality and undiscounted) are shown in Table 4 for the various programs discussed above. Excluding pensions and Social Security, the highest levels of wealth are accumulated under the current system, averaging about $140,000 at age 61. Wealth accumulated by age 61 is almost $30,000 lower under a system of partial personal accounts, and is $56,000 lower when the current system is fully converted to personal accounts. Part of the gap in saving is made up by lump sum payments which are realized at age 62, the rest (and more) by higher payments at later ages. Even when lump sum benefits are not permitted, as in line 4 of Table 4, the personal account system reduces saving.

E. The Choice Between Lump Sum Payments and Annuitized Benefits

[10]Using an alternative offset method similar to that used by the President's Commission did not have major effects on the findings. In simulations with offsets, it was assumed that the personal accounts were mandatory. With certain returns in the personal accounts that were higher than the offset interest rate, the model would show that everyone would prefer the personal accounts were they voluntary. Here the contributions to the personal accounts are cumulated at the offset rate of 2.5 percent real. The resulting amount is then discounted to the normal retirement age at 2.5 percent real and transformed into a single annuity at the same interest rate. This puts the offset computations on a comparable basis with the PIA, which is the traditional benefit available at normal retirement. Traditional benefits are then reduced by the ratio of this annuity to the PIA. The reduction applies to the individual's own benefit only, and not to any spouse or survivor benefits which depend on the individual's earnings record, since the offset account is annuitized with a single life annuity. A joint annuity would be very difficult to compute, since the spouse benefits depend on the relation of half of the individual's PIA to the spouse's PIA, and the applicable spouse's PIA may well not have been determined at the time the individual applies for benefits. For further discussion of alternative offset methods, see Gustman and Steinmeier (2005c). There we show that the offset method adopted by the President's Commission essentially taxes away the principal created in the private account from payroll tax deposits made in the name of the covered individual. That reduces the insurance the account would otherwise provide against unforeseen changes in Social Security benefits that might be adopted in the future.

[11] Projecting the saving response to personal accounts is a dicey proposition. Given the close positive relation between pensions and other saving, Cagan (1965) and Katona (1965) postulate that pensions may make people more aware of the need for retirement saving, thereby stimulating, rather than substituting for retirement saving.

As seen in Table 5, simulations for the basic package of personal accounts suggests that 46.2 percent will choose a lump sum payment, 48.5 percent will choose a voluntary annuity, and 5.4 percent will not have sufficient annuitized benefits to allow them to take a lump sum. That is, they will not have an annuity equal to the family poverty level. The earlier one retires the greater the proportion choosing to accept a lump sum payment from their personal accounts rather than annuitizing funds available for a voluntary annuity. For example, as seen in Table 5, for the base package of personal accounts, almost two thirds of those retiring in their early fifties choose to take a lump sum settlement when they reach age 62, while 40 to 47 percent of those retiring between 58 and 62 choose a lump sum settlement. Seventy percent of those retiring at exactly 62 choose a lump sum settlement. Among those retiring from age 63 on, only about a fifth will choose a lump sum settlement over annuitized benefits.

Table B in the Appendix shows how the proportion choosing lump sum vs. voluntary annuities out of the discretionary funds in the personal accounts varies among the different plans. Discretionary funds are those in excess of any annuity that is required to ensure that retirement income meets the minimum level specified in the plan. For most variations of the personal account plans, about half of participants choose to take their benefits from the personal account as a lump sum. We will see below that the heterogeneity in the decision to accept a lump sum benefit will affect the distribution of retirement income at different ages.

F. Benefits by Age

Despite having only modest effects on retirement, the features of these alternative systems have major effects on retirement incomes of the covered populations. Where annuitization is not mandatory, as noted in Table 5, many will choose to take lump sum payments at age 62. Thus we see in Table 6A in those programs where lump sum payments are permitted, i.e., in rows 2, 3 and 5, the average benefit taken at age 62 (in 1992 dollars) is equal in dollar amount to two to four times the average yearly annuitized benefit paid at age 70.

In contrast, as seen in row 4 of Table 6A, in plans for personal accounts where full annuitization is required, the average benefit taken at age 62 is much lower than the average benefit at age 70, as many put off benefit claiming until a later age. Moreover, within those plans allowing a lump sum payment, the lower the required annuity, and the higher the permitted lump sum, the smaller the yearly benefit at older ages compared to the benefit at age 62.

One issue is how widows will fare if lump sum benefits are claimed at age 62, either by the family when both spouses are alive, or by the widow. Table 6B shows that spouses on average will be just as well off under the baseline system of partial privatization as under the current program, assuming the 4.31% real return to the personal account portfolio. Scanning down the benefits by program for 85 year olds, widow's benefits will be higher than under the current program only if there is complete conversion of the current system to personal accounts, or if under a plan with partial personal accounts, annuitization is mandatory.

G. Comparing Benefits and Taxes

Total taxes and benefits over the lifetime are shown in Table 7, where taxes and benefits are shown in 1992 dollars, adjusted for mortality, but not discounted. Total taxes paid decline by 1.2 percent under the baseline personal account program, compared to the current law projections for traditional Social Security benefits. In addition to the decline in total taxes paid, there is a much larger decline in taxes paid into the trust fund as taxes are diverted to personal accounts. For the baseline personal account program, the maximum decline in taxes paid into the trust fund due to diversion of taxes from conventional benefits to personal accounts is 37.7 percent (4/10.6).[12]

Table 7 also shows the decline in lifetime benefits from $328,955 to $199,878, or almost 40 percent. Thus the decline in benefits and taxes from adoption of personal accounts are roughly of the same proportion. However, because taxes are reduced years before benefits are reduced, the movement to personal accounts does present a solvency problem. Given the assumption of a real return to the personal account portfolio of 4.31 percent per year, and the heavy pattern of participation in these accounts, the increase in *total* benefits, i.e. the sum of benefits from the traditional system and from personal accounts, is substantial, rising from $328,955 to $410,434.[13]

H. Implications of Having An Effective Earnings Test on Lump Sum Benefits

There are alternative policies that might link the availability of lump sum benefits to continued work. For example, suppose that to prevent a wave of cash outs at age 62, the lump sum were paid out in four quarterly payments that required the individual be retired. Or a

[12]The actual decline in taxes is slightly less than 37.7 percent since 5 percent of covered workers will choose not to accept the personal account, and these will mainly come from the ranks of low income workers.

[13] Again, this calculation does not take into account any risk premium either for stock market investment, or the political risk to current Social Security promises.

waiting period were instituted, where the person had to be out of the labor market for a specified time before the lump sum would be payable. Either of these strategies would establish a link between work and availability of the lump sum benefit that may encourage earlier retirement than if the lump sum payment were not available. Most importantly, either strategy would require a person who wanted the lump sum payout to sever the connection with a long term employer.

IV. Implications and Conclusions

These simulations explore a number of behavioral responses to systems of personal accounts, focusing on those responses that are most relevant to policy design. Particular features of personal accounts will affect retirement behavior, saving, participation in personal accounts, and the choice of whether to take benefits as a lump sum or an annuity. These choices in turn will affect the flow of benefits and taxes, and ultimately the adequacy of benefits.

Among our findings: Under a system of partial personal accounts, total retirement benefits would increase by about a quarter, while the fraction of 62 year olds at full time work would decline by about 22 percent compared to the current system. If the current system were replaced completely by personal accounts, total retirement benefits would increase by about 75 percent and the fraction at full time work would decline by about a third. If all benefits from personal accounts could be taken as a lump sum, the fraction not retired at age 62 would fall by about 5 percentage points compared to a system where there is mandatory annuitization of benefits. When annuitization is voluntary, there will be substantial diversion of benefits to age 62. When annuitization is mandatory, benefits received in one's 70s and 80s may be increased by 20 percent or more.

Retirement responses are relatively modest, but the predicted increase in retirements from adopting partial personal accounts should nevertheless be of concern to policy makers. Increased retirements will further reduce the labor supply of older workers beyond the decline caused by the retirement of the baby boom.

Our analysis simplifies behavior on a number of dimensions. Decision makers are imperfectly informed (Gustman and Steinmeier, 2004b). Their behavior may be influenced by defaults or other factors unrelated to returns (Madrian and Shea, 2001; Choi et al., 2003, 2004). And once again, there is no uncertainty built into the model. Depending on whether a person discounts traditional Social Security benefits or expected stock returns more heavily, one might have a greater or lesser tendency to participate in the personal accounts than are suggested by our simulations.

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Table 1
Estimated Results

Symbol	Description	Coefficient Value	t-statistic
α	Consumption parameter	-0.16	2.60
	Parameters in β		
β_0	Constant	-10.01	246.52
β_a	Coefficient of Age[a]	0.084	4.78
β_h	Coefficient of Health[d]	4.71	4.54
β_c	Coefficient of Cohort[b,d] (Year of Birth)	0.03	0.28
	Parameters in δ		
δ_0	Constant	-3.75	5.93
δ_a	Coefficient of Age[c]	0.56	2.66
σ_ε	Standard Deviation of ε[d]	5.11	6.06
	q value	52.11	
	Number of observations	2231	

Several variables are differenced from their approximate means in the sample in order to facilitate estimation. They are:

[a] The actual variable is age - 62.
[b] The actual variable is cohort - 1936.
[c] The actual variable is age - 65.
[d] These coefficients are all relative to the age coefficient, again to facilitate estimation.

Table 2: Observed and Projected Retirement Percentages

	Observed Retirement Percentages					Projected Retirement Percentages			
	Percentage Retiring		Percentage Retired			Percentage Retiring		Percentage Retired	
Age	From FT Work	Completely	From FT Work	Completely	Observations	From FT Work	Completely	From FT Work	Completely
50	4.1	3.3	4.1	3.3	243	4.5	3.1	4.5	3.1
51	0.9	0	5	3.3	361	1.4	0.9	5.9	4.1
52	2.7	2.2	7.6	5.5	510	1.7	1.2	7.6	5.3
53	2	1.1	9.7	6.6	621	1.5	1.1	9.1	6.4
54	2.1	1.3	11.8	7.9	712	1.9	1.4	11	7.8
55	3.1	2.7	14.9	10.6	801	3.2	2.4	14.2	10.2
56	1.9	2.1	16.8	12.7	907	3.2	2.4	17.4	12.6
57	4	3.2	20.8	15.9	990	3.5	2.8	20.9	15.4
58	3	2.1	23.8	18	1064	4.2	3.4	25.1	18.8
59	3.6	2.1	27.4	20.1	1132	4.5	3.6	29.6	22.4
60	6	6.4	33.4	26.4	1121	6.5	5.3	36.1	27.6
61	6.3	5.5	39.7	31.9	1043	5.4	4.3	41.4	32
62	15.1	12.5	54.8	44.4	986	14.8	10.3	56.2	42.2
63	5.6	3.4	60.4	47.9	909	6.2	4.9	62.4	47.1
64	6.7	6.7	67.1	54.6	843	5.9	4.9	68.2	52
65	9.1	6.7	76.2	61.3	744	6	5.3	74.2	57.3
66	4.5	3.9	80.7	65.2	658	4.5	4.1	78.7	61.3
67	2.8	2.9	83.5	68.1	565	4.2	4	82.9	65.3
68	3.1	3.3	86.7	71.4	472	3.7	3.3	86.6	68.6
69	1.7	4.6	88.4	76	379	3	2.6	89.7	71.3

Total number of observed respondents: 2231

Table 3: Retirement Outcomes Under Alternative Systems of Personal Accounts

	Retirement Status at Age 62			Retirement
	Not Retired	Partially Retired	Fully Retired	Rate From FT Work
Program Features (variation from base package)				
1. Current law projections of traditional Social Security	41.9	14.3	43.8	15.6
Revised Systems with Personal Accounts				
2. Base package of personal accounts	32.8	9.6	57.6	21.6
3. Total conversion to personal accounts	27.9	8.9	63.2	23.3
4. Full annuitization required	36.7	15	48.3	18.9
5. Annuitization optional, full lump sum withdrawal permitted	31.2	8.5	60.3	23.0

Table 4: Wealth by Age Conditional on Both Spouses Living (in 1992 dollars, unadjusted for mortality)

	61	62	70	75	80	85	90
Program Features (variation from base package)							
1. Current law Social Security	140028	148305	155113	122812	88634	56404	29148
2. Base package of personal accounts	111601	138839	123891	95909	67239	41430	20545
3. Total conversion to personal accounts	83907	132864	115582	88687	61425	37339	18108
4. Full annuitization required	113228	120313	111607	87957	62797	39205	19528
5. Annuitization optional, full lump sum permitted	111600	140271	124077	96008	67277	41448	20551

Base package = Current law traditional benefits, voluntary, partial (4% of contribution) accounts, prorated traditional benefits, annuitize to family poverty level, joint and 2/3 annuity, required personal accounts subject to earnings test.

Table 5: Percent Choosing Voluntary Annuities Under Base Package of Personal Accounts

Age Retired From FT Work	No Funds Available	Lump Sum	Voluntary Annuity
50	9	60.9	30.1
51	3.9	64.9	31.2
52	3.9	64.2	31.9
53	1.1	63.3	35.6
54	1.5	57.3	41.2
55	1.6	56.5	41.8
56	3	49.5	47.5
57	1.6	50.4	48.1
58	2.7	45.5	51.8
59	3	46.7	50.2
60	3.2	40.1	56.7
61	3.8	46.4	49.8
62	7.2	69.7	23.1
63	8.3	20.5	71.1
64	8.9	18.8	72.3
65	6.5	20.6	72.8
66	5.5	19.9	74.6
67	3	20.6	76.4
68	4.6	22	73.4
69	6.2	22.7	71.1
70	8.8	37	54.2
All	5.4	46.2	48.5

Table 6A: Traditional Social Security Benefits Plus Benefit From Personal Accounts by Age of Receipt, Assuming Husband and Wife are Alive
(Unadjusted for mortality, in 1992 dollars)

	62	70	75	80	85
Program Features (variation from base package)					
1. Current law projections of traditional Social Security	3679	16139	16906	17059	17059
2. Base package of personal accounts	48147	18665	17444	17347	17407
3. Total conversion to personal accounts	92830	21791	21432	21113	21192
4. Full annuitization required	7044	20978	21898	22078	22128
5. Annuitization optional, full lump sum withdrawal permitted	52012	18386	17110	16999	17061

Base package = Current law traditional benefits, voluntary, partial (4% of contribution) accounts, prorated traditional benefits, annuitize to family poverty level, joint and 2/3 annuity, required personal accounts subject to earnings test.

Table 6B: Traditional Social Security Benefits Plus Benefit From Personal Accounts by Age of Receipt, Assuming Wife Only Is Alive
(Unadjusted for mortality, in 1992 dollars)

	62	70	75	80	85
Program Features (variation from base package)					
1. Current law projections of traditional Social Security	1061	9546	10780	10999	11061
2. Base package of personal accounts	45127	12400	11364	11296	11367
3. Total conversion to personal accounts	89992	15091	14469	14098	14166
4. Full annuitization required	3861	13304	14244	14413	14461
5. Annuitization optional, full lump sum withdrawal permitted	49001	12237	11149	11067	11140

Base package = Current law traditional benefits, voluntary, partial (4% of contribution) accounts, prorated traditional benefits, annuitize to family poverty level, joint and 2/3 annuity, required personal accounts subject to earnings test.

Table 7: Taxes and Expected Family Benefits from Social Security and Personal Accounts
(In 1992 dollars, adjusted for mortality, but not discounted)

		Sum Over Lifetime		
	Sum Taxes	Social Security Benefits	Personal Account Benefits	Total Benefits
Program Features (variation from base package)				
1. Current law projections of traditional Social Security	171428	328955	0	328955
2. Base package of personal accounts	169304	199878	210556	410434
3. Total conversion to personal accounts	167331	0	574346	577009
4. Full annuitization required	169886	199540	251026	450566
5. Annuitization optional, full lump sum withdrawal permitted	169151	199330	207820	407150

Base package = Current law traditional benefits, voluntary, partial (4% of contribution) accounts, prorated traditional benefits, annuitize to family poverty level, joint and 2/3 annuity, required personal accounts subject to earnings test.

Appendix

Appendix Table 1: Reasons for Deletions of Observations

	Obs Dropped	Obs Left
Total sample individuals		12652
Not specified gender	6785	5867
Not specified marital status	1578	4289
Spouse not interviewed if married	133	4156
Not a career worker	497	3659
Ambiguity about whether jobs are ss covered	49	3610
No FT earnings in ss record or self report	36	3574
No sr earnings, and ss earnings over limit	31	3543
Relatively large business assets	291	3252
No Pension Provider record in last job	865	2387
FT years unavailable for spouse	156	2231

Additional Tables:
Table A: Percent Choosing Personal Accounts

Program Features (variation from base package)	Low Income	Total
1. Current law projections of traditional Social Security	0	0
2. Base package of personal accounts	95.4	98.5
3. Full annuitization required	94.1	97.9
4. Annuitization optional, full lump sum withdrawal permitted	98.4	99.4
5. Total conversion to personal accounts	94.7	98.2
6. Mandatory personal accounts, using offset accounts	100.0	100.0
7. Mandatory personal accounts	100.0	100.0
8. Annuitize to single person poverty level	94.9	98.3
9. Annuitization up to currently scheduled PIA	94.9	98.2
10. Single annuities	95.8	98.6
11. Required personal accounts not subject to earnings test	95.6	98.5

Table B: Percent Choosing Lump Sum vs. Voluntary Annuities

	No Funds Available	Lump Sum	Voluntary Annuity
Program Features (variation from base package)			
1. Current law projections of traditional Social Security	100.0	0	0
Revised Systems with Personal Accounts			
2. Base package of personal accounts	5.4	46.2	48.5
3. Full annuitization required	100.0	0	0
4. Annuitization optional, full lump sum withdrawal permitted	0.6	50.1	49.3
5. Total conversion to personal accounts	4.8	45.9	49.2
6. Mandatory personal accounts, using offset accounts	5.0	50.9	44.1
7. Mandatory personal accounts	4.8	46.5	48.7
8. Annuitize to single person poverty level	7.0	45.6	47.4
9. Annuitization up to currently scheduled PIA	4.8	52.9	42.4
10. Single annuities	4.5	63.1	32.4
11. Required personal accounts not subject to earnings test	5.4	45.9	48.6

Base package = Current law traditional benefits, voluntary, partial (4% of contribution) accounts, prorated traditional benefits, annuitize to family poverty level, joint and 2/3 annuity, required personal accounts subject to earnings test.