



Inaugural Issue

Social Insecurity? Personal Accounts and the Stock Market Collapse

By Andrew G. Biggs

The recent financial crisis and ensuing stock market gyrations have drawn renewed attention to Social Security reform, in particular proposals to establish personal retirement accounts that invest in stocks and bonds. As Barack Obama asked a campaign audience, “Imagine if you had some of your Social Security money in the stock market right now. How would you be feeling about the prospects for your retirement?” But despite the recent market downturn, individuals investing four percentage points of the 12.4 percent payroll tax in a personal account holding a “life-cycle” portfolio and retiring today would have increased their total Social Security benefits by more than 15 percent. Moreover, a simulation of ninety-five cohorts of individuals retiring from 1915 through 2008 found that all of them would have increased their total Social Security benefits by holding personal accounts. These results are not intended to understate the risks of equity investment, but rather put them in perspective. Some analysis has overstated the importance of returns over a short period of time relative to those over the full course of a working lifetime by looking at declines in stock returns over only the last year. While individuals retiring today may have ended with a lower account balance than they expected, they would nevertheless have significantly increased their total retirement benefits by virtue of choosing to participate in a personal retirement account.

In recent months, markets have been in turmoil due to the unwinding of the mid-decade housing bubble and its subsequent impact on financial institutions, from Fannie Mae and AIG to Bear Stearns and Wachovia. As of November 2008, the S&P 500 index was down more than 33 percent for the year.¹ These declines follow the bursting of the tech bubble earlier in the decade, which also subjected many investors to significant short-term losses.

These events, coupled with the 2008 presidential campaign, have generated renewed attention to personal retirement accounts for Social Security, which would allow individuals to invest part of their Social Security contributions in stocks and bonds. During the recent campaign, then-candidate Barack Obama told a campaign audience: “If my opponent had his way millions of Americans would

have had their Social Security tied to [the] stock market this week. Millions would have watched as the market tumbled and their nest egg disappeared before their eyes.”² This is a compelling argument, which is why personal-account detractors trot it out whenever the market takes a dive. As Obama asked his audience, “Imagine if you had some of your Social Security money in the stock market right now. How would you be feeling about the prospects for your retirement?” How indeed, if Social Security included personal accounts, would an American retiring today have fared?

The Structure of Social Security Personal Retirement Accounts

Using historical returns from stock and bond markets, I modeled a personal account plan that is roughly representative of those suggested by President George W. Bush or introduced in Congress.

Andrew G. Biggs (andrew.biggs@aei.org) is a resident scholar at AEI. From 2007 to 2008, he was the principal deputy commissioner of the Social Security Administration.

The personal account simulation used here builds upon data and methods in a 2005 working paper by Robert J. Shiller.³ The results differ markedly, however, and differences in methodology will be discussed in following sections. For the moment, however, it is worth reviewing the data and assumptions.

Assume that individuals could voluntarily invest four percentage points of the 12.4 percent payroll tax in a personal retirement account. They would begin making contributions at age twenty-one and retire at sixty-five. Annual earnings and account contributions are simulated using a stylized earnings history for a typical worker created by the Social Security Administration's actuaries.⁴

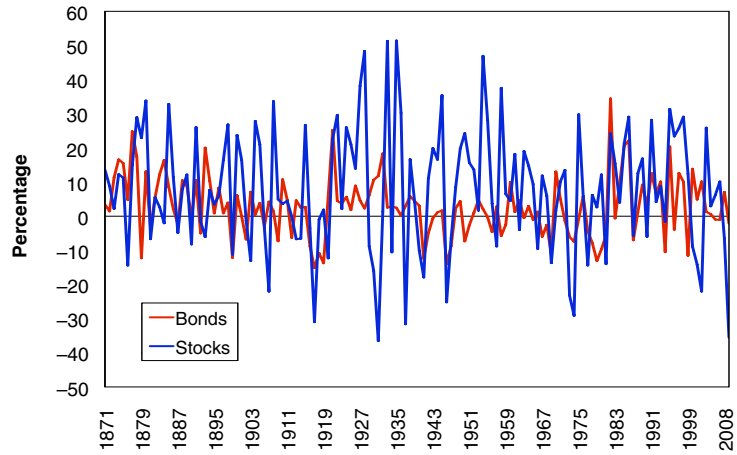
Through his account, the worker would invest in stock and bond index funds; in this case, an S&P 500 index fund and long-term government bonds. I drew market return data from Shiller and updated it through November 2008. Figure 1 illustrates annual returns on stocks and bonds from 1871 through 2008. The geometric mean return on stocks was 6.3 percent above inflation, while the mean return on bonds was 2.5 percent.

The portfolio would be managed on a "life-cycle" basis, meaning that the proportion of stocks and bonds would automatically be adjusted as the individual aged. Following Shiller, accounts would hold 85 percent stocks through age twenty-nine, then gradually decline to 15 percent stocks by age sixty, with annual rebalancing of assets to maintain these proportions. In Bush's 2005 personal account proposal, individuals would automatically be switched to a life-cycle account as of age forty-seven. It is likely that future personal account proposals would make a life-cycle portfolio the default option at all ages, and it is assumed that accounts would be managed in that way throughout the individual's working career.

In terms of annual averages, the account holds 53 percent stocks and 47 percent bonds. Administrative costs are assumed to equal 0.3 percent of assets managed, consistent with general estimates from the Social Security Administration's actuaries. In practice, a management fee of 0.3 percent means that the annual return on the account is reduced by that amount. A gross return of 4.3 percent, for instance, would net to 4 percent after administrative costs.

As personal account participation would be voluntary, traditional benefits must be reduced for account holders.

FIGURE 1
REAL ANNUAL RETURNS, STOCKS AND LONG-TERM
GOVERNMENT BONDS, 1871–NOVEMBER 4, 2008



SOURCE: Author's calculations.

This "offset" to traditional benefits is designed to maintain parity with non-account holders and to reimburse Social Security for the fact that account holders contribute 4 percent less of their wages to the program than do non-account holders. In many proposals, this offset is managed through a "shadow account," a bookkeeping entry that compounds personal account contributions at the interest rate earned by bonds held in the Social Security trust fund. Since tax contributions to Social Security would otherwise be credited to the trust fund, where they would earn the government bond interest rate for the program, the shadow account tracks the reduction to the trust fund balance caused by any given individual diverting part of his taxes to a personal account.⁵ At retirement, the shadow account balance is converted to a monthly traditional benefit reduction via an annuity formula based on interest rates and expected longevity at the time.

In practice, the coupling of the real personal account with the shadow account implies that total Social Security benefits—traditional benefits plus an annuity from the personal account—would increase if the personal account's average return exceeded the average return on a shadow account invested solely in government bonds. Thus, the government bond interest rate represents a "break even" rate of return: if account returns (net of administrative costs) exceed the bond return, then total benefits would increase, but if account returns fell short of the bond return, then total benefits would decline.

Simulating Personal Accounts for Individuals Retiring in 2008

Under Bush's 2005 proposal, personal account investments would have been phased in from 2009–2011 and would have been restricted to individuals age fifty-five and younger. In other words, even had his proposal passed, individuals retiring today would not have had any of their Social Security funds in the market.

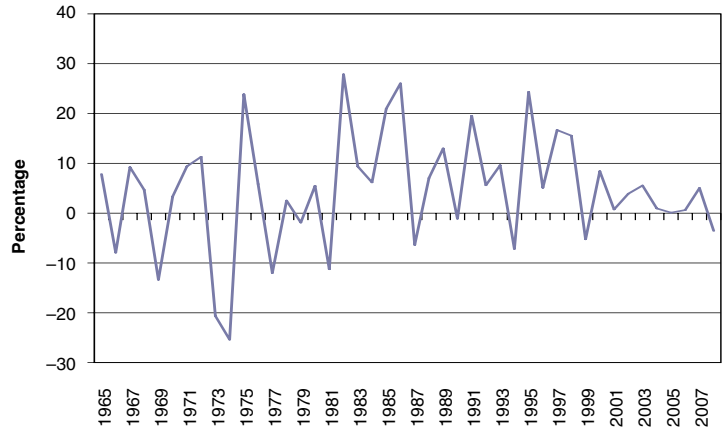
But account critics make a justifiable broader point: market disruptions similar to today's are likely to occur again in the future, just as they have in the past, and it makes sense to imagine how account holders might fare under such conditions. To address this question, I simulated a medium-wage earner investing in a personal account throughout his working lifetime and experiencing historical market returns from 1965 to 2008.

Figure 2 illustrates real annual returns on a life-cycle portfolio for an individual retiring at age sixty-five in 2008, based on data shown in figure 1. As expected, returns fluctuate significantly from year to year due to the stock portion of the portfolio. However, returns become more stable toward the end of the period as the life-cycle portfolio automatically shifts from stocks to bonds. Individuals retiring in 2008 would hold only 15 percent of their portfolios in stocks.

Expressed in 2008 terms, the end balance on our model worker's personal account would equal approximately \$161,500. Using a single life, CPI-indexed annuity formula from the federal Thrift Savings Plan,⁶ this would translate into an annual personal account payment of \$10,330. The shadow account balance would equal approximately \$122,380, which, annuitized at the same rate, would produce an offset to traditional benefits of \$7,830. Netted out, the personal account would increase annual benefits by a total of \$2,500. Measured against the base benefit of a medium earner retiring in 2008 of \$15,730, a worker retiring in 2008 would increase his total Social Security benefits by more than 15 percent by virtue of holding a personal account.

Now, this is not precisely an answer to Obama's question, "How would you be feeling about the prospects for your retirement?"⁷ Personal account holders retiring today would no doubt be disappointed that their account values have fallen—even if, by holding an account, their total

FIGURE 2
REAL ANNUAL RETURNS ON A LIFE-CYCLE PORTFOLIO
FOR AN INDIVIDUAL RETIRING IN 2008



SOURCE: Author's calculations.

benefits had increased relative to those of their neighbors who had remained entirely in the current program. That is human nature. At the same time, however, there is a quantitative answer to Obama's question. "You" *should* be feeling more than 15 percent better off than if you had not participated in a personal account.

The above example is useful in that it provides perspective on claims that current market conditions fatally undermine the substantive case for personal accounts. However, it is based on one set of market returns from 1965 through 2008. Better and worse combinations of returns are likely, so it is useful to expand the simulation.

Again following Shiller, I used historical stock and bond data from 1871 through the present to simulate ninety-five cohorts of workers, retiring from 1915 through today. (As forty-four years of returns are required to simulate a full career, it is not possible to simulate individuals retiring prior to 1915.) The process is identical to that used above: workers are assumed to invest 4 percent of wages in a life-cycle portfolio, while traditional benefits are reduced by the amount of contributions compounded at the government bond interest rate.

Figure 3 illustrates average returns earned over a full working lifetime for each cohort of retirees, compared to the returns on the all-bond shadow account portfolio. The return for retirees in 1915, for instance, is a contribution-weighted average of returns on the life-cycle portfolio for the years 1871 through 1914. The average career-long

return earned by personal account holders was 3.4 percent above inflation, while the average return on an all-bond portfolio was 1.4 percent above inflation. In all cases, returns on life-cycle portfolios exceeded those on an all-bond portfolio. This indicates that in all cases individuals holding personal accounts would have increased their total retirement benefits.

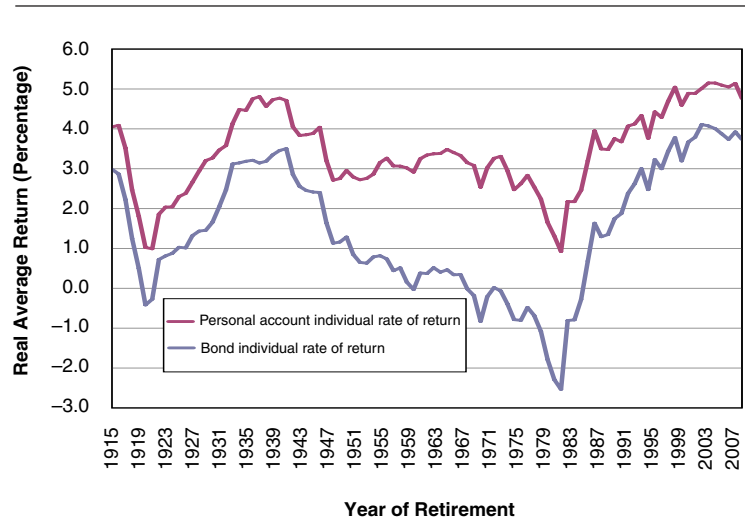
Figure 4 shows estimated increases in total retirement benefits, calculated in the same manner as above. Increases in total Social Security benefits ranged from 6 percent to 23 percent, with an average increase of 15 percent. This again shows that Obama and others' criticism of the market risk associated with personal retirement accounts is not strongly supported by analysis of historical data.

Getting Bond Returns Right

These findings, which appear to support personal accounts invested in stocks and bonds, are contrary to Shiller's. This seems odd at first glance because the results here are built upon his data and methods.⁸ Shiller's paper was widely perceived to show that accounts would not be a good deal for a large number of participants.⁹ Specifically, Shiller concluded that almost one-third of cohorts would fail to break even if accounts were simulated relative to historical returns. If future stock returns were below the historical average, Shiller projects, more than 70 percent of cohorts might lose money. How could such similar simulations offer such contrary conclusions?

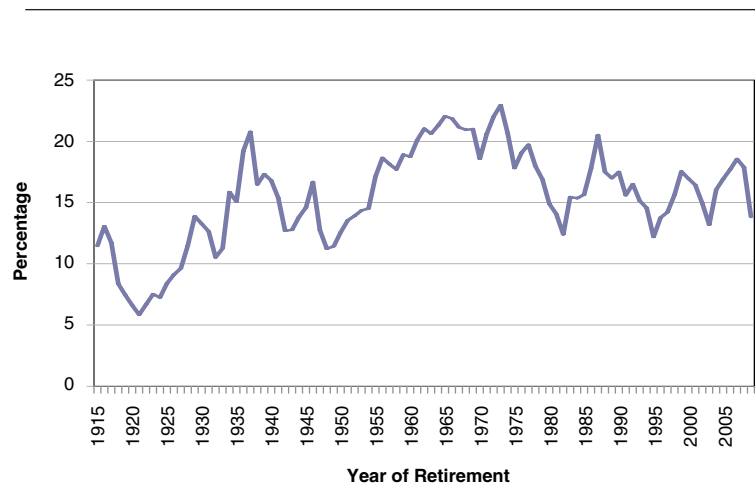
With the exception of the addition of returns from 2005 through November 2008, the historical data used are essentially the same.¹⁰ The key difference comes in the assumption regarding the interest rate charged on the shadow account used to reduce traditional benefits for account holders. Recall that the reason for the shadow account is to compensate the Social Security trust fund for income lost when payroll taxes are diverted to personal accounts. It only makes sense that Social Security contributions diverted to personal accounts should be deducted from account holders' retirement benefits. Compounding account contributions at the trust fund bond rate and then deducting the final amount from account holders'

FIGURE 3
AVERAGE ANNUAL RETURNS ON A PERSONAL ACCOUNT VERSUS AN ALL-BOND "SHADOW ACCOUNT"



SOURCE: Author's calculations.

FIGURE 4
CHANGE IN TOTAL RETIREMENT BENEFITS FOR A PERSONAL-ACCOUNT HOLDER



SOURCE: Author's calculations.

traditional benefits would effectively compensate the trust fund for its lost income.

Consistent with Bush's 2005 proposal, Shiller assumes that the shadow account interest rate would be a constant 3 percent above inflation, which is the future return on trust fund bonds projected by Social Security's trustees. Matching the offset rate to the future trust fund bond rate would keep Social Security's finances roughly neutral in the

long run. However, fluctuations in *realized* interest rates could have significant effects both for account holders and for the trust fund. If realized interest rates exceeded 3 percent, account holders would effectively have been subsidized by the traditional program as they would give up traditional benefits smaller in present value than the taxes they diverted to their accounts. Likewise, if realized interest rates were below 3 percent, then account holders would be subsidizing the traditional program. Neither outcome was intended by policymakers.

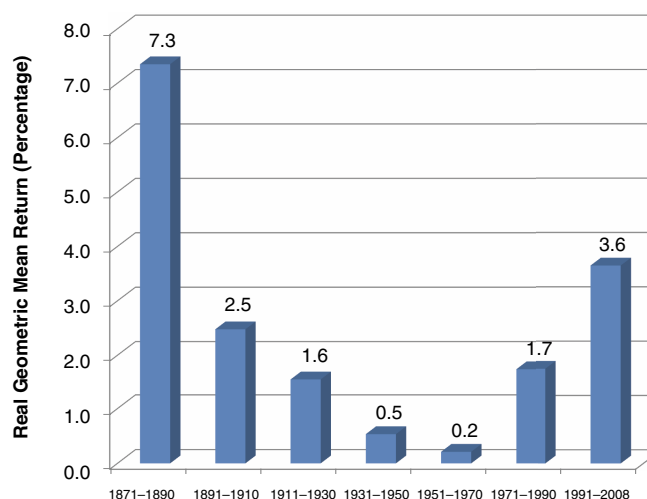
For those reasons, I assume that the offset interest rate on the shadow account equals the realized return on an all-government bond portfolio, which would differ from cohort to cohort based upon the actual sequence of historical returns. Offsetting traditional benefits at the realized bond interest rate would ensure that neither traditional program contributors nor personal-account holders are forced to subsidize the other. This approach was considered by the Commission to Strengthen Social Security in 2001, and at least one congressional reform plan—the Social Security Solvency and Modernization Act of 2003 introduced by Senator Lindsey Graham (R-S.C.)—based the shadow account interest rate on the realized government bond return.¹¹ During the reform debate in 2005, Bush administration aides expressed openness to this approach.

Both my simulation and Shiller’s paper use the trust fund interest rate, just in different ways. While either assumption can be justified, basing the shadow account interest rate on realized historical returns provides more informative results.

Shiller’s approach accurately represents the Bush proposal. Problems arise, however, because Shiller applies this interest rate not prospectively but retrospectively. His modeling mixes a 3 percent offset interest rate based on projections of *future* bond rates with a data set of *historical* bond returns that may be quite different. If historical government bond returns were below 3 percent, fewer accounts would “break even,” for a key component of their portfolios would have average returns below 3 percent.

Based on average bond returns from 1871 through 2008, this concern may appear somewhat overstated. The average long-term government bond return from 1871 to the present was 2.5 percent above inflation. If the offset interest rate were set to the historical average of 2.5 percent rather than 3 percent, then the percentage of account

FIGURE 5
AVERAGE GOVERNMENT BOND RETURNS BY PERIOD



SOURCE: Author’s calculations.

holders failing to break even would fall from 36 to 19 percent. Nevertheless, this still implies that one in five cohorts of account holders would see reduced benefits, while the results above indicate that *all* cohorts would come out ahead. What accounts for this difference?

The key factor is the *placement* of bond returns throughout the historical sample. Recall that benefits are simulated for cohorts whose years in the workforce range from 1871–1915 through 1965–2008. So the model first simulates a cohort investing from 1871 through 1915, then a second cohort investing from 1872 through 1916, and so on. This technique implies that returns at the beginning and end of the sample period will have less influence on the overall results than those toward the middle. The bond returns in 1871 and 2008, for instance, are represented in only a single cohort’s personal account returns, while the bond returns from annual 1915 through 1965 would be represented in forty-four cohorts of account holders.

If bond returns were randomly distributed throughout the sample, this should not affect the outcome of the simulation. As it happens, however, actual government bond returns at the beginning and end of the 1871–2008 period are significantly higher than those toward the middle. Figure 5 shows that the highest average real bond returns were in the periods 1871–90 and 1991–2008 (7.3 percent and 3.6 percent, respectively). In the intervening period, real returns were far lower.

Due to the placement of bond returns within the historical sample, the bond return earned by the average account

holder would be far *lower* than the average bond return over the period. In fact, the average account holder would have earned only 1.4 percent on the bond component of his account portfolio during the 1871–2008 period. Put simply, Shiller’s results merely show that it is very difficult to earn a 3 percent return on your overall portfolio when the bond component returns little over 1 percent. If personal accounts were charged an offset interest rate of 3 percent when the typical bond return was 1.4 percent, the Social Security program would make a significant profit from the transaction, contradicting the policy goal of neutrality with regard to system financing.

Put another way, if policymakers in 1871 were establishing a voluntary personal account program for Social Security (which, in any case, did not yet exist) and wished for accounts to be roughly neutral with regard to the long-term trust fund balance, they would have chosen an offset interest rate based on bond returns at the time, not based on projected bond returns beginning in 2005 and extending seventy-five years into the future. This argues for using an offset interest rate based on actual historical returns, not on projected future bond returns.

In effect, personal accounts fare poorly in Shiller’s simulation not because of stock returns but due to an implicit “tax” levied on accounts by reducing their benefits based on an interest rate far higher than the government’s borrowing cost. This can be illustrated by artificially lowering historical stock returns. Shiller argues that future stock returns may be lower than in the past, which is not implausible. On that premise, he lowers all historical returns by 2.2 percentage points. Using that assumption, coupled with the 3 percent offset interest rate, two-thirds of retiree cohorts would lose money by virtue of holding a personal account. But if we adjust the offset rate to the *realized* return on government bonds, this finding disappears: even with stock returns reduced by over two percentage points, all ninety-five cohorts would exceed the break-even interest rate and increase their total benefits by holding an account. Obviously, total benefit increases would be smaller—only 8 percent on average. Nevertheless, this illustrates that Shiller’s assumption regarding the proper offset interest rate is the driver of his simulation results. Had Shiller used analytical techniques to account for the non-uniform placement of bond returns in his historical

sample, such as weighting the cohort returns or using a “bootstrapping” approach for Monte Carlo analysis, his results would more closely resemble those presented here.¹²

Even with stock returns reduced by over two percentage points, all ninety-five cohorts would exceed the break-even interest rate and increase their total benefits by holding an account.

In Pursuit of a Realistic Plan

Like Shiller, Gary Burtless performs a qualitatively similar analysis to mine while coming to very different conclusions. He states:

Some people mistakenly believe the annual ups and downs in the stock market average out over time, assuring even the unluckiest investor a good return if she invests steadily over a full career. A *moment’s reflection shows that this*

cannot be true. From the end of October 2007 to October 24, 2008, the Standard and Poor’s composite stock index fell 46% after adjusting for changes in the U.S. price level. Shares purchased before November 2007 lost almost half their value in less than 12 months. For a worker who planned on retiring at the end of 2008, the drop in stock market prices would require a drastic downsizing of consumption plans if the worker’s sole source of retirement income is derived from stock investments.¹³

This statement is, of course, a non sequitur: the evidence presented can neither prove nor refute the claim that even unlucky investors would earn a good return by investing steadily over a full career. Fluctuations in market returns, whether immediately preceding retirement or at other times, do not determine the lifetime rate of return earned on a retirement account.¹⁴

The only way of proving or disproving the statement in question is to measure the returns that would be paid to individuals who invested over a full career. Burtless simulates career personal accounts investing 4 percent of wages in an all-stock portfolio using market data from 1871 through the present. The balance of the account is annuitized at age sixty-two based on interest rates at the time.

Burtless expresses his results in terms of the replacement rate, which represents the ratio of retirement income paid by a personal account to earnings during working years. The average replacement rate in Burtless’s simulation is 40 percent, and 90 percent of the replacement rates fall

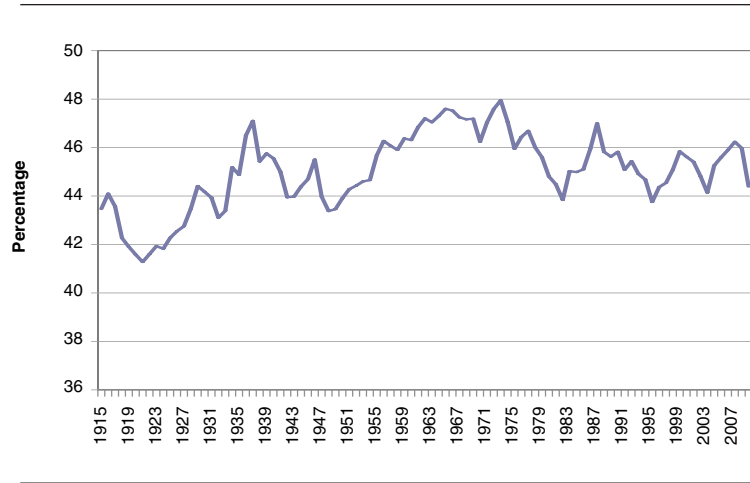
between 16 percent and 75 percent. The maximum replacement rate is 89 percent and the minimum 12 percent. For Burtless, “[t]he main lesson to be drawn . . . is that individual retirement accounts invested solely in the stock market offer a very shaky cornerstone for retirement income. Workers fortunate enough to retire when stock prices are high obtain big pensions, while workers with the bad luck to retire after markets plunge can be left with little money to live on in retirement.”

How does this compare to replacement rates derived from the simulations above? These are shown in figure 6. The baseline benefit replacement rate for a non-account holder would be 39 percent of pre-retirement earnings. Figure 6 shows that for account holders, the average total Social Security benefit replacement rate would be 45 percent. Ninety percent of cohorts receive replacement rates between 42 percent and 47 percent of pre-retirement earnings. The minimum replacement rate was 41 percent, while the maximum replacement rate was 48 percent. Each person must judge for himself whether this constitutes too much volatility in retirement income derived from Social Security. However, this level of volatility is significantly lower than that found in Burtless’s simulations.

Why do Burtless’s results and conclusions differ so significantly from mine? There are three principal reasons. First, my simulations reflect the *total* Social Security benefit, while Burtless models only replacement rates from the account alone—that is, Burtless’s simulations more closely resemble the benefits one could expect from an IRA or 401(k) account invested in stocks, not a personal account integrated with the traditional Social Security benefit. Because of the interactions between the account and the shadow account, detailed below, analyzing the total Social Security benefit is the only way to assess realistically the volatility of retirement income from reform proposals. Moreover, modeling the full Social Security benefit reflects the intent of account-based reform legislation that Social Security benefits be derived from a combination of defined-contribution and defined-benefit sources, not defined-contribution alone.

Second, much of the volatility in replacement rates in Burtless’s simulation derives not from risky stock returns but from differences in interest rates at the time the account is converted to an annuity. The annuity payment is higher or lower based on the interest rate at the time the annuity is

FIGURE 6
TOTAL SOCIAL SECURITY REPLACEMENT RATES



SOURCE: Author’s calculations.

NOTE: The replacement rates are measured relative to the individual’s career-long average wages, while Burtless measures replacement rates relative to peak wages between ages fifty-four and fifty-eight. This difference in the denominator of the replacement rate calculation will produce different levels of replacement rates but should have little or no impact on the variance in replacement rates, which is more important in this context. The baseline for a non-account participant is 39 percent.

purchased. In the stylized reform plan I simulate above—which, again, much more closely resembles actual reform plans than Burtless’s approach does—both the annuity from the personal account and the shadow account reduction in traditional benefits are calculated using the same interest rate. So, if interest rates happen to be high at the time a person retires, his personal account annuity would be higher, as would the reduction in his traditional Social Security benefit. Likewise, if interest rates were low, both the account annuity and the traditional benefit offset would be lower. By itself, this eliminates much of the volatility in replacement rates shown in Burtless’s results.

Third, while Burtless’s hypothetical portfolio is 100 percent stocks, in the simulations above the portfolio is 53 percent stocks (on average) and moves toward bonds as an individual ages. This mixed stock/bond portfolio much more closely resembles the default portfolios in actual personal account plans than an all-stock portfolio does. As a result, replacement rates would vary more in Burtless’s results than in my simulations. Had I used an all-stock portfolio, the average replacement rate would rise to 65 percent, with 90 percent of cohorts receiving replacement rates between 45 percent and 102 percent. The minimum and maximum replacement rates are 42 percent and 108 percent. With reference to the returns on an all-stock portfolio, the average internal rate of return net of 0.3 percent administrative costs was 6.1 percent above

inflation. The interquartile range is from 5 percent through 7.4 percent, and the minimum and maximum returns are 2.3 percent and 9.2 percent, respectively. Again, individuals must judge for themselves whether the higher mean returns justify the increased range of outcomes.

Under a reform plan simulated as it might actually be introduced in Congress, the historical results look significantly better than Burtless suggests. This is not, however, to disagree with many of Burtless's broader points: the stock market is volatile, Social Security accounts do not pay higher returns when adjusted for risk, and the recent market fluctuations do show the value of a combined defined-benefit/defined-contribution provision of pension income. Even if historical returns show that personal accounts would have been an almost universally good deal for individuals, future returns could be lower or riskier than the historical record. In other words, as investment advertisements stress, past performance does not guarantee future results.

Why Personal Accounts Matter

As shown above, policy conclusions drawn from isolated circumstances may be contradicted when confronted with a more thorough analysis of the historical data. Contrary to what Obama has said, personal-account holders investing in stocks and bonds would have generally fared very well and significantly increased their total Social Security retirement benefits.

At the same time, however, we should not overstate what historical data can tell us. This analysis uses stock and bond returns from 1871 through the present, which appears to be a large sample of data. In reality, though, it is not. Investing through Social Security personal accounts would take place over a full working lifetime, herein taken to be forty-four years. There are only three full, non-overlapping forty-four-year periods between 1871 and the present, which implies that our data sample over the relevant period is actually quite small.¹⁵ That is to say, we cannot generalize from the fact that workers with personal accounts in the past would have fared very well to the inference that account holders in the future will do similarly well. They might, but our sample of data is not large enough to say with certainty.

Moreover, individuals who have access to equity investments outside of Social Security, such as through a 401(k) account, can already set the expected return on their total retirement portfolio—Social Security plus 401(k)—at their desired level by holding more or fewer stocks in their 401(k) account. Assume that you invest 10 percent of your wages in Social Security retirement benefits and 10 percent of your wages in a 401(k) account. Assume that your expected rate of return on Social Security is 2 percent and that you desire a 4 percent return on your total retirement portfolio. If so, you need only arrange your 401(k) account's portfolio to target a 6 percent annual return. Assum-

ing stocks return 6.5 percent above inflation and government bonds 3.0 percent, investing your 401(k) 85 percent in stocks and 15 percent in bonds would achieve this result.

If Social Security were invested in stocks, both the expected return and risk on Social Security would increase. But, again assuming you desire a 4 percent return on your total retirement savings, the rational response would be to lower the percentage of your 401(k) held in stocks to maintain the mix of risk and return you desire.

The only clear financial gain from personal accounts would be to low earners who currently are unable to invest in stocks but wish to diversify their retirement savings portfolios. These individuals are currently constrained to invest only in a low-risk, low-return portfolio—Social Security—but might prefer a different mix of investments, including stocks.

This is not to say that personal accounts do not have a role to play. If we wish to prefund future retirement benefits—to save more today in order to reduce the strain on future workers of financing Social Security—personal accounts would likely be more effective than the current trust fund structure, which appears not to build saving in a broad sense but to subsidize consumption elsewhere in the federal budget. But this “savings” role of personal accounts differs from the “financial portfolio” role discussed above.

Opponents of personal retirement accounts as part of a reformed Social Security program have pointed to recent market downturns as self-evident proof that accounts would be a poor policy choice. There are many valid arguments for and against personal accounts, but the simulations herein show that current market conditions do

The only clear financial gain from personal accounts would be to low earners who currently are unable to invest in stocks but wish to diversify their retirement savings portfolios.

not prove the critics right. An individual holding a personal account invested in a life-cycle portfolio of stocks and bonds and retiring in November 2008 would have increased his total Social Security benefits by over 15 percent. More broadly, simulations of ninety-five cohorts of retirees using stock and bond data from 1871 to the present show that in all cases individuals with accounts would have increased their total benefits by doing so, by an average of around 15 percent. These findings are not to indicate that stocks represent a “free lunch” that would allow Social Security to be fixed without significant sacrifices. Reform will be a difficult task, with or without personal accounts.

AEI research assistant Adam Paul worked with Mr. Biggs to produce this Retirement Policy Outlook.

Notes

1. All simulations use calculations based on year-to-date S&P 500 returns as of November 4, 2008.
2. Barack Obama, “Statement on Economic Crisis” (speech, Bank United Center, Coral Gables, FL, September 19, 2008).
3. Robert J. Shiller, “The Life-Cycle Personal Accounts Proposal for Social Security: A Review” (Working Paper 11,300, National Bureau of Economic Research, Cambridge, MA, May 2005), available at www.nber.org/papers/w11300 (accessed November 12, 2008).
4. This earnings history describes the percentage of the economy-wide average wage earned by a typical worker at each age. These annual percentages are applied to the average wage index projected by the Social Security trustees for years from 2008 onward to create a simulated individual earnings history. Four percent of annual earnings are credited to the personal account each year. See Michael Clingman and Orlo Nichols, “Scaled Factors for Hypothetical Earnings Examples under the 2008 Trustees Report Assumptions” (Actuarial Note 2008.3, Office of the Chief Actuary, Social Security Administration, Baltimore, MD, August 2008), available at www.socialsecurity.gov/OACT/NOTES/ran3/an2008-3.html (accessed November 12, 2008).
5. Even if one does not accept that trust fund balances represent net saving by the government, offsetting traditional benefits by compounding account contributions at the government bond rate reflects the increased borrowing costs the government incurs from lower Social Security tax collections. To keep Social Security’s financing precisely equal, the offset interest rate on the shadow account would need to be very slightly higher than the interest rate on the trust fund. This is due to provisions in many account plans that allow single workers who die prior to retirement to pass their account balance on to their estate, rather than surrendering it to Social Security. The effects of these provisions are small, however, and not modeled here.
6. Thrift Savings Plan, “Factors for Thrift Savings Plan Annuities: Options 1 and 2—Single Life,” 2008, available at www.tsp.gov/annuity/Table12ABC.pdf (accessed November 12, 2008).
7. Barack Obama, “Statement on Economic Crisis.”
8. Robert J. Shiller, “The Life-Cycle Personal Accounts Proposal for Social Security: A Review.”
9. Jonathan Weisman, “Retirement Accounts Questioned: Paper Challenges Expected Benefits,” *Washington Post*, March 19, 2005.
10. For simplicity, I assume the bond element of the portfolio consists entirely of government bonds, while Shiller works with a mix of government bonds, corporate bonds, and money market funds. These differences, however, are minor with regard to the simulation results.
11. See Chris Chaplain and Alice H. Wade, “Estimated OASDI Financial Effects of ‘Social Security Solvency and Modernization Act of 2003’ Introduced by Senator Lindsey Graham” (memorandum, Office of the Chief Actuary, Social Security Administration, Baltimore, MD, November 18, 2003), available at www.ssa.gov/OACT/solvency/LGraham_20031118.html (accessed November 12, 2008).
12. The essential problem with Shiller’s analysis is that certain returns are more heavily weighted than others; returns at the beginning and end of the 1871–2008 period affect a smaller number of retiree cohorts than do returns toward the middle of the distribution. The key to correcting this problem is to ensure that annual returns are equally weighted. Explicitly weighting the returns would give greater prominence to the higher bond returns at either end of the sample period, causing more cohorts to exceed the 3 percent “break-even” return. Likewise, a “bootstrapping” approach, which randomly pulls returns from the sample data, would also weight returns more equally regardless of where they occurred in the sample.
13. Gary Burtless, “Stock Market Fluctuations and Retiree Income: An Update” (Brookings Institution, Washington, DC, October 31, 2008), available at www.brookings.edu/papers/2008/1031_market_burtless.aspx (accessed November 12, 2008). Emphasis added.
14. Market risk immediately preceding retirement can be reduced by shifting the account portfolio from stocks to bonds as retirement nears. This is common practice among 401(k) investors, and the default portfolio for Social Security accounts under President Bush’s plan would have done the same. In practice, the stock declines cited by Burtless would apply to only 15 percent of the balance in the life-cycle portfolio, with the remaining portfolio being held in bonds.
15. It is not uncommon to use overlapping data periods, as Shiller does, or as in Jeremy J. Siegel, *Stocks for the Long Run*, 2nd ed. (New York: McGraw-Hill, 1998). While each overlapping forty-four-year period will have slightly different results, however, they cannot be considered truly independent data points, as each period shares the vast majority of its underlying data with adjoining periods. In statistical jargon, the overlapping forty-four-year periods are autocorrelated.