# A CRITICAL LOOK AT EQUITY INVESTMENT IN THE 1994-1996 ADVISORY COUNCIL ON SOCIAL SECURITY RECOMMENDATIONS[1]

## EXECUTIVE SUMMARY

The Social Security trustees have reported that Social Security is not in long-term (75 year) actuarial balance and, without some adjustments in program benefits and/or taxes, will eventually be unable to pay promised benefits in full. Three approaches to restoring Social Security's long-term solvency were offered in the recent recommendations of the 1994-96 Advisory Council on Social Security. This Issue Brief describes and analyzes the impacts on individuals of the three approaches.

While there are significant differences in the approaches, all three of the council's recommendations include some form of equity investment, whether under the guidance of the Social Security Trustees or by individual initiative. We use projections of stock market fluctuations to help evaluate the adequacy and equity of the three proposals.

Regarding adequacy of income, all three plans provide an adequate floor of income to keep low-wage earners born after 1960 out of poverty in retirement. Regarding the equity of lifetime taxes and benefits, we show which proposals generate the highest benefits in comparison with taxes. We demonstrate that *if* individual investments yield returns equaling the projected average yield or above, then for current older

workers (exemplified in this paper by those born in 1955) the Maintain Benefits Equity Investment (MBEI) plan is generally the most advantageous. For younger persons (exemplified in this paper by those born in 1985) the Personal Security Accounts (PSA) plan generally yields the highest returns. The Individual Accounts (IA) plan generally yields the lowest returns for both age groups. The MBEI proposal generally yields the highest returns for persons with disabilities.

However, everyone's experience investing in equities in the IA or PSA plans will differ, as some investors will get low yields and some will get high yields. The expected value of lifetime contributions to an investor is generally highest in the MBEI plan for majorities of older workers, and highest in the PSA plan for majorities of younger workers. But sizeable minorities of older workers would have higher yields with the PSA plan, and sizeable minorities of younger workers would have higher yields with the MBEI and IA plans.

## I. INTRODUCTION

Social Security[2] is an intergenerational program, in which today's workers pay Federal Insurance Contributions Act (FICA) taxes or Self Employment Contributions Act (SECA) taxes that provide the benefits for today's retired workers, their survivors, people with severe disabilities, and their families. Today's workers, in turn, assume similar treatment from tomorrow's workers. For over sixty years this intergenerational arrangement has worked. Unless changes are made though, Social Security benefits are not sustainable at their current levels for the long term.[3] As a result, policy-makers are proposing both moderate and extreme changes to the Social Security compact.

Since 1989, the Social Security trustees have reported that Social Security is not in long-term (75 year) actuarial balance and, without some adjustments in program benefits and/or taxes, will eventually be unable to pay promised benefits in full. In 1997, the Trustees of the Social Security Trust Fund reported that annual FICA and other tax revenues would be lower than benefit payouts after 2012. Until 2019, tax revenues and interest earnings from the trust fund reserves will be sufficient to pay Social Security obligations. Benefit obligations will exceed both tax and interest income by 2019. By 2029, the Trustees project that the trust fund reserves will be depleted and tax revenues will be sufficient to cover only three-quarters of the benefits.[4]

Armed with the Trustees' projections, some analysts assert that the concept of Social Security is no longer viable, and it should be converted to a "privatized"

system.[5] Others find that adjustments to the current system are all that is necessary.[6]

Between 1994 and 1996, the government-appointed Advisory Council on Social Security met to review the status of Social Security and to offer recommendations for its improvement. Some Council members found the prospect of changing the basic structure of Social Security from a centrally managed social insurance program to an *individualized investment* system to be a positive step. Others viewed individualized investment as an overly drastic and risky move, but were willing to diversify the Trust Funds' investment portfolio to include having a portion of the funds *invested* in equities.

The Council offered three approaches to restoring Social Security's long-term solvency. While there are significant differences in the approaches, all three of the Council's recommendations include some form of equity investment. This Issue Paper focuses on the Council's report and, in particular, on the various approaches to equity investment it offers.[7] It first discusses the basic concepts of trust fund financing and equity investment, then summarizes the three plans proposed, and finally examines the possible effects of each proposal on the various populations served by OASDI.

## II. EQUITY INVESTMENT

Equity investment in the context of Social Security means that Social Security reserves are invested, at least partially, in equities. That investment could be controlled by the Social Security Trustees or by individuals.

Equity investment does not necessarily mean privatization. Though definitions of privatization may differ, we consider privatization to refer only to the situation where individuals control the investment of, and bear the risks of, Social Security funds.

Thus, equity investment could be accomplished either by diversifying the portfolio of Treasury securities held by the Social Security trust fund reserves[8] or by giving individuals the responsibility for managing their own private Social Security investment accounts (outside the trust funds).

The Current Pay-As-You-Go Social Security System
Many workers assume that the dollars they pay in FICA taxes finance their own future benefits. In fact, no one pays directly for his/her own Social Security benefits under the current structure. Social Security is close to a *pay-as-you-go* system, where workers' FICA taxes in any given year pay benefits to retirees, disabled persons, survivors, and dependents that same year. The worker, by paying FICA tax while s/he is working, earns the "right" to receive a benefit when s/he reaches retirement age or becomes disabled; and the family has a "right" to certain benefits if the worker dies.[9] Any excess revenues in the Social Security system are held in reserve and are invested in special issue interest-earning U.S. Treasury securities.[10] In OASDI, the estimated proportion of the year's outgo that could be paid with the funds available at the beginning of the year in 1997 was 153%, and is projected to be 265% in 2011. The reserves are projected to decline to zero in 2029.[11]

Alternative Investment Of The Trust Fund Reserves

An alternative investment approach would switch Social Security from a pay-as-you-go system with a small reserve to an intentionally partially pre-funded system. The pre-funding could occur either through direct investing of the trust funds or by individuals investing on their own.

One approach to equity investment would require Social Security to diversify the OASDI portfolio by investing a portion of the trust fund reserves in corporate bonds and equities. The resultant gains or losses would accrue directly to the trust fund reserves.[12]

As in current law, an individual's Social Security benefit would continue to be based solely on a fixed formula and would not depend directly on the returns from the trust funds' investments. Thus the benefit structure could be unaffected. In pension terminology, Social Security would remain a defined benefit rather than a defined contribution plan. Individual workers and retirees would not participate in the investment decisions. One of the Advisory Council plans uses this approach.

Privatization Alternatives With Individual Responsibility
The second form of equity investment requires direct involvement of the worker in the investment of a specified portion of his/her FICA tax dollars in the capital market. The involvement could range from the individual worker having limited control and responsibility for investment strategies and performance, to having sole responsibility for, and extensive choice about, where the money is invested and the level of risk assumed. Two of the Advisory Council plans use this approach.

**Example 1: Individuals Choose from Fixed Investment Options Provided.**

At the most cautious end of the equity-investment-with-individual-responsibility spectrum is an approach similar to that taken by the Federal Employee Retirement System (FERS). FERS establishes a limited series of investment options (with various levels of expected risk and return) from which workers select where their accounts are to be invested.

Under such an investment scenario, Social Security covered workers would invest a specified portion (typically from one to five percentage points) of their FICA contributions in any of several funds identified and managed by Social Security. Workers and beneficiaries in turn would assume the risks and gain the rewards of their investment choices.

Social Security would pay benefits based on a new formula, incorporating a basic benefit plus the investment returns to individual accounts.

One of the Advisory Council plans has a similar approach.

**Example 2: The Individual Makes All Investment Decisions.**

At the other extreme is full privatization of the Social Security system. If the entire system were privatized, there would be no government-provided benefit. The government would set the percentage of wages that a worker is required to invest for retirement purposes, but the government would neither offer nor regulate investment options. Thus, an individual's retirement benefits would be based largely on his/her level of savings and investment savvy and the condition of the market upon withdrawal from the workforce. In addition to being responsible for retirement benefits, this option implicitly requires that workers provide for their own disability and survivor benefits.

A less extreme version would have the individual fully responsible for investing part of his or her FICA tax while Social Security would provide a reduced defined benefit and a limited disability benefit with the remainder of the FICA tax.

One of the Advisory Council plans uses this approach.

Examples 1 and 2 demonstrate a range of possibilities where some individual responsibility is required.

## III. TRANSITION

In two of the three solvency plans offered by the Advisory Council, workers would pre-fund a portion of their own benefits. In one plan, 1.6 percent of earnings is invested over and above the current FICA tax; and in the other plan, 5 percentage points of the current 6.2 percent employee contribution is invested by individuals. When fully implemented, these plans assume that future workers will have at least 40 years to build up a retirement portfolio. In transitioning from the current to a new system, providing benefits for those who have had substantial years of work under the existing system while creating new private accounts for young workers will be one of the critical issues that must be resolved. During a phase-in period, those who have contributed to the

current system and are already OASDI beneficiaries, or are soon to be beneficiaries, cannot be asked to give up the benefits they earned; neither can they be expected to build up an adequate retirement portfolio on their own. Young workers will have to pay both for current beneficiaries and their own retirement.

The unavoidable reality is that in a transition from the current system to an individual investment system of any sort, or to a pre-funded trust fund, today's young workers will have to pay for themselves, for today's older workers, and for retired workers.

## IV.  THE SOCIAL SECURITY ADVISORY COUNCIL AND ITS RECOMMENDATIONS

Prior to the creation of the Social Security Administration as an independent agency in 1994, Section 706 of the Social Security Act mandated that the Secretary of Health and Human Services appoint an Advisory Council on Social Security every four years for the purpose of reviewing 1) the status of the Social Security and Medicare trust funds in relation to the long-term commitments of these programs; 2) the scope of coverage; 3) the adequacy of benefits; and 4) all other aspects of the Social Security and Medicare programs, including their impact on the public assistance programs under the Social Security Act.

The 1994-96 Advisory Council[13] focused on restoring the long-term solvency of the OASDI trust funds.   Long-term solvency refers to the OASDI Trust Funds' ability to pay benefits and

maintain an adequate (one-year) reserve for 75 years.[14]

The thirteen members of the Council agreed from the beginning on the following principles[15] concerning the trust fund operations that would guide their deliberations:

*"The nation should maintain a universal, mandatory retirement system that provides security for all Americans.*

*Early action is needed to correct the actuarial imbalance in Social Security.*

*The traditional 75 year forecasting horizon used by the Social Security Administration should be supplemented with additional measures of long term stability.  Specifically, the trust fund ratio of assets to expenditures should be stabilized over the last two decades of the measurement period.[16]*

*The Council supports the current practice of automatic cost-of-living adjustments for benefits.*

*The Council does not support means-testing that would condition benefits on other income received in retirement.*

*The Council supports the redistributive nature of Social Security and would protect benefits for low wage retirees.*

*Because of changes in typical work patterns, the Council believes that spousal benefits should be reduced gradually and survivors' benefits increased by a commensurate amount.* (It is interesting to note that in the final report, the Maintain Benefits Equity Investment plan neither reduced spousal benefits nor increased survivor benefits).

*The Council recommends that all new hires in state and local governments that*

*are currently uncovered be brought into the Social Security system.*

*The Council believes that Social Security benefits should be taxed under general income tax principles.*

*The Council supports the creation of inflation-indexed government bonds."*

A majority of the council also agreed upon the following recommendations:
- The age of retirement with full benefits should be increased.
- There should be some investment of Social Security moneys in the private sector to receive a higher return.

For the first time in the history of Social Security advisory councils, however, there was no consensus on a solution. The members of the Council split into three groups when specific solutions were proposed. Moreover, a fundamental difference in approaches to solvency emerged. The final report outlines three plans for making Social Security[17] solvent.

The first plan, authored by Robert Ball, former Commissioner of Social Security, maintains benefits roughly as they are now and invests part of the reserves in equities. The plan is called the *Maintain Benefits Equity Investment* or *MBEI* plan. The second plan, authored by Edward Gramlich, Professor of Economics at the University of Michigan, lowers benefits somewhat for future beneficiaries and adds to Social Security small mandatory individual private retirement accounts. This plan is called the *Individual Accounts* or *IA* plan. The third plan, authored by Sylvester Scheiber, Vice President for Research at Watson Wyatt Worldwide, and Carolyn Weaver of the American Enterprise Institute, provides for a flat benefit augmented by "personal security accounts," which are larger than those provided under the IA plan. This plan is called the *Personal Security Accounts* or *PSA* plan. The three plans are described more fully in the boxes following.

## Plan 1 – Maintain Benefits Equity Investment (MBEI)

### Summary
Plan 1 retains the current Social Security benefit structure. It makes some changes in coverage and payroll tax rates, modest cuts in benefits, and asks for serious consideration of investing a portion of the trust fund assets by Social Security in equities.

### Features

1.  The basic benefits (including benefits for survivors and people with disabilities) and tax structures remain the same.

2.  The payroll tax for OASDI is increased by 0.8 percentage points each for employers and employees beginning in 2045.

3.  Either the benefit computation period is increased from 35 to 38 years by 1999[18] or contribution rates are increased by 0.15 percent of covered wages (each) for both employers and employees.

4.  Beginning with new hires, all state and local workers are covered (current state and local workers remain unaffected).

5.  Social Security benefits are taxed like contributory government and private pensions --that is, to the extent that benefits are greater than the individual's contributions. The current dollar thresholds for including Social Security income in taxable income are phased out.[19]

6.  Resulting from the 1993 budget agreements, a portion of the tax on Social Security benefits currently goes to the Hospital Insurance fund. That portion is gradually to be redirected to OASDI between 2010 and 2019.

7.  The possibility of Social Security investing a "sizable portion" of the trust fund assets in private sector equities should be studied.[20]

## Plan 2 – Individual Accounts (IA)

### Summary
Plan 2 has a two-tiered benefit structure. *Tier 1* basically retains the current Social Security system with some benefit reductions to keep the system in actuarial balance. Assets of the trust funds remain in government securities. *Tier 2* provides a new but modest individual investment component (an additional 1.6 percent of taxable earnings to be paid for and invested by the employee, but retained in government-supervised accounts).

### Features

1. The current transition period to the full retirement age of 67, currently scheduled to be completed for workers who reach age 62 in the year 2022, is accelerated to be completed in 2011; thereafter, the age for full retirement is adjusted based upon increases in longevity.[21] The age for early retirement remains at 62.

2. The computation period for retirement benefits is increased from 35 to 38 years.

3. The spouse's benefit[22] is reduced from 50 percent to 33 percent of the worker's PIA.

4. The widow/er's benefit amount is based upon the highest of 1) 75 percent of the combined benefits payable to the couple while alive; 2) the spouse's PIA; or 3) the individual's own PIA.

5. All newly hired state and local workers are covered (current state and local workers remain unaffected).

6. Social Security benefits are taxed like contributory government and private pensions --that is, to the extent that benefits are greater than the individual's contributions. The current dollar thresholds for including Social Security income in taxable income are phased out.

7. Two of the three factors used to calculate today's Social Security benefits (the "bend percents" currently set at 90, 32 and 15 percent) are modified. The 90 percent factor is unchanged, but the 32 percent and 15 percent factors are reduced by: 0.5 percent annually for 1998-2011; and 1.5 percent annually for 2012-2030. The second and third bend percents reach 22.4 percent and 10.5 percent in 2030. Thus after 2030, benefits are calculated using the bend percents of 90, 22.4 and 10.5 percent.

8. A mandatory Individual Account adds a personal investment component to the basic Social Security benefit starting in 1998. This account is funded by an additional 1.6 percent employee after-tax contribution (on top of the 6.2 percent FICA). The individual is required to invest in one of the various investment options provided through the government. At retirement, funds from this individual account are converted to a minimum guarantee, indexed annuity (a joint and survivor option is also available). Benefits from this account are tax-free.

## Plan 3 – Personal Security Accounts (PSA)

### Summary

This plan offers a significant change from the current Social Security system.  It comprises two tiers.  As currently designed, it is fully phased in for those who will be aged 62 in 2036.  *Tier 1* provides a standard, basic benefit for all those who have worked at least ten years.  *Tier 2* provides an individual investment component called a Personal Security Account (PSA).  These PSAs are funded by redirecting 5 percentage points of the employee's FICA tax back to the employee to invest on his own for retirement.

### Features

General:

1. DI benefits are financed by the DI trust fund (from a portion of the 7.4 percent of payroll tax not used to fund PSAs) and administered by SSA.  The DI benefit is calculated based on current law, except that the DI Primary Insurance Amount (PIA) is gradually reduced as the age for full retirement increases.  This reduction in benefits can never be more than 30 percent.  As in current law, DI benefits convert to OASI benefits at the full retirement age.  After 1997, 50 percent of DI benefits are taxed.

2. All newly hired state and local workers not covered by social security would participate in Social Security (current state and local workers remain unaffected).

3. Some Social Security benefits are taxed: 100 percent of the Tier 1 benefit, 50 percent of past service credits for beneficiaries in the transition period, and 50 percent of benefits for those age 55 and over. Current income thresholds ($32,000 and $25,000) are phased out of the taxation formula between 1998 and 2007.

Tier 1:

Tier 1 has a maximum benefit of $410 (in 1996 dollars), indexed by wage growth, for full career workers (35 years)[23] and a guarantee of 50 percent of this amount for workers with 10 years of coverage.  For those with between 10 and 35 years of coverage, there is a two- percent increase for each additional year of work up to 25 years.

1. All workers aged 25 to 54 in 1998 would receive their accrued benefit under the existing system plus a pro-rated share of the flat benefit from the new system.

2. The benefit for the spouse of a retired worker is the higher of the spouse's own tier-1 benefit or 50% of a full Tier 1 benefit.  The benefit for the spouse of a disabled worker is the same as under current law.

(Continued…)

## Plan 3 – Personal Security Accounts (PSA) (Continued)

3. The benefit for a widow or widower is the highest of the widow/er's own Tier 1 benefit amount, the deceased spouse's full Tier 1 amount, or 75 percent of the couple's combined Tier 1 amounts.

4. Tier 1, when fully effective, is funded from a FICA tax of 6.2 percent on the employer, and 1.2 percent on the employee.

5. The full retirement age (FRA) and age of early eligibility (AEE) for Tier 1 benefits increase gradually to 67 (two months per year) and 65 respectively. After 2011, the FRA is indexed to reflect longevity increases.

Tier 2:
Tier 2 consists of Personal Security Accounts (PSAs). For all workers under age 55 in 1998, five percentage points of the employee's 6.2 percent payroll tax are directed to PSAs.

1. Individually owned and privately managed retirement accounts are established. Earnings from PSAs can be withdrawn beginning at age 62. Any funds remaining in an account after the death of a worker can be included in the worker's estate.

2. Those who are aged 55 and over in 1998 will continue to contribute and will receive benefits from the current system. Those who are under age 25 will be fully covered by the new system.

3. This plan provides a transition from the current system to the new system. Those who are aged 25-54 in 1998 will participate in the new system, but credits earned under the current system (adjusted to reflect work before January 1998 and indexed from 1998 to the year of retirement eligibility) are offset by the Tier 1 basic benefit.

4. Additional borrowing would be required in the early years of the transition, and would be paid off by an increase of 1.52 percent in the payroll tax (for 72 years, from 1998 to 2069). The tax would cover the costs of the transition to the new system and the benefits of those who remain under the current system.

5. Amounts can be withdrawn tax-free from the Personal Security Accounts beginning at age 62.

6. Personal Security Account benefits are contributed in after-tax dollars and are not taxed upon withdrawal.

## V. ADEQUACY AND EQUITY

Social Security has historically both redistributed income to reduce poverty, and provided a reasonable return on each worker's FICA contributions. These goals have been referred to as *social adequacy* and *individual equity*. In this section, we evaluate the three Advisory Council plans using various adequacy and equity criteria.

Adequacy

Adequacy is a measure of the extent to which Social Security benefits provide a floor of protection or are paid in some concordance with need. The adequacy objective is accomplished to some extent in all three plans because each provides a floor of protection, while the MBEI and IA plans have, in addition, a progressive benefit structure. Benefits increase with lifetime earnings, and they are proportionately higher for low-earning workers than for high-earning workers.[24]

While Social Security was never meant fully to replace workers' earnings, one measure of adequacy is the extent to which beneficiaries are kept out of poverty. We use a common measure of benefit level – the wage replacement ratio – to help gauge the impact of the Advisory Council options on beneficiaries who are near poverty. The wage replacement ratio is the individual's benefit[25] in the first year of retirement divided by his or her wage in the final year of work. If the wage replacement ratio is too low, beneficiaries risk being impoverished. The replacement ratio is not sensitive to the amount of taxes paid to Social Security.

A low-wage earner in 1996 would have earned $11,537, while the 1996 Health and Human Services poverty guideline for an individual was $7,740 (or 67 percent of the low wage), and for a couple was $10,360 (or 90 percent of the low wage).[26] Thus a wage replacement ratio below 67 percent of the low wage for singles or 90 percent for single-earner couples would place low-wage earners in poverty if they had no other income. Table 1 shows what the wage replacement ratios would have to have been to have kept low, average, high, and maximum taxable earners above poverty in 1996, assuming they had no other retirement income.[27]

**Table 1: Wage Replacement Ratio Required to Stay Above Poverty in 1996**

| | |
|---|---|
| Low-wage Single | 67% |
| Low-wage One-Earner Couple | 90 |
| Average-wage Single | 30 |
| Average-wage One-Earner Couple | 40 |
| High-wage Single | 19 |
| High-wage One-Earner Couple | 25 |
| Maximum-taxable-wage Single | 12 |
| Max-tax One-Earner Couple | 17 |

The Social Security Administration calculated wage replacement ratios for the three Advisory Council plans, as shown in Charts 1A and 1B for single workers with steady low earnings.[28] The charts also show the replacement ratio needed to stay above poverty at age 65 if retiring and at age 50 if disabled.

If a person's sole income in retirement was from Social Security, then the poverty line in the charts would indicate the lowest level that the wage replacement rate could be to keep a person above poverty.

**Chart 1A: Replacement Ratios for Steady Low Earner Retiring at Age 65**

PSA

Percent

IA

MBEI

Replacement Rate Needed
To Stay Above Poverty ⟶

Year of Birth
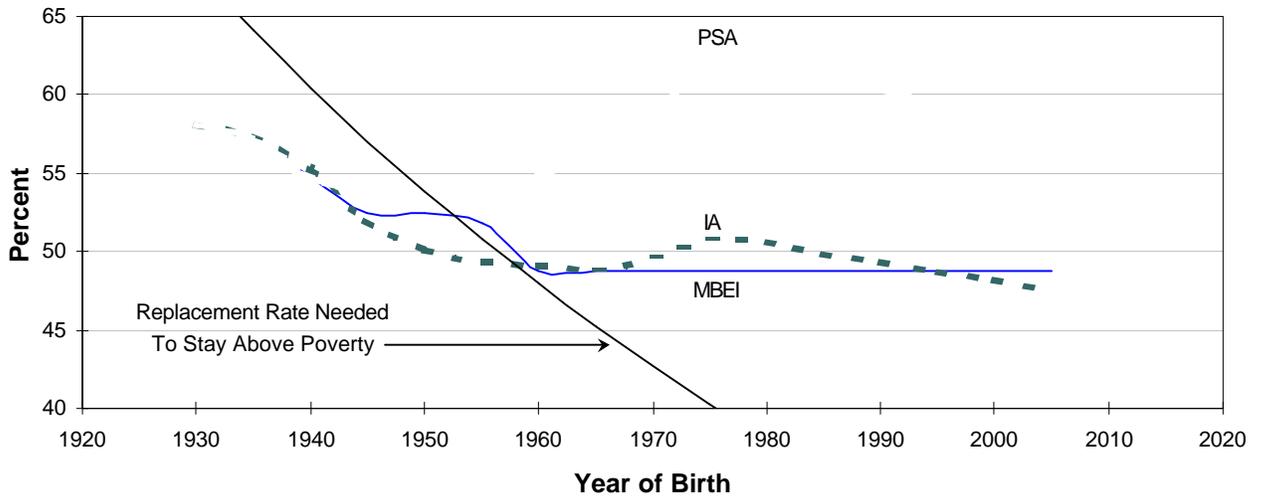
Sources: Social Security Advisory Council Report and calculations by the authors

**Chart 1B: Replacement Ratios for Steady Low Earner Disabled at Age 50**

MBEI

Percent

IA

Replacement Rate Needed
To Stay Above Poverty ⟶

PSA

Year of Birth
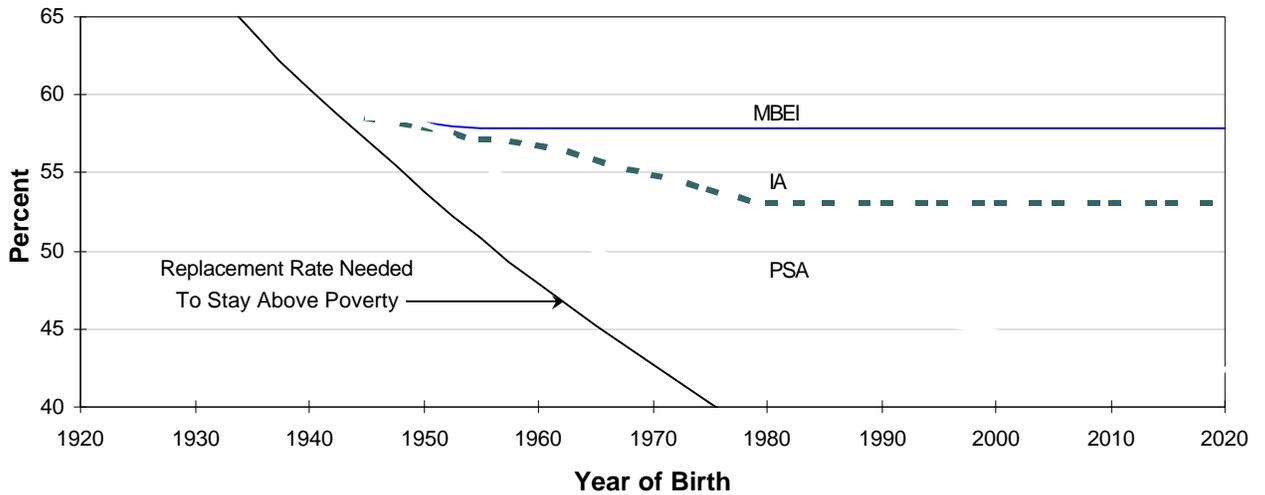
Sources: Social Security Advisory Council Report and calculations by the authors

Chart 1A shows the replacement ratio for workers who retired at age 65 and Chart 1B relates to workers who are disabled at age 50. The charts include income from the Individual and Private Security accounts. In these charts, the Advisory Council assumed that IAs and PSAs would be diversified as 401(k) accounts are currently. Stock market yields are assumed to be 7.0 percent, real. However, each individual's experience will likely differ.[29]

It is apparent from Chart 1A that low-earner retirees have the highest age-65 replacement ratios under the PSA plan. The IA and MBEI plans have replacement ratios very similar to each other, and come in second. Replacement ratios do not account for the FICA contribution, and therefore do not indicate "money's worth"; they should not be used to judge that one plan is better than another. Money's worth refers to the relationship between the Social Security benefits participants receive and the contributions they make to the system. The PSA plan was designed to generate high replacement ratios – but with more risk – for future generations, while the MBEI plan was crafted to maintain the current-law replacement ratios.

Moreover, these projections are based on one specific stock market scenario. As will be shown in Section VI, many investors will receive higher or lower yields on their investments.

The replacement ratio results are reversed, however, for the disabled person who, between ages 50 and 65, cannot access his or her privatized retirement account or has not contributed for the full period and has a lower base

amount (see Chart 1B for a low-earning worker newly disabled at age 50). In this case, the MBEI plan offers the highest replacement ratios and the PSA the lowest ratios. Though not shown on the chart, once the disabled beneficiary reaches retirement age, he or she has access to the IA or PSA account and the replacement ratios rise significantly from those in Chart 1B. The same pattern holds for higher-income earners.

In Charts 1A and 1B, the poverty replacement ratio declines over time. This happens because average wages are assumed to grow at an annual rate of 5 percent (nominal) while the poverty threshold, which is pegged to the CPI, is assumed to grow at an annual rate of 3.79 percent. Since wages grow faster than poverty, the poverty-wage replacement ratio declines over time.

Chart 1A shows that for cohorts born after 1960 all three plans provide the 67 percent necessary replacement rate required to keep low-income earners above poverty (assuming that they have no other income). The PSA and IA plans provide this benefit level for cohorts born as early as 1955. It should be noted that for cohorts born after 1960, current-law benefits would also be sufficient to provide a low-income earner with a poverty-level benefit[30]. Though not shown on the charts, average and high-income-earners receive above-poverty-level benefits also.[31]

<u>Individual Equity</u>
Given the adequacy objective, a natural question is "how do you pay for it in a balanced system?" Historically, Social Security has achieved its low-income support objective by transferring money from rich to poor, from males to females, and from singles to one-earner couples. Generally, those who traditionally need income support get a better deal; those who are financially more fortunate transfer some of their wealth to the poor, and therefore do not get as good a deal from Social Security. Individual equity, often labeled "money's worth," is a way of describing how valuable Social Security is to each individual.

Individual equity can be a confusing concept. On the one hand, an individual works, earns, and contributes to the system, and eventually receives a benefit. On the other hand, while working, s/he is covered by social insurance that will provide the spouse and family with a benefit should s/he die or become disabled. Additionally, when the individual worker retires, his or her eligible family members receive benefits based on their contributions. Evaluating the equity of a single worker's contributions requires more than just evaluating the contribution and potential interest rates.

While some researchers have derived more comprehensive measures of individual equity, the standard measures of individual equity in the literature look only at the Old-Age Insurance component of Social Security, not the whole package.[32] Among the measures used in the literature are: 1) the lifetime net tax (i.e., total taxes less total benefits, in real dollars), 2) the average years to recover real dollar contributions, 3) the

ratio of lifetime benefits to taxes, and 4) the lifetime internal rate of return (the constant real rate of return that is needed to equate the present value of contributions with the present value of benefits for each plan).

The wage replacement ratio, used in the previous section on adequacy, is not a good measure of individual equity because it measures only benefit amounts without consideration of the FICA contributions to Social Security and/or to investment accounts.

We present in Charts 2A-E the internal rate of return (IRR) as an index of individual equity.[33] *When comparing plans on this scale, a higher internal rate of return is better to an individual because it means the "yield" on the FICA contributions is higher.*[34] In these charts, the stock investments in all three plans are assumed to yield a real return of 7.0 percent.

Charts 2A-C focus only on average-earners. Chart 2A compares the IRRs for single average-earner males born between 1920 and 2004 for the three different plans (accounting for both the public and private tiers of the plans). For most birth cohorts, the IRRs are highest for the PSA plan, and lowest for the IA plan. The MBEI plan is in the middle, except for birth cohorts 1946-1963 (approximately) where the MBEI plan has the highest IRR.

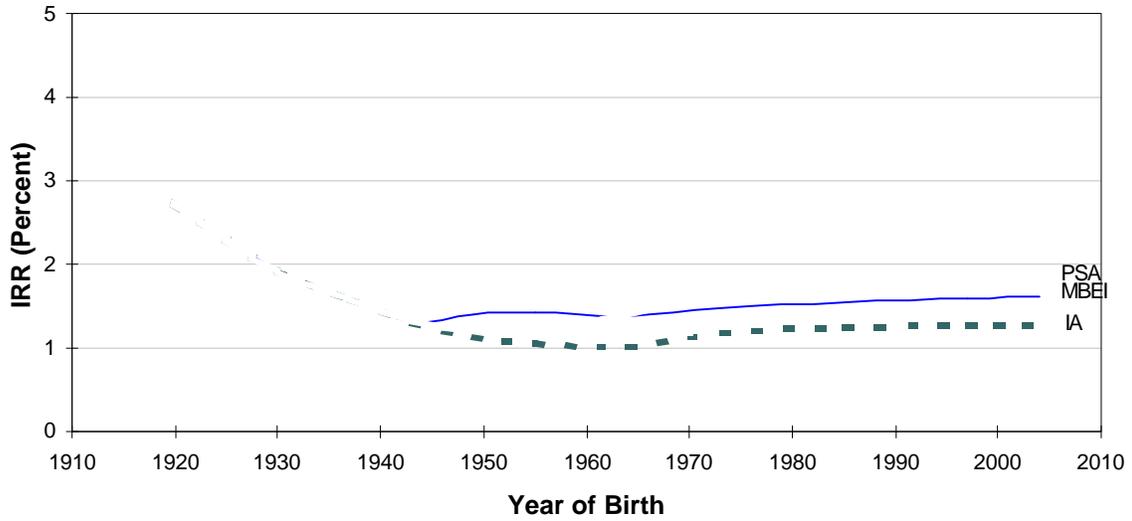**Chart 2A: IRR For Single Males With Average Earnings**

IRR (Percent)

PSA
MBEI
IA

Year of Birth

**Chart 2B: IRR For Couples With One Average Earner**

IRR (Percent)

MBEI
PSA
IA

Year of Birth
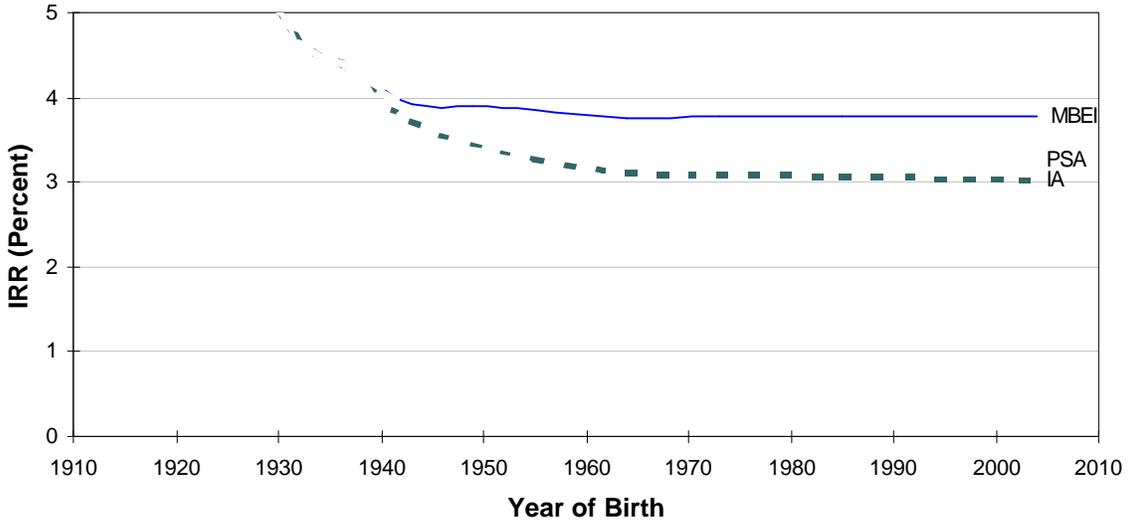
**Chart 2C: IRR For Couples With Two Average Earners**

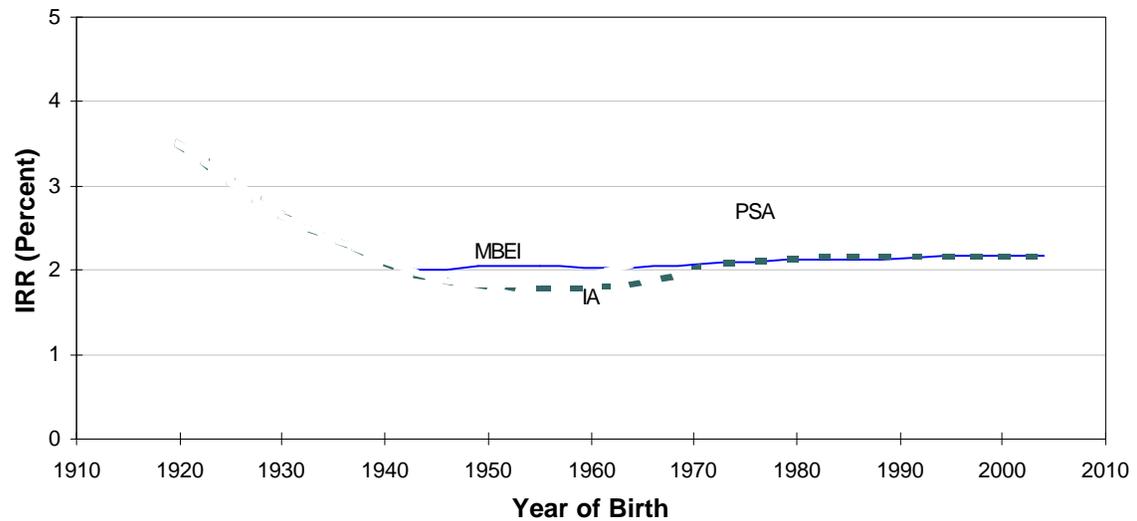IRR (Percent)

PSA
MBEI
IA

Year of Birth

15

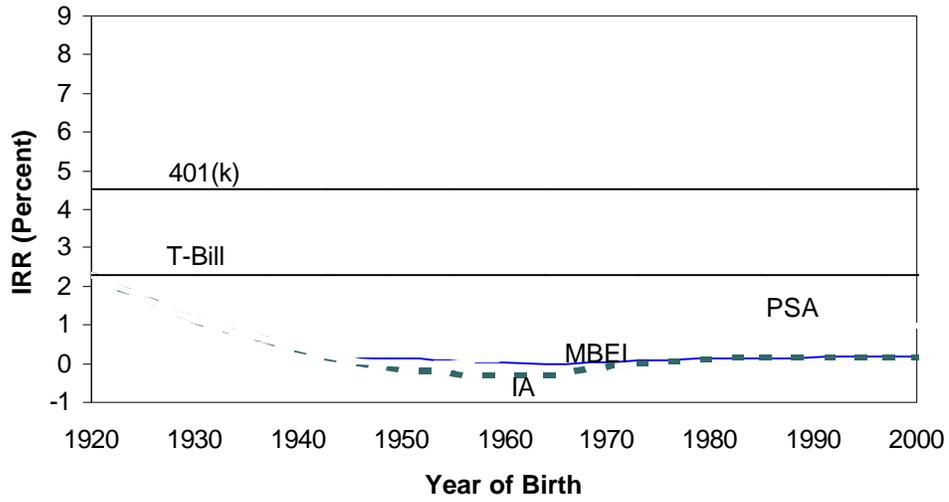**Chart 2D:  IRR  For Single Maximum-Earner Males**



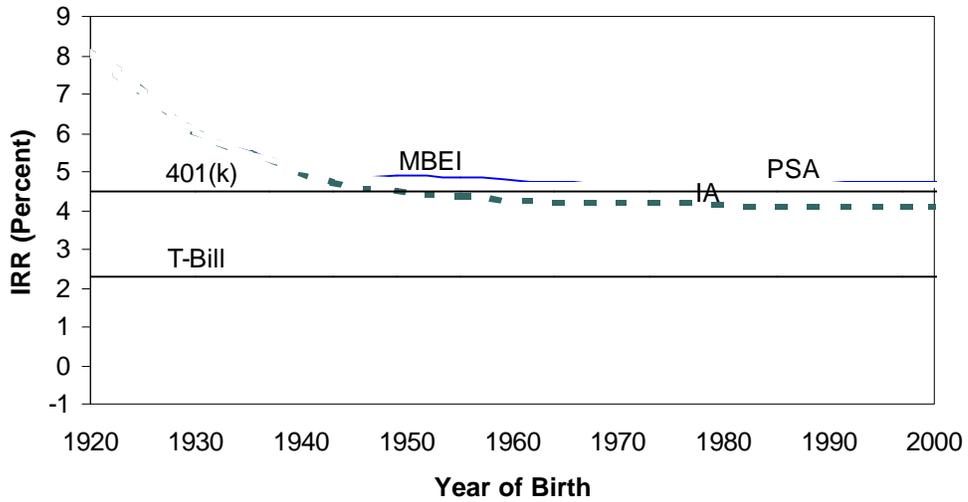**Chart 2E:  IRR For One-Earner Couples With Low Earnings**

Chart 2B compares the IRRs for single-earner couples with average earnings. The IRRs generated by the IA plan are still the lowest of the three plans, but perhaps surprisingly, the MBEI plan is the best for one-earner couples in all age groups. These results hold because the spousal benefit is reduced in the IA and PSA plans, but is not reduced in the MBEI plan.

Chart 2C compares IRRs for couples with two average-earners. For early cohorts, the MBEI plan is best, but for couples born after 1960, the PSA plan is best. For couples born after 1970, the IA and MBEI plans seem quite similar.

Adequacy And Equity
In discussing adequacy, above, we mentioned that Social Security transfers wealth from singles to couples. This transfer is evident also by comparing Charts 2A and 2B. In all three plans, average-earning single males (and single females, though not shown) have lower IRRs than one-earner couples with average earnings. This difference results from the spousal benefit. In Charts 2D and 2E, we show an even larger social transfer, that from maximum-earning single males in chart 2D to one-earner couples with low earnings in Chart 2E.

In addition, on the charts for comparison purposes are historical averages for the real returns on T-Bills and 401(k) plans. The difference between charts 2D with low IRRs and Chart 2E with high IRRs for all three plans is striking. It shows that in spite of the significant individual equity differences among plans, the three plans still accomplish nearly the same social transfers. They all transfer wealth from rich to poor.

## VI. SENSITIVITY TO RATES OF RETURN

The results reported in the previous sections and, in particular, the relative standing of the three proposals, are only representative of one scenario – when real stock yields are precisely 7.0 percent. The results do not reflect the range of actual yields individuals would experience on their investments over their working lives. In this section we show how the relative rankings of the plans can change when we consider a reasonable distribution of stock market returns rather than a single market return. We briefly discuss the history of a major stock index to demonstrate the volatility of the market. Then we discuss portfolio selection and yields in the three Advisory Council plans. Next, we integrate the tier-1 and tier-2 components of the plans to show how the diversity of returns in the stock market leads to a diversity in the overall money's worth in the three plans. Finally, we compare the three plans for stylized individuals. We show that, for many stylized cases where the Advisory Council calculated that one plan generates higher internal rates of return than another, the result holds true only for a slim majority of individuals.

Historical Behavior of the Standard and Poor's Composite Index
All three plans envision some monies invested in the stock market. The S&P composite index represents the 500 largest companies in the U.S equities markets, for 1957 and later years. Prior to 1957, it consisted of the largest 90 companies. Based on historical data, Ibbotson Associates estimates the future expected return on large company stocks to be 13.1 percent, but with a high

volatility – a standard deviation of 20.4 percent.[35] Furthermore, the distribution of returns is not symmetric. More than half of the time, the index is projected to have a return lower than the mean. The projected median nominal return, as calculated by AARP using formulas in Ibbotson, is 10.8 percent.[36] The median return represents the return for which half the investors will be below and half will be above. Only 45 percent of investors in an S&P 500 index would be expected to receive a yield at or above the mean.

Portfolio Selection and Yields in the MBEI, IA, and PSA Plans
In the MBEI plan, the trustees continue to invest at least sixty percent of the reserves in interest-bearing U.S. Treasury bills, with the remainder invested in large stock indexes. The Advisory Council assumed that individuals in IA plans choose from a handful of government-monitored diversified portfolios. Individuals in the PSA plans can create their own portfolios with few constraints.

In order to compare the three plans, we need to make some assumptions about the yields and administrative costs in the various investment portfolios. Our assumptions are consistent with the Advisory Council's assumptions. The Advisory Council's analyses were performed in the context of the Social Security Trustees "intermediate" economic assumptions with a small inflation adjustment. The Advisory Council estimated IRRs for the MBEI plan under a scenario that stocks would receive a real yield of 7.0 percent. For the IA and PSA plans, they estimated IRRs under three stock yield scenarios – 2.3 percent real, 7.0 percent real, and 9.3 percent real. Our analysis shows that the

range of yields in those three scenarios actually covers only 70 percent of the likely lifetime yields. Carlos Figueiredo of AARP developed a model to estimate the distribution of portfolio yields for different lengths of investment and different types of portfolios. Based on projections where a portion of earnings are reinvested in the S&P 500 index every year for 40 years, the model shows that there is a 14 percent likelihood of large company stocks yielding below 2.3 percent real, and a 16 percent likelihood of large company stocks yielding above 9.3 percent real.[37]

In our analysis, we also assume that stocks in the MBEI plan generate a singular net real yield (i.e., the nominal gross yield less administrative costs and adjusted for inflation) of 7.0 percent rather than a distribution of yields. We were constrained in our analysis to this assumption, in part because the Advisory Council calculated IRRs for the MBEI plan only using the single point value rather than a distribution. Nevertheless, it is a reasonable assumption. The MBEI reserves are invested in an index, so its yield is the index mean. While there may be fluctuations in the market, the plan as a whole absorbs those fluctuations over time, and no individual is subject to the variations. Furthermore, since we are assuming the Social Security Trustees' intermediate economic assumptions, perhaps we could argue that in a perfectly stable economy the annual S&P 500 mean yield does not fluctuate.

The 7.0 percent value we use for the MBEI is below the 8.87 percent projected net real mean of the S&P 500[38], but again, it is the value chosen by the Advisory Council for their analyses. The projected S&P 500 mean stock yield

would likely be reduced below 8.87 percent if the MBEI plan were implemented, since the MBEI plan's "privatized" investments are only in stocks. The MBEI portfolio increases the demand for stocks relative to bonds, and thus reduces stock yields. Had the privatized part of the portfolio been in stocks and bonds, as are the IA and PSA portfolios, the projected mean yield would not be reduced.[39]

In projecting the stock yield in the IA plan, we were faced with a choice. On the one hand, individuals in the IA plan can choose only from a few indexes, the means of which may not differ much from each other. In this case, the S&P 500 mean yield (8.87 percent) should be used. On the other hand, individuals are required to annuitize their portfolio at the time of retirement, so they may be subject to some variation from fund to fund. Therefore, it is also reasonable to assume a distribution of yields perhaps as wide as the S&P 500's expected distribution. We analyzed both cases and found almost no difference in the rankings among the three plans for the investor with the median market yield. The IA plan, however, is more competitive in comparison to the other plans when the wider distribution of yields is assumed. Results from both assumptions are presented later in the paper.

Stocks in the PSA plan were assumed to have a distribution of yields comparable to the historic annual S&P 500 yield distribution. Accordingly, in any given year, one quarter of investors would receive real yields below –4.71 percent, half of the investors would receive real yields below 6.75 percent, and one quarter of investors would receive yields

above 19.57 percent, on the stock portion of their portfolios.

The IA and PSA portfolios are assumed to be diversified between stocks and U.S. securities, with the balance tilting towards U.S. securities as the individual investor ages. The IA portfolios are invested more heavily in U.S. securities than are the PSA portfolios because the IA portfolios must be annuitized at the time of retirement. U.S. securities are assumed to have a real yield of 2.3 percent.

We follow the Advisory Council's assumptions regarding administrative costs. For the MBEI plan, the equities investment transactions costs are estimated to be 0.005 percent of assets annually, while annual administrative expenses for the IA and PSA plans are estimated to be 0.105 and 1.00 percentage points, respectively. [40]

Overview of Methodology
The Advisory Council compared money's worth in the three plans assuming the Social Security Trustees' intermediate economic forecasts (with a small CPI adjustment) and for three different stock market yield scenarios. We expand on their analysis, using a simulation model to estimate the percentile distributions of stock market returns from investing repeatedly in PSA portfolios over a work-life. A detailed description of the methodology is available in the Technical Appendix.

The distributions of stock market returns are transformed into distributions of IRRs, one of the money's worth measures used by the Advisory Council. The IRRs represent the money's worth to an individual of the combined tier-1

and tier-2 components of the plans. IRRs for the IA at the mean stock market return are derived, and IRRs for the MBEI at a 7.0 percent real stock yield are taken from the Advisory Council report. The three plans can then be compared at all points in the IRR distributions rather than only at the three arbitrary points provided by the Advisory Council.

In particular, we are able to compare the plans for the investor with the median return, and identify the percentage of investors in stylized categories who will get higher IRRs in one plan than another. Our results for workers with the median IRR are not markedly different from the Advisory Council's middle-of-the-road 7.0 percent stock yield scenario. The plan yielding the highest IRR in the 7.0 percent scenario was also the plan yielding the highest IRR for a majority of investors. However, we also found that in many cases, sizeable minorities would end up having higher IRRs with another plan. The remainder of this section shows the IRR distributions graphically for average earning single males, and then presents summary results for seventeen different stylized worker types.

The analysis focuses on two birth cohorts: those born in 1955, to represent workers in the transition period, and those born in 1985, to represent workers for whom the plans are fully implemented. We assume that the 1955 cohort will invest for 22 years in either the IA or PSA plans before retiring, since they are already well into their working

careers before the new plans take effect. The 1985 birth cohort is assumed to invest for 40 years before retiring. Representative results are presented in Charts 3A and 3B, and a more complete summary is presented in the table that follows.

In Chart 3A, we show how average-earner single males born in 1955 would fare under the three plans using the Advisory Council's intermediate economic assumptions, and assuming that stocks in IA plans receive a 8.87 percent real yield. Even though all average-earning single males born in 1955 are assumed to invest for twenty two years, stock market fluctuations (in the PSA plans) and variations in investment portfolios will cause some to receive low internal rates of return and some to end up with high IRRs.

For example, in the PSA plan, twenty five percent of workers will receive a portfolio (tier-2) return below 2.76 percent, which is equivalent to an IRR of 0.77 percent on tier-1 and tier-2 combined. Fifty percent of the workers will receive a tier-2 return of 4.41 percent or lower, hence an IRR of 1.22 percent or lower on both tiers combined. Seventy five percent of workers will receive a return lower than 6.03 percent on their tier-2 investment, and hence will receive an overall IRR below 2.20 percent on both tiers combined. This percentile distribution of IRRs is demonstrated on the chart in the

**Chart 3A: Distribution of IRRs for Average-Earning Single Males Born in 1955**
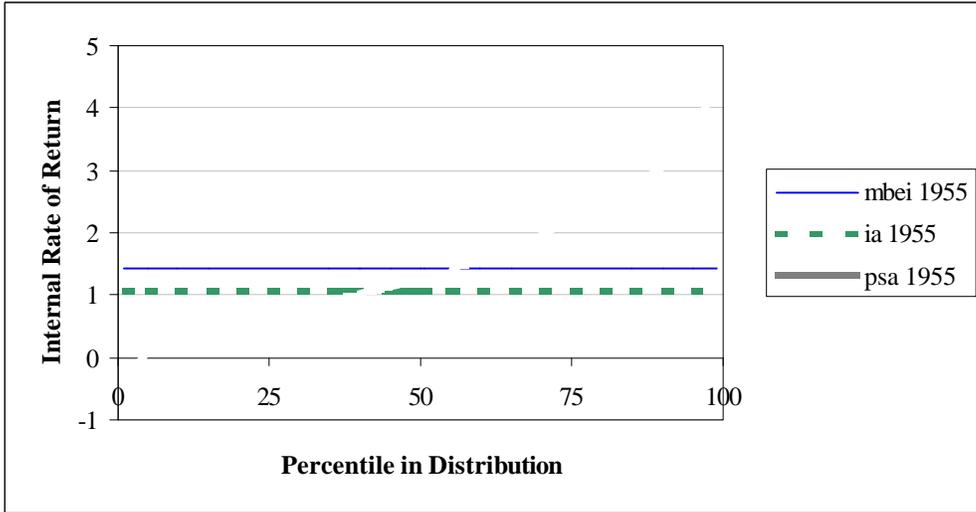(Stocks in IA portfolios yield 8.87 percent real)



**Chart 3B: Distribution of IRRs for Average-Earning Single Males Born In 1985**
(Stocks in IA portfolios yield 8.87 percent real)
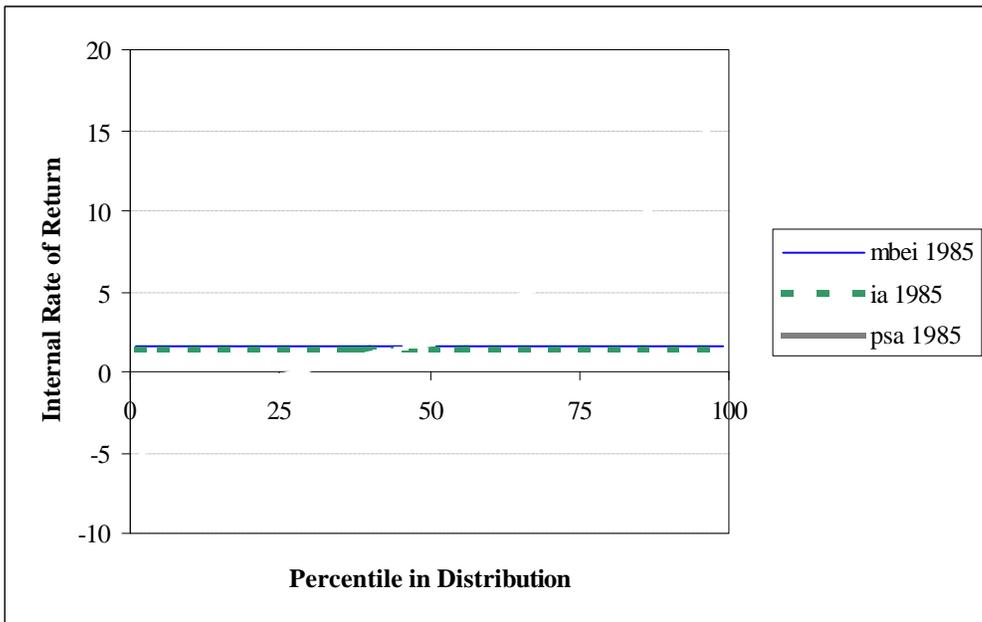


following way. On the horizontal axis is the percent of workers who will get an IRR less than or equal to the value on the vertical axis. The PSA curve rises because some people will receive higher portfolio yields than others. The MBEI and IA curves do not rise because their market yields are assumed constant. Chart 3A also shows an interesting phenomenon. While we observed earlier from Chart 2A that a single average-earner with a 7.0 percent real return would do better with the MBEI plan than the PSA plan, we see from Chart 3A that

market fluctuations will cause some people to do particularly well under the PSA plan. In Chart 3A we see that 56 percent of these workers will have highest IRRs with the MBEI plan, but for 44 percent of them the PSA will outperform the MBEI plan. The chart also clearly shows that the PSA and MBEI plans generally outperform the IA plan. The MBEI plan is always preferred over the IA plan, with the MBEI having an IRR of 1.42 percent while the IA's IRR is 1.09. The PSA generates higher IRRs than the IA for 58 percent of this worker type, but the IA is better for 42 percent of the workers.

The birth cohort is 30 years later –1985– in Chart 3B. These average-earning single males will have had 40 years to invest in the market, and will also not be part of the "transition period" workers. The worker with the median return in Chart 3B will have a higher IRR with the PSA plan (IRR=1.82 percent) than with the MBEI plan (IRR=1.55 percent) or the IA plan (IRR=1.49 percent). However, 40 percent of workers in this category will have higher-than-PSA IRRs with either the MBEI or IA plans.

The analysis described above is presented in summary form in Tables 2A-B. For various categories of workers born in 1955 and 1985 and assuming the intermediate assumptions, Tables 2A-B identify which plan is the best (in terms of providing the highest internal rate of return) for the worker with a median lifetime yield on investments. The median return is the value for which half the workers will do better and half will do worse. Tables 2A-B also specify the percent of workers who would do best with each plan on pairwise comparisons of plans. It is clear that for many

categories of workers, while one plan is identified as best for the worker with the median return, a different plan is often identified as best for a sizable minority of those workers. Calculations in Table 2A assume that the IA stock yields are 8.87 percent, and calculations in Table 2B assume that the IA stock yields are distributed like the S&P 500 mean.

Tables 2A-B focus on the differential treatment of the plans by marital status, gender, earnings, and birth cohort. Marital status is highlighted because the IA and PSA plans reduce spousal benefits. Gender is highlighted because females live longer and therefore will favor a plan with a higher defined benefit component. Earnings are highlighted because of different approaches to progressivity among the three plans. Birth cohort is highlighted to distinguish between those in the transition period and those for whom the plans are fully phased in. Finally, we also identify categories of workers where the IRRs are very similar from one plan to the next.

Marital Status
In Tables 2A-B, one-earner couples in either cohort show a greater advantage in the MBEI plan than in the other plans. This advantage results from the reduction in spousal benefits in the IA and PSA plans.

## Table 2A: What Percent Of Workers Will Prefer Each Plan?
### (IA plan stock yield is 8.87 percent, real)

| Worker Categories | Plan With Highest IRR For Worker With Median Return | Percent Of Workers In Each Category Who Will Have A Higher IRR With… | | |
|---|---|---|---|---|
| | | MBEI Than IA | MBEI Than PSA | IA Than PSA |
| **Birth Cohort 1955** | | | | |
| **Single males** | | | | |
| Low earnings | MBEI & PSA | 100 | 50 | 28 |
| Average earnings | MBEI | 100 | 56 | 42 |
| High earnings | MBEI | 100 | 55 | 43 |
| Maximum-taxable earnings | MBEI | 100 | 51 | 41 |
| **Single females** | | | | |
| Low earnings | MBEI | 100 | 54 | 29 |
| Average earnings | MBEI | 100 | 60 | 47 |
| High earnings | MBEI | 100 | 59 | 49 |
| Maximum-taxable earnings | MBEI | 100 | 55 | 46 |
| **One-earner couples** | | | | |
| Low earnings | MBEI | 100 | 62 | 16 |
| Average earnings | MBEI | 100 | 72 | 45 |
| High earnings | MBEI | 100 | 72 | 52 |
| Maximum-taxable earnings | MBEI | 100 | 67 | 51 |
| **Two-earner couples** | | | | |
| Husband (low-earner) and wife (low-earner) | PSA | 100 | 43 | 26 |
| Husband (average-earner) and wife (low-earner) | MBEI | 100 | 59 | 43 |
| Husband (average-earner) and wife (average-earner) | MBEI | 100 | 56 | 47 |
| Husband (high-earner) and wife (average-earner) | MBEI | 100 | 61 | 51 |
| Husband (high-earner) and wife (high-earner) | MBEI | 100 | 57 | 48 |
| **Birth Cohort 1985** | | | | |
| **Single males** | | | | |
| Low earnings | PSA | 100 | 42 | 40 |
| Average earnings | PSA | 100 | 46 | 46 |
| High earnings | PSA | 0 | 45 | 46 |
| Maximum-taxable earnings | PSA | 0 | 42 | 45 |
| **Single females** | | | | |
| Low earnings | PSA | 100 | 45 | 41 |
| Average earnings | MBEI & PSA | 100 | 50 | 48 |
| High earnings | PSA | 100 | 49 | 48 |
| Maximum-taxable earnings | PSA | 0 | 46 | 47 |
| **One-earner couples** | | | | |
| Low earnings | MBEI | 100 | 51 | 38 |
| Average earnings | MBEI | 100 | 54 | 50 |
| High earnings | MBEI | 100 | 54 | 51 |
| Maximum-taxable earnings | MBEI | 100 | 52 | 51 |
| **Two-earner couples** | | | | |
| Husband (low-earner) and wife (low-earner) | PSA | 0 | 35 | 38 |
| Husband (average-earner) and wife (low-earner) | PSA | 100 | 45 | 45 |
| Husband (average-earner) and wife (average-earner) | PSA | 0 | 45 | 48 |
| Husband (high-earner) and wife (average-earner) | PSA | 100 | 48 | 47 |
| Husband (high-earner) and wife (high-earner) | PSA | 0 | 46 | 47 |

## Table 2B: What Percent Of Workers Will Prefer Each Plan?
(IA plan stock yield is distributed like the S&P 500 mean)

| Worker Categories | Plan With Highest IRR For Worker With Median Return | Percent Of Workers In Each Category Who Will Have A Higher IRR With… | | |
|---|---|---|---|---|
| | | MBEI Than IA | MBEI Than PSA | IA Than PSA |
| **Birth Cohort 1955** | | | | |
| **Single males** | | | | |
| Low earnings | MBEI & PSA | 91 | 50 | 18 |
| Average earnings | MBEI | 94 | 56 | 36 |
| High earnings | MBEI | 89 | 55 | 37 |
| Maximum-taxable earnings | MBEI | 85 | 51 | 34 |
| **Single females** | | | | |
| Low earnings | MBEI | 100 | 54 | 16 |
| Average earnings | MBEI | 95 | 60 | 43 |
| High earnings | MBEI | 89 | 59 | 45 |
| Maximum-taxable earnings | MBEI | 87 | 55 | 41 |
| **One-earner couples** | | | | |
| Low earnings | MBEI | 100 | 62 | 6 |
| Average earnings | MBEI | 100 | 72 | 40 |
| High earnings | MBEI | 100 | 72 | 51 |
| Maximum-taxable earnings | MBEI | 100 | 67 | 50 |
| **Two-earner couples** | | | | |
| Husband (low-earner) and wife (low-earner) | PSA | 94 | 43 | 15 |
| Husband (average-earner) and wife (low-earner) | MBEI | 100 | 59 | 37 |
| Husband (average-earner) and wife (average-earner) | MBEI | 88 | 56 | 42 |
| Husband (high-earner) and wife (average-earner) | MBEI | 100 | 61 | 49 |
| Husband (high-earner) and wife (high-earner) | MBEI | 85 | 57 | 44 |
| **Birth Cohort 1985** | | | | |
| **Single males** | | | | |
| Low earnings | PSA | 58 | 42 | 37 |
| Average earnings | PSA | 56 | 46 | 36 |
| High earnings | PSA | 54 | 45 | 37 |
| Maximum-taxable earnings | PSA | 50 | 42 | 35 |
| **Single females** | | | | |
| Low earnings | PSA | 60 | 45 | 27 |
| Average earnings | MBEI & PSA | 59 | 50 | 41 |
| High earnings | PSA | 56 | 49 | 42 |
| Maximum-taxable earnings | PSA | 53 | 46 | 39 |
| **One-earner couples** | | | | |
| Low earnings | MBEI | 70 | 51 | 22 |
| Average earnings | MBEI | 69 | 54 | 44 |
| High earnings | MBEI | 66 | 54 | 48 |
| Maximum-taxable earnings | MBEI | 62 | 52 | 47 |
| **Two-earner couples** | | | | |
| Husband (low-earner) and wife (low-earner) | PSA | 49 | 35 | 25 |
| Husband (average-earner) and wife (low-earner) | PSA | 56 | 45 | 36 |
| Husband (average-earner) and wife (average-earner) | PSA | 50 | 45 | 42 |
| Husband (high-earner) and wife (average-earner) | PSA | 56 | 48 | 41 |
| Husband (high-earner) and wife (high-earner) | PSA | 54 | 46 | 40 |

Gender

Single females will have an experience similar to single males in both the 1955 and the 1985 cohorts, except that more females than males in each category will do better with the MBEI plan

Earnings Level

There appears to be a consistent finding regarding earnings level in both cohorts: higher proportions of average and high-earners, as compared with either low or maximum earners, seem to do better with the MBEI plan than the PSA plan. Thus, support for the MBEI plan, when compared against the PSA plan would probably be strongest among average and high-earners.

A similar consistency is found regarding the IA and PSA plans: higher proportions of average, high, and max-earners, as compared with low-earners, seem to do better with the IA plan than the PSA plan. Thus middle and higher-earners would probably have a stronger preference for the IA plan, when compared against the PSA plan, than would low-earners.

Birth Cohort

For the 1955 birth cohort, the MBEI plan will turn out to have provided the highest internal rates of return for more than half the workers in 15 out of 17 worker categories. The only exceptions are low-earning single males where IRRs are equal at the median yield, and two-earner couples with both husband and wife are low-earners where the MBEI IRR is lower than the PSA IRR. Of course, a given worker in each category will not know ahead of time if he/she will be a winner or loser in the PSA and IA plans.

The MBEI plan will generate better returns than the IA plan in all categories for the 1955 birth cohort. The PSA will generate better returns than the IA plan for majorities of workers in all categories except one-earner couples with high or maximum-taxable earnings, and two-earner couples where the husband is a high-earner and the wife is an average-earner. An overall ranking of plans for this birth cohort, based on internal rates of return, would be MBEI first, PSA second, and IA last.

The 1985 birth cohort will have quite a different experience. The MBEI plan will still generate the highest IRRs for a majority of one-earner couples, and for single females with average earnings. However, for majorities of other single females, single males, and two-earner couples, the PSA plan generates the highest IRRS. The IA plan is noticeably more competitive with the MBEI plan in the 1985 as compared to the 1955 birth cohort. The IA plan is better than the MBEI plan for majorities in six categories when the IA stock yield is fixed, and is better or equal to the MBEI plan in two categories when the IA stock yield is distributed.

The IA plan is more competitive with the PSA plan for low-earning individuals and couples in the 1885 cohort as compared to the 1955 cohort. When the IA stock yield is fixed, the IA plan is preferred to the PSA by larger groups of minorities in nearly all worker categories for 1985 cohorts as compared to 1955 cohorts. That generalization does not hold when the IA stock yields are distributed.

An overall ranking of the plans for the 1985 birth cohort would appear to be MBEI first, then PSA and lastly the IA

plan. However, this ranking is not as clear-cut as the ranking for the 1955 cohort. In this (1985) cohort, the PSA plan provides higher IRRs than the MBEI plan for majorities of workers in 12 of 17 categories.

Close Calls

Having identified for each of the seventeen worker categories the plan that yields the highest IRR, we turn now to evaluate how close the second-best plan is. Looking at the MBEI/PSA comparison for the 1955 birth cohort, there are five worker categories in which the percent of workers who will have a higher IRR with the MBEI is 50 plus or minus five percentage points. These cases can be considered close calls, or within a reasonable margin of error. The five cases are concentrated in the single male and single female categories.

When the IA stock yield is fixed (Table 2A), nine out of 17 IA/PSA comparisons for the 1955 birth cohort are too close to call. They fall in all categories except single males.

In the 1985 birth cohort, there are significantly more close calls. In 14 categories, the MBEI and PSA plans are close, and in 13 categories the PSA and IA plans are close.

When we assume that stock yields in the IA plan are distributed according to the S&P 500 distribution of yields (Table 2B), then we find that the preferred plan for the majority in each category does not change. However, there are no close calls between the MBEI and IA plans in the 1955 birth cohort, and there are 6 close calls in the 1985 cohort. In comparing the IA to the PSA when the IA yields follow a distribution, the IA

plan is less competitive. While there are 16 close calls when the IA plan receives the mean yield, there are only four close calls when the IA yields are distributed like the S&P 500 mean.

From this discussion on close calls, it is reasonable to conclude that even small changes in the analytical assumptions underlying these comparisons, or small changes in the plans themselves, can easily change the overall rankings among the plans.

## VII. CONCLUSION

This Issue Brief has described the three proposals from the Advisory Council on Social Security to bring Social Security into a sustainable long-run balance. Each proposal incorporates some form of equity investment of Social Security funds, whether under the guidance of the Trustees or by individual initiative.

We evaluated the privatization aspects of the three proposals, focusing mainly on how sensitivity to market fluctuations affects adequacy and equity.

Regarding adequacy of income, all three plans provide adequate benefits to keep low-income earners born after 1960 out of poverty in retirement.[41] Regarding the equity of lifetime taxes and benefits, we compared the three plans using the intermediate assumptions. If, as the Advisory Council assumed, every worker receives a 7.0 percent return on their equity investment, then for current older workers (exemplified in this paper by those born in 1955) the MBEI plan is generally the most advantageous. For younger workers (exemplified in this paper by those born in 1985) the PSA plan generally yields the highest returns.

The IA plan generally yields the lowest returns for all age groups, and the MBEI proposal generally yields the highest returns for disabled persons.

However, everyone's experience investing in equities in the IA or PSA plans will differ, as some investors will receive low yields and some will receive high yields. When accounting for the distribution of returns, we found that majorities of workers in most of the stylized cases we evaluated will rank the three plans consistent with the Advisory Council's 7 percent market return scenario. For many worker categories, however, those rankings are held by only a slim majority of the workers in each category.

## END NOTES

[1] The authors would like to acknowledge helpful comments from John Gist, Steve Goss, Tim Kelley, Jules Lichtenstein, Joyce Manchester, Evelyn Morton, Robert Myers, David Pattison, Steven Sandell, Sylvester Schieber, Theresa Varner, and Sally Whitney.

[2] In this briefing paper the term Social Security means Old-Age, Survivors, and Disability Insurance (OASDI) unless otherwise noted.

[3] The Social Security actuaries, in their *low-cost* estimate find that the current benefit levels are sustainable. But because their *intermediate-* and *high*-cost estimates project insolvency, the current policy is not analyzed in this paper.

[4] *The 1997 Annual Report Of The Board Of Trustees Of The Federal Old-Age And Survivors Insurance And Disability Insurance Trust Funds*, (Washington: U. S. Government Printing Office, 1997), p. 6. For further discussion of the long-term balance and the status of the trust funds, see *Old-Age, Survivors, and Disability Insurance Trust Funds: 1996 Trustees' Projections*, AARP/PPI Data Digest No. DD23, (Washington: American Association of Retired Persons, 1996).

[5] Peter Peterson, for example, recommends: "As the savings in [mandated] private retirement accounts built, the current universal Social Security system could be converted into a purer and much less costly floor of protection that only paid benefits to the needy." Quoted from "Will America Grow Up Before It Grows Old?" Atlantic Monthly, May, 1996. Melissa Heiger and William Shipman conclude their July 22, 1997 paper for the Cato Project on Social Security entitled "Common Objections to a Market Based Social Security System: A Response" by observing that "The privatization of Social Security is an idea whose time has come."

[6] Robert Kuttner, for example, wrote: "Rather than hack away at Social Security, Congress should legislate standby adjustments to take effect only if the doomsayers prove right." Business Week, February 20, 1995. Dean Baker, in "Privatizing Social Security: the Wall Street Fix" (EPI Issue Brief #112, July 1996), makes several observations about making radical changes to the system: "The major threat to the system comes from proposals to fix it. Privatization represents the most serious threat to date...".

[7] The current-law policy is not analyzed in this paper because it is not solvent under the intermediate cost assumptions.

[8] The trust fund reserves are the excess of FICA and other collections over benefit payments and administrative costs. Some analysts would not consider as privatization the diversification of trust fund assets if the benefits were still determined by a formula.

[9] This paper uses the phrase "right to receive a benefit" advisedly. The constitutional right to continued Social Security benefits was argued in Flemming v. Nestor 363 U.S. 603 (Decided June 20, 1960.) While the Supreme Court decided that Mr. Nestor was not protected from having his benefits terminated, its written decision does include a discussion of the unique character of

Social Security and the concept of "earned right". "The 'right' to Social Security benefits is, in one sense, 'earned,' for the entire scheme rests on the legislative judgment that those who in their productive years were functioning members of the economy may justly call upon that economy, in their later years, for protection from the 'rigors of the poor house as well as from the haunting fear that such a lot awaits them when the end is near.'"

[10] The yield on these special-issue Treasury bonds is the average yield of outstanding Treasury bonds of four or more years' duration.

[11] *1997 OASDI Trustees Report*, pp. 26, 129.

[12] This topic was investigated by P. Brett Hammond and Mark Warshawsky in "Investing Social Security Funds in Stocks" Benefits Quarterly. Third Quarter, 1997. They note: "A conclusion that could be drawn from these static projections is that in the case of the plans calling for central management and all other things being equal, equity markets could grow fast enough to absorb, without much distortion the equity investment flows and sums that would be generated by these plans. Our analysis suggests though not conclusively, that worries about sheer size of a centrally managed Social Security equity fund, especially if it is indexed to the broadest possible market index, are overblown."

[13] The 1994-96 Council is the last one under the pre-1994 legislation. The independent Social Security Administration now has a legislatively mandated Advisory Board that is in place continuously.

[14] According to the Trustees' intermediate projection, Social Security will be insolvent by 2029.

[15] Combs, Ann L. "Social Security: Options for Reform." Prepared for the Society of Actuaries' conference *Myth vs. Reality: Social Security and Private Plans*. June 10-11, 1996. pp. 4-5.

[16] This means the system would be poised to remain in balance well beyond the 75-year horizon.

[17] All three plans assume that corrections in the upward bias of the CPI will be minus 0.1 percentage points for the December 1996 COLA and minus 0.21 percentage points for the December 1997 COLA.

[18] All years of earnings are considered, but for retirement benefits, only the 35 highest years (after indexing) are used.

[19] Currently, if "provisional" income exceeds $25,000 for single individuals or $32,000 for married couples, then a portion of Social Security benefits become taxable.

[20] The investment would be in a passive equity index fund held and managed by the federal government. The Council report observes, "... the 40 percent allocation to equities is not a magic number..." Nevertheless, if 40 percent of the assets were held in equities, it would mean that eventually the trust funds would hold up to 10 percent of the nation's GDP in equities. The analyses in sections V and VI of this paper assume that up to 40% of assets will be held in equities.

[21] The Social Security actuaries project that if the full retirement age were indexed to increases in longevity, the age would increase about one month every two years. See Stephen C. Goss, "Appendix II: Comparison Of Financial Effects Of Advisory Council Plans To Modify The OASDI Program," in *Report of the 1994-1996 Advisory Council on Social Security, Volume I: Findings and Recommendations* (Washington, DC: 1996). p. 169.

[22] This reduction includes spouses of both retired and disabled workers.

[23] The amount is wage indexed for new beneficiaries thereafter.

[24] Low-earners are defined here as having a lifetime of earnings at 45% of the average wage. Average-earners have a lifetime of average earnings, high-earners have a lifetime of earnings at 160% of the average wage, and maximum taxable earners have a wage at the level of Social Security maximum taxable earnings.

[25] This paper considers the combined benefits from the public program and, for the IA and PSA plans, the private investment component.

[26] From the Department of Health and Human Services, as reported in the *Federal Register*, March 10, 1996.

[27] Authors' estimates, based on the *1996 OASDI Trustees Report*, intermediate assumptions.

[28] Replacement ratios for low-earners, as well as average and high-earners are discussed in Goss, "Appendix II," pp. 227-229.

[29] The Advisory Council assumed that inflation will be 3.79 percent, the real yield on long-term U.S. Government securities 2.3 percent, and the real yield on equities 7 percent (*Council Report*, Vol. II. p. 160). Based on analysis done by Joel

Dickson of the Vanguard Group, Inc., the Council assumed that the net real yields on diversified PSA 401(k)-type accounts would range (depending on age group) from 3.5 to 4.1 percent. The IA accounts would have a net real yield ranging from 3.3 to 5.0 percent (Goss, "Appendix II," p. 171).

[30] Goss, "Appendix II," p. 223.

[31] The striking drop in wage replacement ratios needed to stay above poverty indicates to the authors that the notion of poverty may need to be re-evaluated. A low-income earner born in 2015 would need only a 25% replacement ratio to stay above poverty. But it seems likely that we would consider as impoverished a low-income earner retiring on just above a quarter of his pre-retirement earnings. In fact, the National Research council has recommended changing the way poverty is calculated. See Citro, Constance F, and Robert T. Michael, Editors, *Measuring Poverty: A New Approach*, National Research Council (Washington, DC: National Academy Press, 1995).

[32] A notable exception is Steuerle, C. E., and Jon Bakija. *Retooling Social Security For The 21st Century: Right & Wrong Approaches To Reform.* (Washington, DC: The Urban Institute Press, 1994).

[33] The figures presented here are real rates of return. They include both the employee's and employer's share of contributions. They are drawn from Goss, "Appendix II," p. 219.

[34] This statement assumes that risk and taxes remain unchanged.

[35] Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation*, 1995 yearbook, from 1926 to 1995. P. 171.

[36] Ibbotson, pp. 171-178.

[37] Calculations using the AARP/Figuiredo model, assuming a stock-only portfolio with an expected real return of 8.25 percent, a standard deviation of 20.4 percent, and a real annual increase in new investments of 1.21 percent.

[38] Based on AARP calculations using the AARP/Figueiredo model.

[39] Joel Dickson, in his report to the Advisory Council, (Volume II, p. 486) suggested that future stock yields would be reduced in the MBEI plan relative to the IA and PSA plans because the MBEI "privatized" investments are only in stocks, whereas the IA and PSA privatized investments are assumed to be invested in stocks and bonds. Dickson's analysis did not suggest how much lower the MBEI stock yields would be below the historical mean. The 7.0 percent value used by the Advisory Council for MBEI IRRs conforms with the general direction of Dickson's analysis, but the precise number they and we used cannot be justified.

[40] Goss, "Appendix II," pp. 170-171.

[41] Current law also does not provide sufficient income replacement to bring low-earners out of poverty in retirement.