

# The Effect of Alternative Methods of Taxing Social Security Benefits on Individual Returns

DANIEL P. MURPHY, PhD, CPA  
YVONNE H. STEWART, PhD, CPA

**Abstract:** *Recent debate over the Social Security system has centered on the "deal" or rate of return that current and future beneficiaries can expect to realize. Prior studies have examined this issue but have generally ignored the effect of income taxes on returns. This study extends prior research by incorporating the income taxation of benefits into the returns computation. After-tax returns are computed using four different accounting methods for 27 separate simulated beneficiary profiles. The beneficiary profiles differ by birth year, income level, and filing status.*

*The results indicate that income taxes have a substantial impact on returns. In particular, high-income and younger beneficiaries are adversely affected. Marital status also has a substantial impact on returns due to the joint and survivor feature of the benefit system. While the benefit system was designed to provide low-income beneficiaries a better return than high-income beneficiaries, the income taxation of benefits is creating tremendous disparities between high- and low-income beneficiaries' returns.*

## Introduction

**A**s the baby boom generation approaches retirement, the "Great Social Security Debate" has again achieved prominence among policymakers, analysts, and in the popular

press. Unlike prior debates, which tended to focus exclusively on the solvency of the Social Security system, much of the current debate has focused on the "deal" or rate of return workers can expect to realize on their contributions. Given the public's growing financial sophistication and the increasing incidence of self-managed retirement accounts, it is not surprising that current workers are asking questions of the Social Security system that have been traditionally reserved for financial service providers.<sup>1</sup>

Whether workers receive their "money's worth" from Social Security has been debated for many years. Numerous academic studies and articles in the popular press have examined the rate of return a "typical" retired worker can expect to realize on his or her lifetime contributions. While some of these studies have considered the effects of age, marital status, and income level on the expected rate of return, the effect of income taxation on that return has rarely been considered.

In 1984, the first year Social Security benefits were taxed under newly enacted Internal Revenue Code (IRC) Section 86, about 36 percent of all beneficiaries who filed an income tax return included a portion of benefits received in their adjusted gross income. Due to increases in retirees' income levels and changes in the tax

law, this percentage increased to over 65 percent by 1996 and is expected to continue increasing.<sup>2</sup> As the number of beneficiaries who pay income tax on a portion of their Social Security benefits increases, the issues raised by the impact of income taxes on the Social Security benefit/tax relation become more important.

Understanding the impact of income taxation on the net-of-tax Social Security benefits received is important for a number of reasons. Foremost, the taxation of benefits can have a substantial impact on the rate of return an individual can expect to realize from the system. As the workforce becomes more informed about investment returns and retirement planning, there is an increasing need to understand the economic relation between the tax law and the Social Security benefit formula. Additionally, the income taxation of Social Security benefits has implications for how well the Social Security system's policy objectives are being met. It is important to note that the Social Security system's economic and social objectives were formulated *prior* to the taxation of benefits. Policymakers need to be aware of how the taxation of benefits affects the distribution of net-of-tax benefits across various

*This issue of the Journal went to press in October 1999.*

# *The tremendous growth in Individual Retirement Accounts, 401(k) and 403(b) accounts, has heightened the public's financial sophistication and expectations for reasonable rates of return.*

groups of beneficiaries.

The purpose of this study is to examine the effect of income taxation on the returns realized by Social Security beneficiaries. Because the laws governing benefit taxation have changed in recent years and calls for further changes have recently been made, this study examines alternative methods of taxing Social Security benefits. Specifically, this study examines the sensitivity of after-tax economic returns realized by Social Security beneficiaries to differences in tax accounting methods. For each accounting method examined, differences in beneficiary pre-retirement income, marital status, and year of retirement also will be considered.

This article focuses on how alternative methods of taxing benefits impacts the expected rate of return realized by beneficiaries and how returns vary across income level, marital status, and year of retirement. To control for unrelated variables and permit greater focus on the economic and demographic variables of interest, the study employs a simulation approach to model a number of representative beneficiary profiles.

The remainder of this article is organized as follows: The next section provides a brief overview of the Social Security system and how its public perception has evolved. The various models used in this study to measure expected rates of return are then presented and explained. The alternative methods of taxing benefits are described along with the different representative beneficiary profiles that are examined. The results are presented, and the article concludes with a discussion of policy implications.

## **Changing Perceptions of the Social Security System**

The Social Security system is comprised of three trust funds: the Old-Age and Survivors Insurance

(OASI) Trust Fund, the Disability Insurance (DI) Trust Fund, and the Hospital Insurance (HI) Trust Fund. This study focuses on the payments made to retired beneficiaries under the OASI program.<sup>3</sup> Since its inception, the OASI program's primary goal has been to meet the minimum income needs of its beneficiaries. However, as the program matured, its Board of Trustees has also recognized the importance of providing a reasonable return on worker contributions.<sup>4</sup> The OASI program has been successful in meeting both of these objectives by historically providing individual benefits far in excess of contributions.

The OASI program was originally designed as a "pay as you go" system. That is, workers' current contributions to the fund were used to pay current benefits to retirees. Although the program was never intended to be a self-funded retirement system, Congressional and Social Security Administration decisions have contributed to reshaping public perceptions. For example, the decision to accumulate large OASI surpluses and invest them in Treasury securities gives many individuals the impression that these funds are being saved and will be available to fund their retirement. The Social Security Administration's distribution of Personal Earnings and Benefit Estimate Statements detailing one's contributions and expected benefits looks very similar to private retirement account statements and contributes to a public perception that the Social Security system is analogous to a private retirement system.<sup>5</sup> The tremendous growth in Individual Retirement Accounts, 401(k) and 403(b) accounts, has heightened the public's financial sophistication and expectations for reasonable rates of return. As a result, there have been a number of reports, proposals, and studies that advocate redesigning the Social Se-

curity system to enhance its investment performance.<sup>6</sup>

Changes in the OASI program have called into question whether it will successfully continue to provide beneficiaries with a reasonable return on their contributions. Worker contributions to the OASI program have increased from a \$30 maximum annual contribution in 1937 to a \$3,884 maximum annual contribution in 1999. This increase represents an average, annual growth rate over eight percent.<sup>7</sup> Additionally, OASI employee contributions are matched by either the employer or by the individual if self-employed. The increase in the required annual contribution makes it much more difficult for the program to provide a reasonable rate of return to its beneficiaries.

OASI benefits are computed using the Primary Insurance Amount (PIA) formula developed by the Social Security Administration. Although the computed PIA is not explicitly linked to contributions, it is positively related to earnings.<sup>8</sup> Furthermore, while benefits have risen steadily over the years, maximum benefit payments have not increased as rapidly as increases in the maximum OASI contribution.

The 1983 Amendments to the Social Security Act introduced IRC Section 86, which requires including a portion of OASI benefits received in an upper-income individual's taxable income. Interestingly, the law also stipulates that any income taxes collected under Section 86 be remitted to the OASI Trust Fund as opposed to the government's general operating budget. Thus, while Congress has been unwilling to reduce the gross benefits received by upper-income recipients, it has used the tax laws to reduce the net benefits. As the percentage of retirees subject to benefit taxation increases, the impact of income tax laws on the net return realized by beneficiaries will become more pronounced and widespread.<sup>9</sup>

# The Effect of Alternative Methods of Taxing Social Security Benefits on Individual Returns

## Measuring Expected Rates of Return

The purpose of this article is to examine how alternative methods of taxing OASI benefits impact the expected rate of return realized by beneficiaries and how these net-of-tax returns vary across income level, marital status, and year of retirement. Much prior research has used an actuarial model approach whereby the future value of OASI taxes paid is compared to the present value of OASI benefits received at a given point in time (i.e., retirement age of 65 years). The actuarial models use a fixed rate of return to compute the present and future values. To bypass the problems associated with using a fixed, "fair" rate of return variable, this study computes an internal rate of return for each beneficiary profile examined that establishes the following equivalency condition:

$$C_e = B_{at}$$

where,

$C_e$  = the future value of OASI taxes paid on achieving entitlement age  $e$  (i.e., age 65),

and

$B_{at}$  = the present value of the expected after-tax OASI benefits at the age of entitlement adjusted for the probability of survival.

## Future Value of OASI Taxes Paid ( $C_e$ )

This study focuses on the taxation of benefits; therefore, all profiled beneficiaries are assumed to survive to the entitlement age. Thus, the future value of an individual's OASI taxes paid ( $C_e$ ) is computed as of his or her 65th year depending on the assumed date of retirement.<sup>10</sup> Consistent with prior research, individuals are assumed to begin work at age 22 and bear the entire incidence of the OASI taxes paid.<sup>11</sup> The annual percentage change in OASI-covered

wages mirrors the annual change in the Social Security Administration's Average Wage Series. Projected OASI tax rates and contribution base amounts reflect the Alternative II set of assumptions in the OASI Board of Trustees' Annual Report.

Because this study computes an individual internal rate of return for each beneficiary profile, the future value of OASI taxes paid by an individual as of his or her entitlement age ( $C_e$ ) is computed as

$$C_e = \sum_{i=22}^{e-1} W_i * (T_i) * (1+r)^{(e-i)}$$

where,

$W_i$  = wages in year  $i$  subject to tax (not to exceed the maximum OASI contribution base in year  $i$ ),

$T_i$  = OASI tax rate borne directly by the individual employee at age  $i$  plus the OASI tax rate paid explicitly by the employer but paid implicitly by the employee at age  $i$ ,

$r$  = computed internal rate of return, and

$e$  = entitlement age.

## Present Value of After-Tax OASI Benefits Received ( $B_{at}$ )

To permit comparability with the future value of OASI taxes paid, the present value of an individual's lifetime expected after-tax OASI benefits ( $B_{at}$ ) is computed as of his or her entitlement age. An individual's pre-tax OASI benefits are computed using the Primary Insurance Amount Calculation Program and are indexed for inflation using the Alternative II assumptions.<sup>12</sup>

The  $B_{at}$  computations reflect a beneficiary's annual probability of survival, conditioned on attaining the entitlement age. The computations also incorporate differences in income levels, year of entry into the workforce, and marital status. The conditional survival probabilities were computed using life expectancy data

contained in the Life Tables, published by the Social Security Administration's Office of the Actuary. These data reflect both intergenerational and gender differences.

Unlike prior research, the gross OASI benefit received is reduced by the income tax paid on this amount. The next section details how the income tax was computed for each of the alternative methods of taxing the benefits. The present value of an unmarried individual's expected after-tax OASI benefits is computed as:

$$B_{at} = \sum_{i=e}^{119} \{ [P_s(i|e) * (PIA_i - (T_{mtri} * PIA_{tax}))] \div (1+r)^{i-e} \}$$

where,

$B_{at}$  = present value of the expected after-tax benefits,

$P_s(i|e)$  = probability of survival to age  $i$  conditional upon survival to entitlement age  $e$ ,

$PIA_i$  = primary insurance amount (i.e., Social Security benefit) received in year  $i$ ,

$PIA_{tax}$  = taxable portion of PIA benefit in year  $i$ ,

$r$  = computed internal rate of return,  $e$  = entitlement age,

$T_{mtri}$  = marginal explicit tax rate in year  $i$ ,

and

119 = maximum life expectancy used in the SSA Life Tables.

This study also examines the expected rate of return realized by married beneficiaries. To isolate the effect of marital status on expected returns, the analysis assumes that only one of the spouses worked in OASI-covered employment prior to both beneficiaries' retirement.<sup>13</sup> A covered worker's spouse is eligible to receive a spousal benefit equal to 50 percent of the worker's primary benefit (i.e., PIA). Thus, a married couple receives a benefit equal to 150 percent of the worker's primary benefit. Upon the death of a spouse, the survivor receives 100 percent of the worker's

# *Some policymakers have suggested taxing Social Security benefits similar to the way private pensions are taxed under IRC Section 72.*

primary benefit or approximately 67 percent of the joint benefit. Because one spouse will predecease the other, the benefits model for married beneficiaries reflects the dual joint probability of joint survival, the husband's sole survival, and the wife's sole survival. The computed tax on the benefits received reflects these different marital statuses. The present value of a married couple's expected after-tax OASI benefits is computed as:

$$B_{at} = \sum_{i=e}^{119} \{ P_j(i|e) * [PIA_{ji} - (T_{mtri} * PIA_{txi})] + P_{fs}(i|e) * [(PIA_{ji} * .67) - (T_{mtri} * PIA_{txi})] + P_{ms}(i|e) * [(PIA_{ji} * .67) - (T_{mtri} * PIA_{txi})] \} * (1+r)^{-e}$$

where,

- $B_{at}$  = present value of expected after-tax benefits,
- $P_j(i|e)$  = probability of joint survival to age  $i$  given survival to entitlement age  $e$ ,
- $P_{fs}(i|e)$  and  $P_{ms}(i|e)$  = dual joint probability of either female or male sole survival to age  $i$  given joint survival to entitlement age  $e$ ,
- $PIA_{ji}$  = primary insurance amount payable in year  $i$  to joint beneficiaries,
- $PIA_{txi}$  = taxable portion of PIA benefit in year  $i$ ,
- $r$  = computed internal rate of return,
- $e$  = entitlement age,
- $T_{mtri}$  = marginal explicit tax rate in year  $i$ ,
- 119 = maximum life expectancy used in the SSA Life Tables, and
- .67 = percentage of  $PIA_{ji}$  received by a sole survivor.

## Alternative Methods of Taxing Social Security Benefits

### No Taxation of Benefits

Prior to 1984, Social Security benefits were not subject to income taxation. Although Congress probably will

never again exempt benefits from taxation, these results are useful as a benchmark to compare with the results of other methods of taxing benefits.<sup>14</sup> Additionally, these no-tax results provide a link to prior studies that have not considered the effect of income taxes.

### Taxation of Benefits Under Prior Law

From 1984 through 1993, IRC Section 86 required that up to 50 percent of benefits be included in taxable income depending on the taxpayer's modified adjusted gross income and filing status. The taxable portion of OASI benefits received in year  $i$  ( $PIA_{txi}$ ) can be modeled as:

$$PIA_{txi} = \text{MIN}\{.5 * PIA_i, \text{MAX}[0, .5 * (\text{MAGI} - B_{old})]\}$$

where,

- $\text{MAGI}$  = modified adjusted gross income defined as the sum of taxable gross income, tax-exempt interest income, and one-half of the OASI benefits received;
- $PIA_i$  = primary insurance amount payable in year  $i$ ; and
- $B_{old}$  = base amount (\$32,000 or \$25,000 depending on filing status).

### Taxation of Benefits Under Current Law

The Revenue Reconciliation Act of 1993 amended IRC Section 86 to increase for certain taxpayers, the percentage of OASI benefits subject to income taxation for tax years beginning after 1993. For taxpayers with modified adjusted gross income less than the threshold amount (i.e., \$34,000 for single taxpayers and \$44,000 for married taxpayers), the taxable portion of the OASI benefits received is determined under prior law. However, for taxpayers whose modified adjusted gross income exceeds the threshold amount, the taxable portion of the OASI benefits received is determined by taking the lesser of:

- (1) 85 percent of OASI benefits received, or
- (2) 85 percent of modified adjusted gross income exceeding the threshold amount

plus the lesser of:

- (1) the amount computed under prior law, or
- (2) 50 percent of the difference between the threshold amounts mandated under current and prior law.

The taxable portion of OASI benefits received in year  $i$  ( $PIA_{txi}$ ) can be modeled as:

$$PIA_{txi} = \text{Min}\{.85 * PIA_i; \text{Max}[0, .85(\text{MAGI}_i - B_{new})]\} + \text{Min}\{[.5 * PIA_i; \text{Max}(0, .5(\text{MAGI} - B_{old}))], .5(B_{new} - B_{old})\}$$

where,

- $\text{MAGI}_i$  = modified adjusted gross income in year  $i$  is defined as the sum of taxable gross income, tax-exempt interest income, and one-half of the OASI benefits received;
- $PIA_i$  = primary insurance amount payable in year  $i$ ;
- $B_{old}$  = base amount (\$32,000 or \$25,000); and
- $B_{new}$  = adjusted base amount (\$44,000 or \$34,000).

### Taxation of Benefits As an Annuity

Some policymakers have suggested taxing Social Security benefits similar to the way private pensions are taxed under IRC Section 72.<sup>15</sup> Under this method, the taxable benefits in a given year equal the gross benefits received less a return of invested capital (i.e., prior OASI taxes paid). The percentage of annual benefits received that constitutes a non-taxable return of capital is called the exclusion ratio. Thus, the taxable portion of benefits received in year  $i$  ( $PIA_{txi}$ ) is:

$$PIA_{txi} = PIA_i * (1 - \text{Exclusion Ratio}).$$

IRC Section 72 defines the exclusion ratio as total lifetime employee contributions divided by total ex-



# The Effect of Alternative Methods of Taxing Social Security Benefits on Individual Returns

pected employee benefits and is computed as follows:

$$\frac{\sum_{i=22}^{e-1} W_i * T_{ni}}{\sum_{i=e}^{119} P_{sj}(i|e) * PIA_i}$$

where,

- $P_{sj}(i|e)$  = the probability of either an unmarried, sole surviving or joint beneficiary surviving to year  $i$ , given survival to the entitlement age  $e$ ;
- $W_i$  = OASI-covered wages in year  $i$ ;
- $T_{ni}$  = employee portion of OASI taxes paid in year  $i$ ; and
- $PIA_i$  = primary insurance amount payable in year  $i$ .

## Taxation of Benefits under the Capital Recovery Method

Prior to the Tax Reform Act of 1986, IRC Section 72(d) permitted annuity recipients, under certain conditions, to treat all receipts as nontaxable to the extent of their contributions. Once all of the contributions were recovered, all benefits received were fully taxable. This method of accounting for benefits is proposed in The Social Security Solvency Act of 1998, co-sponsored by Senators Patrick Moynihan and Robert Kerrey. Their bill explicitly calls for the taxation of all Social Security benefits received in excess of a worker's contributions to the system. The taxable portion of benefits received in year  $i$  ( $PIA_{taxi}$ ) is:

$$PIA_{taxi} = \text{MAX}\{0, PIA_i - \text{MAX}\{0, T_{ne} - \sum_{y=e}^i PIA_y\}\}$$

where

$$T_{ne} = \sum_{i=22}^{e-1} W_i * T_{ni}, \text{ and}$$

$PIA_i$  = primary insurance amount payable in year  $i$ .

## Representative Beneficiary Profiles

This study analyzes the effect of alternative methods of taxing OASI

benefits on the computed internal rates of returns for 27 separate taxpayer profiles that differ by marital status, income level, and year of birth. Because filing status directly affects the taxability of benefits, the study examines joint beneficiaries where only one spouse is assumed to have worked in OASI-covered employment, as well as male and female sole beneficiaries.

To capture the effect of different marginal income tax rates on the actuarial model's results, the study considers for each household type, three separate pre-retirement income-levels: low, middle, and high.<sup>16</sup> For purposes of the C<sub>e</sub> computation, OASI taxes are computed, subject to OASI tax ceiling limitations, on the entire amount of annual income. To assess how expected rates of return vary over time, each of the nine different income/household combinations is analyzed for beneficiaries born in 1920, 1930, and 1940. These beneficiaries are assumed to begin receiving OASI benefits in 1985, 1995, and 2005. Individuals are assumed to begin work at age 22 and to receive benefits upon attaining entitlement age.

Upon achieving entitlement age, the profiled beneficiaries are assumed to begin receiving their OASI benefits in addition to 50 percent of their pre-retirement income. Although the selection of a post-retirement income replacement ratio is problematic, prior research estimates that non-OASI income replacement ratios for retirees range from 34 to 60 percent depending on income and age. Thus, 50 percent is a reasonable assumption.<sup>17</sup>

For each of the 27 different income/household/age cohort beneficiary profiles, the internal rate of return realized by each cohort is computed using the previously described contribution/benefits model adjusted for each of the four alternative accounting methods.

## Results and Analysis

### Rates of Return in the Absence of Taxes

Before evaluating the effect of income taxes on individual returns, it is useful to assess the effect of marital status, income-levels, and retirement age on pretax returns. The data shown in Table 1 provide a baseline for comparisons to the data shown in Tables 2 through 5. Also, these data permit comparability to prior research in this area. For each age cohort, marital status has a substantial effect on the "deal" beneficiaries can expect to receive from the system. As can be seen in Table 1, married beneficiaries realize a much higher return than either single male or female heads of household. Even though the analysis assumes that only one of the married spouses works in OASI-covered employment, the OASI benefit formula provides married couples with a 50 percent higher benefit than comparable single member households. Additionally, the higher returns of married beneficiaries reflect both joint and survivor benefits. Single female households realize higher expected lifetime benefits than single male households with identical income levels due to their longer life expectancies.

The OASI benefit formula is designed to yield a positive, but nonlinear, relation between pretax OASI benefits received, OASI taxes paid, and income level. Although high-income beneficiaries receive more benefits than lower income beneficiaries, the relation between benefits received and OASI taxes paid is not proportional. The negative relation that exists between income levels and returns reflects the redistributive nature of the OASI benefit formula. What is interesting to note is that for a given marital status, returns are fairly uniform for older beneficiaries (i.e., born in 1920) across income levels. However,

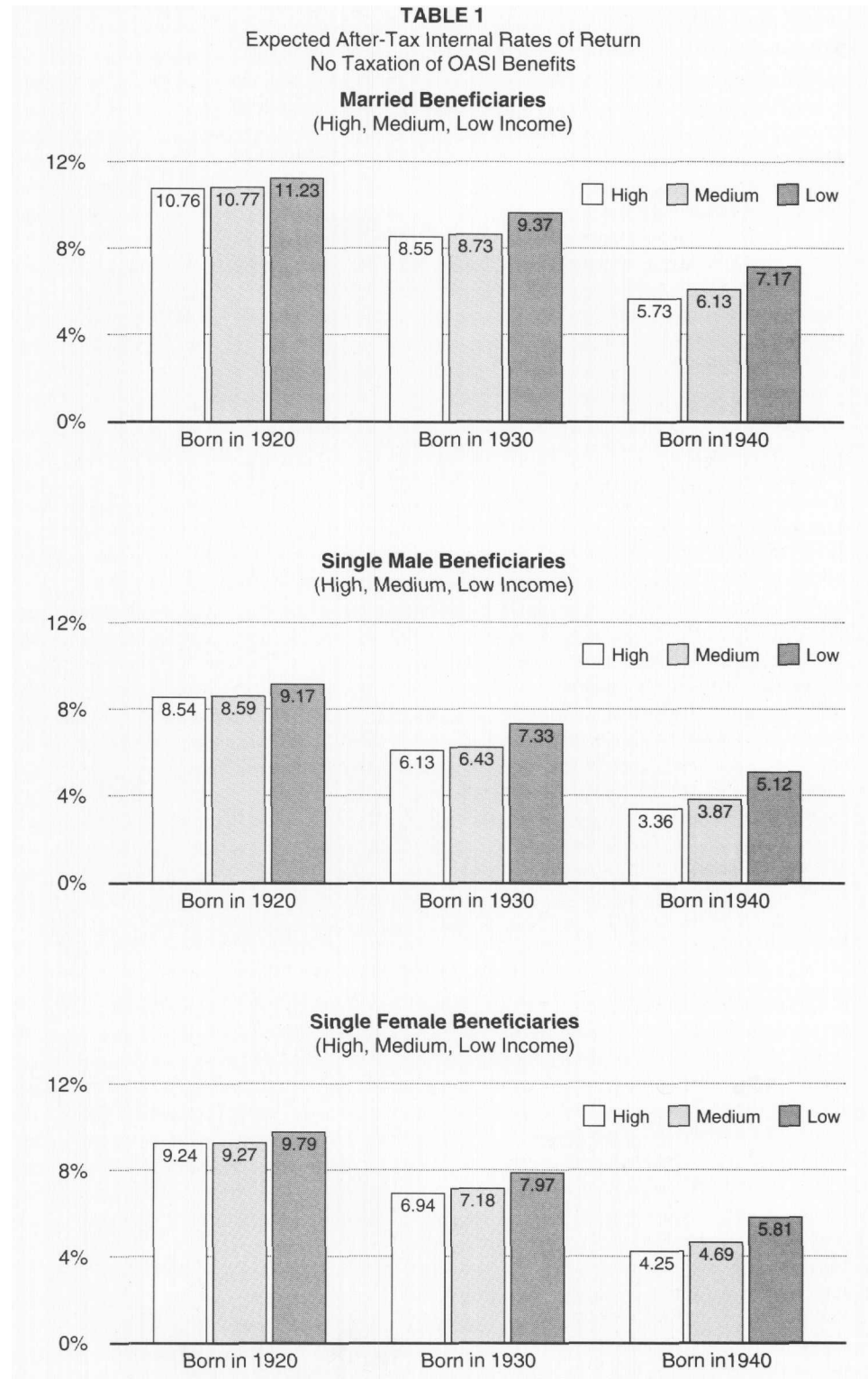
## *Much of the increase in taxes paid is attributable to the dramatic rise in OASI tax rates and covered wage bases since 1983.*

for younger beneficiaries (i.e., born in 1940), there are substantial differences in returns across income levels for a given marital status. For example, high-income, married beneficiaries born in 1920 have a return about four percent less than low-income beneficiaries. This difference, however, is over 20 percent for similar beneficiaries born in 1940.

As shown in Table 1, returns are negatively correlated with the beneficiaries' year of birth. This result is primarily due to the substantial increase in the future value of OASI taxes paid by younger workers as compared to older workers. Much of the increase in taxes paid is attributable to the dramatic rise in OASI tax rates and covered wage bases since 1983. It is important to note that the negative relation between age and returns is accelerating for younger workers. For example, a single, high-income male born in 1930 has a return 28 percent less than a high-income male born in 1920. However, a high-income male born in 1940 has a return 45 percent less than one born in 1930 and 60 percent less than one born in 1920. In fact, the data show that the accelerating decline in returns exists for all profiled beneficiaries regardless of income level, marital status, or age.

### **The Effect of Income Taxes on Rates of Return**

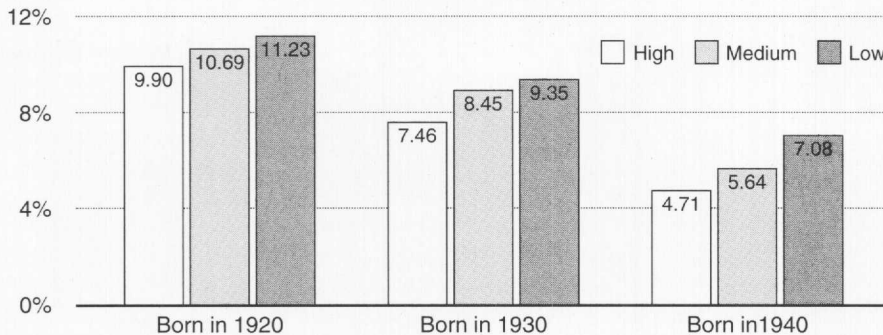
Tables 2 through 5 provide a summary of the after-tax OASI returns computed using four different tax accounting methods. For each beneficiary profile examined, the income tax attributable to the annual benefit amount received was computed using actual and/or indexed-for-inflation tax rate tables, standard deductions, and personal exemption amounts. Itemized deductions were not considered. As previously noted, beneficiaries are assumed to receive one-half of their pre-retirement income in addition to



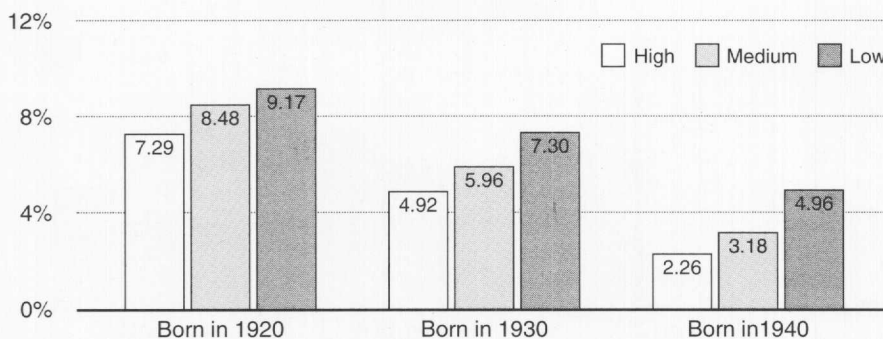
# The Effect of Alternative Methods of Taxing Social Security Benefits on Individual Returns

**TABLE 2**  
Expected After-Tax Internal Rates of Return  
Current Method of Taxation

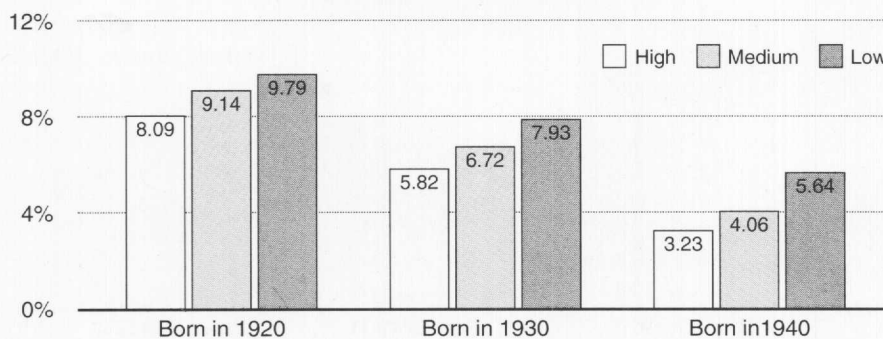
**Married Beneficiaries**  
(High, Medium, Low Income)



**Single Male Beneficiaries**  
(High, Medium, Low Income)



**Single Female Beneficiaries**  
(High, Medium, Low Income)



their OASI benefits.

Table 2 presents the after-tax returns using the current method of taxing OASI benefits. A comparison of the Table 1 and Table 2 results provides a number of striking contrasts. Whereas, low-income beneficiaries are generally either unaffected or only mildly affected by the current income tax provisions, middle- and high-income beneficiaries are greatly affected. For example, high-income, married beneficiaries born in 1940 realize a decreased return of almost 18 percent due to the effect of income taxes. As is evident from the data, there is a relation between a beneficiary's age and the extent to which taxes affect returns: the younger the beneficiary, the greater the effect of taxes. The primary reason for this relation is the fixed threshold income levels used in the IRC Section 86 computation. The income threshold levels were established by the Revenue Reconciliation Act of 1993, and no provision was made for future indexing. Thus, inflation alone will have the effect of increasing the portion of OASI benefits received subject to income tax.

Marital status has an impact on returns due to differences in the allowable standard deduction and the size of the tax rate brackets. Income taxes reduce returns by almost 18 percent for high-income, married beneficiaries born in 1940. However, the impact on single, male and female beneficiaries is much higher. A comparison of after-tax returns for high-income, single beneficiaries born in 1940 shown in Table 2 to the corresponding returns shown in Table 1 demonstrates that income taxes reduce returns by 32 percent and 24 percent for single males and females respectively.

Prior to 1993, OASI benefits were taxed in a manner similar to the current method. The primary differences, however, were a reduced income threshold



## *Another interesting result of the annuity method is the effect on the returns of high-income beneficiaries born in 1940.*

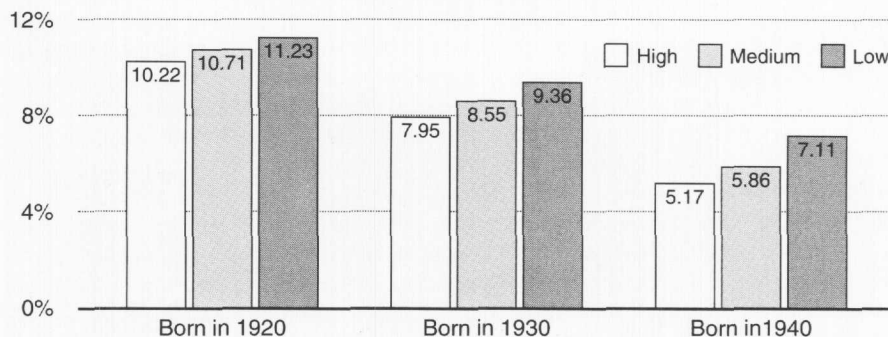
and benefit inclusion percentage. As can be seen by comparing Tables 2 and 3, the impact of the change in methods on returns was negligible for low- and middle-income beneficiaries. For high-income beneficiaries, the impact of the change in tax law is more substantial, particularly for younger beneficiaries. Returns for beneficiaries born in 1920 decline three to seven percent as a result of the change in methods. However, declines in returns for beneficiaries born in 1930 and 1940 range from 6 to 18 percent. The taxation of OASI benefits induces greater differences between the returns of higher and lower income beneficiaries. The current tax method has the primary effect of increasing these differences over the prior tax method for high-income beneficiaries.

In addition to examining the two most recently required methods of accounting for OASI benefits, this study examines the annuity and capital recovery methods of accounting for benefits. IRC Section 72 requires using the annuity method to account for proceeds received under life insurance, endowment, or annuity contracts. As can be seen in Table 4, on the following page, the annuity method produces a number of differences in returns from current law. The most noticeable difference is that all beneficiaries' returns are affected by income taxation and not just those with high incomes. This difference occurs because the annuity method shields a much smaller percentage of benefits from income taxation than current law. Under current law, anywhere from 15 to 100 percent of OASI benefits received is shielded from income taxation each year, depending on marital status and income.

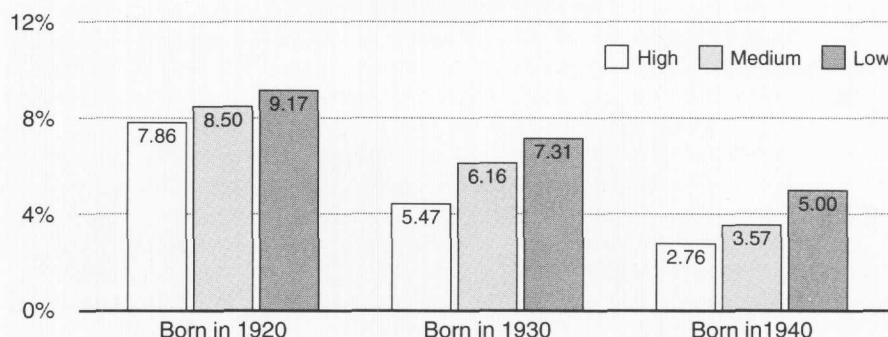
Another interesting result of the annuity method is the effect on the returns of high-income beneficiaries born in 1940. Under current law, this cohort of beneficiaries experiences the greatest reduction in returns due to taxes. However, under the annuity

**TABLE 3**  
Expected After-Tax Internal Rates of Return  
Prior Law Method of Taxation

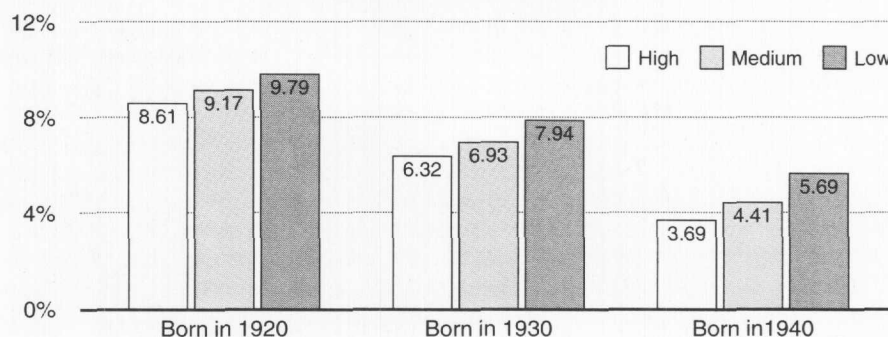
**Married Beneficiaries**  
(High, Medium, Low Income)



**Single Male Beneficiaries**  
(High, Medium, Low Income)



**Single Female Beneficiaries**  
(High, Medium, Low Income)

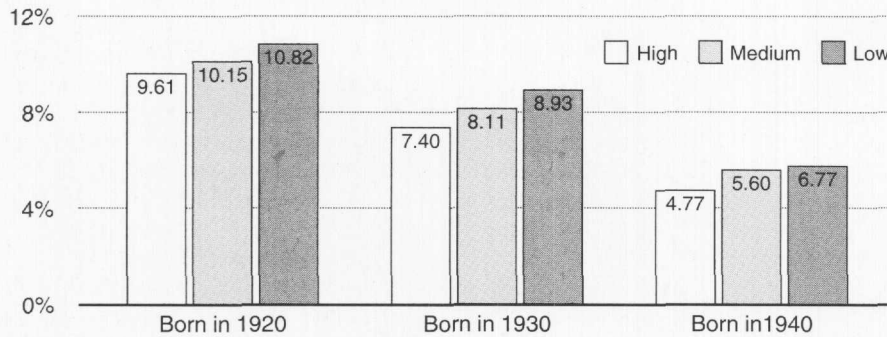




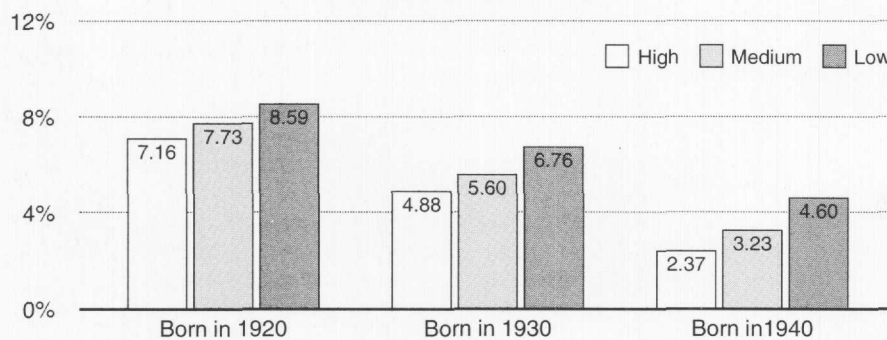
# The Effect of Alternative Methods of Taxing Social Security Benefits on Individual Returns

**TABLE 4**  
Expected After-Tax Internal Rates of Return  
Annuity Method of Taxation

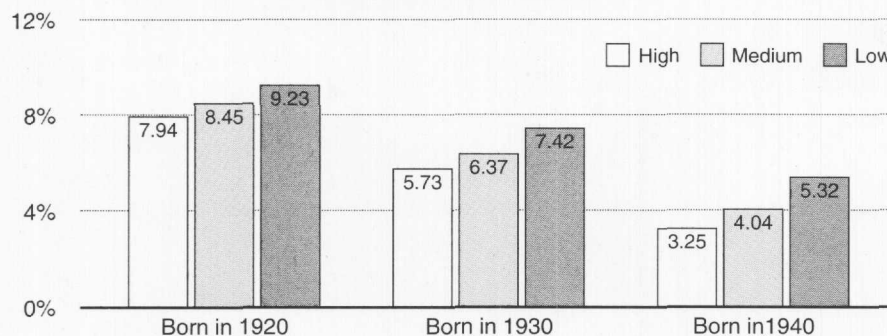
**Married Beneficiaries**  
(High, Medium, Low Income)



**Single Male Beneficiaries**  
(High, Medium, Low Income)



**Single Female Beneficiaries**  
(High, Medium, Low Income)



method, they are the only cohort that realizes a relatively higher return.

While privately financed pensions have traditionally been taxed using the annuity method, its use to tax Social Security benefits would mark a significant departure in taxing philosophy and effect. This method may be more logical than the current method, but the increase in low-income beneficiaries' tax burden may contradict the program's objectives. The capital recovery method is similar to the annuity method in that only benefits not covered by prior OASI taxes paid are subject to income tax. The difference between the two methods is one of timing. The capital recovery method shields all benefits received from income taxation until full capital recovery, whereas the annuity method spreads out the capital recovery over the beneficiary's expected lifetime. As can be seen from Tables 4 and 5, the capital recovery and annuity methods yield similar returns. The between-method differences in returns are attributable solely to timing differences. The capital recovery method could yield a substantially different result from the annuity method depending on the beneficiary's actual year of death. For example, a beneficiary dying before his or her expected year of death would realize a higher return under the capital recovery method than the annuity method.

## The Variation in Rates of Return Caused by Income Taxes

The OASI benefit formula is purposely designed to provide greater returns to lower income beneficiaries. The original intent of the formula was to provide all beneficiaries a reasonable return on their contributions and to ensure a minimum benefit level for all beneficiaries. Thus, a policy objective of the OASI system is to provide low-income beneficiaries a better deal than high-income beneficiaries.

At the time the OASI benefit sys-

## *It is important for policymakers to consider the extent to which income taxation affects the distribution of net benefits . . .*

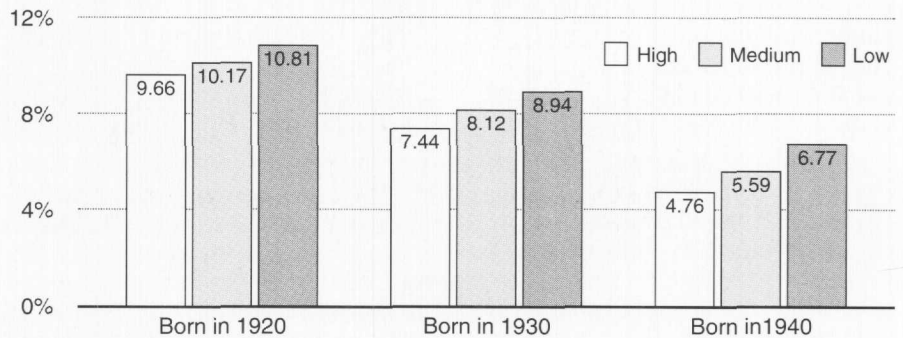
tem was designed, benefits were not taxed. It is important for policymakers to consider the extent to which income taxation affects the distribution of net benefits (i.e., returns) across different income groups. Table 6 on the following page, summarizes, for each age cohort and tax method, the degree of variation in after-tax returns between low- and high-income beneficiaries. Assuming that the variation under the "No Tax" column is the desired level, it is clear that income taxation has a substantial effect. Under current law, the increase in the tax-induced variation over the "No Tax" result is over 250 percent for single females. Of the four methods examined, the current system of taxing benefits induces the greatest variation in returns. Furthermore, these variations are much more pronounced for younger beneficiaries.

### **Conclusion**

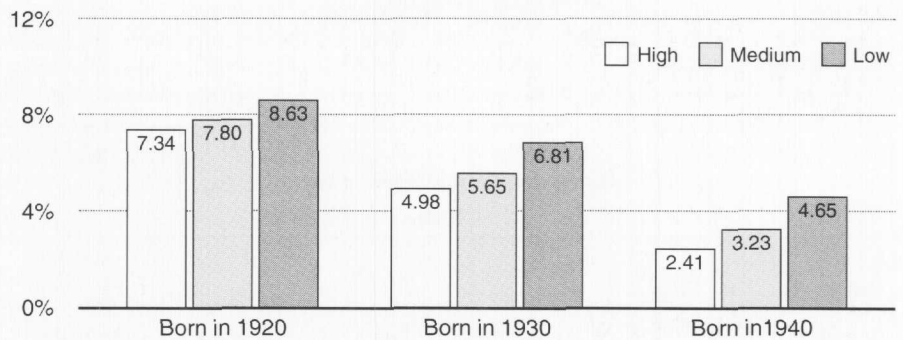
The purpose of this study is to examine alternative methods of taxing Social Security benefits and their effect on individual after-tax returns. The results of the analysis indicate that, in general, income taxes have a substantial effect on individual returns depending on the tax accounting method used. For each method examined, the tax burden falls primarily on high-income beneficiaries. Additionally, there is a clear inter-generational effect as younger beneficiaries realize a much lower return than older beneficiaries. As the Social Security debate increases in intensity, the issue of whether beneficiaries receive a "good deal" on their OASI contributions will become more important in gaining public acceptance for any future changes in the system's benefit and/or tax structure.

Policymakers should not only be concerned with the extent of tax-induced variation in returns but also with the increasing variation over time. As was shown, younger benefi-

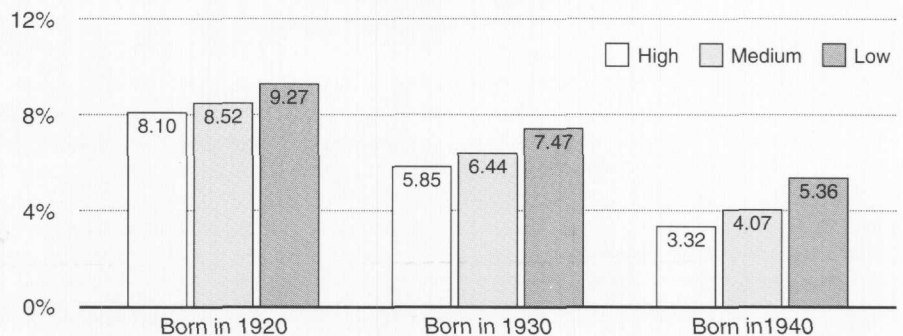
**TABLE 5**  
Expected After-Tax Internal Rates of Return  
Capital Recovery Method of Taxation  
**Married Beneficiaries**  
(High, Medium, Low Income)



**Single Male Beneficiaries**  
(High, Medium, Low Income)



**Single Female Beneficiaries**  
(High, Medium, Low Income)



# The Effect of Alternative Methods of Taxing Social Security Benefits on Individual Returns

ciaries receive lower returns than their elders. To compound matters, the percentage variation in returns is increasing with younger beneficiaries. For example, under current law, the percentage variation for the 1940 single male cohort is over 360 percent higher than the 1920 cohort's variation. Although the OASI system is designed to promote social equity

and progressivity, it is not clear whether income taxes have induced a greater than desired effect.

This study required making a number of simplifying assumptions that limit the generalizability of the results. Changes in future income and OASI tax rates, as well as incorrect estimates of future inflation rates and annual wage rate changes, would

most certainly alter the results. However, by holding these factors constant across beneficiary profiles, economic differences have been highlighted due solely to differences in tax accounting methods. **J**  
(I/R Code No. 3200.041/7400.00)

*\*The authors would like to thank Ken Anderson, Julie Collins, Bill Fox, Tom Hill, Matt Murray, and participants at the University of Tennessee Research Workshop for their comments on earlier drafts of this paper. The financial support provided by the KPMG Peat Marwick Foundation is gratefully acknowledged.*

**Daniel P. Murphy, PhD, CPA, is an associate professor of accounting at the University of Tennessee. He has published numerous articles in a number of academic and professional journals, including the *Journal of Financial Service Professionals*. His primary teaching interest is in family tax planning, including estate and personal financial planning.**

**Yvonne H. Stewart, PhD., CPA, is an assistant professor of accounting and the PricewaterhouseCoopers Faculty Fellow at Wake Forest University. Her research focuses on Social Security taxation and the tax subsidy granted tax-exempt entities, primarily credit unions. Her teaching interests include individual taxation, tax policy, and accounting information systems.**

**TABLE 6**  
The Percentage Variation In Individual Returns<sup>1</sup>

Married OASI Beneficiaries					
Method of Taxation					
Birth Year	No Tax	Current Law	Prior Law	Annuity	Capital Recovery
1920	4.37%	13.43%	9.88%	12.59%	11.90%
1930	9.59	25.34	17.74	20.68	20.16
1940	25.13	50.32	37.52	41.93	42.22

Single Male OASI Beneficiaries					
Method of Taxation					
Birth Year	No Tax	Current Law	Prior Law	Annuity	Capital Recovery
1920	7.38%	25.79%	16.67%	19.97%	17.57%
1930	19.58	48.37	33.64	38.52	36.75
1940	52.38	119.46	81.16	94.09	92.95

Single Female OASI Beneficiaries					
Method of Taxation					
Birth Year	No Tax	Current Law	Prior Law	Annuity	Capital Recovery
1920	5.95%	21.01%	13.70%	16.25%	14.44%
1930	14.84	36.25	25.63	29.49	27.69
1940	36.71	74.61	54.20	63.69	61.45

<sup>1</sup> The percentage variation in individual returns is computed by dividing the difference between the high- and low-income return by the high-income return. For example, the 1920 cohort's percentage variation under current law is  $(11.23-9.90)/9.90 = 13.43\%$ . The individual returns are from Tables 1 through 5.

(1) *The Outlook*, Wall St. J. Jan. 12, 1998, at A1.  
 (2) These statistics were computed using publicly available data bases compiled by the Social Security Administration. These data can be found at [www.irs.ustreas.gov/prod/tax\\_stats/soi/ind\\_agi.html](http://www.irs.ustreas.gov/prod/tax_stats/soi/ind_agi.html).  
 (3) The OASI Trust Fund is the largest of these three funds. The current fund balance exceeds \$500 billion and is expected to continue to increase until 2022. See The 1999 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, March 30, 1999, at 29.  
 (4) The 1979 Advisory Council on Social Security cautioned that "all current and future workers should be able to expect ... a reasonable return..." on their tax payments. See the U.S. Department of Health, Education, and Welfare, Social Security Financing and Benefits, Report of the 1979 Advisory Council on Social Security (1979).  
 (5) Much like a private retirement system, Social



Security taxes are referred to as "contributions" and transfer payments as "benefits." Some commentators suggest the reason for this particular word usage is primarily to eliminate any negative stigma that may be associated with a transfer payment system. See Michael Boskin, *Too Many Promises: The Uncertain Future of Social Security* (1986).

(6) Senators Moynihan and Kerrey introduced The Social Security Solvency Act of 1998 (Senate bill number 1792) that includes a provision for allowing individuals to direct up to 2 percent of their OASI taxes into voluntary personal savings accounts. The purpose of this provision is to provide a means for all taxpayers to direct their retirement contributions to sources that will provide them a higher rate of return on their contributions.

(7) The OASI tax rate in 1937 was one percent of the first \$3,000 of covered earnings. For 1999, the tax rate is 5.35 percent of their first \$72,600 of covered earnings. A historical summary of the OASI rates and covered earnings amounts can be found in Michael Boskin, *Too Many Promises: The Uncertain Future of Social Security* (1986).

(8) Although an individual with high lifetime earnings will receive greater benefits than one with low lifetime earnings, those with lower earnings receive proportionately higher benefits. A non-proportional benefit system permits the system to achieve its goal of meeting the minimum income needs of all beneficiaries.

(9) For excellent summaries of prior academic and government studies of the Social Security money's worth issues see Dean Leimer, *A Guide to Social Security Money's Worth Issues*, 58 *Social Security Bull.* 2 (Summer 1995); C. Eugene Steuerle and Jon M. Bakija, *Retooling Social Se-*

*curity for the 21st Century* (1994).

(10) The 1983 Amendments to the Social Security Act, P.L. 98-21 extended the normal entitlement age from 65 to 67 years. This extension is to be phased in over the period 2003 to 2025. This study considers beneficiaries retiring in years 1985 to 2005 when the normal entitlement age is 65 years and four months.

(11) For a greater discussion of this issue, see Michael Boskin, *Too Many Promises: The Uncertain Future of Social Security* (1986); Martin Feldstein et al., *Social Security Rules and Marginal Tax Rates*, 45 *Nat'l Tax J.* (1992), at 1-22.

Consistent with prior research, all profiled beneficiaries examined are assumed to be employees, rather than self-employed, and to work continuously from age 22 until their retirement. Although work life tables prepared for the 1979-80 period by the U.S. Department of Labor indicate that individuals can expect some inactive years during their working lives, these data do not delineate between different age cohorts or income levels. Therefore, these work life data are not considered in this study.

(12) This program was developed by and is available from the Social Security Administration's Office of the Actuary.

(13) Although two wage-earner households are becoming more prevalent, U.S. Census Bureau data show that single wage-earner families have been the historical norm. This study's single wage-earner assumption is reasonable for the age cohorts examined and permits the researchers to isolate the effect of marital status on expected returns.

(14) See *The 1998 tax reform debate: Let's spell tax reform r-e-d-u-c-e* 43 *National Public Ac-*

*countant*, at 1-8, citing Senator John Ashcroft's advocacy of the repeal of §86 relating to the taxation of Social Security benefits.

(15) Former Office of Management and Budget Director Alice Rivlin has argued that Social Security benefits should be "taxed like private pensions" and that any benefits received beyond contributions made should be fully taxable. See Alice Rivlin, *Revising the American Dream: The Economy, the States, and the Federal Government* (1992).

(16) The low, middle, and high pre-retirement income levels, in 1993 dollars, are \$20,000, \$45,000, and \$100,000 respectively. These income levels were selected to provide three distinctly different economic profiles and accentuate differences in the marginal tax rates. Prior and subsequent year income amounts used in this analysis reflect actual or estimated annual changes in wages using the Social Security Administration's Average Wage Series contained in the 1999 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, March 30, 1999, page 147.

(17) See Michael Boskin, *Too Many Promises: The Uncertain Future of Social Security* (1986); Julie Collins and Jack Kramer, *An Examination of the Employer's Pension Plan Choice: Integrated vs. Nonintegrated Plans*, 8 *J. Am. Tax Ass'n* (Fall 1985), at 35-48.

The analysis of the expected rates of returns for each of the 27 different income/household/age cohorts was replicated using both a 34 and 60 percent non-OASI income replacement ratio. The results were somewhat affected, but they did not significantly change the results or the inferences made from the data.

## Index of Advertisers

Conseco .....	Inside Front Cover
Coventry Financial .....	Inside Back Cover
Futurity .....	27
GE Financial Assurance, Insurance Brokerage Group .....	13
The Guardian .....	1
The Investment Center .....	14
Manulife .....	7
MassMutual .....	33

MetLife Brokerage .....	25
Mutual Service Corporation .....	17
Nathan & Lewis Securities, Inc. ....	10, 11
National Financial Partners .....	31
New England Financial .....	Back Cover
Prudential .....	23
ReliaStar .....	2
Second Opinion Insurance Services .....	15
Standard Insurance .....	21
TIAA-CREF .....	5
Transamerica .....	29
Viaticus .....	19