Cato Institute Social Security Choice Paper No. 12: The Benefits of Social Security Privatization for Women

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Ekaterina Shirley, Peter Spiegler

Ekaterina Shirley and Peter Spiegler are graduate students at the John F. Kennedy School of Government, Harvard University.

Executive Summary

The economic case for privatization as a response to Social Security's insolvency problems has been made extensively in the academic and policy literature. How privatization would affect various social groups, however, has remained largely unaddressed. There are reasons to be especially concerned about the impact of reform on women. Women are known to be disproportionately dependent on Social Security benefits in their old age and because of longer life expectancy and employment patterns, an elderly woman is twice as likely to be living in poverty as is an elderly man.

Although the Social Security system is gender neutral on its face, it produces some financial outcomes that place women at a disadvantage in retirement compared with men.

- The employment patterns of women, characterized by fewer years in the labor force, lower earnings, and more frequent job changes, translate into lower Social Security benefits.
- The dual-entitlement rules of the system often impose a penalty on wives and widows of two-earner couples.
- The loss of up to 50 percent of a couple's benefit at the husband's death throws every fifth widow into poverty.

Those outcomes are exacerbated by women's disproportionate dependence on Social Security benefits. As a result of low private asset accumulation and inadequate or absent supplementary pension coverage, on average, nonmarried women over 65 rely on Social Security for 72 percent of their retirement income. Forty percent of that group rely on Social Security for 90 percent or more of their retirement income.

Contrary to some criticisms raised in the course of the Social Security reform debate, our analysis demonstrated that privatization of Social Security in fact would offer tangible financial benefits to women. If higher rates of return are realized on investments in the private capital markets, privatization is likely to boost the retirement savings of both men and women. Indeed, this study finds that

- Virtually all women would be better off (most *significantly*) under a system of individually owned, privately invested accounts than under the current Social Security system.
- A fully privatized Social Security system with earnings sharing between spouses provides greater benefits to women than does a partially privatized, two-tiered system.

- Contributions to personal accounts could be reduced to as little as 7 percent of covered earnings and still provide all categories of women (single, divorced, married, widowed) with significantly higher retirement benefits than does Social Security. That would allow the remaining 5.4 percent of the current payroll tax to be used to provide disability benefits, help finance transition costs, protect against market risk, or even provide a tax cut at some point in the future.

Introduction

As a result of the pressing need for Social Security reform, there is an unprecedented opportunity to make comprehensive changes to the current system. Privatization, in some form, has attracted much support because of its potential to effectively address the system's solvency issues while providing higher rates of return to retirees.

In assessing the merits of privatization as a reform tool, it is important to recognize that it would affect different groups in society differently. There are reasons to be especially concerned about the impact of reform on women. Women are known to be disproportionately dependent on Social Security benefits in their old age; and because of longer life expectancy and gender differences in employment patterns, an elderly woman is twice as likely to be living in poverty as is an elderly man. The poverty rates are especially high among widows (20.2 percent) and divorced, separated, or never-married women over 65 (27.4 percent) compared with those in corresponding groups of men, 12.1 and 18.7 percent respectively.[1] The rules of the current system exacerbate those difficulties. Although Social Security does not penalize women explicitly, because of demographic factors and the different roles of men and women in families, women ultimately are economically disadvantaged by the system.

As the country moves toward a policy choice on Social Security reform, it is crucially important to understand how the proposed alternatives, and privatization in particular, would affect women's well-being. We have assessed the potential benefits of privatization for women by focusing on two groups of questions: First, what are the flaws of the existing system in its treatment of women, and how do the privatization proposals address those flaws? Second, what features should a private system incorporate in order to take account of the special needs of female participants--needs associated with their earnings, employment patterns, family roles, and longevity--and to guarantee adequate and equitable protection to women?

Social Security's Unfair Treatment of Women

Social Security's provisions are "gender neutral" in that benefits for women are calculated using exactly the same rules that are used to calculate benefits for men.[2] That legal equality, however, has led to de facto inequality due to differences between men and women in wages, employment patterns, family roles, and longevity. On average, women earn less and change jobs more frequently than do men. They take more time out of the labor force for childbearing and childrearing and for managing a wide range of family emergencies. In addition, living longer than men, on average, makes women more dependent on retirement benefits for a longer period of time. As a result of those gender-driven differences, the Social Security program produces some negative outcomes for women. Some of the most serious effects are the following:

- **Women receive lower benefits than men.** As a result of lower earnings and fewer years of work, women, on average, earn fewer Social Security benefits than do men. For instance, in 1995 a retired male worker received $810 in monthly benefits, while a retired female worker received only $621, on average.[3]

- **Divorcée benefits may be inadequate.** Benefits for divorced spouses, which comprise only 50 percent of the former spouse's worker benefit, may not be adequate to support a woman living alone. The average monthly benefit for a divorced spouse in 1995 was only $372.

- **Two-earner couples and widows of two-earner couples are penalized.** Due to lower (or absent) spousal benefits received by some working wives under current "dual-entitlement" rules,[4] combined benefits for some two-earner couples can be lower by as much as one-third than are those for one-earner couples with identical average lifetime earnings (and other relevant characteristics such as age). The widow's benefit for the survivor of a two-earner couple may be as little as one-half of what the couple had been receiving.

- **Social Security may discourage work.** A married woman who works and pays Social Security taxes might not receive more benefits than she would if she had never worked and received only a spousal benefit.

Those aspects of the current system are especially damaging for women, because they are disproportionately dependent on Social Security for their retirement income for the following reasons:

- **Women are less likely to have independent private savings.** Lower earnings impair women's ability to accumulate individual, private savings for retirement.

- **Women are less likely to have supplementary private pensions.** Women are less likely than men both to qualify for employer-provided pension plans and to work for employers who offer those retirement plans.

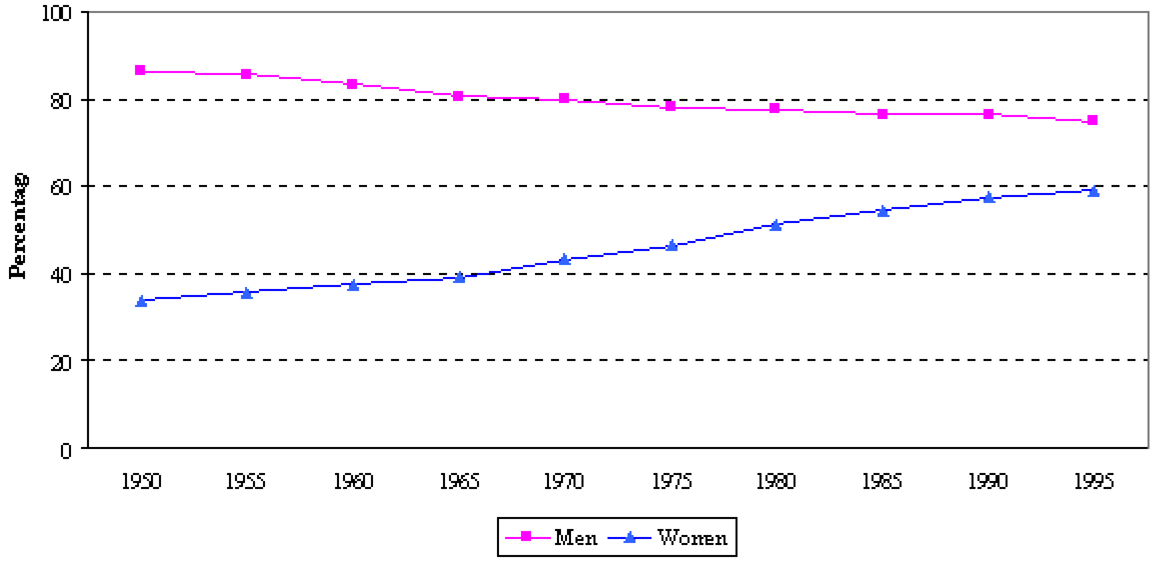
- **Women's longer life expectancy requires more retirement income.** Given amounts of individual retirement savings might be sufficient for men but not for women who tend to live longer and, thus, incur more postretirement living expenses.

Those factors result in an alarmingly high incidence of poverty among elderly women. Poverty rates for women aged 65 and over (14.9 percent) are twice as high as for elderly men (7.2 percent). In addition, the female poverty rate increases with age-20.2 percent of women over 85 are poor.

Women Receive Lower Retirement Benefits

The tendency of women to take more time out of the workforce and to seek part-time work results in lower lifetime earnings and incomplete lifetime earnings records, which translate into lower Social Security benefits. Although female labor force participation rates have grown and the gender gap between earnings of men and women has narrowed in recent decades, the gender differences remain significant (Figure 1). The labor force participation rate for the cohort of women currently nearing retirement age (55 to 64 years of age) was about 40 percent in the late 1960s when they were 25 to 34 years of age. The labor force participation rate for women who are 25 to 34 years of age today is about 75 percent, which is still only four-fifths of men.[5] And when women do work, 1 out of 4 works part-time, compared with 1 out of 10 men, which translates into lower earnings.

Figure 1
Labor Force Participation Rates for Men and Women Age 16 and Over



Source: Eva E. Jacobs, ed., *Handbook of U.S. Labor Statistics: Employment, Earnings, Prices, Productivity, and Other Labor Data* (Lanham, Md.: Bernan, 1997), pp. 39-40.

An important link between those labor force trends and lower Social Security benefits is the manner in which benefits are calculated. Currently, a worker's 35 years of highest annual earnings are used for benefit computation. Clearly, lower lifetime earnings will lead to lower benefits. Lower benefits also result from incomplete earnings records, however, which are the result of years spend out of the official workforce. Benefits are computed on the basis of the worker's 35 years of highest earnings, and any years short of 35 count as zero. That affects women disproportionately. The median number of years with zero earnings for workers turning 62 and 1993 was 4 for men and 15 for women.[6] Some of the currently debated proposals for reforming Social Security argue for further extending the computation period to 38 years. Although women's labor force participation is increasing, the Social Security Administration forecasts that fewer than 30 percent of women retiring in 2020 will have 38 years of covered earnings, compared with almost 60 percent of men.

The tendency to earn lower benefits is especially problematic because many retired women (38 percent in 1993) draw Social Security benefits based only on their own employment records. Of particular concern is the group of unmarried women who either never married or were divorced after one or more marriages that lasted for less than 10 years, the minimum term required for divorcées to qualify for spousal or survivor benefits. It is important to note that divorced wives are entitled to a benefit of only 50 percent of their ex-husbands' worker benefit amount. The poverty rate observed in the group of elderly divorced, separated, or never-married women (27.4 percent) is the highest of all demographic groups.

Social Security Penalizes Two-Earner Couples

The provisions of the 1935 Social Security Act were based on the principle of "individual equity": only those who contribute to the program should receive benefits, and individual benefit levels should relate to individual earnings levels. Since then, Congress has sought to support families of covered workers also. The 1939 amendments extended benefits to workers' wives, widows, eligible children, and, in a few instances, parents.

As a result of those amendments, some individuals became "dually entitled" - that is, entitled to benefits both as a retired worker and as the spouse (or surviving spouse) of another worker. Dually entitled beneficiaries, however, do not receive the sum of those two benefits. Rather, they receive (1) the retired worker benefit they earned, and (2) the difference, if any, between that benefit and the benefit they would receive as a spouse or survivor. In effect, they receive either their own earned benefit or their spousal (or survivor) benefit, whichever is greater. The spousal benefit is currently 50 percent of the spouse's worker benefit, while the survivor's benefit is 100 percent of the deceased worker's benefit.

As more and more women have entered the labor force, it has become increasingly apparent that the dual-entitlement rule produces many unintended negative results. For example:

- Couples with only one worker may receive more benefits than couples with the same total earnings earned by two workers.

- Wives may not receive more benefits as a result of working than they receive on the basis of their husband's earnings.

- Table 1 contains a hypothetical example illustrating the first point. Of the three couples with the same total earnings, the one-earner couple receives the highest combined benefit. When a couple's Average Indexed Monthly Earnings (AIME) equals $1,000, the differential can be as large as 18 percent.[7]

Table 1
Comparison of One-Earner and Two-Earner Couples' Benefits under Dual-Entitlement Rules

	Average Indexed Monthly Earnings (AIME)	Monthly Primary Insurance Amount (PIA)
Couple A		
Husband	$1,000	$573
Wife	0	287
Total	$1,000	$860
Couple B		
Husband	$667	$467
Wife	333	300
Total	$1,000	$767
Couple C		
Husband	$500	$413
Wife	500	413
Total	$1,000	$826

Source: Peggy S. Trout, Adequacy and Equity of Social Security, in *Report of the 1994-1996 Advisory Council on Social Security, vol. II: Findings and Recommendations* (Washington: Government Printing Office, 1997), p. 341. Updated according to 1996 Social Security benefit formula.

Table 2 illustrates the second negative effect of dual-entitlement rules. In this example, when the husband's AIME equals $1,000, the working wife must earn at least 32 percent of that amount in order to receive a Social Security worker's benefit (in her own right) that is greater than the spousal benefit to which she is entitled if she does not work at all. In 1993, 24 percent of elderly married and widowed women who worked before retirement had lifetime earnings that were insufficient for them to obtain a worker's benefit higher than their spousal or widow benefit. That number is projected to increase to 39 percent by 2040.[8]

Table 2
Social Security Benefits Comparison of Working and Nonworking Wives

	AIME	**Benefit for Spouse (Usually Wife)**		
		As Worker	As Spouse	**Total Payable**
Worker Spouse (0%)	$1,000 $0	$0	$287	**$287**
Primary Earner Spouse (25%)	$1,000 $250	$225	$287	**$287**
Primary Earner Spouse (32%)	$1,000 $319	$288	$287	**$288**
Primary Earner Spouse (50%)	$1,000 $500	$413	$287	**$413**

Source: Authors' calculation.

Because women tend to have lower lifetime earnings and longer life expectancies than men, they are much more likely than men to qualify for spousal and survivor benefits and, thus, to be affected by the dual-entitlement classification. Women at present account for 99 percent of beneficiaries who receive spousal or survivor benefits.[9] As a result, the program's treatment of two-earner couples is generally perceived as a women's issue.

Poverty among Elderly Women

About 64 percent of all elderly women who live in poverty are widows.[10] Although poverty rates are higher for divorced, separated, or never-married women (27.4 percent), those groups make up a small proportion of the elderly population.

Social Security provides less protection against poverty for elderly women than for men because women tend to outlive their husbands and Social Security's survivor benefit rules can leave widows with up to 50 percent less income than the couple was receiving when the husband was alive.[11] That is one reason why the poverty rate for widows is 20.2 percent, 1.7 times greater than for widowers (12.1 percent) and four times greater than for married couples (5 percent).

The amount a widow receives from Social Security depends on how earnings were split between husband and wife. Generally, the more of the couple's earnings the widow earned, the smaller the share of the couple's retirement benefit she receives after he dies. As illustrated in Table 3, the wife who did not work (couple A) will receive two-thirds of the couple's retirement benefit when she becomes a widow. The wife who worked and earned half the couple's earnings (couple C) will get only half the couple's benefits as a widow. Moreover, of the three couples, the one-earner couple A was not only receiving the highest retirement benefits when the husband was alive ($860, Table 1), but also the surviving wife receives the highest widow benefit in absolute terms ($573, Table 3).

Table 3
Comparison of Benefits for Widows of One-Earner and Two-Earner Couples

	AIME	Couple's Benefit	Widow's Benefit	Percent of Couple's Benefit
Couple A				
Husband Wife Total	$1,000 0 $1,000	$860	$573	**67**
Couple B				
Husband Wife Total	$667 333 $1,000	$767	$467	**60**
Couple C				
Husband Wife Total	$500 500 $1,000	$826	$413	**50**

Source: Trout, "Adequacy and Equity of Social Security," in *Report of the 1994-1996 Advisory Council on Social Security, vol. II: Findings and Recommendations* (Washington: Government Printing Office, 1997), p. 341. Updated according to 1996 Social Security benefit formula.

Thus, a widow's benefit may be as little as one-half of what the couple had been receiving, but living expenses do not drop by half when a husband dies. That is seen clearly by the fact that the poverty line for couples age 65 and older was $9,219 (in 1995), while that for an individual age 65 and older was $7,309-only about 20 percent less than that for couples.[12] The substantial decrease in Social Security income constitutes one of the major causes of poverty among elderly widows.

The Social Security program, as it was enacted in 1935, was intended to provide some "floor protection" in retirement that would be supplemented by personal savings and private pensions. Many elderly women rely on Social Security as their primary source of retirement income, however. Nonmarried women over 65 rely on Social Security for 72 percent of their retirement income, on average (men for 65 percent and married couples for 55 percent). Forty percent of nonmarried women over 65 rely on Social Security for 90 percent or more of their retirement income (29 percent of men and 18 percent of married couples).[13]

There are two main reasons for that dependence. First, elderly women, on average, do not have sufficient private savings to support themselves. Earning less money makes it more difficult for women to save for anything, including retirement. A telephone survey by Merrill Lynch Consulting in 1993 found that only 30 percent of women, compared with 47 percent of men, between ages 25 and 65 are saving for retirement. The female respondents' average total personal savings were $25,700 compared with $52,500 for men.[14] One study found that in 1994 the median annual income from assets for nonmarried women age 65 and over was only $860, compared with $1,249 for nonmarried men and $2,039 for married couples.[15] Second, only a small percentage of elderly women (18 percent, compared with 34 percent of men) received private pensions or annuities. The median annual private pension and annuity income of women was only $2,682 compared with $5,731 for men.[16] Moreover, women who do receive private pensions find their income streams more susceptible to the effects of inflation. Fewer than 5 percent of participants receiving retirement payments from defined benefit plans have those benefits adjusted for inflation through periodic "cost of living adjustments," or COLAs.[17] Because women live longer than men, the impact of inflation is greater for them.

Despite the dramatic increase in women's workforce participation, their access to and participation in pension plans have not increased at the same rate. More than half of American women working full-time, and almost all of those working in part-time or temporary jobs, work for employers who do not provide retirement benefits over and above Social Security. The major reason is that women are concentrated in low-wage, service, part-time, nonunion, and small-firm jobs where pension coverage is less common.

Most employer-provided (defined-benefit) retirement plans require an employee to work for the firm for at least five years for at least 1,000 hours a year before the employee is legally entitled to any pension benefit, regardless of further attachment to the company. In addition, many employers require that an employee work a full year before being eligible to join a retirement plan. Ironically, women over 25 stay with an employer an average of only 4.8 years, compared with an average of 6.6 years for men.[18] Thus, a female employee who in her lifetime held five different jobs could lose not only five years of benefits built up over her career but also the benefits accrued for jobs held for fewer than five years. Therefore, working part-time, changing jobs, and taking time out of the workforce--typical in women's careers--have a dramatic and disproportionate effect on employer-provided retirement benefits and ultimately contribute to female dependence on Social Security income.

The Benefits of Privatization for Women

Given the shortcomings of the current system, it is crucial that the debate over reform of Social Security take into account the likely impact of any Social Security reform on women. That is particularly true of fundamental changes to the system such as privatization, which would transform Social Security into a system of individually owned, privately invested accounts, similar to individual retirement accounts or 401(k) plans.

An example of a straightforward privatization model is the Mandatory Individual Retirement Account (MIRA) proposed by Harvard University's Martin Feldstein and Dartmouth University's Andrew Samwick.[19] Under that plan, each individual would contribute a mandatory amount of payroll into a private account, would have some degree of choice about how it could be invested, and would own the account at retirement. The plan is attractive for two reasons. First, moving the retirement benefit system from a pay-as-you-go basis to a fully funded basis would in effect release an enormous amount of previously unproductive capital for productive investment. Second, it would entail a much higher rate of return on retirement savings, which would greatly enhance the well-being of average workers. As MIT's Peter Diamond explains, "In a steady state the rate of return to participants in a strictly pay-as-you-go Social Security system is the rate of growth of the economy, while the rate of return in a fully funded system is the rate of interest."[20] Between 1960 and 1995 the average rate of growth of the economy was 2.5 percent,[21] whereas the pretax return on private capital (the relevant interest rate for purposes of invested MIRA funds) averaged 9.3 percent for the period from 1960 to 1994[22] and is currently estimated to be 6.2 percent.[23] For a given average level of retirement benefits, then, the contribution rate could be much lower. Feldstein and Samwick estimate that a payroll tax of approximately 2 percent under a MIRA plan would provide the same average level of benefits currently provided under Social Security.[24]

Despite those potential benefits, however, the MIRA raises questions about privatization's impact on women. First, because women generally have lower earnings than men, and since an individual's retirement income would be determined almost entirely by the amount contributed over one's lifetime, women may receive relatively lower benefits than men. Second, depending on how much freedom an individual has to choose how to invest her MIRA, her investment behavior could become a key determinant of her retirement benefits. Women tend to be more conservative investors than men, so, on average, women might see lower returns to their investments, exacerbating the disadvantage of lower lifetime income.[25] Third, because an individual's retirement income is generated entirely from personal contributions that are personal property, married women who interrupt or curtail their careers may find themselves largely or completely dependent in retirement on their husbands' retirement savings and spending behavior.

Whether those problems outweigh the benefits of privatization for women is debatable. It is possible, however, to design a privatized Social Security system with safeguards to protect lower wage earners, to ensure that married women's welfare in retirement is not vulnerable to their husbands' spending habits, and to mitigate the penalty for time taken away from work for family reasons. Two possible ways to address those concerns are the "double-decker" and "earnings sharing" approaches, which we discuss below.

Partial Privatization via the Double-Decker Approach. The double-decker approach can be used to effect partial privatization by using a flat payment as a defined benefit to all individuals and creating individually owned personal security accounts to provide a second tier of benefits. That approach to partial privatization is spelled out in the Social Security Advisory Council's Personal Security Account (PSA) plan.

The PSA plan proposes channeling 5 percentage points of an individual's 12.4 percent payroll tax into a PSA, with the remaining 7.4 percent going to Social Security to cover the Social Security flat benefit and Survivors and Disability Insurance. The PSA could be held "by private registered investment companies, and individuals would have broader choices over how the funds were to be used on retirement."[26] The PSA is the property of the individual, and at retirement the retiree would have the freedom to choose whether and how to spend or save it. For instance, the retiree could choose to purchase an annuity, withdraw lump sums, or continue investing. Regardless of how much an individual accumulates in a PSA, he or she would still receive the flat benefit equal to two-thirds of the poverty line in addition to the accrued PSA amount.[27]

The double-decker approach has some advantages over the current defined-benefit system, but it still has serious shortcomings with respect to women's well-being. Its advantage lies in the potential for greater investment returns to funds invested in the capital markets. If PSA accounts can deliver returns that are higher than the standard Social Security benefit, a partial privatization of that kind would raise retirement income in general without sacrificing the "safety net" of the current system. It is unclear, however, whether the 5 percent payroll contribution would be sufficient to maintain the disbursement of flat benefits at two-thirds of the poverty line. If not, the defined-benefit portion of the PSA plan would face solvency issues of its own.

Even if the PSA plan could deliver higher returns, women might not be able to benefit significantly and might be harmed overall. Private ownership of the PSA is key in understanding the benefits and shortcomings of this program for women. On one hand, having women own their PSAs effectively erases the disincentive to work that occurs under the current system, since every dollar of earnings has a strictly positive effect on retirement income. But individual ownership of PSAs also means that women who interrupt or curtail their careers for family reasons may largely be at the mercy of their husbands' spending behavior in retirement. Since each worker will own his or her own retirement account, there is a danger that upon retirement a husband could choose to spend his money quickly and leave himself and his wife with little to live on in the later years of retirement. Also, even if a substantial amount of the PSA funds remained at the time of the husband's death, he would be under no obligation to leave the funds to his wife.[28]

Full Privatization and Earnings Sharing (FPES). One alternative to the double-decker approach is full privatization using earnings sharing. One example of such a plan is the Personal Security System (PSS) plan designed by Laurence Kotlikoff of Boston University and Jeffrey Sachs of Harvard University.[29]

Under the PSS plan, an individual would continue to pay a 12.4 percent payroll tax, with roughly 70 percent of that amount going into the individual's PSS account and 30 percent going to pay for Survivors and Disability Insurance.

Individuals would choose how to invest the amount contributed to the PSS account in regulated, supervised, and diversified investment funds managed by private investment firms. In that way the PSS plan is similar to the MIRA plan, but there are several key differences. Perhaps the most crucial difference with respect to women is that the PSS plan protects women who alter their labor decisions for family reasons by mandating earnings sharing. "To protect non-working and secondary-earner spouses, total PSS contributions made by married couples are split 50-50 between the husband and the wife before being deposited in each's own PSS account."[30] Second, earnings sharing helps mitigate the problem of poverty among widows by empowering elderly women with personal retirement income, rather than forcing them to rely solely on the income and spending decisions of their husbands. Third, the plan decreases the effect of investment behavior on retirement income by approving only highly diversified investment funds for PSS contributions. Finally, the plan attempts to protect low-wage earners with federal government matching of PSS contributions of low-income contributors on a progressive basis.

One potential criticism of the PSS plan is that divorced women may be worse off than they would be under Social Security. Under the current system, a divorced woman is entitled to benefits equal to 50 percent of her ex-husband's benefits provided that the marriage lasted 10 years. She is able to benefit from her ex-husband's earnings even after the marriage has ended. Under the PSS plan, a divorced woman would benefit from her ex-husband's earnings only during the time of the marriage. One possible measure to address that issue could be to mandate that earnings sharing be a part of any alimony settlement in divorce proceedings.

It is important to note that the benefits to women of a PSS-type system depend in part on the manner in which earnings sharing is effected. There are three main methods: (1) splitting 50-50 the husband's and wife's contributions before depositing the funds in each person's account, as in the PSS plan; (2) joint ownership of a private retirement account to which both spouses contribute; and (3) no sharing of contributions but the purchase of a joint annuity at retirement. Each method allows women to benefit in retirement from their husband's earnings, but they are not equivalent. Only under the first method does a woman have direct ownership of a PSS account containing contributions from both her own and her spouse's lifetime earnings. Because of that important advantage, we have employed 50-50 earnings sharing where applicable throughout our empirical analyses.

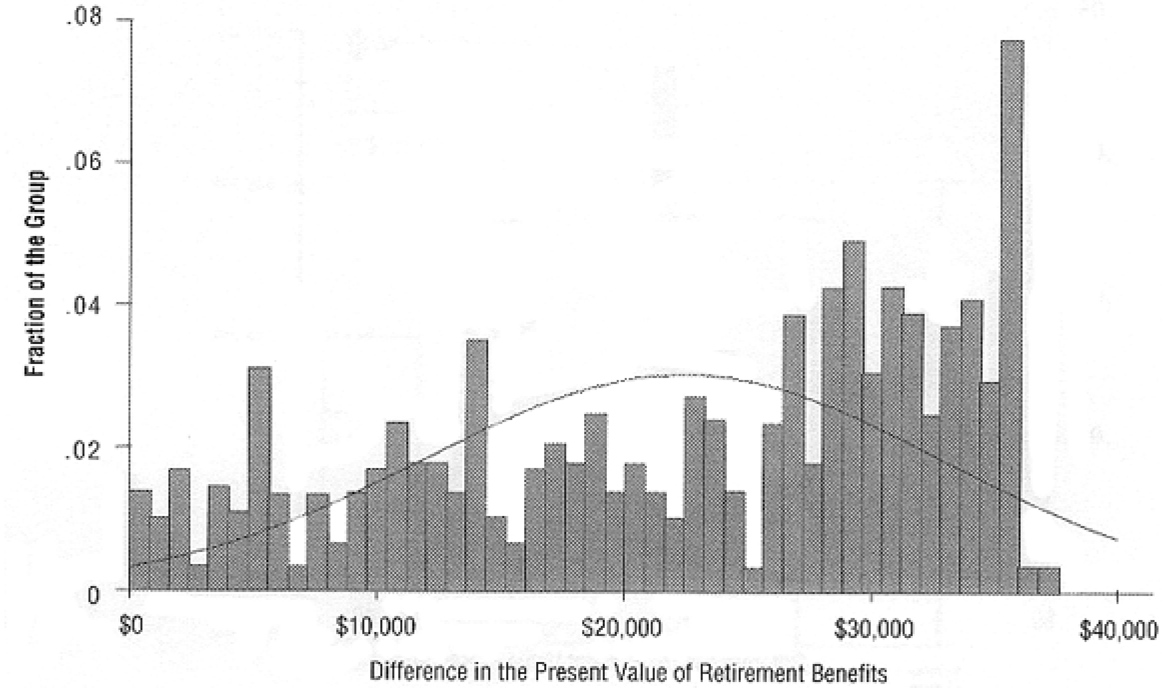
An Empirical Analysis of the Effects of Privatization for Women

To get a more concrete indication of privatization's potential to remedy the shortcomings of the current system's treatment of women, we conducted two types of empirical analysis that compare the benefits under the current system to benefits under a privatized system. First, we conducted a retrospective analysis using actual earnings histories of men and women who retired in 1981. Second, we used a prospective simulation using hypothetical earnings streams of eight "types" of women. In both analyses we assumed that all individuals retire at age 65.

The Retrospective Analysis. Using a panel data set collected in 1991 of 3,577 individuals (1,992 women and 1,585 men) who first applied for Social Security benefits in 1981, we compared the retirement benefits that actually would have accrued under Social Security[31] with the benefits that would hypothetically have accrued under a fully privatized plan with 50-50 earnings sharing between an individual and his or her spouse, where applicable.[32]

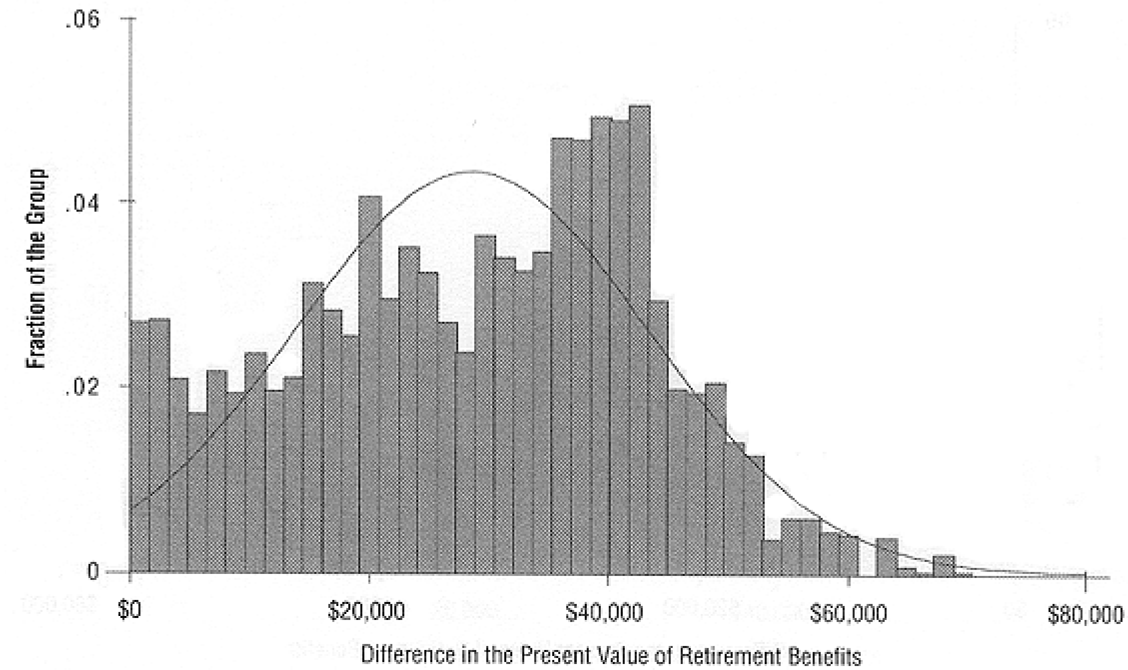
Results. The results are presented in Figures 2-6 for women receiving benefits on their own work record and those receiving benefits as wives, divorcées, widows, and surviving divorcées. The bar charts present the distribution of the difference between FPES income and the present value of Social Security benefits. In each chart, a vertical line indicates the point at which there is zero difference between the FPES amount and the present value of the Social Security benefits, and a normal curve superimposed on the bars indicates the mean and variance of the distribution. In Figure 2, the bar at $20,000 shows that roughly 4 percent of women in the cohort who received benefits as workers would have accrued $20,000 more in a fully private plan with earnings sharing than under Social Security.

Figure 2
Difference in the Present Value of Retirement Benefits for *Women Receiving Benefits as Workers* (1995 Dollars)



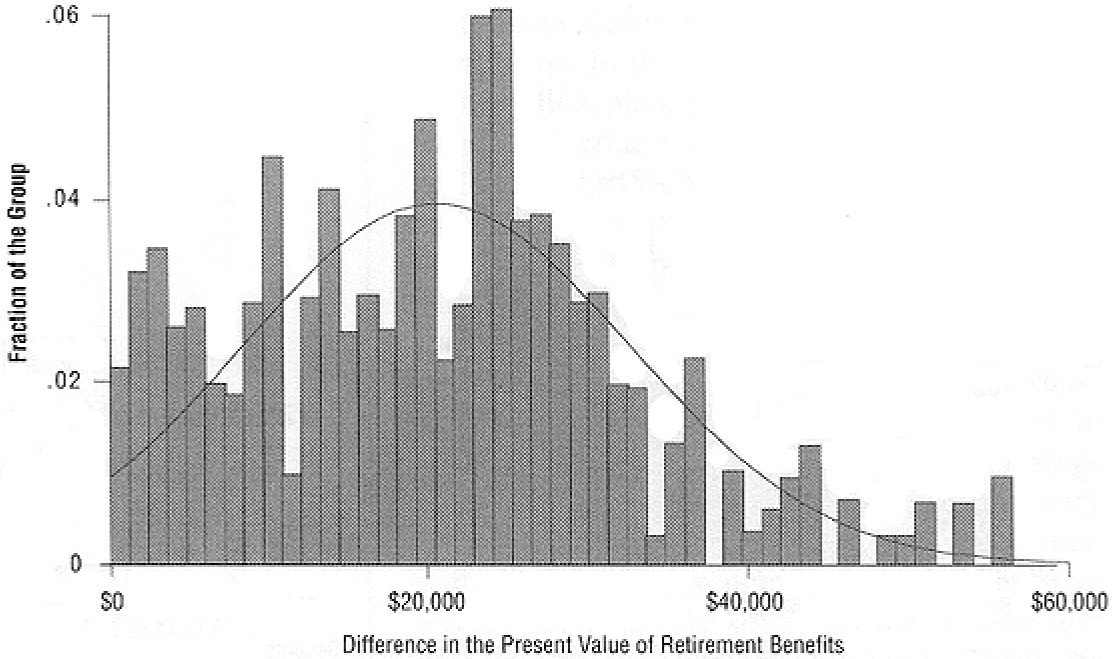
In Figure 3, the bar at $30,000 shows that slightly more than 5 percent of women in this cohort who received benefits as wives would have accrued $30,000 more in a fully private plan with earnings sharing than under Social Security.

Figure 3
Difference in the Present Value of Retirement Benefits for *Women Receiving Benefits as Wives* (1995 Dollars)



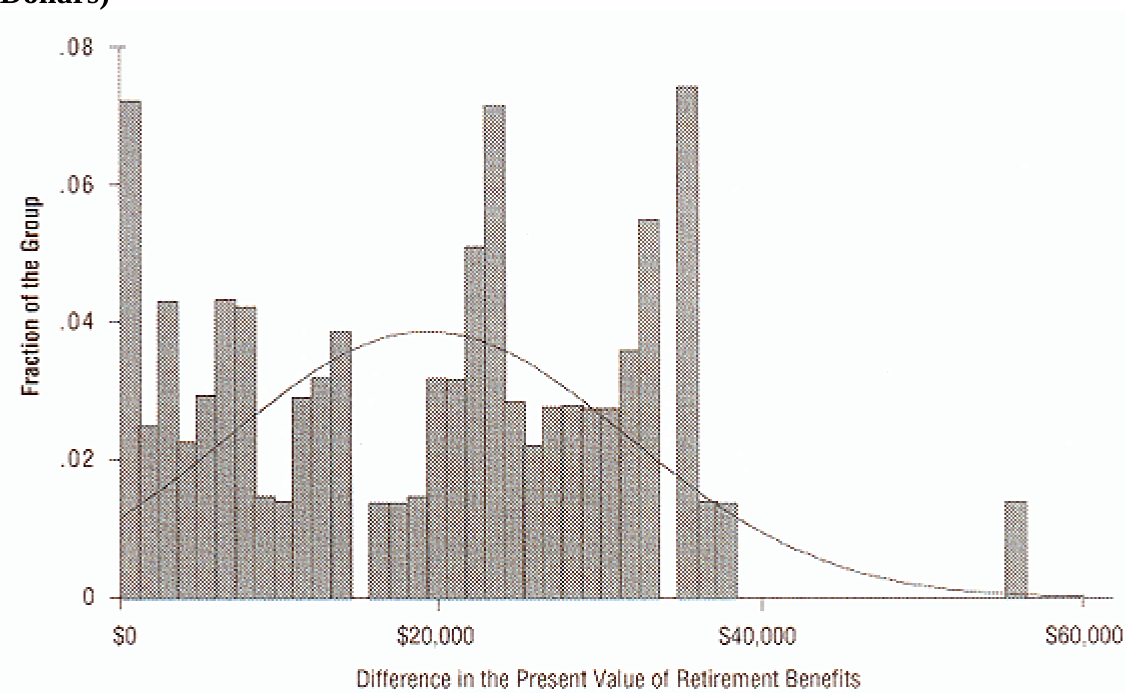
In Figure 4, the tall bar just beyond $20,000 shows that roughly 6 percent of women in the cohort who received benefits as widows would have accrued roughly $23,000 more under a fully private plan with earnings sharing than under Social Security.

Figure 4
Difference in the Present Value of Retirement Benefits for *Women Receiving Benefits as Widows* (1995 Dollars)



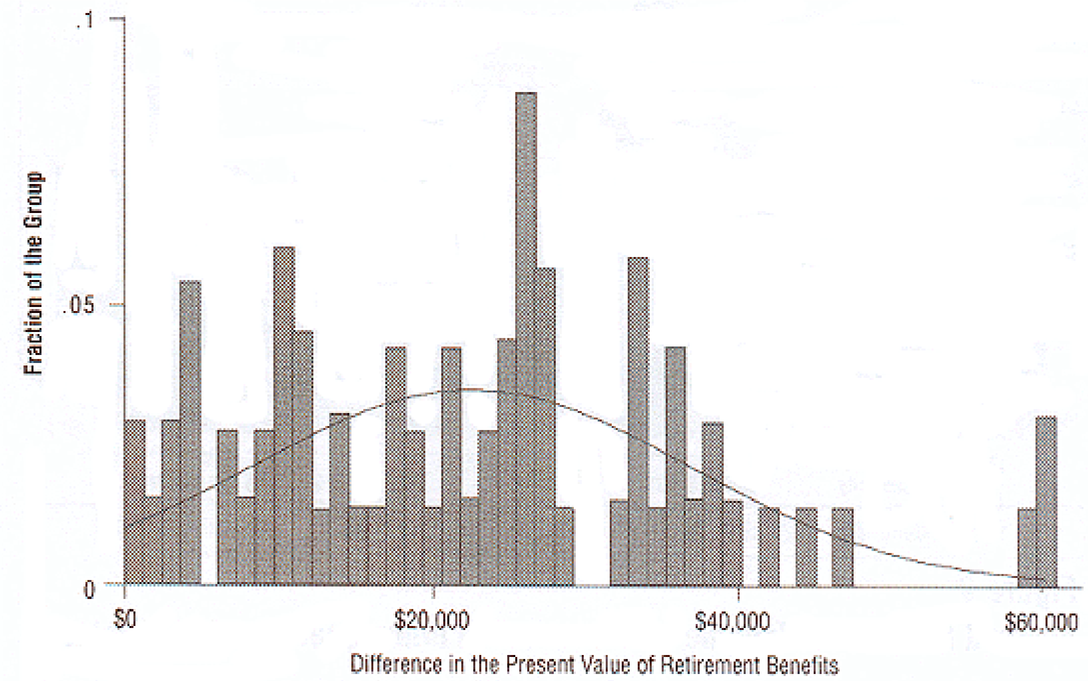
In Figure 5, the tall bar just beyond the $20,000 shows that roughly 8 percent of women in the cohort who received benefits as divorcees would have accrued roughly $23,000 more in a fully private plan with earnings sharing than under Social Security.

Figure 5
Difference in the Present Value of Retirement Benefits for *Women Receiving Benefits as Divorcées* (1995 Dollars)



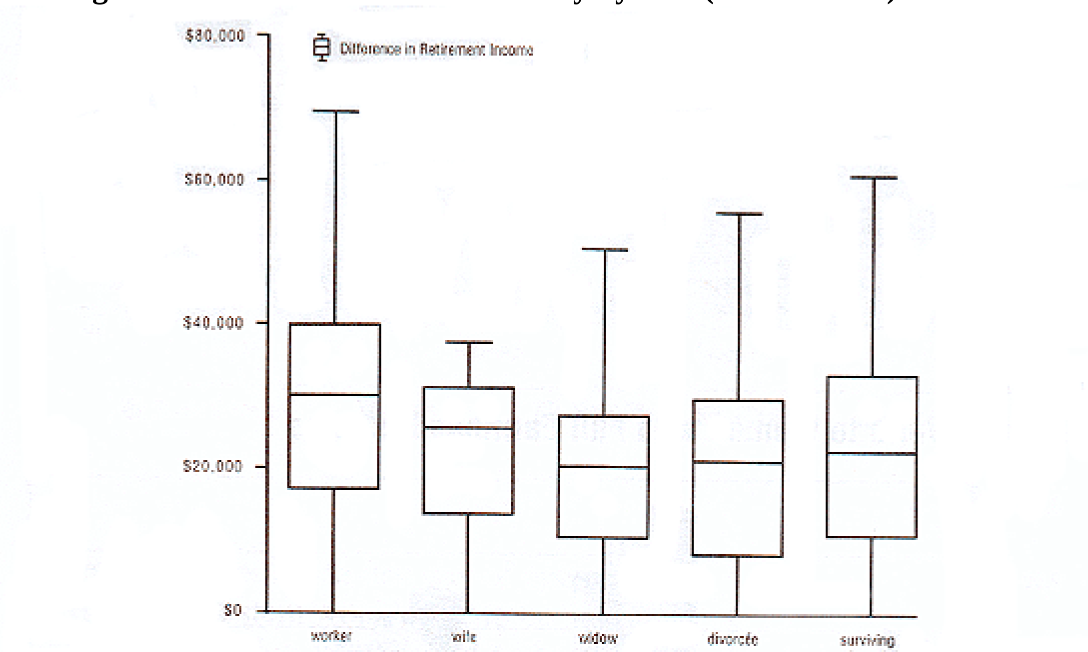
In Figure 6, the tall bar just beyond $20,000 shows that roughly 7 percent of women in the cohort who received benefits as widows would have accrued roughly $25,000 more in a fully private plan with earnings sharing than under Social Security.

Figure 6
Difference in the Present Value of Retirement Benefits for *Women Receiving Benefits as Surviving Divorcées* (1995 Dollars)



The "boxplot" for each category of women (Figure 7) displays the median as the line through the center of the box, with the 75th and 25th percentiles as the top and bottom boundaries of the box, respectively, and the highest and lowest values as the extreme top and bottom lines, respectively. For example, the median value of the accrued difference between benefits from the two plans is approximately $30,030 for those receiving Social Security benefits on their own earnings histories, $25,654 for those receiving benefits as wives, $20,331 for widows, $21,156 for divorcées, and $22,550 for surviving divorcées. As the extreme bottom of each category shows, all women receiving benefits on their own earnings histories-wives, widows, divorcées, and surviving divorcées-would have been either unaffected or better off had they been able to switch to the FPES system.

Figure 7
Difference in the Present Value of Retirement Income to Women under Full Privatization with Earnings Sharing versus the Current Social Security System (1995 Dollars)



Note: Each "boxplot" shows the median value as the line in the middle of the box, with the 75th and 25th percentiles of the distribution as the top and bottom borders of the box, respectively. Extreme high and low values are represented by the ends of the arms emanating from the box.

There is a very small number of women for whom Social Security and FPES would have produced virtually identical retirement payments on a present value basis. For 0.11 percent of the 1,992 women in the sample, the difference between the present value of Social Security benefits and the accrued FPES benefits is zero. For 3.7 percent of the women the difference is less than $2,000. Those women are at the lower end of the retirement income distribution for both FPES and Social Security benefits. Thus, even though the absolute dollar difference in accrued retirement income between the two plans is small for some women, it is significant relative to their total benefits. As a percentage of Social Security benefits, the difference is substantial. The median value of that percentage is 57.9 percent for single women, 207.5 percent for wives, 67.2 percent for divorcées, 57.7 percent for surviving divorces, and 96.5 percent for widows.[33]

Overall, then, the cohort of women represented by this data set would have been better off under the FPES system described here, and even those who would have benefited by only a small amount in absolute terms would have benefited by a significant amount relative to their total receipts from Social Security.

The Prospective Simulations. The retrospective analysis presents evidence that an FPES system could have helped to raise the retirement earnings of the women in the sample whether they were collecting benefits on their own earnings record or as a spouse or survivor. As discussed previously, however, demographics have changed over time, and consequently the cohort of women in the workforce today has significantly different labor and marital characteristics than the cohort in the data set. Obviously, complete lifetime earnings histories for women who are currently in the workforce do not exist. Thus, in order to examine the potential for an FPES plan to improve the retirement income of today's working women, we need to create those earnings histories and simulate the effects of the various retirement plans. As we did in the retrospective analysis, we compared benefits that would result for various groups of women under the Social Security and FPES systems. We also examined the effects of a double-decker plan for comparative purposes.[34]

Results. Figures 3, 8 and 9 show the present value of retirement benefits that accrue to each type of woman with both full and interrupted earnings histories under the three different plans: Social Security, FPES, and Double Decker.[35]

Figure 8
Accrued Retirement Income of Women with Full Earnings Histories

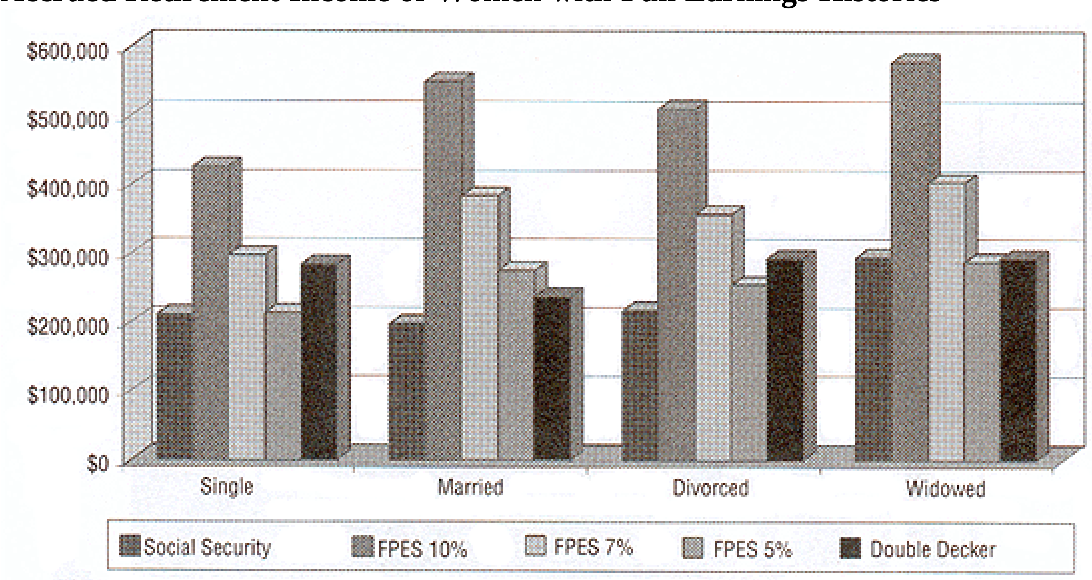
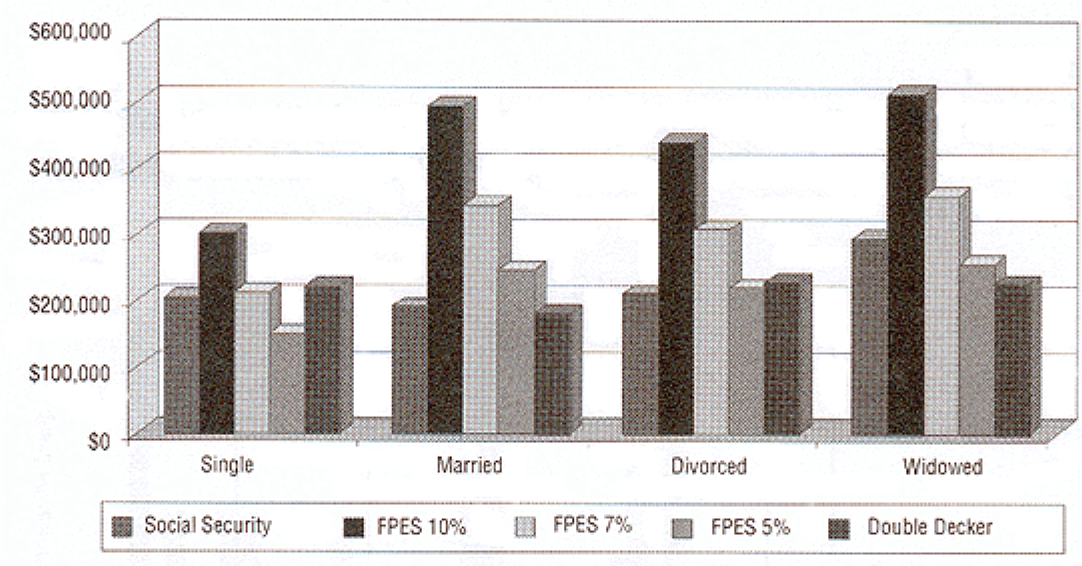


Figure 9
Accrued Retirement Income of Women with Interrupted Earnings Histories



In every case, the FPES plan with a contribution rate of 10 percent delivers the highest amount of retirement benefits on a present value basis. That is also the case for all categories of women at a contribution rate of 7 percent, except single women with interrupted earnings histories. In that case, the double-decker plan delivers slightly more than FPES at 7 percent, roughly $5000. It is also clear that the earnings-sharing element of FPES provides a major boon to married women. Of women with full earnings histories, under the FPES with a 10 percent contribution rate, single women accrue, on average, 19 percent less income than married or previously married women. Of women with interrupted earnings histories, single women accrue, on average, 35 percent less than married or previously married women. That result implies that, in relative terms, single women may be at a disadvantage under FPES. Not only would they receive lower benefits than women who benefited from earnings sharing, but they would, all other things being equal, face a higher cost of living because they would not enjoy the economies of scale of living in a family. Given that single women receive more retirement income under the FPES plan than under any of the other plans, however, that seems to be more a potential criticism of the distribution of income under FPES than of its ability to deliver a higher retirement income than Social Security.

At a 5 percent contribution rate, the FPES system is less attractive than Social Security for single women who spend five years away from the workforce, because of the progressive design of the Social Security formula and the inability of single women to benefit from the FPES system's earnings sharing. At 5 percent, FPES is also less attractive than the double-decker system for single, divorced, and widowed women with full earnings histories and for single and divorced women with interrupted earnings histories. Again, the inability of single women to take advantage of FPES's earnings sharing contributes a great deal to making the double-decker system more attractive for single women when the contribution rate is only 5 percent.

The double-decker system is also more favorable than FPES with a 5 percent contribution rate for divorced women, because a divorced woman under FPES loses the benefit of her husband's contribution to her PSA after the divorce. Under the double-decker system, marital status has no effect on benefits. Married women remain better off under FPES, even at the 5 percent contribution rate. In part that is because of earnings sharing and, in part, because of an idiosyncrasy of our methodology-the lower tier benefit for married women is based on the assumption that the husband and wife split wedges equal to two-thirds of the poverty line for married couples. That amount (50 percent of two-thirds of the poverty line for married couples is $4,609.50) is less than the lower-tier benefit for single, widowed, and divorced women ($7,309). Widowed women with full earnings histories receive roughly equal benefits under the two plans, but they are better off under FPES when their earnings histories are interrupted, because in that case the flat benefit makes up a greater percentage of the total double-decker benefits. Thus, the relative success of FPES is sensitive to the contribution rate, but FPES remains the most attractive plan for all categories of women at contribution rates of 7 percent and above.

On the basis of the mixed results of the FPES system at the 5 percent contribution rate, it could be argued that the high level of retirement income delivered by the FPES system may result simply from high contribution rates. To address that concern, we normalized the above results by calculating the "money's worth" of each dollar invested across programs. Figures 10 and 11 show that FPES is also the most effective program on a money's worth basis for women in all categories, and therefore its apparent superiority to the double-decker system and Social Security is not due solely to maintaining the total payroll contribution at 7 percent or above.

Figure 10
Money's Worth to Women with Full Earnings Histories

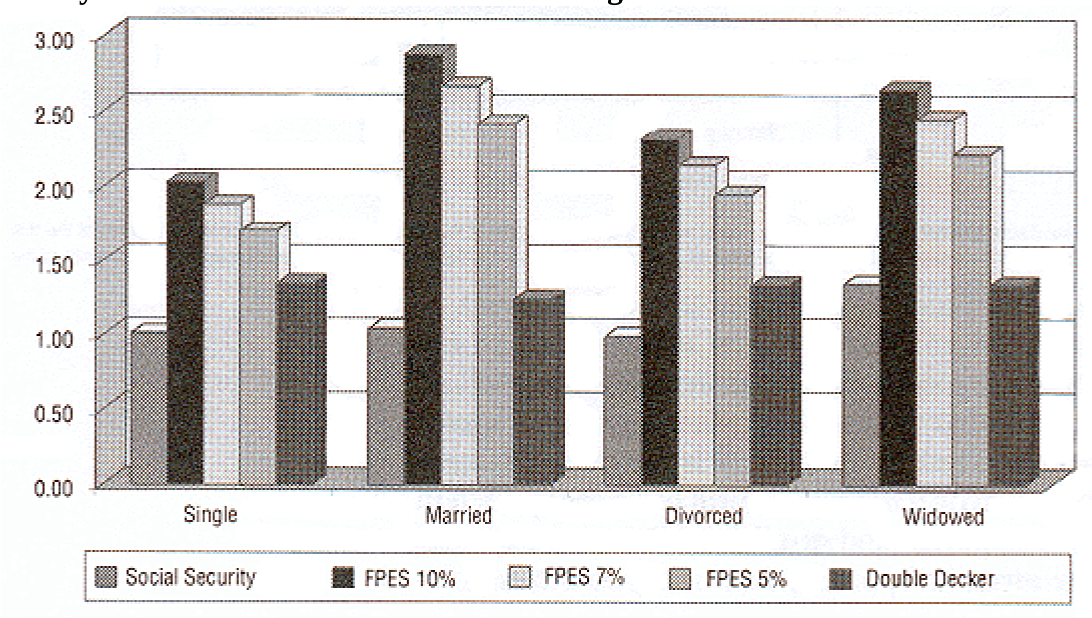
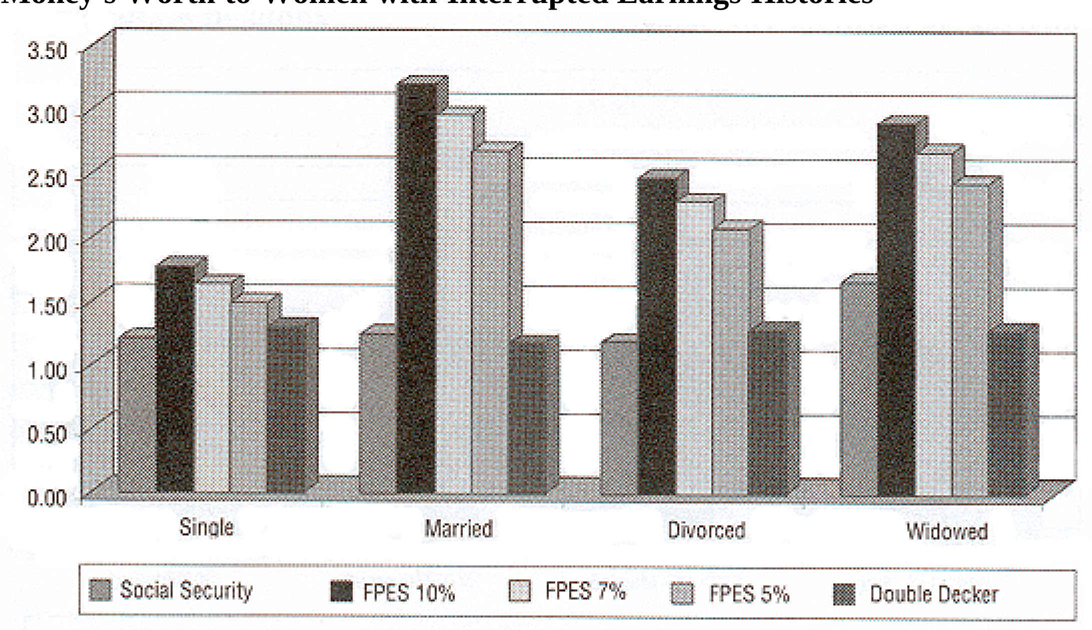


Figure 11
Money's Worth to Women with Interrupted Earnings Histories



One potential problem with that simulation is that our hypothetical woman earns the mean wage. Given that one of the major shortcomings of the current system is its tendency to exacerbate the problem of poverty among widows, it is important to examine the sensitivity of the results to income level. Toward that end, we ran a second simulation using half the national mean wage level of women in each category (and their husbands, where applicable) to determine the starting salary. The absolute dollar results are presented in Figures 12 and 13, and the money's worth results are presented in Figures 14 and 15.

Figure 12

Accrued Retirement Income of Low-to-Moderate-Income Women with Full Earnings Histories

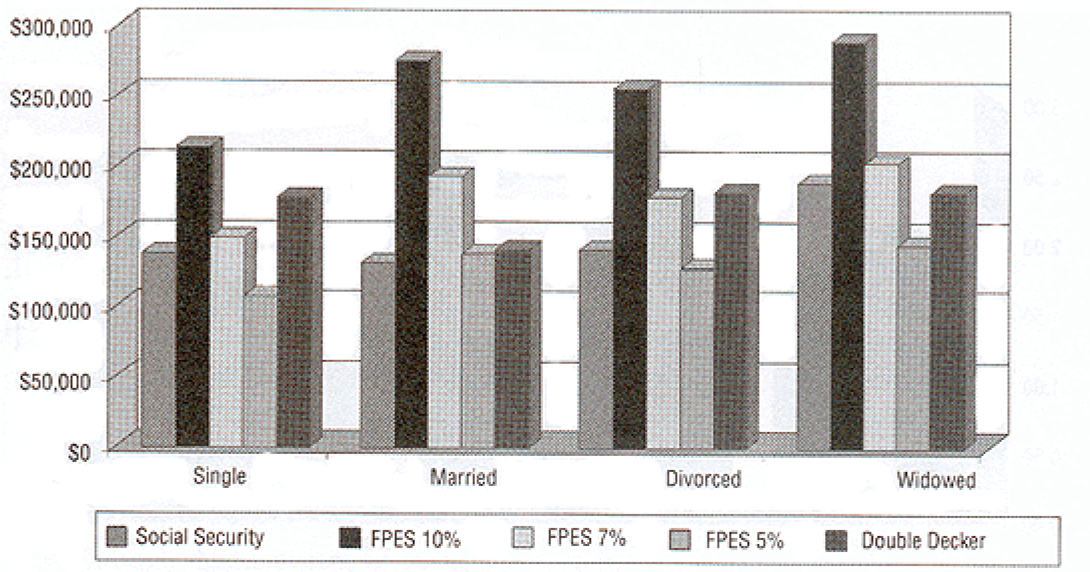


Figure 13
Accrued Retirement Income of Low-to-Moderate-Income Women with Interrupted Earnings Histories

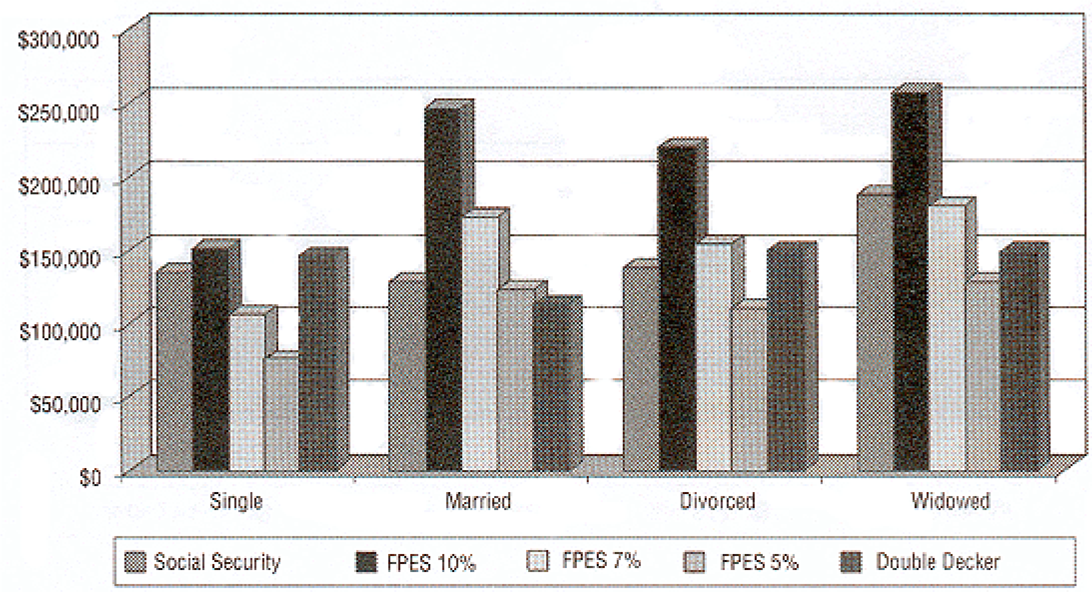


Figure 14
Money's Worth to Women with Full Earnings Histories and Low-to-Moderate-Incomes

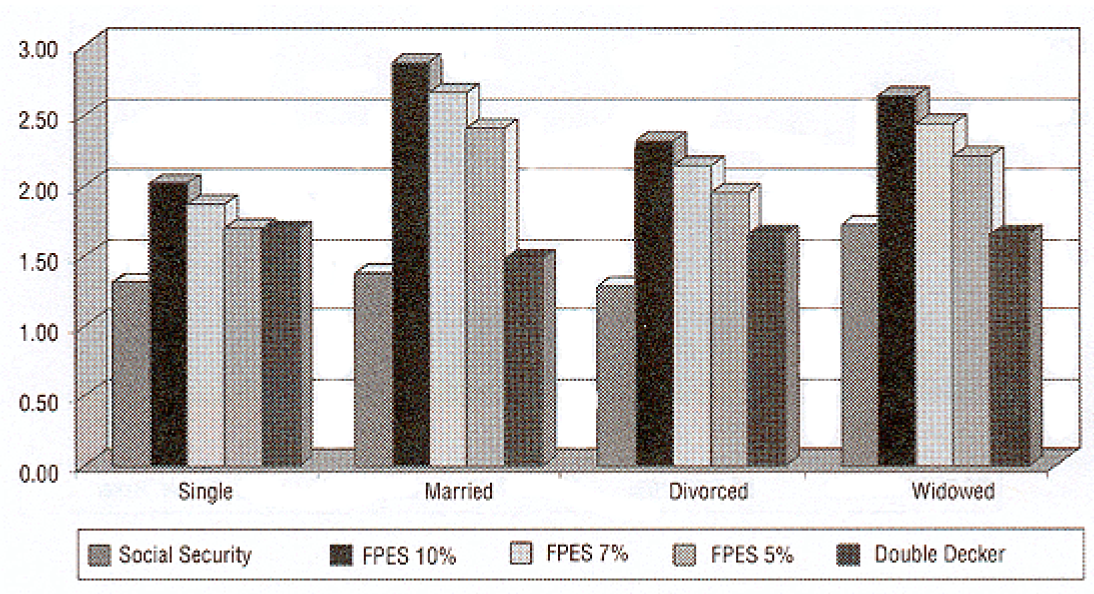
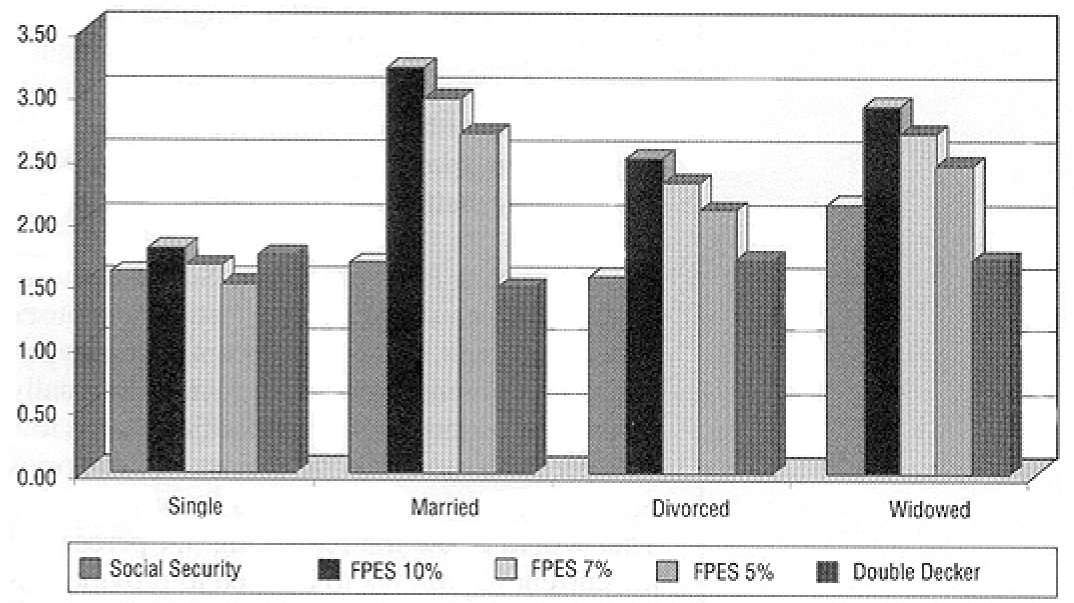


Figure 15
Money's Worth to Women with Interrupted Earnings Histories and Low-to-Moderate-Incomes



The FPES plan is the most effective in absolute terms at a 10 percent contribution rate for all categories of women. At a 7 percent contribution rate, FPES is the most effective plan for married and widowed women with full earnings histories and married and divorced women with interrupted earnings histories. It is also clear, however, that the FPES plan is less dominant over the Social Security and double-decker plans at the lower contribution level.

The double-decker plan is also relatively more attractive in the lower wage scenario. Under the previous scenario, it was 37 percent (married women with interrupted earnings streams) to 73 percent (single women with interrupted earnings streams) as effective as FPES at a 10 percent contribution rate. Under the lower wage scenario, it ranges from 46 percent (married women, interrupted earnings streams) to 95 percent (single women, interrupted earnings streams) as effective as FPES. That improvement in relative performance is due to the greater importance of a progressive, defined benefit for lower income individuals.

At a 5 percent contribution rate with no second-tier government benefits, the private accounts do not provide better benefits than those promised by Social Security, except to married women with full earnings histories. As noted above, single women cannot benefit from FPES's earnings sharing, making Social Security relatively more attractive for them. Widows are better off under Social Security in that scenario because, with such a low contribution rate, the FPES system cannot accrue enough income to dominate the Social Security entitlement of 100 percent of the deceased spouse's benefits. The double-decker system dominates FPES with a 5 percent contribution rate in every category except married women with interrupted earnings histories-and FPES's dominance in that case is partially due to calculation of the lower tier benefit for married women, as described above. In general, the double-decker system is effective at lower income levels because of its highly progressive lower tier benefit.

The advantage of FPES in delivering retirement income, however, is still quite substantial in most cases if the contribution rate is at or above 7 percent. FPES also remains more effective on a money's worth basis than Social Security and the double-decker plan for all categories of women except single women of low-to-moderate income with interrupted earnings histories, as shown in Figure 15. As noted previously, the superiority of FPES on a money's worth basis suggests that a beneficial FPES plan could be designed with a contribution rate at or below the current payroll tax rate.

Implications and Caveats

The retrospective and prospective analyses indicate that the cohort of women that retired in 1981 and women currently in the workforce could benefit in two ways under an FPES system. First, the FPES plan significantly raised the retirement income of women with mean earnings relative to what they would have received under the current Social Security system in all cases at the 7 and 10 percent contribution rates (with the exception of single women with interrupted earnings histories) and in most cases at the 5 percent contribution rate. That is true for two reasons. First, FPES allows women to take advantage of the higher return to a fully funded program invested in the private capital markets. Second, FPES allows women who earn less money because of family-related duties to benefit directly from their husbands' earnings through 50-50 contribution splitting. Those advantages also help to alleviate the problem of poverty among widows. From the simulations, we also see that the benefits of the FPES system decrease as the contribution rate decreases: FPES begins to have mixed results at a 5 percent contribution rate compared with Social Security.

Second, the FPES plan achieves those gains while removing the disincentive to work that exists under the current system. Further, the FPES plan was more effective than the PSA-type double-decker plan in delivering retirement income. Even in cases in which the FPES plan gave lower absolute levels of income, it virtually always remained more efficient on a money's worth basis. Based on those results, the FPES plan appears to present an effective means of harnessing Social Security privatization to address the disadvantages faced by women under the current system.

There are three caveats to this conclusion. The first is that our analysis has not taken into consideration the burden of moving to a fully funded system. Transition costs are a serious issue that any comprehensive reform plan will have to face, as claims on Social Security benefits incurred prior to the first day of operation of the reformed system would have to be paid over time. The transition would need to be paid for either through reduced benefits to grandfathered beneficiaries (which seems politically highly unlikely) or through reductions in other government spending.

We have not factored those costs into our analyses for two reasons. First, our focus is on the long-run effects of Social Security reform on women's welfare, and the transition cost, although highly significant, is a short- to medium-term effect. Second, since any course of action (reform of any kind or no reform) will require some level of adjustment cost to shore up the system's solvency, it is not clear how large the net transition cost of reform is (relative to the status quo).

The second caveat is that our analysis assumes risk neutrality, which may undervalue the returns from the Social Security and double-decker plans. By looking solely at dollars contributed and received, we implicitly value the insurance aspect of defined-benefit plans at zero. To the extent that individuals are risk averse, that assumption will bias our results in favor of the FPES plan. And the higher the degree of risk aversion, the more biased will be the results. The magnitude of that effect, however, is unclear. It should also be mentioned, however, that the imminent insolvency of Social Security means that relying on Social Security also contains an element of risk. That uncertainty mitigates the bias caused by our risk-neutrality assumption.

A third question is whether the investment behaviors of men and women are different enough to cause significant gender-based differences in returns on invested retirement income under a defined-contribution plan. A few recent studies have demonstrated that women are generally more risk averse than men in their financial decisions and therefore appear to be more conservative investors. Hence the introduction of worker-directed retirement savings accounts could potentially worsen existing retirement income disparities between men and women.

A 1997 study of participants in the federal Thrift Savings Plan (TSP) found that women and men differed greatly in their investments in common stock.[36] Among the participants in 1990, only 28 percent of women, compared with 45 percent of men, invested some portion of their pension portfolio in the common stock fund. For those employees who did invest in the common stock fund, however, the gender difference in the percentage of contributions allocated to that fund was slight-on average 31 percent for women and 34 percent for men. Two other options available to the participants under TSP were a short-term Treasury securities fund and a fixed-income fund of government and corporate bonds. From 1980 to 1989, rates of return were 11 percent for the Treasury securities fund, 12.2 percent for the fixed-income fund, and 17.4 percent for the stock fund. The study also found that, as a result of the gender difference in portfolio allocation, the gap between account balances of men and women increases with the number of years in the plan. (Assuming an estimated difference in the percentage of contributions invested in stock by men and women of 14 percentage points, the authors of the study estimated that after 35 years of participation in the plan, a man's pension account would be as much as 16 percent larger than a woman's.)

Another study, by the General Accounting Office, examined a data set of single individuals (never married, separated, divorced, or widowed) aged 51 to 61 from the 1992 Health and Retirement survey.[37] The study revealed that the ratio of riskier assets (in this case, stocks, mutual funds, and investments trusts) to total assets held by men was 8 percentage points higher than the ratio for women.

Investment decisions may differ by gender for several reasons.[38] First, women and men may differ in their underlying attitudes or preferences for risk due, for instance, to cultural factors. Second, gender differences in risk bearing may be due to differences in economic status-that is, higher-income workers may be more willing to bear risk. Finally, the differences in risk bearing may be due to gender differences in information. If women know less and are less confident about their knowledge of investments, that might explain their unwillingness to bear as much risk as men do.

The observed "gap" may also stem from differences in economic and demographic characteristics. In fact, one study found no significant gender differences in willingness to take financial risk after controlling for savings, home ownership, and other assets.[39] The federal TSP study rejected that hypothesis, however, and concluded that men are more likely to invest in common stock than are women of similar age and marital status with similar incomes (salary and other family income). In both studies, however, the authors failed to control for either general level of education or investment-specific knowledge-factors that may account for a large part of the gap in investment behavior. For example, according to the GAO study, more educated (as well as wealthier) respondents tended to hold a higher fraction of their investment portfolio in riskier assets.

Some pension experts believe that education is a critical factor in helping individuals make better investment choices. Preliminary evidence from a study of 401(k) participants suggests that people who are given information about their investment choices and potential returns are more likely to participate in a 401(k) plan and to contribute a higher proportion of their salaries than those who do not receive such information.[40] Very few studies, however, have examined how education affects the portfolio allocation decisions of 401(k) participants.[41]

Although research on the origins of the gender difference in investment behavior is limited, there is evidence that investor education can alleviate the problem.[42] In any case, it is clear that worker portfolio choice will generate a demand for investor education.

Conclusions and Policy Recommendations

Although it is based upon legally gender-neutral provisions, the Social Security system produces some financial outcomes that place women at a disadvantage in retirement compared with men.

- Women's employment patterns, characterized by fewer years in the labor force, lower earnings, part-time work, and more frequent changing of jobs, translate into lower Social Security benefits.

- Through dual-entitlement rules, the system imposes a penalty on many married working women, two-earner couples, and survivors of two-earner couples.

- The loss of up to 50 percent of a couple's benefit amount at the husband's death throws every fifth widow into poverty.

Those outcomes are exacerbated by women's disproportionate dependence on Social Security benefits. As a result of low private asset accumulation and inadequate or absent supplementary pension coverage, on average, nonmarried women over 65 rely on Social Security for 72 percent of their retirement income, and 40 percent of that group relies on Social Security for 90 percent or more of their retirement income.

Our analysis demonstrated that, contrary to some criticisms raised in the course of Social Security reform debate, privatization of Social Security in fact would offer tangible financial benefits to women.[43] Under a properly designed system of individually owned, privately invested accounts, with a provision for earnings sharing between spouses, women would likely be significantly better off than under the current system.

Moreover, a fully privatized Social Security system with earnings sharing between spouses benefits women more than does a partially privatized, two-tiered system. In fact, individually invested accounts with a contribution rate as low as 7 percent could provide almost all categories of women greater benefits than Social Security. That would allow the remaining 5.4 percent of the current payroll tax to be used to provide disability benefits, help pay transition costs, provide protection against market risk, or even provide a tax cut at some point in the future. In short, if done properly, privatizing Social Security will benefit women.

Notes

1. U.S. House of Representatives, Committee on Ways and Means, *1996 Green Book* (Washington: Government Printing Office, 1996), p. 960.

2. Spousal and survivor benefits were made available to husbands and widowers in 1950. A few more major provisions under which men and women had been treated differently were eliminated in 1972 and 1983. General Accounting Office, "Social Security: Issues Involving Benefit Equity for Working Women," GAO/HEHS-96-55, April 1996, p. 2; and Peggy S. Trout, "Adequacy and Equity of Social Security," in *Report of the 1994≠ 1996Advisory Council on Social Security, vol. II, Findings and Recommendations* (Washington: Government Printing Office, 1997), p. 338.

3. U.S. House of Representatives, *1996 Green Book*, p. 51.

4. Some Social Security beneficiaries are entitled to benefits both as a retired worker and as the spouse or survivor of another worker. They are considered "dually entitled."

5. Jane L. Ross, "Social Security Reform: Implications for the Financial Well-Being of Women," General Accounting Office/T-HEHS-97-112, April 10, 1997, p. 2.

6. General Accounting Office, "Social Security Reform: Implications for Women's Retirement Income," GAO/HEHS-98-42, December 1997, p. 8.

7. The AIME is calculated by adding the 35 years of a worker's highest indexed earnings and dividing by 420, the number of months in 35 years. In this example, we assume that the workers' earnings were such that their combined AIME equaled $1,000. The following benefit formula (1996) is applied to AIME to determine monthly benefit amount (PIA): Under $437, 90 percent; $437≠ $2,635,32 percent; and over $2,635, 15 percent.

8. Trout, p. 344.

9. General Accounting Office, "Social Security Reform: Implications for Women's Retirement Income," p. 2.

10. Under Social Security, a woman divorced after 10 or more years of marriage is treated as a widow when her ex-husband dies.

11. Women retiring at age 65 in 2000 can expect to live 19.4 years, while men of the same age can expect to live 15.6 years. Thus, for example, if a woman is two years younger than her husband, she is projected to outlive her husband by about 6 years, on average. See, U.S. House of Representatives, p. 955.

12. U. S. Department of Commerce, "Income and Poverty, 1995," Electronic version.

13. Susan Grad, "Income of the Population 55 or Older, 1994," SSA no. 13-11871, 1996, p. 95.

14. Merrill Lynch, "Retirement Savings in America," *Fifth Annual Merrill Lynch Retirement Planning Survey* (Princeton: Merrill Lynch, 1993). Cited in Martha Priddy Patterson, "Women's Employment Patterns, Pension Coverage, and Retirement Planning," in *The American Woman 1996-1997*, eds. Cynthia Costello and Barbara K. Krimgold (New York: W. W. Norton & Co., 1996).

15. Grad, p. 87.

16. Ibid., pp. 21≠ 22,81.

17. U.S. Department of Labor, *Employee Benefits in Medium and Large Private Establishments, 1991.* (Washington: Government Printing Office, 1991). Reproduced from Patterson, p. 12.

18. Patterson, p. 1.

19. Martin Feldstein and Andrew Samwick, "The Transition Path in Privatizing Social Security." National Bureau of Economic Research Working Paper no. 5761, 1996. The authors do not endorse this or any other specific privatization proposal.

20. Peter Diamond, "Macroeconomic Aspects of Social Security Reform," in *Brookings Papers on Economic Activity*, no. 2 (1997): 12.

21. Feldstein and Samwick, p. 6, cite the *Economic Report of the President 1996* and point out that "because of the reduced rate of growth during the past two decades, the Social Security Trustees (1995) assume that the rate of growth in the future will be only two percent."

22. Ibid. The authors cite Richard Rippe, "Further Gains in Corporate Profitability," *Economic Outlook Monthly*, August 1995.

23. Diamond, p. 21, cites Barry P. Bosworth, "Fund Accumulation: How Much? How Managed?" in *Social Security: What Role for the Future?*, eds. Peter Diamond, David Lindeman and Howard Young (Washington: National Academy of Social Insurance, 1996). Feldstein and Samwick use a figure of 9.0 percent.

24. Feldstein and Samwick, p. 17.

25. Richard P. Hinz, David D. McCarthy, and John A. Turner, "Are Women More Conservative Investors? Gender Differences in Participant-Directed Pension Investments," in *Positioning Pensions for the Twenty-First Century*, eds. Michael S. Gordon, Olivia S. Mitchell and Marc M. Twinney (Philadelphia: University of Pennsylvania Press, 1997).

26. Edward M. Gramlich, "Different Approaches for Dealing with Social Security," *Journal of Economic Perspectives* 10, no. 3 (Summer 1996): 61.

27. To qualify for the full flat benefit, individuals would have to have a certain number of years with taxable earnings.

28. John Williamson, "Should Women Support the Privatization of Social Security?" *Challenge* 40, no. 4 (July≠ August 1997): 100.

29. The following description of the plan is taken from Laurence J. Kotlikoff and Jeffrey Sachs, "It's High Time to Privatize," *Brookings Review* 15, no. 3 (Summer 1997): 16≠ 22.This plan is used for modeling purposes only.

30. Ibid., p. 20.

31. We calculated the Social Security benefits of each individual on the basis of his or her earnings history and the 1981 benefit formulas rather than the amount of Social Security benefit individuals reported receiving.

32. Social Security benefits were generated according to the rules of the Social Security system, using the 1981 "bend-points" to calculate each individual's monthly benefit, the Primary Insurance Amount (PIA). The calculation of the full privatization with earnings sharing (FPES) benefits required assumptions about the payroll contribution percentage and the return on those invested funds. As there is no precedent for an FPES plan, we chose a contribution rate of 7 percent, which is approximately the average payroll tax over the 35 years prior to 1981. For the rate of return on invested funds, we follow Bosworth and Diamond in using a figure of 6.2 percent, which is a weighted average of returns in the corporate, housing and noncorporate sectors from 1960 to 1993.

An issue arises regarding how to compare the accrued FPES benefits, which are a lump sum amount, and the Social Security PIA, which is a stream of monthly payments. We chose to calculate a present value of the Social Security benefit rather than annuitize the FPES private retirement account because of the inherent difficulties in estimating how such a large inflow of new savings would be treated by the annuities market. The Social Security benefits were discounted at an annual rate of 2.3 percent (the real interest rate used by the Social Security trustees) and were further discounted in each year to take into account the probability of death in each year after retirement. Two further simplifying assumptions are (1) that no individuals would collect benefits for more than 40 years (i.e. age 105) and (2) that individuals' marital status would not change during the period they collect benefits. For example, if a woman began collecting benefits as a spouse we assume that she will remain married and will not become widowed.

33. There are several reasons that the difference in retirement benefits in the retrospective analysis appears small relative to the results in the prospective analysis. First, in the retrospective analysis, workers had 35 years of earnings, but in the prospective simulations workers had 40 years of earnings. Those 5 years of additional contributions are reflected in the prospective simulation. That is consistent with fully private plans where every dollar contributed would bring additional benefits, whereas under Social Security, workers receive credit for only 35 years of their highest earnings. In addition, the taxable maximum for the cohort retiring in 1981 was much lower than it is today. For example, in 1951 it was $3,600; today it is $68,500. In addition, the payroll tax rate on average was 7 percent, 5.4 percentage points lower than it is today. Therefore, the returns in the retrospective analysis appear relatively smaller because workers contributed much less than they do today.

34. In conducting the prospective simulation we used the following methodology.

Defining categories of women: Under the current Social Security system, marital status is the key demographic determinant of the level of benefits to women. Therefore, we defined our categories according to marital status. In all we defined eight types of women. The eight types comprise four marital types (single never married, married, divorced, and widowed) coupled with two types of earnings histories (full earnings history and interrupted earnings histories with five years taken away from the workforce). The interrupted earnings history is meant to simulate time taken away from work for family. In the case of single women, it could represent time taken to give birth to and begin to raise a child as a single parent.

Generating earnings streams: We assumed that individuals entered the workforce at age 25 and retired at age 65. Earnings streams were generated by using the Current Population Survey's (CPS) mean annual earnings for each category of women aged 25≠ 44to calculate a starting annual income and increasing the income each year by an assumed real wage growth rate of 1 percent. For married, divorced, and widowed women, a spousal earnings stream was generated using the CPS mean annual income for married men aged 25≠ 44and assuming the same 1 percent annual real growth rate. Mean earnings were $40,229 for married men, $31,339 for divorced men, $27,289 for widowed men, and $25,613 for single men. Mean earnings were $21,792 for married women, $25,098 for divorced women, $24,986 for widowed women, and $24,042 for single women. Low-to-moderate-income figures are 50 percent of the mean.

Defining the rules and assumptions for the different plans: The FPES plan is structured in the simulations as it was structured in the retrospective analysis with the exception of the contribution rate. To examine the sensitivity of the effectiveness of the FPES system to the contribution rate, we included a range of rates. Following Kotlikoff and Sachs we included a contribution rate of 10 percent, which is the current payroll tax of 12.4 percent less 2.4 percent for Survivors and Disability Insurance. And for comparison, we also run the simulation with contribution rates of 7 percent and 5 percent. For a married individual, the contribution is split evenly between his or her private retirement account and that of his or her spouse during the duration of the marriage. For single and divorced individuals, the entire amount is contributed to their private retirement accounts. The assumed rate of return on private retirement account funds is 6.2 percent as in the retrospective analysis. The double-decker plan is structured as outlined in the Advisory Council's proposal. The contribution rate remains at the current payroll tax rate of 12.4 percent. Five percent of that amount is contributed to the individual's PSA, which receives a 6.2 percent return, with the rest going to the government to cover the flat benefit and Survivors and Disability Insurance. The accrued amount of double-decker benefits at retirement includes the accrued PSA amount plus the present value of a flat benefit of two-thirds of the relevant poverty line. The present value is calculated using a 2.3 percent discount rate and with the appropriate discount for the probability of death in each year. The Social Security benefits are calculated and discounted by the same method as was detailed in the retrospective analysis.

Defining outputs: To assess whether the privatization plans address the shortcomings of the present system, it is necessary to determine their relative effectiveness on three general fronts: (1) increasing the level of women's retirement benefits, (2) addressing poverty among widows, and (3) addressing the disincentive for women to work. The third point is more a theoretical than an empirical matter. By giving women ownership of their retirement accounts, the PSS and double-decker plans ensure that every dollar earned by a woman has a strictly positive effect on her retirement income. Our simulations assess the first point empirically by comparing the level of benefits available to different types of women at retirement. Running a scenario for low-wage workers, whose earnings are only half of the national mean wage, captures the second point. The relevant output for these purposes in our simulations is the present value of retirement benefits at retirement. In addition to that comparison of absolute dollars, we calculate a measure of the efficiency--or "money's worth"--for each program to ensure that higher benefits were not simply being bought at the price of inordinately high contributions. For each program and each category of women, then, we calculated a statistic we call the "money's worth" for the program, which is equal to the ratio of the present value of accrued benefits to the value of contributed funds. In all cases, we included the 2.4 percent paid to Survivors and Disability Insurance in the amount of contributed funds.

35. Social Security benefits for single, never-married women are calculated using the woman's own earnings history. Married and divorced women are "dually entitled" and receive the greater of the benefit calculated from their own earnings history and 50 percent of that of their husband/ex-husband. Widows are also dually entitled and receive the greater of the benefit calculated from their own earnings history and that of their deceased husband. FPES is full privatization with 50-50 earnings sharing. The 10, 7, and 5 percent columns represent different contribution rates. The double-decker benefit consists of two tiers. The first tier is a flat benefit of two-thirds of the poverty line. Poverty line statistics were taken from the March 1996 Current Population Survey. For single women, divorcées, and widows, the poverty line for an individual 65 years or older in 1995 ($7,309) was used to calculate the benefit. For married women, 50 percent of the poverty line for couples 65 years or older in 1995 (50 percent of $9,219) was used. The second tier consists of a PSA as defined above.

36. Hinz, McCarthy, and Turner. The sample size is 498, including 350 male and 148 female participants.

37. Ross. The sub-sample of single respondents is 2,371. The authors excluded married couples from their sample to separate out the investment decisions of men and women that would be difficult to distinguish if couples were included.

38. For further discussion, see Hinz, McCarthy, and Turner, p. 93.

39. Nancy A. Jianakoplos and Alexandra Bernasek, "Are Women More Risk Averse?" Paper presented at the Annual Meeting of the Western Economics Association, San Diego, California, June 1994. Cited in Hinz, McCarthy, and Turner.

40. Robert L. Clark and Sylvester J. Schieber, *Factors Affecting Participation Rates and Contribution Levels in 401(k) Plans* (Washington: Watson Wyatt Worldwide, 1996). Cited in General Accounting Office, "Social Security Reform: Implications for Women's Retirement Income," p. 14.

41. B. Douglas Bernheim and Daniel M. Garrett. "The Determinants and Consequences of Financial Education in the Workplace; Evidence from a Survey of Households," National Bureau of Economic Research Working Paper 5667, 1996. Cited in Diamond, pp. 34, 43.

42. General Accounting Office, "Social Security Reform: Implications for Women's Retirement Income," p. 14.

43. See, for example, John Williamson, "Should Women Support the Privatization of Social Security?" *Challenge* 40, no. 4 (July-August 1997): 97≠ 108.