

# Why Do Women Invest Differently Than Men?

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*Several recent studies have found that women invest their pensions more conservatively than men (Bajtelsmit and VanDerhei, 1996; Hinz, McCarthy, and Turner, 1996) and that women are more risk averse (Jianakoplos and Bernasek, 1996). Although these findings have serious implications for the well-being of women in retirement, the reasons for observed gender differences are less well-defined. This paper surveys the existing literature regarding gender differences in investment and considers the policy implications of these differences. The authors provide a summary and organization of the explanations for gender differences that have been offered in a variety of fields, including economics, sociology, education and gender studies.*

**KEY WORDS:** *gender differences, individual investors, investment, pensions, risk aversion*

## Introduction

An increasing number of financial studies conclude that women invest their asset portfolios more conservatively than their male counterparts<sup>a</sup>, a finding that is generally consistent with the “common wisdom” of financial services providers. Although there is a large body of literature on other types of gender differences in pensions<sup>b</sup>, examination of differences in investment behavior is a relatively new avenue for research. The existence of gender differences raises important questions for public policy, particularly in light of the recent trend toward self-directed pension accounts and the proposals for partial privatization of Social Security. Although there are obvious implications for the overall financial well-being of women in retirement, interventions can be more effectively designed with better understanding of the underlying causes of observed investment patterns.

All other things equal, a conservative investment strategy results in less retirement income on average than a more aggressive strategy. Consumption in retirement is likely to be even lower when, in reality, all things are not equal between women and men. Women’s greater longevity implies that, even with the same investment strategy and pension accumulation, retirement wealth must support a longer period of retirement. Women have lower lifetime earnings, lower earnings growth, lower wealth, and lower pension coverage and participation rates. Although

statistics show much improvement in these areas in the last several decades (Congressional Budget Office, 1993), the continued high poverty rate among older women is of great concern to policy-makers (House Select Committee on Aging, 1992).

The existence of gender differences in investing and risk-taking is fairly well established by recent studies. However, assuming that this is a cause for concern, appropriate policy interventions can be more effectively designed with better understanding of the fundamental causes for differences. Identifying the causes is a more difficult task since it is generally only possible to observe the outcomes of decisions as opposed to the decision-making processes themselves. This issue is important not only to private and social pension policy makers, but also to plan sponsors and professionals who provide investment information to clients.

This article surveys what is known and what is still unknown regarding gender differences in investing. The following section critically summarizes the existing empirical work on gender differences in risk-taking behavior, including a comparison of datasets studied, methodologies employed, and conclusions made. The implications of these conclusions for individuals and society at large are explored in the third section. The major contribution of this article is a summary and organization of the alternative explanations for gender

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differences that have been offered in a variety of fields, including economics, education, sociology, and gender studies. Empirical and theoretical support is provided for the hypothesis that observed investment and risk-taking differences are ultimately the result of discrimination and/or differences in individual preferences. The final section provides a summary and recommendations for further research.

### **Evidence of Gender Differences in Investing**

One of the difficulties encountered in examining gender differences in investment is the scarcity of gender-specific and comparable data with the necessary control variables. The data typically collected by plan sponsors are limited to plan specific information such as allocation percentages, account balances, and loans. Although the Pension and Welfare Benefits Administration of the Department of Labor collects and disseminates information on pension plans, these data are limited to aggregate plan information, most notably from the IRS Form 5500 annual report.

Ideally, a study of this issue requires detailed demographic information for each individual in the sample, information on non-pension income and wealth, social security eligibility, and pension asset allocation information. Furthermore, the optimal data set would be constructed to be representative of the population so that more general conclusions can be drawn. To date, there is no publicly available data set that meets these criteria, although there have been many private and government sponsored surveys aimed at better understanding individual financial and retirement decision-making<sup>c</sup>. In each case, survey designers had particular research issues in mind or were influenced by their biases in the questions they asked<sup>d</sup>. In particular, most surveys do not include any information on who makes financial decisions for the household<sup>e</sup>. Thus, in each study discussed in this section, there are missing explanatory variables. Since studies using limited sample populations or small experiments are not necessarily robust to the whole population, these are considered separately in the following discussion. It is interesting to note that this issue has only come to the attention of researchers in the last two years, possibly due to concerns related to the increased number of self-directed pensions.

#### *Studies Using Large Datasets*

*Thrift Savings Plan* A recent study by Hinz, McCarthy, and Turner (1996) uses 1990 survey data for a subsample of 498 participants in the Thrift Savings Plan (TSP), the defined contribution plan for Federal Government Workers, to test for gender effects in allocation. By matching demographic information from the survey with

government administrative records, the researchers are able to control for age, income, marital status, length of time in the plan, and gender. Variables that are missing in the TSP data are information on household wealth (all other investments) and decision-making. Using logit analysis, they show that men are significantly more likely to hold risky assets and that the percentage of pension wealth that is invested in these asset categories is higher for males.

*Surveys of Consumer Finances* Where the TSP data has better pension information and less information on other wealth, the Survey of Consumer Finances (SCF), sponsored by the Federal Reserve System, has a wealth of information about household finances but very limited detail regarding pension allocation. A benefit of using this survey data, however, is that the sampling procedures used in collecting the data make it possible to weight the data to be representative of the US population.

Jianakoplos and Bernasek (1996) use the SCF 1989 data to construct a measure of relative risk aversion under the theoretical framework developed by Friend and Blume (1975). The holdings of risky assets as a percentage of total assets are regressed on the natural log of wealth and other explanatory variables. The coefficient on the wealth variable thus provides a measure of relative risk aversion. Although previous studies had attempted to measure risk aversion in this way, this study is the first to examine the significance of gender differences<sup>f</sup>. Examination of the equation for different categories of the sample shows that single women are relatively more risk averse in their asset holdings than single men or married couples.

In the Jianakoplos and Bernasek (1996) study, participants\* self-reported investment risk tolerance provides evidence that women also *perceive* themselves to be less inclined to risk taking. When asked to choose between four statements regarding their risk-return tradeoff, 63% of the single women and 57% of the married women report that they are not willing to accept any financial risk at all (compared to 43% of single men and 41% of married men in the sample).

The SCF survey includes information on each of the respondents\* three largest pensions. Although pension balance information is provided, allocation information for defined contribution plans is more limited. For each pension, respondents were asked to indicate whether they allocated their pension to (1) mostly stocks, (2) mostly interest bearing investments, or (3) mixed. Bajtelsmit, Bernasek, and Jianakoplos (1996) extend the Jianakoplos and Bernasek (1996) results by considering the factors

that influence the percentage of household wealth invested in risky pension assets. For participants in the 1989 SCF who had defined contribution plans and wealth in excess of \$1000, they find that women are relatively more risk averse than men and that women's percentage wealth allocations to risky pensions decrease with wealth (increasing relative risk aversion). The conclusions of both studies are limited by the fact that the survey does not indicate whether the respondent or their employer had allocation decision-making authority for their account. Although self-directed plans are increasingly common, there are still many defined contribution plans for which participants do not make allocation decisions. Lastly, as in most studies, the household decision-maker is not identified.

*Private Plans* Bajtelsmit and VanDerhei (1996) find significant gender differences in investment of pension assets based on plan allocation data provided by a large plan sponsor. Their data set consists of 1993 plan-level data on 20,000 management-level employees for a single US firm. The pension plan participants are required to self-allocate their pension contribution and are given five investment alternatives: employer stock, a diversified equity portfolio, a government bond portfolio, a guaranteed interest fund (GIC), and a social choice equity fund. They find that women are significantly more likely to allocate to the fixed income alternatives and significantly less likely to invest in employer stock (arguably the riskiest alternative due to its impact on diversification). Although the study controls for age, income, race, and job tenure, the lack of information on other household income, wealth, dependents, and household decision-making limits the inferences that can be drawn from these results.

*Health and Retirement Survey* A relatively new survey designed to examine issues related to health and retirement of older individuals, the Health and Retirement Survey (HRS) includes information related to risk-taking and pensions. The 9,495 participants ages 51-61 were asked to make risky choices in both personal and financial contexts and also provided pension information similar to that collected for the SCF. Based on responses to the risk questions, Barsky, Juster, Kimball, and Shapiro (1995) find that men are more risk tolerant. Thus far, there are no studies using this data to examine gender differences in pension risk-taking. Furthermore, since the survey is aimed at older individuals, any statistical analysis of this issue would have limited applicability to the general population.

### *Other Studies of Risk Differences by Gender*

*Experimental Evidence* Researchers have also attempted

to investigate risk-taking behavior by designing experiments that require participants to make risky choices. Although several such studies have been conducted<sup>e</sup>, few have examined gender differences in results. Brinig (1994)<sup>h</sup> and Jianakoplos and Bernasek (1996)<sup>i</sup> conducted experiments that did not involve any risk of loss. Brinig found limited evidence of gender differences but did not test for significance. The Jianakoplos and Bernasek (1996) experiment did not result in a statistically significant gender difference.

It is clearly difficult to design experiments that mimic real-life decision-making, particularly with respect to the possibility of loss. Furthermore, experimental studies generally suffer from a small sample bias. The common practice of using college students as subjects cannot be considered a random sampling procedure. Thus, it is difficult to draw more than very limited conclusions from these studies. However, experiments reported in the insurance literature might provide guidance for future work in this area, since individual response to risk of loss is the primary motivation for insurance experiments.

*Smaller Surveys* Several less comprehensive surveys have found patterns related to gender and risk taking that are consistent with those reported above. For example, Zinkhan and Karande (1991) found that female MBA students, both American and Spanish, were significantly less likely to take business risks than males. The instrument used for measurement of risk-taking behavior was the Kogan and Wallach (1964) Choice Dilemmas Questionnaire and the sample included 212 students from the University of Houston and the Madrid School of Business. This study is particularly interesting in that it demonstrates that gender differences persist cross-culturally.

Brokerage firms are often interested in the investment behavior of their clients. A questionnaire sent to clients of a large brokerage firm found that gender was the third most important determinant of investor style (after age and income), with women being more conservative. (Lewellen, Lease, and Schlarbaum, 1977). A more recent survey by John Hancock was intended to investigate the awareness and knowledge of plan participants with regard to their 401(k) plan. Although not the focus of the survey, they found there were some gender differences in responses (Yakoboski and Silverman, 1994). Despite being more likely to have reported that they read educational materials that lead them to believe they were investing too conservatively, women were less likely to have altered their investments accordingly. Similarly, a psychological study on the character of gender differences in money handling found

that males and females had different styles. Men were more inclined to feel competent in financial matters and to be willing to take risks to amass wealth (Prince, 1993).

### **Implications of Gender Differences in Investing**

The results reported in the previous section provide strong evidence that women allocate their portfolios differently than men and may differ in their attitudes toward risk-taking. Regardless of why this is so, there are some clear implications for the future, particularly with respect to the financial well-being of older women. Increased popularity of self-directed pension accounts and proposals for social security privatization should be carefully examined in light of the differential impact that these changes may have on the social well-being of women versus men. This section discusses these implications as well as the implications related to the increasing presence of women in corporate management positions.

#### *Private Pensions: Increased Participant Investment Responsibility*

The trends in private pension provisions<sup>j</sup> show that an increasing proportion of pension plans are of the defined contribution type. This type of plan, as compared to a defined benefit plan, shifts investment risk from plan sponsors to plan participants. Although pension coverage for women has increased substantially in the last two decades, women are still more likely to work at places of employment that do not sponsor pensions, and when offered, they are less likely to participate.

As more plans require participants to make their own allocation decisions<sup>k</sup>, differences in risk-taking behavior will imply larger differences in retirement income. If women are more likely to allocate their portfolio to low risk investments, their pension accumulations will be lower and they will have lower wealth at retirement. Due to generally greater longevity, this lower wealth level will have to support a longer retirement period, widening the income disparity between retired men and women. Alternatively, lower wealth may require that women will need to extend their working years beyond the normal age of retirement<sup>l</sup>.

If gender differences in risk-taking and perceptions of risk-taking exist, there are also implications for participant education. Most plans provide similar types of materials and information to participants, including historical performance, projections of future performance, and projections of replacement ratios for particular investment strategies. Larger pension plans are now beginning to offer education on general investment principles and financial planning for retirement. The fact

that women are making more conservative choices may be relevant to plan sponsors and providers in their design of educational materials.

#### *Social Security Reform Proposals*

Although the financial position of women over age 65 has improved over the last few decades, this trend may be due for a reversal. Gains have been largely due to generous reforms of Social Security for certain cohorts of retirees. However, recent reforms will substantially reduce the replacement ratios that can be expected by future generations<sup>m</sup>. Individuals will therefore be required to shoulder a greater share of the burden for their retirement through own-savings and private pensions. To the extent that women have tended to rely on Social Security for the majority of their retirement income in the past, these changes will have a greater impact on women than on men, who have higher savings and higher pension coverage on average.

Recent Social Security reform proposals that have gained popular support would allow individuals to partially opt out of Social Security in favor of private investment of a portion of their payroll tax (*Wall Street Journal*, February 20, 1996). As in the case of private pensions, more conservative investment of this portion will result in lower accumulations. If wealth accumulation in the individual account is not sufficient to offset the reduction in benefit formula, the end result will not be superior to the existing formula.

Alternatively, if women choose not to opt out, they may retire with benefits that are lower than those of individuals who have taken advantage of the investment option. Furthermore, if those who choose to opt out are higher income and male, the Social Security trust fund may find itself in worse condition than without privatizing since the redistributive nature of the system requires the participation of higher income individuals and those with shorter lives.

#### *Risk-Taking Behavior and Corporate America*

As more women enter the workforce, there are increasing numbers of women in positions of authority in corporations<sup>n</sup>. While it may be the case that the women who breach the “glass ceiling” are atypical women, there is still the possibility that women in positions of authority may perceive risks and deal with risk differently than men. It has been suggested that gender differences in decision-making and management style may be factors that have inhibited female movement up the “corporate ladder.” Differences in risk aversion could cause women to experience greater difficulty in industries that reward risk-taking or measure performance against benchmarks.

Another possible implication for business is that an increased number of women in management could result in reduced business risk-taking. The implications of this projection are not clear although it is an issue of sufficient importance to merit further study.

### Explanations for Gender Differences in Investing

Researchers in many diverse fields have attempted to provide explanations for observed gender differences. It is difficult to definitively answer this question since researchers can only observe the outcomes of decisions rather than the decision-making processes themselves. Gender differences in investing and risk-taking can be attributed to many possible causes but, ultimately, it can be shown that all the explanations have their root in discrimination and/or differences in individual preferences. These factors may influence risk aversion directly or through outcomes such as gender differences in wealth, income and employment. Figure 1 illustrates these effects in the form of a flow-chart. The discussion below will proceed according to the organization of Figure 1 by first discussing the way in which wealth, income and employment differences influence risk-taking and then examining how these outcomes are the result of discrimination and/or individual choice.

#### Outcomes

*Gender Differences in Wealth* Despite a narrowing of the gender wealth gap over time, women still have lower levels of wealth on average than men (U.S. Bureau of the Census, 1993). Expected utility theory establishes that in an absolute sense (amount of money invested in risky assets) risk aversion decreases with wealth (Huang and Litzenberger, 1988). Because women have less wealth, it follows that they will be expected to exhibit greater *absolute* risk aversion than men. The implication is that women, on average, will hold a smaller *dollar value* of risky assets in their investment portfolios than men. Jianakoplos and Bernasek (1996) also find that women are *relatively* more risk averse than men i.e. they will hold a smaller *proportion* of their portfolio in risky assets.

*Gender Differences in Income* Despite a narrowing of the gender earnings gap, women continue to earn less on average than men. In 1993, the gender earnings ratio was 0.72 (U.S. Bureau of the Census, 1993). For individuals over age 55, the difference is much greater. In 1991, the ratio of female to male income for those age 55 to 64 was an astounding 0.39 and for those age 65 and over was somewhat better at 0.57 (Bureau of the Census, 1992). Lower levels of income for women mean fewer resources available for savings and investment.

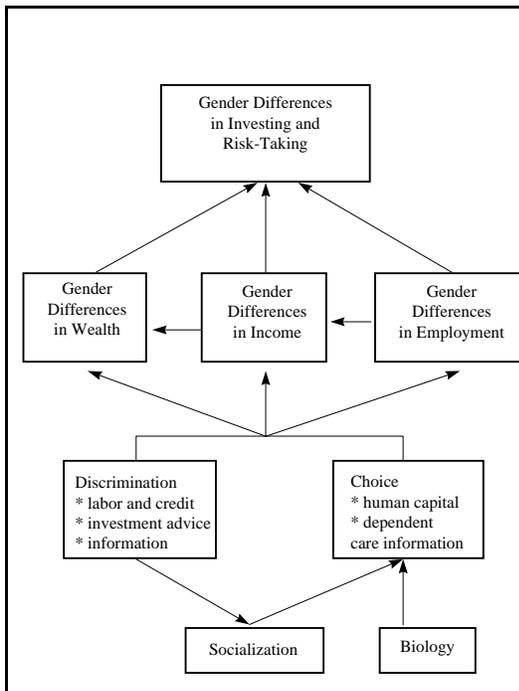
Although there is evidence that the gender pension gap is closing more rapidly than the earnings gap (Korczyk, 1992) lower levels of income for women have implications for defined contribution and benefit pensions based on income. The main implication is that they will provide women with lower overall benefits in retirement. It is also less likely that individuals earning lower incomes will be covered by pensions. Only 13% of workers earning \$10,000 or less are eligible for participation in pension plans as compared to 41% with earnings between \$10,000 and \$20,000, and 80% for those with earnings over \$50,000 per year (Korczyk, 1992).

The trend toward defined contribution plans has worked to the advantage of women in many ways<sup>9</sup>, but it is also possible that the greater flexibility in these plans may result in the use of plan assets for non-pension purposes. Lump-sum pre-retirement distributions are increasingly common, with 10.8 million persons receiving distributions in 1990 alone, totaling \$126 billion. A study using the May 1988 Current Population Survey found that women were 40% more likely to receive a payment than men, but the percentage of both sexes that saved the entire distribution was nearly the same (Fernandez, 1992). Only half of the recipients rolled over their entire distribution into another form of savings or retirement plan (Yakoboski and Silverman, 1994). To the extent that women have lower income and lower wealth, it is possible that they will be more likely to access these lump sum distributions for other needs such as college tuition or housing. Lower income may also mean that women will be less able to take advantage of employer matches.

It should also be noted, however, that *having* income does not necessarily translate into *controlling* income. Although they do not find significant gender differences between male and female primary family financial managers in their sample of households, Hayhoe and Wilhelm (1996) provide a discussion of this issue and recommend further research. Zelizer (1989) finds that husbands generally control income, except at the very lowest income levels (where control means allocating shortages and dealing with creditors). Ferree (1990) contends that there is a need for further research on the issue of household decision-making and that the available survey data in the United States is flawed in that they continue to treat households as a single decision-making unit.

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Figure 1  
Causal Relationships for Gender and Risk-Taking.



*Gender Differences in Employment* Despite inroads by women into traditionally male occupations, the labor market continues to be segregated occupationally by gender with women concentrated in low paying occupations and at lower levels within occupations (Reskin and Hartmann, 1986; Reskin, 1988). Witkowski and Leicht (1995) include an excellent review of this literature in their study of how gender roles in the family influence labor force activity by gender and occupational segregation by gender.

Magenheim (1993) reviews several studies that imply that occupational segregation by gender has pension effects. Female-dominated jobs are also jobs that are the least likely to have employer-sponsored pension plans. Occupational segregation is thus an explanation not only for lower average female earnings but also for lower coverage rates which imply greater reliance on own-savings for retirement income. Similarly, women's greater likelihood of being employed in part-time and temporary occupations (Blank, 1990; Blau & Ferber, 1987) provides an explanation for their lower average earnings and fewer pension benefits. Workers in part-time and temporary jobs who desire health insurance, disability insurance or life insurance coverage must pay for it out of disposable income, thereby further reducing resources available for savings and investment.

Since women are also more likely than men to change

jobs (Light & Ureta, 1990), they face greater job switching penalties inherent in defined benefit annuity formulas<sup>9</sup>. In addition, as Ferguson and Blackwell (1995) point out, a less obvious penalty is due to vesting rules. Despite the shortening of average vesting requirements in recent years, more women than men leave their places of employment prior to vesting in their pensions.

*Causes of Wealth, Income and Employment Differences* *Discrimination* Gender discrimination in labor markets has been shown to play a role in labor market outcomes for women and can explain their lower wages (Neumark and McLennan, 1995). Women continue to face discrimination in credit markets both for personal and business loans (Wray, 1995). The popular press has reported on the "glass ceiling" facing women in corporate America and the "brick wall" facing women seeking business loans (*Newsweek*, August 24, 1992). A bipartisan federal commission studying discrimination in the workplace (commonly referred to as the "glass ceiling commission") recently released its report which concludes that the glass ceiling exists and it is "the unseen, yet unbreachable barrier that keeps minorities and women from rising to the upper rungs of the corporate ladder regardless of their qualifications and achievements" (*New York Times*, November 23, 1995). A recent *Virginia Slims Opinion Poll* of women's issues shows that more women in 1995 believed that discrimination in the workplace impedes movement into executive positions than did in 1970 (Townsend, 1996). The feedback hypothesis posits that women who experience labor market discrimination respond with job switching, career interruption and less investment in human capital, resulting in lower wage growth.

Anecdotally it has been reported that women receive more conservative investment advice than men, either because they are believed to be more risk averse or because the investment adviser believes they "should" be. In the first case this is an example of statistical discrimination where advice is being offered on the basis of a perception of average willingness of women to take risks rather than on the individual's willingness to take risks. Although it is not clear that women are consistently being advised into "widows and orphans"<sup>9</sup> investments, a recent *Money* magazine survey of how brokers treat their customers found that brokers treat male clients better than female clients, spending more time with them and offering them a wider variety of higher return (and presumably higher risk) investments (Wang, 1994).

Anecdotally, it has been reported that managers suffer

from some of the same (mis)perceptions as investment advisers. They may attempt to "protect" women by not promoting them into positions that are regarded as more risky, such as jobs that are paid on commission (*Wall Street Journal*, May 17, 1994). A 1995 *Catalyst* survey of female executives indicates that more than half of the women surveyed attribute male stereotyping as a significant factor preventing advancement of women to corporate leadership (Townsend, 1996). This has the potential to restrict advancement opportunities, and, to the extent that experience with risk improves one's understanding, it may perpetuate risk averse behavior by women.

The impact of information on investment decision-making has two separate dimensions to it. Women may differ in access to information and they may also differ in their ability or inclination to use available information. Handley (1994) reports that women experience exclusion from informal networks and, as a consequence, lack of prompt access to valuable information in the organization. It is interesting to note that in the female executive survey discussed above nearly half of the women executives, but only 15% of the male executives, reported exclusion from these networks to be factors preventing the advancement of women. Most men (82%) cited lack of experience as an important factor.

*Choices* The choice-based explanation for gender differences in investing and risk-taking derives from human capital theory in economics. Human capital theory (Becker, 1975) states that women rationally choose to invest in less human capital (education, skills, on-the-job training) than men, which in turn affects their employment opportunities, their incomes and their ability to accumulate wealth. Women make different choices than men primarily due to their greater family responsibilities. The gender division of labor within the family, which results in women taking primary responsibility for household work and child care, is seen alternatively as the result of inherent biological differences or as the result of socialization.

Despite increases in women's investments in human capital, they still invest less on average than do men (Sandell and Shapiro, 1980), and they invest differently -- much less than men in math and science related areas. The implications of this are that women choose low-paying occupations that require less human capital, and in turn choose to earn lower incomes (Light and Ureta, 1995; Vella, 1994). Eccles (1994) provides an excellent review of the literature on gender differences in math and science achievement in her study of how gender role socialization explains women's educational and

occupational choices.

In their study of two issues related to educational opportunities for girls and boys, Ramos and Lambating (1996) conclude that tests such as the SAT which have penalties for wrong answers are biased in favor of greater risk takers. Since their review of the literature indicates that boys are more inclined to be risk takers, they argue that tests in which risk plays a role discriminate against females. Poor test results negatively affect girls' confidence, their opportunities and desire to attend college, and their choices of subjects to study, particularly math and science fields. Ramos and Lambating (1996) suggest that discrimination can produce feedback effects which in turn affect women's choices. Another study which examines these feedback effects directly in relation to the labor market is Neumark and McLennan (1995).

Women's responsibility for dependent care has tended to make their work life shorter and characterized by more interruptions on average than men's. Women are more likely to take time out of the workforce for family responsibilities (child bearing, child care, elder care) which makes it difficult for them to take advantage of long term investment growth in retirement savings. Women continue to be the primary caretakers in families, responsible for care of children and the elderly. In the *Working Care Givers Report* (1989) commissioned by the American Association of Retired Persons (AARP), it was estimated that three out of every four employed persons who provide care for the elderly are women. This can affect the time women have available for jobs and it can often mean higher current expenditures and less money available for investment.

A recent article in the *New York Times* reported on the increase in investment clubs for women (*New York Times*, October 15, 1995). Women are becoming more aware of the need to learn more about money. It may be that women on average have had less inclination to collect and process financial information and that this has affected their willingness to undertake more risky investments. If they have had less exposure to the information and less experience with processing it, then they may have less confidence and less of a desire to become knowledgeable about financial matters. With private pensions women and men are required by law to receive the same information but there is evidence to suggest that even then women are more conservative in their investment allocations, holding much higher proportions of their portfolios in fixed assets than men (*National Underwriter*, May 6, 1996).

*Biological Determinism Versus Socialization*

The continuing debate over biology versus socialization as the basis for women's choices has a long history (Huber, 1993). The biological argument maintains that because of women's greater biological responsibility for reproduction, evolution has led women to be less willing to take risks than men. LaBorde Witt (1994) explores the gendered division of labor in care-giving and presents an extensive review of the literature on the biology/socialization debate.

Feminist scholarship has emphasized the importance of gender as a social construct and has been influential in making the argument that gender differences are more important than biological differences when it comes to understanding differences in the behavior of women and men (Nelson, 1996). The work of Gilligan (1982) and Chodorow (1978) examining the formation of gender identity early in life has been particularly influential in subsequent feminist scholarship. Since most researchers agree that socialization plays at least some role in influencing women's choices, it is not necessary to belabor the relative influence of biology. From a policy perspective, interventions focused on changing socialization processes can still positively impact the well-being of women by influencing their decision-making.

**Conclusions and Implications for Future Research**

Investigation of gender differences in investing is a new area of research in finance and economics. Because the research is at such an early stage, much remains to be done. Studies to date have not produced a clear understanding of the causes of observed gender differences and it is therefore too early to identify appropriate policy interventions. Nevertheless, popular beliefs regarding the causes of gender differences have motivated policy-makers to create programs designed to improve economic outcomes for women.

If interventions are based on misconceptions regarding the cause of the risk-taking differences, then programs may be ineffective in achieving desired outcomes and may inefficiently allocate limited public resources. A priority for future research will be to more thoroughly investigate the causes of gender differences to better inform policy makers and investment professionals.

In this paper, we have delineated the alternative explanations for gender differences in investment and risk-taking in an effort to help guide data collection and identification of relevant variables for empirical research. Review of the limitations of previous studies suggests that existing datasets are inadequate for the purposes of

investigating gender differences in investing. Future academic and professional research will require more detailed information on household financial decision-making, particularly with respect to understanding the decision-making process. In the absence of this information, outcomes such as gender differences in wealth will not serve as an accurate indicator of risk preferences. Greater efforts need to be made, particularly in the design of surveys, to acquire information that allows researchers to distinguish between the influence of discrimination and individual choice, as well as the determinants of choice.

**Endnotes**

- a. See Hinz, McCarthy, and Turner (1996), Bajtelsmit and VanDerhei (1996), Bajtelsmit, Bernasek, and Jianakoplos (1996), and Jianakoplos and Bernasek (1996).
- b. Magenheim (1993) reviews the literature on gender patterns through 1992 and does not include any studies on investing behavior.
- c. For example, large data collection efforts include: the Survey of Consumer Finances, the Survey of Income and Program Participation, the Health and Retirement Survey.
- d. For example, the Survey of Consumer Finances assumes that the head of household is the male spouse.
- e. A new privately sponsored survey of TIAA-CREF participants includes decision-making information, although the sample is not representative of the population and the survey has incomplete information on the household.
- f. Riley and Chow (1992) used the 1984 panel of the Survey of Income and Program Participation (SIPP) data to construct a relative risk aversion measure, but reported results do not include any tests for significance of differences by gender.
- g. For example, Gertner (1993) and Metrick (1995) examine risk taking behavior on game shows. Altaf (1993) experiments to determine whether risk taking is context dependent and Levy (1994) examines student choices between risky and risk-free assets.
- h. The game involved drawing a winning ball from one of three jars representing different risk-return payoffs.
- i. Using the same game as Altaf (1993), the game paid \$25 to the participant who accumulated the most points. Points were obtained by choosing to roll a die or toss a coin, each of which involved certain payoffs in the form of points. The two alternatives had the same expected value but different variance.
- j. A review of recent trends in sponsorship, coverage, plan type and participant decision-making is provided in Bajtelsmit and VanDerhei (1996).
- k. ERISA section 403(b) exempts plan sponsors from fiduciary liability for bad investment performance if: 1) the participants are offered a choice of at least three alternative investment options that differ in risk and return characteristics and 2) the participants are given information sufficient to make an informed decision.
- l. However, this may not be feasible given Fries' (1991) evidence that, although the age-span is lengthening, the age of morbidity is not significantly different from that of earlier generations.
- m. Aaron, Boswell, and Burtless (1989) project that replacement ratios for 65 year old low income retirees in 2030 will be 51% compared to 63.8% for retirees in 1985. For those with average income, the change is projected to be a reduction from 40.9% replacement to 35.8% in 2030.
- n. Although most estimates put women's representation in senior management at 5% or less, women now hold 10% of the seats on Boards of Directors in the Fortune 500 (Townsend, 1996)
- o. For example, women have generally benefitted from the absence of

the implicit penalty to job switching that is imposed by defined benefit plan formulas. The lower administrative costs of defined contribution plans and the lower risk to employers has also made employers more likely to offer plans where none had been offered before, resulting in higher pension coverage ratios for women in the last decade.

- p. When workers leave a job with vested DB benefits, the retirement benefit formula is often based on years of service and final average salary. Assuming some level of wage growth over time, a worker with identical total years of service at several different employers will have a lower total benefit from the multiple pension plans than a worker who has had a "career" job at a single employer with a similar DB formula.
- q. The "widows and orphans" terminology originates from the titles of early insurance funds designed for women. It is commonly used today to describe investments that are low risk. See, for example, a recent article in *The Economist*: "Not for Widows, Orphans--or Hedge Funds: Mortgage Backed Securities" (July 9, 1994, pp. 81-82).

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