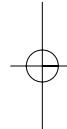


Pension Design and Structure

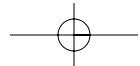
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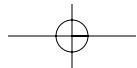
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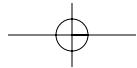
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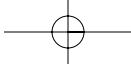
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Chapter 10

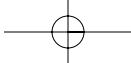
Sex Differences, Financial Education, and Retirement Goals

*Robert L. Clark, Madeleine B. d'Ambrosio,
Ann A. McDermed, and Kshama Sawant*

Many labor market differences have been documented between men and women, including in occupational choice, labor force attachment, hours of work, job tenure, and pay. Yet, little is known about sex differences in retirement objectives, retirement saving, and responses to financial educational events. This chapter examines sex differences in initial retirement goals and responses to financial education seminars. Responses are measured as revised retirement targets and changes in saving and investment behavior.

This is an important issue because women tend to have smaller accumulations in their basic and supplemental retirement plans, they are more likely to be employed in occupations requiring lower skills and less education, they have fewer years of job tenure, and they tend to have lower annual earnings. Consequently, women may be less prepared financially for retirement than men, and they may also be less able to enhance their retirement saving due to the prospects of lower earnings during their working lives. Developing an adequate financial plan is also very important for women, given their long life expectancies, greater chances of becoming widowed, and higher probabilities of needing nursing home care late in life. Secretary of Labor Elaine Chao was quoted on this problem stating as “Americans are saving too little, often dangerously too little. The average 50-year-old has less than \$40,000 in personal financial wealth. And the average American retires with only enough savings to provide about 60 percent of former annual income. The problem is especially acute for women and minorities” (*USA Today*, 2003). Smaller account balances and lower annual

The authors acknowledge the cooperation of many consultants in TIAA-CREF Consulting Services who administered the surveys in conjunction with seminars around the country. They also thank Pirie McIndoe, Al Gonzalez, and Brian Usischon, of the TIAA-CREF Raleigh-Durham Office, for their assistance in pre-testing the survey and Robert Romano, of the TIAA-CREF Sales Support, for his efforts in coordinating the integration of the surveys with the financial education seminars. Paul Mulvey played a major role in the design of the survey. Juanita Kreps contributed to the development of the overall project. Mike Sitar provided research assistance. Research support was provided by the TIAA-CREF Institute.



186 Robert L. Clark et al.

saving rates must indicate that women have set lower goals for retirement income. Alternatively, women could have similar retirement goals as men but they could be making larger and more systematic errors in their retirement saving behavior. Finally, if women invest more conservatively than men, similar saving rates might yield different account balances at the end of a working career.

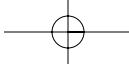
Mismatches in retirement goals and saving behavior for both men and women may be the result of inadequate knowledge of financial markets and the saving process.¹ If true, then workers should respond to financial education by altering either their goals (age of retirement and retirement income) and their saving behavior (changing the amount that they save each year or changing their investment allocations). If workers are on track to achieve their retirement goals, participation in financial education events should not alter their saving behavior. Instead, the educational experience should confirm that the household has set realistic retirement goals and is making reasonable choices to achieve these objectives.

To assess the role of financial education on individual retirement saving, we examine participants in retirement education seminars and estimate how they respond to the information presented regarding how financial markets work, the need to set specific retirement goals, and the retirement saving process. The behavior of men and women is examined separately to determine whether there are significant differences by sex.²

Individual Responsibility for Retirement Saving

The structure of retirement plans has changed substantially, significantly increasing the role of workers in the determination of their retirement income. Though the proportion of the labor force covered by any type of pension plan has remained relatively stable at around 50 percent over the past 25 years, coverage rates in defined benefit (DB) plans have plummeted, while participation in primary defined contribution (DC) plans has grown rapidly. In addition, workers in large organizations, are often covered by supplemental pension plans, which are almost exclusively some type of DC plan. Thus, DC plans are now the dominant plan type for primary employer-provided pensions.³

In most DB plans, full-time employees are automatically included in the plan after meeting minimum participation standards, and retirement benefits typically depend on earnings histories and years of service. Thus, DB participants are generally not required to make participation, contribution, or investment decisions. In contrast, DC plans are based on individual accounts into which the company and employees contribute funds. In many cases, and especially for 401(k) plans, participation is typically voluntary, so each worker must decide whether to make any annual contribution and the size of annual contributions. In addition, each participant must decide how



10 / Sex Differences and Financial Education 187

to invest the periodic contributions and when and how to rebalance his individual accounts. Workers must determine their desired retirement ages and level of retirement income, and then they must make appropriate saving decisions to achieve these goals. Otherwise they will arrive at retirement with insufficient resources.⁴

Economic theory provides a structure for considering the allocation of time and resources over the lifetime. Under certain restrictive conditions, such life-cycle models can solve for the optimal age of retirement, required saving rates, and retirement income levels. Most of these models assume that individuals have perfect knowledge, that they understand financial markets, and that they know the risk–return distribution of all assets. With this knowledge, people can make the appropriate consumption and saving decisions to maximize their well-being.

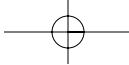
Evidence from the real world however, suggests that many workers suffer from limited knowledge of financial markets and are under-informed about how much they need to save to achieve a retirement income goal (MacFarland, Marconi, and Utkus, Chapter 6, this volume; US Senate Committee, 2002; Bernheim, 1998). For example, a recent survey indicated that one-third of workers aged 56–65 report that they will need 50 percent or less of their income during their final working years to live comfortably in retirement (*USA Today*, 2003).⁵ In fact, it appears that most households will actually require 70–80 percent of pre-retirement income in order to have the same level of consumption in retirement.

It seems obvious that increased financial education and awareness would be beneficial to people considering how to save for their retirement. However, researchers know little about the linkages between financial education, setting retirement goals, and the impact of enhanced financial education on the likelihood of achieving the necessary saving to reach these goals.

In what follows, we evaluate the impact of participation in financial education seminars on retirement goals and retirement saving behavior. Specifically, we evaluate whether participants in such seminars revised their expected retirement ages and the desired level of retirement income desired in retirement. Further, we examine whether financial education prompts participants to change their saving behavior by making specific changes in the amounts they save, how they invest their retirement assets, and whether they intend to acquire additional information.

Prior Research on Financial Education and Retirement Saving

Many employers now provide some form of financial education for their workers, consisting of communications that explain company retirement saving options, general information about financial markets and economic



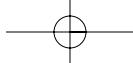
188 Robert L. Clark et al.

conditions, and financial education or retirement seminars led by in-house staff, pension providers, or other experts. Sometimes such programs are intended to increase participation and contribution levels to help the company meet nondiscrimination standards. It is estimated that 40 percent of employers with 1,000 or more employees offer some type of financial education program (Arnone, 2002). But many of these programs appear to provide only minimal assistance to workers and some employers are concerned about the liability associated with providing financial advice to their employees. Some firms also subsidize the cost of their employees purchasing a financial plan.⁶

Relatively few studies have attempted to estimate the effectiveness of such educational programs in influencing retirement goals or retirement saving behavior. Bayer, Bernheim, and Scholz (1996) found that workers employed by firms that offered financial education programs had higher participation rates in and contribution rates to 401(k) plans, as compared to firms that did not provide this type of program.⁷ That analysis indicated that seminars were the most effective type of communication. Sponsorship of financial education seminars was associated with a 12 percentage point increase in the participation rate of nonhighly compensated workers, and a 6 percentage point increase among highly compensated employees. Company-sponsored retirement seminars produced a one percentage point increase in the contribution rate of the nonhighly compensated, and no significant increase among highly compensated employees. This jump in contribution rates for nonhighly compensated is quite large, given that the average contribution rate for these employees was only 3 percent.

A study by Clark and Schieber (1998) examined data from 19 firms covering more than 40,000 employees to estimate the effect of company-provided written communications describing the retirement savings process, the need for workers to save, the national economic environment, and the characteristics of the company retirement plan. They found that such financial information played a significant role in boosting the probability of participating in a 401(k) plan, and in increasing contribution rates to that plan. Providing written documents to workers about retirement saving increased the probability of participating in the 401(k) plan between 15 and 21 percentage points. In addition, providing of information concerning the company's 401(k) plan increased the annual contribution rate by two percentage points, while generic financial and economic information had no significant influence on the contribution rate.

Using the Health and Retirement Survey (HRS), Muller (2000) evaluated the effect of financial education seminars on the allocation of investments in defined contribution plans. The 1992 wave of the HRS asked whether respondents had ever attended a retirement seminar, and this factor appeared to have no general effect on asset allocation. However, the investment allocation question from the HRS asked whether the household's



10 / Sex Differences and Financial Education 189

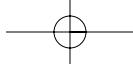
assets were mostly or all in stocks, mixed, or mostly or all in bonds. This measure would naturally miss small and even medium-size adjustments to pension investments. Mullen did find that people having a high degree of risk aversion did tend to adjust their portfolios after participation in a seminar.⁸

Other studies have focused on the role of planning and the lack of financial literacy for retirement saving. For example, Lusardi (1999, 2000, Chapter 9, this volume) found that people who did not plan for retirement had lower net wealth and were less likely to invest in assets with higher expected returns such as equities. She also stated that extensive information is needed to plan adequately for retirement and that financial education programs are important to the planning process. Analysis by Madrian and Shea (2001), use the administrative records of a large employer to examine participation and saving behavior in the 401(k) plan before and after a 1-h retirement seminar. They find small but statistically significant effects of attendance at financial education seminars: Attendees had increased rates of participation in the 401(k) plan and greater diversification in their retirement plan portfolios. On the other hand, most seminar participants made no changes in their savings behavior. Though only a very short post-seminar period of observation was available.

While this limited literature to date suggests that financial education provided by employers can increase retirement saving and potentially alter the investment of assets in retirement accounts, the mechanism for how education alters retirement saving and investment decisions is unclear. Maki (2001) offers three routes by which individuals may use new information. First, financial education could increase household saving by causing the family to lower its discount rate. Second, increased knowledge could prompt the household to become less risk averse, and thus invest more in assets with higher risk and expected return. Finally, financial education programs could change the household's knowledge of its investment choice set. For example, the information could reveal to workers that it is impossible to achieve the current goal of retiring at a specific age with a certain level of income, using their current saving and investment strategy. Maki dismissed the first two possibilities and argued that greater knowledge of what is possible is the primary mechanism through which these programs alter household decisionmaking.

Seminars and Surveys

To further explore the effectiveness of financial educational programs, it is necessary to have baseline information before the event, and then to collect participant responses after the event regarding their changes or plans for changes in financial planning based on the information provided. We implement this research design using survey responses of participants in a series of financial education seminars who completed pre and post-seminar



190 Robert L. Clark et al.

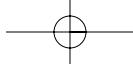
surveys. Participants in the seminars were employees of colleges and universities, other educational institutions, and some nonprofit organizations, which attended seminars presented by TIAA-CREF consultants.⁹

Since the seminars were open to all employees of these institutions, participants include administrative, technical, clerical, and maintenance workers, as well as faculty members. Seminar attendees could be enrolled in a DC plan or a DB plan. The seminars are aimed at audiences in different life stages including newly hired employees, mid-career workers, and pre-retirees.¹⁰ The objective of the seminars is to provide financial information to assist individuals in the retirement planning process. Seminar leaders discuss retirement goals such as the amount of money needed in retirement to maintain consumption levels, and the relationship between the retirement age and the annual saving needed to achieve retirement income goals. Considerable time in the seminars is devoted to examining risk–return characteristics of alternative investments.

We conducted several surveys of participants attending these financial education seminars over the period of March 2001 to May 2002. The first survey was administered to participants at the beginning of the seminar, and the second survey was completed at the end of the seminar before participants left the room. Survey I asked participants to report their retirement goals, their current account balances in retirement plans, their investment allocations, and their annual contributions to retirement accounts. Participants indicated the age at which they hoped to retire and the annual income they hoped to have in retirement as a percent of their final earnings. Respondents also were asked to indicate the likelihood that they would achieve these goals. Individuals reported details concerning their retirement accounts including account balances and how these funds were invested. Finally, people were asked to provide information on their age, sex, employment, years of service, marital status, education, earnings, household income, number of children, and occupation.

After completing the first survey, individuals participated in the financial education seminar for approximately one hour. At the conclusion of the seminar, participants were asked to complete the second survey. In this second survey, respondents indicated whether, based on the information provided in the seminar, they had changed their retirement age goals or revised the level of retirement income they desired. In addition, individuals were asked whether they intended to change their allocation of invested funds in their primary DC plan to include more equities or more bonds. If respondents had a supplemental retirement plan, they were asked if they intended to increase contributions or change investment allocations. Individuals who did not have a supplemental plan were asked if they planned to establish one.¹¹

A total of 633 usable responses in which participants completed both surveys were obtained.¹² Appendix Table 10A-1 reports the sample means



10 / Sex Differences and Financial Education 191

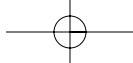
for Survey I; more detail appears in Clark and d'Ambrosio (2002). Women represented 53 percent of the respondents. On average, the women were four years younger than the male respondents and had 5 years less experience with their current employer. Female respondents had less schooling and were more likely to be in non-academic positions. For example, 44 percent of the women had no graduate degree compared to only 27 percent of the men. Among female respondents, 13 percent were in secretarial or maintenance positions, compared to less than 6 percent of the men. When the sample was limited to those in teaching and research positions, three fourths of all men were in tenured positions, compared to only 44 percent of the women, and 59 percent of the men were full professors, while only 28 percent of the women were at this rank.

These differences in tenure, education, and occupation are reflected in annual earnings and account balances. Annual earnings from the primary employer were 50 percent higher for the male respondents (\$73,070 compared to \$50,388). Lower earnings for women also produced smaller account balances in both basic pension plans (\$514,801 for men and \$191,461 for women) and supplemental retirement plans (\$129,293 for the male respondents and \$91,060 for the female participants). The investment allocation of retirement accounts between equities and bonds was not substantially different by sex. In the basic pension plan, women held 64 percent of their assets in equities and allocated 60 percent of new contributions to equities. By comparison, men held 64 percent of the account balances in equities and allocated 58 percent of new contributions to equities. In the supplemental plans, women held 67 percent of their account balances in equities and designated 63 percent of new contributions to the purchase of equities while men held 70 percent of their balances in equities and used 71 percent of new monies to purchase additional equities.

Female respondents to our surveys tended to report that they were more conservative investors than men. Almost half of the women indicated that they were either conservative or moderately conservative investors, as compared to 44 percent of the men. This finding is consistent with other surveys that report women are more likely to elect lower risk-lower return investment choices than are men. It is interesting that these sex differences in risk self-assessment seem to be at variance with the similarity in the allocation of pension funds.

Establishing Retirement Goals

Turning to an analysis of desired age of retirement and target replacement rate (the level of retirement income compared to final earnings), we find that women had slightly lower targets. They indicated expected retirement ages of 63 years as compared to an average age of 64 years for the men, and a desired replacement rate of 79 percent compared to 81 percent for male



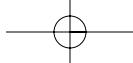
192 Robert L. Clark et al.

respondents. To explain the differences in retirement ages across participants, we estimated a Logit probability model. In this specification, the probability of seminar participants setting retirement age goals younger than age 60, between ages 60 and 64, age 65, or over 65 was estimated as a function of individual and household characteristics. Demographic characteristics included in the analysis were age, marital status, and number of children. Human capital variables were education, occupation, and years of service with the employer. Measures of financial resources were household income, whether respondents were the sole income earners in their households, and whether their basic pension plans were defined benefit plans. Finally, to control for potential differences in financial knowledge before the seminar, an indicator variable for whether or not they worked with a financial advisor was included.

The results indicate strong differences in desired retirement ages by sex. Women who were married were almost 20 percentage points more likely to set their desired retirement age below 65, while the expected retirement age for men was unaffected by marital status. Women with fewer years of education were significantly more likely to report a lower desired retirement age. Women with only a college degree were 14 percentage points more likely to have retirement age goals under age 65, as compared to women who had graduate degrees. Men with children were 22 percentage points more likely to have an expected retirement age of 65 or more compared to men without children. The presence of children did not significantly affect the desired retirement age of women. Men working with a financial adviser were 20 percentage points more likely to set a retirement age goal of younger than age 65. Working with a financial adviser did not significantly affect women's desired retirement age.

Differences in retirement income goals before the seminar were also explored. Women with children were 10 percentage points less likely to set a replacement rate goal in excess of 85 percent. Surprisingly, women with higher annual earnings were more likely to set lower income replacement goals. Each additional year of service with the current employer raised the probability of a higher replacement rate target in excess of 85 percent, by one percentage point for both men and women. Men who were the sole earner in the household were 19 percentage points less likely to set retirement income targets of 85 percent or more. Men under age 45 were 23 percentage points more likely to set replacement rate targets in excess of 85 percent.¹³

Before they participated in the seminar, women had less confidence in their abilities to attain these retirement goals. On a scale of 1–10, women indicated that they had a level 7 confidence level in being able to retire at the desired age, but only a level 6 confidence level in their ability to achieve the retirement income goal. By comparison, the men had confidence levels of 8 on their retirement age goal and level of 7 on achieving the retirement



10 / Sex Differences and Financial Education 193

income goal. After the financial education seminar, women were much more likely than men to alter their retirement goals. Sixteen percent of the women but only 6 percent of the men modified their expected age of retirement while women were twice as likely to raise their expected retirement age after the seminar than to lower it, while men were split almost equally between those that raised and lowered the retirement age goal. Among women, those who had initially hoped to retire early raised their expected retirement age after learning more about financial markets and the savings process. Almost a quarter of women who had initially indicated a desired retirement age of younger than 60 raised this target after the seminar, and the increase was by an average of more than 4 years. By contrast and regardless of their initial retirement goal, relatively few men tended to alter their expected retirement age.

Table 10-1 presents results of a Logit probability model explaining how these changes in retirement age goals varied across individual and household characteristics.¹⁴ For women, characteristics significantly associated with changing retirement age goals were age and educational attainment. Compared to older seminar participants, respondents under age 45 were nine percentage points less likely to increase their desired retirement ages after the seminar. Individuals without advanced degrees were seven to 11 percentage points more likely to increase their target ages of retirement. For men, those with only a high school degree were one percentage point more likely to increase their retirement-age goal.

In response to the seminar, women were also much more likely to alter their retirement income goals (Table 10-2). Approximately 35 percent of the women changed their income target, versus only 20 percent of the men. Almost three quarters of women who modified their goal, raised their desired income replacement rate. Almost half of those women who had initially reported a desired replacement rate of less than 65 percent of final earnings raised their retirement income goal. Similarly, men with relatively low retirement income goals were more likely to increase their desired replacement ratio after the seminar.

Women who had only an undergraduate college degree were 11 percentage points more likely to increase their retirement income objective. Women who were enrolled in a DB pension plan were 14 percentage points more likely to increase their desired retirement goal, and male participants in DB plans were 10 percentage points more likely to increase their income replacement rate goals. Male sole earners were four percentage points more likely to reduce their income goal after the seminar, and men who were more conservative investors were one percentage point less likely to raise their income goal. Men and women who had only long-term savings objectives were four percentage points more likely to report that they were lowering their retirement income goals.

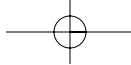
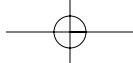

194 Robert L. Clark et al.

TABLE 10-1 Estimates of Post-Seminar Changes in Retirement Age Goals

| <i>Variable</i> | <i>Lower Goal</i> | <i>No Change</i> | <i>Raise Goal</i> | <i>Significance Level</i> |
|--|-------------------|------------------|-------------------|---------------------------|
| I. Women | | | | |
| <i>DB plan</i> | 0.00 | 0.00 | -0.01 | 0.83 |
| <i>Age</i> | | | | |
| Age 44 or younger | 0.06 | 0.036 | -0.09 | 0.02 |
| Age 45 and over | | | | |
| <i>Education</i> | | | | |
| High-school degree | -0.07 | -0.04 | 0.11 | 0.03 |
| College degree | -0.05 | -0.03 | 0.07 | 0.04 |
| Graduate/Professional degree | | | | |
| <i>Occupation</i> | | | | |
| Teaching/Research | | | | |
| Professional/Technical, other | | | | |
| Administration/Management | 0.02 | 0.01 | -0.04 | 0.27 |
| Secretarial/Clerical | 0.06 | 0.04 | -0.09 | 0.74 |
| Maintenance/Service | | | | |
| <i>Household income (% change)</i> | -0.00 | -0.00 | 0.00 | 0.56 |
| <i>Conservative investor</i> | 0.03 | 0.02 | -0.04 | 0.21 |
| <i>Focus of savings</i> | | | | |
| Saving objectives include short, intermediate, and long term | -0.03 | -0.02 | 0.05 | 0.25 |
| <i>Number of observations</i> | 13 | 178 | 21 | |
| <i>Percent of sample</i> | 6.1 | 83.9 | 9.9 | |
| II. Men | | | | |
| <i>DB plan</i> | -0.03 | -0.00 | 0.03 | 0.14 |
| <i>Age</i> | | | | |
| Age 44 or younger | -0.03 | -0.00 | 0.03 | 0.25 |
| Age 45 and over | | | | |
| <i>Education</i> | | | | |
| High-school degree | -0.01 | -0.00 | 0.01 | 0.08 |
| College degree | 0.01 | 0.00 | -0.01 | 0.46 |
| Graduate/Professional degree | | | | |
| <i>Occupation</i> | | | | |
| Teaching/Research | | | | |
| Professional/Technical, other | | | | |
| Administration/Management | 0.01 | 0.00 | -0.02 | 0.38 |
| Secretarial/Clerical | 0.05 | 0.00 | -0.05 | 0.10 |
| Maintenance/Service | | | | |
| <i>Household income (% change)</i> | -0.00 | -0.00 | 0.00 | 0.69 |
| <i>Conservative investor</i> | 0.03 | 0.00 | -0.02 | 0.16 |



10 / Sex Differences and Financial Education 195

TABLE 10-1 *Continued.*

| Variable | Lower Goal | No Change | Raise Goal | Significance Level |
|--|------------|-----------|------------|--------------------|
| <i>Focus of savings</i> | | | | |
| Saving objectives include short, intermediate, and long term | -0.00 | 0.00 | 0.00 | 0.97 |
| <i>Number of observations</i> | | | | |
| Percent of sample | 6 | 167 | 6 | 3.3 |

Notes: Table entries are the marginal effects derived from the estimated coefficients in Logit equations. Derivatives are evaluated at sample means.

Source: Authors' estimates.

Saving and Investment Choices

Though women had much lower account balances in their retirement plans than did men, prior to the seminar, there were relatively small differences in investment choices for account balances and in the allocation of new contributions. Building on the new information provided in the seminar, the evidence shows that women were much more likely to increase their retirement saving and alter their investment choices. Among persons without a supplemental retirement plan, 48 percent of the women but only 33 percent of the men indicated that they would establish such a plan in the future. Among those who already had a supplemental plan, 53 percent of women compared to only 33 percent of the men planned on increasing their annual contributions. Women were also more likely to report that they would alter their investment choices in both basic and supplemental pension plans.

Table 10-3 reports marginal effects from sex-specific Logit estimations of the probability of establishing a supplemental pension plan among individuals who did not have such a plan prior to the seminar. Women whose basic pension plan was a DB plan were 40 percentage points more likely to indicate that they would establish a supplemental plan after the seminar, than those whose basic pension was a DC plan. Women aged 60 and over were 36 percentage points less likely to start a new supplemental plan, as compared to younger women. The likelihood of opening a new plan was 23 percentage points greater for women with a long-term savings horizon. For men, each 10 percent increase in the proportion of total household income derived from their earnings was associated with a seven percentage point increase in the likelihood of establishing a supplemental plan. Those with five or fewer years of employment with their current employer were 67 percentage points more likely to open a new supplemental retirement

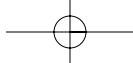

196 Robert L. Clark et al.

TABLE 10-2 Estimates of Post-Seminar Changes in Retirement Income Goals

| <i>Variable</i> | <i>Lower Goal</i> | <i>No Change</i> | <i>Raise Goal</i> | <i>Significance Level</i> |
|-----------------------------------|-------------------|------------------|-------------------|---------------------------|
| I. Women | | | | |
| <i>DB plan</i> | -0.06 | -0.08 | 0.14 | 0.04 |
| <i>Age</i> | | | | |
| Age 44 or younger | 0.02 | 0.03 | -0.05 | 0.50 |
| Age 45 and over | | | | |
| <i>Education</i> | | | | |
| High-school degree | -0.03 | -0.05 | 0.08 | 0.38 |
| College degree | -0.05 | -0.07 | 0.11 | 0.08 |
| Graduate/Professional degree | | | | |
| <i>Annual earnings (% change)</i> | -0.00 | -0.00 | 0.00 | 0.12 |
| Respondent sole income earner | 0.00 | 0.00 | 0.00 | 1.00 |
| Conservative Investor | 0.02 | 0.03 | -0.06 | 0.35 |
| Works with financial adviser | -0.00 | -0.00 | 0.01 | 0.92 |
| <i>Focus of savings</i> | | | | |
| Long term | 0.05 | 0.07 | -0.12 | 0.06 |
| <i>Number of observations</i> | 19 | 130 | 54 | |
| <i>Percent of sample</i> | 9.3 | 64.0 | 26.6 | |
| II. Men | | | | |
| <i>DB plan</i> | -0.04 | -0.06 | 0.10 | 0.12 |
| <i>Age</i> | | | | |
| Age 44 or younger | 0.01 | 0.02 | -0.04 | 0.60 |
| Age 45 and over | | | | |
| <i>Education</i> | | | | |
| High-school degree | -0.03 | -0.05 | 0.09 | 0.32 |
| College degree | 0.02 | 0.04 | -0.06 | 0.30 |
| Graduate/Professional degree | | | | |
| <i>Annual earnings (% change)</i> | -0.00 | -0.00 | 0.00 | 0.20 |
| Respondent sole income earner | 0.04 | 0.07 | -0.11 | 0.04 |
| Conservative investor | 0.04 | 0.05 | -0.01 | 0.04 |
| Works with financial adviser | 0.02 | 0.03 | -0.05 | 0.28 |
| <i>Focus of savings</i> | | | | |
| Long term | 0.04 | 0.07 | -0.11 | 0.05 |
| <i>Number of observations</i> | 10 | 142 | 25 | |
| <i>Percent of sample</i> | 5.6 | 80.2 | 14.1 | |

Notes: Table entries are the marginal effects derived from estimated coefficients in the Logit equations. Derivatives are evaluated at the sample means.

Source: Authors' estimates.

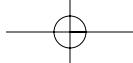
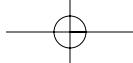

10 / Sex Differences and Financial Education 197

TABLE 10-3 Estimates of Post-Seminar Changes in Retirement Saving Behavior

| <i>Variable</i> | <i>Plans to Establish Supplemental Plan</i> | <i>Plans to Increase Contributions to Supplemental Plan</i> |
|--|---|---|
| I. Women | | |
| <i>DB plan</i> | 0.40 (0.04) | -0.01 (0.91) |
| <i>Age</i> | | |
| Age 44 or younger | -0.06 (0.69) | -0.12 (0.39) |
| Age 45-59 | | |
| Age 60 and over | -0.36 (0.04) | -0.26 (0.05) |
| <i>Married</i> | 0.25 (0.32) | 0.13 (0.32) |
| <i>Occupation</i> | | |
| Teaching/Research | | |
| Professional/Technical, other | | |
| Administration/Management | 0.11 (0.39) | 0.12 (0.24) |
| Secretarial/Clerical | -0.06 (0.67) | 0.28 (0.07) |
| Maintenance/Service | | |
| <i>Annual earnings (% change)</i> | -0.00 (0.17) | 0.00 (0.41) |
| <i>Earnings % household income</i> | 0.00 (0.50) | 0.00 (0.42) |
| <i>Worked for employer 5 years or less</i> | 0.02 (0.90) | |
| <i>Conservative investor</i> | -0.11 (0.44) | 0.21 (0.05) |
| <i>Works with a financial adviser</i> | -0.11 (0.36) | 0.14 (0.19) |
| <i>Focus of savings</i> | | |
| Short term | | |
| Long term | 0.23 (0.10) | 0.27 (0.15) |
| Multi-period focus | 0.27 (0.11) | 0.30 (0.14) |
| Number of observations | 73 | 102 |
| II. Men | | |
| <i>DB plan</i> | -0.07 (0.66) | 0.09 (0.49) |
| <i>Age</i> | | |
| Age 44 or younger | -0.05 (0.66) | 0.32 (0.09) |
| Age 45-59 | | |
| Age 60 and over | 0.04 (0.73) | -0.27 (0.02) |
| <i>Married</i> | 0.12 (0.46) | -0.03 (0.83) |
| <i>Occupation</i> | | |
| Teaching/Research | | |
| Professional/Technical, other | | |
| Administration/Management | 0.22 (0.36) | |
| Secretarial/Clerical | 0.16 (0.12) | |
| Maintenance/Service | | |
| <i>Annual earnings (% change)</i> | 0.00 (0.22) | 0.06 (0.66) |
| <i>Earnings % household income</i> | 0.01 (0.05) | -0.00 (0.82) |
| <i>Worked for employer 5 years or less</i> | 0.67 (0.00) | |


198 Robert L. Clark et al.
TABLE 10-3 *Continued.*

| Variable | <i>Plans to Establish Supplemental Plan</i> | <i>Plans to Increase Contributions to Supplemental Plan</i> |
|--------------------------------|---|---|
| <i>Conservative investor</i> | 0.03 (0.81) | 0.04 (0.69) |
| Works with a financial adviser | -0.00 (0.98) | 0.11 (0.23) |
| <i>Focus of savings</i> | | |
| Short term | | |
| Long term | 0.14 (0.51) | 0.02 (0.94) |
| Multi-period focus | 0.15 (0.63) | 0.11 (0.71) |
| Number of observations | 58 | 94 |

Notes: Table entries are marginal effects derived from the estimated coefficients. Derivatives evaluated for each observation and averaged over the sample. Levels of significance are shown in parentheses.

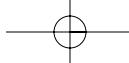
Source: Authors' estimates.

plan. Thus, younger, low-wage women who were concerned about the future were the ones who were responding to the information provided in the seminar.

Similarly, women aged 60 and over were 26 percentage points less likely to increase contributions to existing supplemental retirement plans than younger women. Women who were secretarial or maintenance workers were 28 percentage points more likely to increase contributions. Women with a longer-term outlook were 27 percentage points more likely to report their desire to increase pension contributions. Women who reported that they were more conservative investors were 21 percentage points more likely to indicate a desire to increase contributions to supplemental plans. Men younger than age 60 were 27 percentage points more likely to increase annual contributions to a supplemental retirement plan than men 60 and older.

Among participants whose basic retirement plan was a DC plan, women more often indicated that they would alter their investment allocations after the seminar. Forty-four percent of the female participants, but only 35 percent of male participants, reported a plan to rebalance their accounts in their basic plans. A similar response was found among those with supplemental plans, with 40 percent of the women indicating a desire to alter the investment strategy in their supplemental plans, compared to only 26 percent of the men.

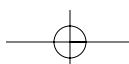
We also provide sex-specific Logit estimates of the probability of participants indicating that they planned to change the investment allocations in their basic and supplemental retirement plans (see Table 10-4). Women in

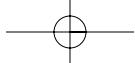


10 / Sex Differences and Financial Education 199

TABLE 10-4 Estimates of Post-Seminar Changes in Investment Allocation

| <i>Variable</i> | <i>Plans to Change Allocation in Basic Plan</i> | <i>Plans to Change Allocation in Supplemental Plan</i> |
|---------------------------------------|---|--|
| I. Women | | |
| <i>DB plan</i> | | -0.20 (0.11) |
| <i>Age</i> | | |
| Age 44 or younger | 0.15 (0.22) | -0.06 (0.67) |
| Age 45-59 | | |
| Age 60 and over | 0.06 (0.63) | 0.04 (0.79) |
| <i>Married</i> | 0.14 (0.15) | 0.11 (0.31) |
| <i>Children</i> | -0.01 (0.90) | |
| <i>Occupation</i> | | |
| Teaching/Research | | |
| Professional/Technical, other | | |
| Administration/Management | 0.15 (0.13) | -0.045 (0.67) |
| Secretarial/Clerical | -0.26 (0.07) | -0.19 (0.25) |
| Maintenance/Service | | |
| <i>Earnings % household income</i> | -0.00 (0.9) | -0.00 (0.17) |
| <i>Conservative investor</i> | 0.18 (0.07) | 0.030 (0.79) |
| <i>Works with a financial adviser</i> | -0.18 (0.07) | -0.08 (0.47) |
| <i>Focus of savings</i> | | |
| Short term | | |
| Long term | -0.00 (1.00) | 0.08 (0.68) |
| Multi-period focus | -0.04 (0.83) | 0.27579 (0.256) |
| <i>First seminar</i> | -0.08 (0.42) | 0.16 (0.17) |
| <i>Account balance</i> | -0.00 (0.02) | |
| <i>Percent equities</i> | 0.01 (0.75) | |
| <i>Number of observations</i> | 121 | 98 |
| II. Men | | |
| <i>DB plan</i> | | -0.07 (0.56) |
| <i>Age</i> | | |
| Age 44 or younger | -0.24 (0.04) | -0.04 (0.78) |
| Age 45-59 | | |
| Age 60 and over | -0.09 (0.31) | -0.01 (0.95) |
| <i>Married</i> | 0.06 (0.62) | 0.16 (0.12) |
| <i>Children</i> | -0.01 (0.90) | |
| <i>Occupation</i> | | |
| Teaching/Research | | |
| Professional/Technical, other | | |
| Administration/Management | 0.01 (0.88) | 0.03 (0.73) |
| Secretarial/Clerical | -0.02 (0.95) | -0.07 (0.70) |
| Maintenance/Service | | |




200 Robert L. Clark et al.
TABLE 10-4 *Continued.*

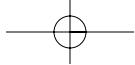
| Variable | Plans to Change Allocation in Basic Plan | Plans to Change Allocation in Supplemental Plan |
|---------------------------------------|---|---|
| <i>Earnings % household income</i> | -0.00 (0.15) | -0.16 (0.16) |
| <i>Conservative investor</i> | 0.11 (0.21) | 0.17456 (0.09) |
| <i>Works with a financial adviser</i> | -0.07 (0.40) | 0.16 (0.09) |
| <i>Focus of savings</i> | | |
| Short term | | |
| Long term | 0.10 (0.70) | 0.05 (0.77) |
| Multi-period focus | 0.03 (0.93) | 0.38 (0.20) |
| <i>First seminar</i> | 0.17 (0.05) | 0.07 (0.50) |
| <i>Account balance</i> | -0.00 (0.11) | |
| <i>Percent equities</i> | 0.01 (0.01) | |
| <i>Number of observations</i> | 129 | 93 |

Notes: Table entries are marginal effects derived from the estimated coefficients. Derivatives are evaluated for each observation and averaged over the sample. Levels of significance are shown in parentheses.

Source: Authors' estimates.

secretarial and maintenance positions were 26 percentage points less likely to alter their investment allocations in basic plans, and 19 percentage points less likely to change allocations in supplemental plans. Those with larger account balances in basic plans were also less likely to change allocations in these plans. Female participants working with a financial adviser were 18 percentage points less likely to want to make changes in their basic plan accounts, and 8 percentage points less likely to alter allocations in their supplemental accounts. Women who reported that they were more conservative investors were 18 percentage points more likely to want to make changes in their basic plan account balances after the seminar. Women whose primary retirement plan was a DB plan were 20 percentage points less likely to alter their investment allocations in their supplemental plan.

Men under the age of 45 were 24 percentage points less likely to make changes in their investment strategy for their basic pension plan than were older participants. Those men who were attending their first financial education seminar were 17 percentage points more likely to make changes in the allocations in their basic plans. Each 10 percent increase in equities, as a percent of total assets in basic pension plan accounts, was associated



10 / Sex Differences and Financial Education 201

with a six percentage point increase in the probability of changing account allocations.

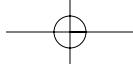
Conclusion

As Alan Greenspan (2002) recently noted:

[E]ducation can play a critical role by equipping consumers with the knowledge required to make wise decisions when choosing among the myriad of financial products and providers. This is especially the case for populations that have traditionally been underserved by our financial system . . . In addition, comprehensive education can help provide individuals with the financial knowledge necessary to create household budgets, initiate savings plans, manage debt, and make strategic investment decisions for their retirement or children's education. Having these basic financial planning skills can help families to meet their near-term obligations and to maximize their longer-term financial well being.

Our analysis indicates that individuals respond to financial education by altering their retirement objectives. After participation in a financial education seminar, many attendees report that they are likely to alter their retirement goals, and in most cases, this means increasing the expected age of retirement. After the seminar, individuals who had initially indicated a relatively low retirement income goal were more likely to raise their income objectives. These responses indicate that the information provided in the seminar showed participants that they were not on track to reach their retirement goals. Responses include deciding to work longer, saving more, opening new retirement accounts, or changing their investment strategies. The results also indicate that women seem more responsive to financial education programs than men.

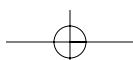
Future analysis will allow us to determine the extent to which seminar participants actually acted on their stated intentions to alter their retirement savings. If participants did not follow through on their intended changes, additional analysis will be needed to determine whether they have reassessed their plans after the seminar, whether they simply ignored the need to make changes, or whether their economic circumstances have changed. Meanwhile, our findings support the hypothesis that financial education is important to achieving retirement goals. Financial education programs can help people reassess their retirement saving plans and increase the likelihood that retirement dreams will be achieved. Clearly financial education can play an important role in setting retirement goals and developing long-term saving plans that enable workers to retire at the desired age with sufficient resources to provide the expected level of retirement income.

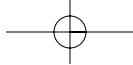


Appendix

TABLE 10A-1 Sample Summary Statistics by Sex

| Variable | Mean | |
|---|---------|---------|
| | Female | Male |
| <i>Number of observations</i> | 335 | 293 |
| <i>Age</i> | 52.6 | 56.4 |
| <i>Years of service</i> | 13.1 | 17.7 |
| <i>Number of children</i> | 1.5 | 1.9 |
| <i>Education attainment</i> | | |
| Percent with high-school degree | 14.4 | 6.8 |
| Percent with college degree | 30.0 | 19.8 |
| Percent with masters degree | 33.6 | 27.6 |
| Percent with doctoral degree | 18.0 | 36.8 |
| Percent with professional degree | 3.9 | 8.8 |
| <i>Annual household income (dollars)</i> | 94,559 | 110,569 |
| <i>Earnings from primary employer (dollars)</i> | 50,388 | 73,070 |
| <i>Type of investor</i> | | |
| Conservative | 5.1 | 8.5 |
| Moderately conservative | 43.4 | 35.9 |
| Moderately aggressive | 39.7 | 43.1 |
| Aggressive | 11.6 | 12.3 |
| <i>Retirement age goal</i> | 62.9 | 64.2 |
| <i>Likelihood of achieving retirement age goal (scale 1–10)</i> | 7.8 | 7.6 |
| <i>Retirement income goal: Percent of final working year's income</i> | 79.2 | 80.5 |
| <i>Likelihood of achieving Income goal (1–10)</i> | 6.0 | 7.1 |
| <i>Plan to work after retirement (percent)</i> | 50.3 | 53.1 |
| <i>Financial seminars previously attended</i> | 2.1 | 2.3 |
| <i>Currently working with financial adviser (%)</i> | 24.3 | 26.5 |
| <i>Basic pension plan</i> | | |
| Percent with DC pension | 79.2 | 84.8 |
| Account balance (dollars) | 191,461 | 514,801 |
| Investment allocation in equities (percent) | 63.9 | 63.5 |
| Employee contribution rate | 7.2 | 7.5 |
| Employer contribution rate | 8.5 | 8.4 |
| Allocation of contribution to equities | 59.1 | 58.2 |
| <i>Supplemental pension plans</i> | | |
| Percent currently making contribution | 50.1 | 49.0 |
| Account balance in dollars | 91,060 | 120,293 |
| Percent in equities | 66.7 | 70.4 |
| Annual contribution in dollars | 5,048 | 6,005 |
| Contribution as a percent of salary | 9.7 | 8.5 |
| Allocation of contributions to equities | 62.7 | 70.9 |





10 / Sex Differences and Financial Education 203

TABLE 10A-1 *Continued.*

| <i>Variable</i> | <i>Mean</i> | |
|--|---------------|-------------|
| | <i>Female</i> | <i>Male</i> |
| <i>Type of employment (percent of respondents)</i> | | |
| Secretarial/Clerical | 12.6 | 0.7 |
| Teaching/Research | 24.7 | 38.9 |
| Administrative/Management | 28.4 | 22.4 |
| Maintenance/Service | 0.3 | 5.1 |
| Other professional/technical | 18.5 | 19.6 |
| Other | 6.1 | 3.1 |
| Retired | 4.9 | 6.9 |
| Not currently employed | 4.0 | 3.1 |
| <i>Tenure Status of teaching/ research (percent of those responding)</i> | | |
| Tenured | 44.3 | 74.4 |
| Tenure-track, non-tenured | 20.4 | 7.2 |
| Non-tenure track | 35.2 | 18.4 |
| <i>Rank of teaching/ research (percent responding)</i> | | |
| Instructor | 34.7 | 7.9 |
| Assistant professor | 21.7 | 24.7 |
| Associate professor | 15.9 | 7.9 |
| Professor | 27.5 | 59.2 |

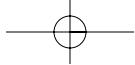
Source: Authors' estimates.

Notes

¹ In some cases, individuals might lack motivation to determine saving strategies as the result of a large menu of investment options offered by their retirement plans. Iyengar, Huberman, and Jiang (Chapter 5, this volume) found that participation rates in 401(k) plans decline significantly as the number of available investment options increases.

² Clark et al. (2003) examined the responses of these seminar participants using a pooled sample of men and women. That analysis showed important differences by sex in the effect of financial education on retirement goals and savings behavior, indicating the need for more detailed assessment including the estimation of sex-specific response functions.

³ The transition to defined contribution plans has been driven by changes in government regulations and tax policy boosting the administrative costs of defined benefit plans and making defined contribution plans more desirable (Clark and McDermed, 1990; Hustead, 1998). In addition, labor force changes have reduced the likelihood of lifetime employment with the same firm and thus increased the demand for more portable pensions. Employment shifts toward sectors with DC plans have also accelerated the growth of such plans (Gustman and Steinmeier, 1992; Ippolito, 1997).



204 Robert L. Clark et al.

⁴ Potential changes in the Social Security system may further increase the need for individuals to enhance their understanding of financial markets and the retirement savings process. For instance, some proposals to reform the Social Security system include individual accounts as a component of retirement benefits, which if adopted, would place even greater responsibility on individual workers in the determination of retirement income goals. Other reform proposals would reduce future Social Security benefits, which would also require workers to be responsible for saving a greater portion of their retirement income (Advisory Council on Social Security, 1997; President's Commission to Strengthen Social Security, 2001).

⁵ The 2003 Retirement Confidence Survey also found that half of all workers believed that they would need less than 70% of their preretirement income to live comfortably in retirement (EBRI, 2003).

⁶ Bernheim and Garrett (2000) and Bayer, Bernheim, and Scholz (1996) assess employer-provided financial education programs.

⁷ Other studies using the same survey include Bernheim (1998) and Bernheim and Garrett (2000).

⁸ This finding is somewhat odd since "high degree" of risk aversion is the second highest of four risk aversion categories used in the analysis, and individuals with "extreme risk aversion" (the highest category) did not have any significant reaction to financial education.

⁹ TIAA-CREF is a large financial services provider with over \$250 billion in assets. It is the primary retirement system for almost three million people employed by education and research organizations.

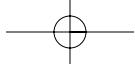
¹⁰ Since participation in these programs is voluntary, self-selection is obviously an issue. Some participants might have done little in the way of retirement planning but begin to worry; such persons might be predisposed toward changing in their goals and behavior, and thus they could be more likely to respond after the seminar. Other individuals might be retirement planners and attend seminars to learn even more. For this group, seminar information may merely ratify past behaviors, so they would be less likely to change saving behavior afterward. Duflo and Saez (this volume) also discuss the issue of selection bias in seminar participation and the subsequent response to surveys.

¹¹ Approximately 3 months after the seminar, participants were sent a third survey by regular mail or email. This time we asked whether the person had actually made changes in his saving behavior. Results from this third survey are not yet available.

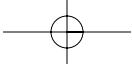
¹² Thirty-six seminars were held at 21 universities, other educational institutions, and nonprofit organizations. In addition, 24 community-based seminars were held in seven different areas. In total, 2,157 people attended part or all of these seminars and 725 individuals completed some parts of the two surveys for a response rate of 34%. The sample included in the analysis contains 633 usable surveys in which participants completed both Survey I and Survey II. Some individuals arrived after the seminar had begun and were not given either of the surveys. In addition, some participants who have completed Survey I left the seminar early and did not complete Survey II.

¹³ Tables of Logit equations for retirement goals prior to attendance at the seminar are available from the authors on request.

¹⁴ In this equation, certain variables are created by combining several categories of answers on the surveys. For example, a variable indicating conservative investors includes those that indicated that they were either conservative or moderately conservative.

**10 / Sex Differences and Financial Education 205****References**

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**206 Robert L. Clark et al.**

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