THE ROLE OF FINANCIAL LITERACY IN DETERMINING RETIREMENT PLANS

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<u>ABSTRACT</u>

Workers nearing retirement face many important, and often irreversible, choices. We collected detailed demographic and financial literacy data on over 1,500 workers nearing retirement at three large companies to assess how individuals are planning for retirement. Many respondents display limited knowledge and understanding of public and company-provided retirement benefits. Controlling for basic demographics and wealth, we find that misconceptions about eligibility ages and plan generosity influence workers' expected age of retirement. Although retirement-related decisions will affect workers' wellbeing for the remainder of their lifetimes, many do not possess enough basic financial knowledge to confidently make optimal choices.

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The Role of Financial Literacy in Determining Retirement Plans

American workers develop retirement plans to maximize life-time well being, based upon their understanding of financial markets and financial mathematics along with their knowledge of their employer's retirement plans, Social Security, and Medicare.[1] To the extent that their knowledge base is correct, employees can develop optimal plans for the transition from full-time work to full-time retirement. Perhaps the most important decision an older worker must make that will determine her economic well-being in retirement is the optimal age of retirement from a career job.[2]

Workers nearing retirement who possess incomplete knowledge may make suboptimal retirement choices. As a result, they might not achieve the highest possible lifetime utility given their available assets. A lack of financial literacy and incorrect assumptions about the generosity and eligibility conditions of retirement programs can lead workers to plan to retire at ages that are either too young or too old, depending on the type of knowledge error. Thus, it is important to examine the relationship between the lack of specific types of information regarding public and company-provided retirement benefits and an individual's stated retirement plans and goals. The impact of being wrong in one's assessment of financial issues and retirement plans depends on the type of errors. Under- versus over-estimates of true values, such as ages of eligibility for retirement programs, could impact retirement decisions differently. Our analysis shows that both the level of knowledge and the types of informational errors influence retirement decisions.

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[1] Throughout this paper we refer to this understanding and knowledge of retirement plans and financial mathematics as "financial literacy," consistent with the prior literature discussed in Section I.

[2] While retirement plans at the start of work life must include savings and investment decisions, the key choices facing a worker nearing retirement are when to leave their career job, when to start retirement benefits, how to manage assets during retirement, and the level of consumption in retirement relative to final working years. While we focus our empirical analysis on modeling the first decision listed, we discuss each of these choices in this article.

To examine the relationship between knowledge and retirement planning we use a new dataset, the Retirement Expectations Survey (REXS). We collected survey data through a partnership with three large employers that allowed us to survey their employees nearing retirement. The surveys were conducted in 2008 and 2009. The employers in our study are Branch Banking and Trust (BB&T), WakeMed, and the Williams Companies. These employers represent vastly different industries and employ a diverse range of workers. While not a nationally representative sample of older workers, combining the data gathered from the retirement eligible population at these three employers provides an interesting snapshot of workers approaching retirement. In the Data Appendix, we describe the dataset in detail and provide a description of how the REXS data compare to the nationally representative data in the Health and Retirement Study (HRS).

The surveys obtained detailed demographic and economic information on the respondents and their households. The survey addressed employees' retirement plans, their knowledge about retirement programs and finance, and their confidence in that knowledge. The survey data are supplemented by specific details of the employer pension plans, Social Security, and Medicare. Thus, we are able to assess the level of worker knowledge regarding their retirement programs, as well as their overall financial literacy. Using this information, we estimate how the retirement plans of the respondents are related to their understanding of their specific retirement benefits and their basic financial literacy. Survey responses indicate that the retirement-eligible employees in these companies had a rather low level of knowledge, a lack of confidence in their ability to make optimal retirement choices, and a strong desire for their employers to provide more formal pre-retirement planning programs.

Since older workers must make retirement decisions using their (sometimes limited) knowledge, these findings suggest that many older employees do not possess the information necessary to make optimal retirement decisions. The lack of financial literacy implies that these older workers are unlikely to achieve their maximum potential lifetime utility. The survey data also indicate a willingness of employees to devote the time to gain a greater understanding of their retirement options.

To examine the retirement planning process, we first determine the older employees' level of knowledge and then estimate the impact of knowledge on retirement plans. The results provide strong evidence that knowledge matters in retirement planning and that the effects are asymmetric. Workers who overestimate the ages at which they are eligible for Social Security (both early and normal) or private pensions plan to retire later relative to workers who know the correct eligibility ages. Underestimating the normal retirement age for Social Security eligibility is associated with an earlier planned retirement age, but underestimates of early Social Security and pension eligibility are unrelated to planned retirement age. This demonstrates that there are real implications to the lack of knowledge and financial literacy. Further, in contrast to most previous economic studies of retirement that assume individuals have appropriate information and act accordingly, this analysis shows the importance of the financial knowledge and how it affects retirement plans.

I. FINANCIAL LITERACY AND ITS EFFECT ON ECONOMIC DECISIONS

The economics literature on the role of knowledge on retirement decision making can be grouped into two areas. First, what do people know about their retirement plans and what is their general level of financial literacy? Second, how do the lack of accurate information and a low

level of financial literacy affect retirement decisions? A review of this literature clearly indicates a rather low level of both knowledge of retirement benefits and general financial literacy among those approaching retirement.

What do people know? Mitchell (1988) provides the first detailed assessment of worker knowledge of the basic characteristics of their pension plans using the 1983 Survey of Consumer Finances. She finds that many workers simply do not know the type of pension that they have, contribution provisions, and the labor supply incentives imbedded in the plan (also see, Luchak and Gunderson, 2000). More recently, Gustman and Steinmeier (2004) compared the self-reported pension data to information provided by employers for respondents in the Health and Retirement Study (HRS). They found that respondent reports of values and characteristics differed substantially from the information contained in the employer linked data. Clark, Morrill, and Allen (2010) find that retirement eligible workers at five large employers have only a limited understanding of their pension plan and of Social Security. Limited evidence also suggests that older workers do not have sufficient understanding of basic financial and investment issues needed to address the important decisions as individuals make the transition from work to retirement (Lusardi and Mitchell, 2006, 2007). Related studies have shown that individuals can improve their knowledge of these important programs through participation in educational events such as employer-provided seminars (Bayer et al., 2009; Bernheim and Garrett, 2003; Clark and d'Ambrosio, 2003; Clark et al., 2006; Lusardi, 2008), while others question the impact of new information on behavior (Duflo and Saez,2004).

Working with our three employers, we were able to design a survey that targeted important areas of financial literacy and knowledge of specific retirement plans. Some of the questions included in the survey were based on previous surveys described in papers such as

Lusardi and Mitchell (2009) and FINRA (2009). Because of our unique relationship with the employers, we were able to ask a series of questions that enabled us to examine the relationship between financial literacy and retirement plans in more depth. Using a bank of questions to develop a knowledge index coupled with questions on self-assessment enabled us to go beyond the scope of other surveys to determine what respondents knew about their company retirement plans, Social Security, and Medicare. We were also able to explore individual attitudes toward retirement readiness.

How does inaccurate knowledge affect retirement decisions? Standard economic theory of retirement decisions assumes that older workers respond to the incentives imbedded in Social Security and employer-provided retirement plans. But if individuals have inaccurate knowledge of the early and normal retirement ages in these plans or the value of their benefits, then they will tend to respond to the perceived incentives and not the actual incentives in the plans. Gustman and Steinmeier (2004, p. 102) concluded that "models of retirement and saving that assume perfect foresight and planning are likely to misestimate the key parameters that supposedly drive retirement and saving behavior." Chan and Stevens (2008, p. 265) also find that knowledge errors are important and may lead to mistakes in retirement decision-making and that individuals do act on their "perceived, but incorrect, pension information." Other studies examining the link between financial literacy and economic behavior include Hilgert et al. (2003), Clark and Schieber (1998), and Maki (2004).

Building on these studies, we examine the effect of knowledge on planned retirement age as a function of the level of knowledge of financial markets and retirement programs. Our findings are consistent with these earlier papers and show a rather low level of understanding of these important plans. A unique aspect of our study is that we also examine the asymmetric

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effect of under- and overestimating ages of eligibility for retirement benefits on planned

retirement. Our results show the importance of knowledge errors on these key characteristics of

retirement plans.

II.   EMPLOYERS, THEIR BENEFIT PLANS, AND THEIR PRE-RETIREMENT PLANNING PROGRAMS

Some employers offer their workers formal retirement planning programs that provide

detailed information on company retirement plans, federal retirement benefits, health care costs

in retirement, life expectancy, and many other issues that one must understand to make optimal

retirement decisions.[3] The three large employers that comprise the Retirement Expectations

Survey (REXS) are Branch Banking and Trust (BB&T), WakeMed, and the Williams

Companies. Each of these companies was interested in creating or expanding a formal pre-

retirement planning seminar for employees, as described in more detail below. At the time of

our survey, the three companies were relying on information provided by their HR personnel and

their 401(k) providers to aid employees through the transition to retirement. An important

component of the survey was to determine the preferences of employees for employer-provided

retirement planning programs and whether they would attend such programs.

BB&T Corporation is a large financial holding company with over 30,000 employees and

$137 billion in assets. Its bank subsidiaries operate approximately 1,500 financial centers in

North Carolina, South Carolina, Virginia, West Virginia, Kentucky, Georgia, Maryland,

Tennessee, Florida, Alabama, Indiana and Washington, D.C. At the time of the survey, BB&T

did not have a formal pre-retirement planning program. Instead, the company offered individual

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[3] Clark, Morrill, and Allen (2010) examined the impact of these programs on worker knowledge and show that attendance in these programs enhance knowledge and alter retirement plans.

counseling with its HR department and on-line access to the 401(k) provider. The survey was sent to 2,475 retirement eligible employees with 605 completing the survey for a response rate of 24 percent. BB&T provides its employees with both a defined benefit pension plan and a 401(k) plan. BB&T also provides health care coverage which is effective on the date an employee begins work. Retiree medical insurance is available to individuals who participated in the health plan while an active worker.

WakeMed is an 804-bed private, not-for-profit health care system based in Raleigh, NC. WakeMed employs over 7,000 workers including medical professionals, registered nurses, medical staff, and support staff. WakeMed has contracted with AIG to provide seminars lasting an hour and half for their employees nearing retirement. These programs focus primarily on the pension and 403(b) plans offered by WakeMed. Because of the limited nature of these programs, WakeMed was interested in learning more about the preferences of their employees for more extensive programs. Our survey was sent to approximately 7,700 workers, of which 2,088 were born between 1943 and 1959 (ages 49-65). We received a total of 237 surveys from our target age group, yielding a response rate of 11 percent from workers of this age. WakeMed provides a pension to all workers age 55 and older with at least three years of service, as long as the worker has worked the equivalent of full-time during those three years. The pension plan allows for either a full lump sum or an annuity, with no partial lump sum option. Retiree medical insurance is only available through COBRA for 18 months following retirement.

Williams is an integrated natural gas company that produces, gathers, processes and transports natural gas to heat homes and power electric generation. It is a large company with approximately 5,000 employees. Williams operates approximately 14,600 miles of interstate natural gas pipeline with a capacity of more than 11 billion cubic feet per day. Prior to the

survey, Williams also did not offer a formal pre-retirement planning program. The survey was sent to 1,592 retirement eligible employees at Williams and 952 completed the survey for a response rate of 60 percent. Since completion of this initial survey, Williams has implemented day-long formal pre-retirement planning seminars for its employees nearing retirement.

Williams provides a cash balance pension plan to employees with at least one year of service. This plan is integrated with Social Security and provides annual credits to individual accounts that are a function of age and earnings above the Social Security tax base. Workers age 28 or younger receive a credit of 4.5 percent of eligible pay plus 1.0 percent for earnings in excess of the Social Security wage base. Credits increase with age to 10 percent for workers age 50 and older plus 5 percent for earnings above the Social Security wage base. The account balance is credited with a quarterly interest payment based on the 30 year weighted average U.S. Treasury Securities Rate. Workers as young as 55 can receive a benefit from the cash balance plan. The employer also offers a 401(k) plan that includes a dollar for dollar match up to 6 percent of eligible pay. Williams has a subsidized retiree medical plan for employees hired before 1992 (or other dates in the case of acquisitions) that did not have more than a one year break in service. Retirees are provided the same health insurance that is available to active employees. The company typically pays 70 percent of the cost of participating in this health plan for these retirees. Persons not eligible for subsidized retiree medical are eligible to participate in the company health plan provided that they pay the entire premium for the coverage. Retirees reaching the age of 65 are no longer allowed to participate in this plan.

While the REXS data are not nationally representative, the three employers included in the study are from diverse industries and include a wide range of occupations. It should be noted that while the surveys were sent to all employees nearing retirement at the three employers, the

response rate was substantially lower in the hospital setting where many employees did not have access to a personal computer during normal business hours. In general, the respondents have higher earnings and better retirement benefits than the average American worker, as described further in the Data Appendix and Appendix Table A3, where the REXS sample is compared to the nationally-representative Heath and Retirement Study (HRS). Thus, one should be careful in assessing how these findings apply to older workers throughout the economy. Despite the limited scope of the sample, these findings represent a unique insight into the importance of financial knowledge in making retirement plans. All workers in our study have employer-provided defined benefit and defined contribution retirement plans, so are drawn from a population with relatively stable employment and generous benefits. Over half of the REXS sample have college degrees, well above the average in the HRS. It is interesting, therefore, to note that even within this population there is still significant confusion about retirement plans and a general lack of financial literacy.

III.   DATA: THE RETIREMENT EXPECTATIONS SURVEY (REXS)

The Retirement Expectations Survey (REXS) is constructed from survey responses of employees at three large employers. The surveys were conducted during 2008 and 2009 via an online survey tool. Each employer distributed the survey to their employees nearing retirement according to the selection criteria described in the Data Appendix.

The survey consisted of over 75 questions and was divided into five parts: demographic and economic characteristics of the employee, demographic and economic characteristics of the employee's spouse or partner, retirement plans of the worker and his/her spouse or partner,

knowledge questions, and the desire for financial education programs.[4] The income and wealth

questions allowed the respondent to select dollar ranges rather than asking for a specific dollar

amount. The survey contains a series of questions that test the knowledge of the respondent

concerning the characteristics and generosity of their employer retirement programs, Social

Security, Medicare, and financial markets. The surveys were sent to all retirement eligible

employees via e-mail, and they responded using an electronic survey. The responses were

completely confidential with neither the company nor the researchers being able to identify the

respondents.

From the three employers we had a total of 1,724 individuals complete some or all of the

survey. Using our baseline regression equation, 1,701 individuals provided responses to all of

the demographic questions included as explanatory variables in our analysis. We further

restricted the sample to those that answered at least 9 out of 14 of the knowledge questions

(maximum number of allowable skipped responses was 5), in order to ensure the quality of the

data. Where appropriate, we classified non-response as either an incorrect answer or as the

omitted category. The Data Appendix provides more detailed information on the samples from

each employer and how the data were constructed. The final sample used in this paper consists

of 1,501 individuals.

Table 1 reports the mean values of responses to some of the important socio-economic

questions from the pooled sample. Almost all of the employees of these three companies were

covered by the firm's defined benefit pension plan and virtually all participated in the 401(k)

plans, so those statistics are not reported. They tended to own their own homes with over 76

percent reporting the equity in their house to be over $50,000. About 68 percent had over

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[4] The survey content and some question wordings differed only slightly between the three employers. For more details see the Data Appendix.

$25,000 in other assets including stocks, bonds, and savings account, while 75 percent had a balance in their 401(k) or 403(b) account of at least one year's salary. Over 78 percent of the respondents were married. As they approach retirement, over 47 percent of these older workers report being in very good or excellent health. The bottom row of Table 1 reports the mean planned retirement age of those that responded to this question with a numeric value (N=1,131). The average expected retirement age is 63.2.

[Table 1]

These older workers report a substantial degree of uncertainty concerning their retirement plans and level of retirement income, as shown in Table 2. Many of the respondents did not know whether to annuitize 401(k) plan balances and/or whether to take a lump sum distribution from the defined benefit plan. Almost two thirds of the respondents indicated that they had not decided on whether to annuitize any of their 401(k) account balances.

[Table 2]

Retirement income expectations for these older workers are also shown in Table 2. For these employees, 56 percent did not know how much income to expect from their company pension in relationship to their final salary. When asked to indicate their total income replacement rate in retirement, 48 percent thought they would have 60 percent or less income in retirement compared to their final salary versus 14 percent that thought they would have over 80 percent of their final salary. Only 33 percent of the respondents thought that they could maintain their living standard in retirement, while a larger 36 percent said they did not know or did not answer. Another interesting finding is the substantial uncertainty over post-retirement work plans reported by the participants. For example, 38 percent of the respondents indicated that they wanted to work full or part-time after retiring from their career employer and only 25

percent stated that they did not plan to work after retirement. However, 37 percent of these workers on the verge of retirement indicated that they were uncertain whether they would seek employment after leaving their current employer (556 responded "don't know", while only 5 individuals left this question blank). Thus, these workers on the verge of retirement indicate a lack of understanding on the level of income they can expect in retirement.

These data indicate considerable uncertainty among these retirement eligible workers over how best to use their retirement benefits and whether these benefits will be sufficient to maintain their current standard of living. This uncertainty could be due, in part, to a general lack of financial knowledge and retirement planning. We now turn to a more direct assessment of the level of financial knowledge exhibited by these retirement eligible employees.

IV.   WHAT DO OLDER WORKERS KNOW ABOUT RETIREMENT PLANS?

Older employees formulate their retirement plans based on their earnings, their wealth, their health, and their expectations concerning benefits from their pensions, Social Security, and 401(k) plans. If their beliefs or knowledge about these programs are incorrect, they may make choices that are suboptimal given their actual situations. To explore the relationship between worker knowledge and retirement plans, we included a series of questions in the survey about employer and national retirement plans. Each question has a correct answer. The Data Appendix provides a list of the 14 questions, possible answers in the survey (correct answers shown in bold), and the proportion of these retirement eligible employees who answered each question correctly. Data are provided for each company since the correct answer to the employer-provided benefit questions vary across the three firms. The mean number of correct answers for the entire sample is 7.3, or approximately 50 percent correct answers on average.

Earlier, we hypothesized that the overall level of knowledge is important to the retirement decision making process; however, the direction of errors also could yield an asymmetric influence on retirement choices. Some of the survey questions are particularly well suited for examining this latter issue. Table 3 reports some of the answers to the knowledge questions. There are three questions asking about the ages of eligibility for Social Security and Medicare benefits. The responses to these questions provide interesting insights into potential informational errors. For example, workers are asked to report the normal retirement age for Social Security (NRA); the correct answer for workers in REXS is 66.[5] Among these respondents 34 percent reported a younger age, 26 percent reported an age above 66, and 3 percent failed to answer this question. Thus, only 37 percent of the sample answered this question correctly. A plausible hypothesis, which we test below, is that, all else equal, workers who think that the NRA for Social Security is younger than 66 will plan to retire at an earlier age than those that think the NRA is greater than 66.[6] The survey indicates similar confusion concerning the age of early retirement benefits for Social Security (age 62) and age of eligibility for Medicare benefits (age 65).

[Table 3]

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[5]An exception to this is that widows can receive Social Security benefits against their deceased spouse's earning record at age 60. To explore if this might be a factor in our results, we determined that there are only 31 widows in the REXS sample, 24 female and 7 male. One should also remember that this is a sample of older persons who are working at companies that provide good benefits and many have a relatively large number of years of service. Only 4 of the widows indicated that they thought the normal age for receiving Social Security benefits was 60. The regression results, presented in Tables 5 and 7, are nearly identical when these 31 widows are dropped from the sample.

[6] On these questions, respondents were given the options of selecting an age from a drop-down list of potential ages ranging from "54 and below" or "50 and below" to "76 and above" in one year increments. Thus the full distribution of responses was truncated. It would be interesting to explore whether the size of the error in one's estimate of the age of eligibility influenced the expected retirement age. However, this is not possible given the small sample sizes and the truncated distribution of answers. The patterns of responses by incorrect answers indicates that underestimating (overestimating) consistently leads to a lower (higher) expected retirement age, but we are unable to reach any conclusion on whether the size of the errors matter.

The survey sent to these retirement eligible workers contained two basic finance questions about risk and inflation.[7] Over three-quarters of the surveyed employees at these companies correctly answered these two questions.[8] It is interesting to note that workers in our sample exhibited a much higher degree of accuracy on the financial questions than they showed on questions concerning their own retirement benefits and national retirement programs. Workers who had a rather high understanding of the stock market risk and inflation questions were much less knowledgeable about their own employer provided retirement plans, Social Security, and Medicare.

To further assess the general state of knowledge of these older workers, we have constructed an index of knowledge based on the set of questions in the survey; details are shown in Appendix Table A2.[9] Table 4 presents the average score on this index of knowledge for the full sample and then broken down by respondent characteristics. The values in Table 4 indicate the average number of correct answers, out of a possible 14 questions, for respondents with various characteristics. The average number of correct answers for the entire sample was 7.3.

The level of knowledge follows expected patterns across economic and demographic characteristics. Workers aged 59 to 65 had a higher knowledge level than those 50 to 58, answering on average 7.7 questions correctly compared to 7.1 questions for the younger workers.

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[7] For a discussion of the financial literacy questions used, see Lusardi and Mitchell (2006) and references therein.

[8] Note that all respondents are currently employed, covered by a pension, and aged between 49 and 65. In the Data Appendix, we assess how the REXS data compare with the nationally representative HRS data with respect to demographics and financial knowledge.

[9] Rather than simply summing the number of answers correctly, one could consider various weighting schemes that would account for differences in question difficulty. To test the sensitivity of our results, we conducted a formal factor analysis and produced an alternative knowledge index. This index was then rescaled to have the same mean and standard deviation as the knowledge index presented here. The results using this alternative index were nearly identical, so are not presented here for brevity (results available upon request). Note that one benefit of the unweighted knowledge index as presented in the paper is that one can interpret the coefficients as corresponding to a marginal increase in the number of questions answered correctly. While a question that fewer respondents answered correctly may thus be classified as more difficult, it does not necessarily follow that this question is more *important* in terms of measuring one's financial literacy. Because we have no formal model of which questions in our list are most important for determining retirement plans or most valuable for pre-retirees, we chose not to explore other weighting schemes further.

Although this pattern of knowledge by age is intriguing, it is important to remember that our sample is of active workers. By definition, then, these are workers that plan to retire at some later date and so may be different than the "younger worker" sample in ways other than just current age. We note that, in results not shown, although older workers score higher on most questions they actually score lower on two of the company-specific questions, the correct age to receive a pension and whether one can take a lump-sum from one's pension.

Similar to the age pattern noted above, workers who expected to retire within 5 years had a knowledge index of 8.3 compared to only 6.8 for those who expected to retire further in the future. Workers with more education, greater wealth, and higher earnings also had a greater success rate in answering these questions. Interestingly, workers who thought they had a greater knowledge of their retirement programs actually did. Men and married workers had higher average knowledge scores than women and unmarried workers, respectively. Note that the differences in means by each category are all statistically significantly different at the 1 percent level.

[Table 4]

To further understand the distribution of knowledge across older workers, we estimated an index of knowledge regression where the dependent variable is the number of correct answers the respondent had out of the 14 questions described above. This allows us to see which factors reported in Table 4 are most important in predicting an individual's knowledge score. The estimated coefficients are reported in Table 5. Once again, we find that older workers have a higher level of knowledge, although the age effect is relatively small with an additional 10 years of age increasing the number of correct answers by 0.9. Years of service also has a significant, positive effect on the level of knowledge with 10 additional years of service adding 0.3 to the

knowledge index. On average, college graduates score 0.4 points higher on the index. Other findings indicate those with higher earnings and greater balances in their 401(k) plans are more knowledgeable, as are those that are closer to retirement. Another very interesting finding is that individuals who think they are more financially literate have significantly higher knowledge scores on our 14 questions.[10]

[Table 5]

In summary, financial literacy varies significantly by worker characteristics even among employees in the same firm who are covered by the same retirement benefit plans. We now turn to the issue of how financial knowledge and errors in knowledge affect the retirement plans of older workers.

V.   EXPLAINING PLANNED AGE OF RETIREMENT

As workers near retirement, they will have to make a series of decisions that define the transition from a full-time, career job to complete retirement. Planning for this transition and the decisions that are ultimately made will determine an individual's economic well-being during her retirement years. The past thirty or so years of work, saving, and investment choices by individuals have determined their current financial and housing wealth and have created a substantial component of lifetime pension and Social Security wealth. While the next few years may marginally affect lifetime wealth, many of the key decisions facing older individuals concern how to use their wealth accumulated by lifetime work to effectively maximize well-being in retirement.

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[10]The regression specification includes the following covariates that are not reported in the table: a constant, company fixed effects, indicators for blank response to plans to work after retirement, annual earnings, DC account balance, home equity, and financial assets.

Economic theory and substantial research on the retirement decision indicate that the timing of retirement is a function of accumulated wealth, current earnings opportunities, health, pension and Social Security wealth, and access to retirement benefits from these programs. A unique aspect of this study is that we are able to test the impact of financial literacy and knowledge of retirement programs on the retirement plans of older workers holding these economic factors constant. Using the REXS data described above, we estimate the planned age of retirement as a function of standard socioeconomic variables along with an index of financial and retirement knowledge. Inaccurate or incomplete knowledge is not necessarily symmetric in its effect on retirement decisions. A further innovation of this research is that we are able to examine the impact of knowledge errors associated with believing that benefits are available at younger ages than they actually are versus errors associated with believing that benefits can only be accessed at older ages.

To illustrate the asymmetric effect of informational errors, Table 6 reports the mean expected retirement age by answers to four knowledge questions concerning the age of eligibility for retirement benefits. Respondents who thought that the early retirement age for Social Security was younger than age 62 had a planned retirement age 1.4 years earlier than those that believed that they could not begin Social Security benefits until after age 62. Similarly, those that thought the normal retirement age was younger than 66 planned to retire 1.6 years earlier than those that thought the normal retirement age was higher than 66. For Medicare, the expected retirement age difference was 1.2 years between those that underestimated the age of eligibility compared to those that thought they must wait until after age 65 to be enrolled in Medicare. Beliefs concerning the earliest age for starting benefits from the employer pension had a similar but slightly smaller effect (about one year).

[Table 6]

Next, we estimate the relationship between planned retirement age and informational

errors more formally in a multivariate regression framework. The regression of planned

retirement age includes both demographic and economic characteristics and the responses to

each of the 14 knowledge questions. The regressions do not include pension wealth variables

because all workers from each firm are covered by the company pension and the expected

benefits from each plan are uniquely determined by the earnings and tenure of the respondents.

Thus, the tenure and earnings variables capture the impact of future pension benefits as well as

their own direct effect. Table 7 reports the coefficients from this regression.[11]

[Table 7]

In general, the estimated coefficients on the explanatory variables conform to

expectations and are consistent with estimates from earlier studies of retirement decisions.

Employees with more years of tenure are planning to retire at younger ages. The tenure effect

includes the impact of tenure on future pension benefit amounts and the fact that more years of

tenure can allow the worker to become eligible for unreduced pension benefits at younger ages.

The estimates indicate that an additional 10 years of tenure with the current employer implies

that the worker will retire 0.5 years sooner. The estimated coefficient of higher annual earnings

on planned retirement is insignificant which is not unexpected as the higher value of working

reflects both an income and substitution effect on the decision to remain in the labor force. Male

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[11] The regression specification also includes a constant, age fixed effects, and company fixed effects. For work after
retirement the omitted category is "no" and controls are included for blank and "don't know" responses. For the
wealth and earnings variables the omitted category is "low" and an indicator for missing values is included. For the
health and subjective survival probability variables the omitted category is "medium" and an indicator for blank is
included. For knowledge variables classified as "high" or "low" (indicated with an "^") the omitted category is
"correct" and controls for blank and the response of "don't know" are included. For all other knowledge variables
the coefficient is on an indicator for whether the answer was correct. We also include age fixed effects rather than a
linear term in age since our workers are ages 49-65 and so planned retirement age is necessarily increasing in age by
construction.

employees plan to retire about a half year later than female workers. Those with college degrees also expect to retire about two thirds of a year later.

An important factor influencing the decision to retire from a career job is expectations by the respondent on their post-retirement plans. Persons who anticipated working after leaving their career employer report planning to retire from their career jobs about a half year earlier than those that do not. Surprisingly, self-reported health status does not significantly influence retirement plans; however, those reporting a high expected probability of surviving to age 85 plan to retire about one-half of a year later than those reporting a 25 to 75 percent chance of living until 85. One should remember that this is a sample of full time workers who overwhelmingly report they are in good to excellent health. The wealth variables all indicate that higher wealth is associated with earlier retirement. Medium account balances in 401(k) plans result in a 0.5 year earlier retirement compared to those with low account balances while high account balances indicated a 1.3 years earlier planned retirement. Similar effects are shown for greater financial wealth outside of pension plans.

How does financial literacy and knowledge of retirement plans affect planned retirement? We investigate this important relationship by including our knowledge questions. Perhaps the most interesting finding of this analysis is that the effect of inaccurate knowledge concerning the age of eligibility for national and company retirement programs. These estimates reported in right half of Table 7.

The empirical specification contains binary indicators of whether the age of eligibility is too low, whether the age of eligibility is too high, and whether the age of eligibility question was left blank or the respondent answered "don't know". All estimates are relative to the omitted category, which is the respondent answering correctly. In Table 7, we report the coefficients

only on the indicators for "too low" and "too high." There are four logical possibilities. First, both indicators could have roughly the same coefficient and have opposite signs. In this case mistaken beliefs about retirement age eligibility have the same sized effect on expected retirement age, regardless of the direction of the error. Second, both indicators could be zero, in which case the errors in reporting retirement plan eligibility would be interpreted as simple noise and not predictive of an individual's planned retirement age.

The other two possibilities reflect asymmetric responses. Workers may act on misinformation that conforms with their desires, a phenomenon known as confirmation bias in the psychology literature (Wason, 1960). This would be manifested here by workers having lower planned retirement ages if they underestimate their age of retirement plan eligibility, whereas those who overestimate their eligibility age retire at the same time as otherwise comparable workers. Finally, workers may be risk averse and react to misinformation that conforms with their fears. In this case workers would have higher planned retirement ages if they overestimate their age of retirement plan eligibility, but those who underestimate this age expect to retire at the same time as other workers.

We estimate that the effect of being wrong in one's belief of the age of eligibility does depend on whether one thinks that the age of eligibility for the retirement benefit is younger or older than the actual age of eligibility, although we find a stronger effect on overestimating which is consistent with the risk aversion story of confirmation bias described above. Consider first the respondents' beliefs concerning the normal retirement age (NRA) for Social Security. Individuals who thought the NRA was at a younger age planned to retire about 0.4 years sooner than those that knew the correct NRA. In contrast, those who thought the NRA was at an older age planned to retire almost 0.8 years later than those who knew the correct NRA.

A belief that the early retirement age (ERA) for Social Security was greater than 62 is associated with a later planned retirement age of 0.7 years while underestimating the ERA for Social Security had no effect on the timing of retirement. Errors in assessing the age of eligibility for starting benefits from the employer pension plan also had a significant impact on planned retirement. Respondents who thought that the age of eligibility was older than it actually was planned to retire more than 1.2 years later compared to those with a correct assessment of the age of eligibility for these benefits. Thinking that one could start pension benefits at a younger age is associated with a small and insignificantly younger planned retirement age. The results indicate that information errors are associated with differences in planned retirement ages, although we see a larger impact of overestimating one's age of eligibility than underestimating.

Of the set of questions where the answers were either correct or incorrect (blank or "don't know" was classified as incorrect), only the questions regarding the company health plan and the financial literacy question on inflation were statistically significant. The results suggest that general financial knowledge may be associated with a later planned retirement age. Correctly knowing about the company's health plan policy is associated with planning to retire nearly one year earlier. However, in results not shown, this effect is similar for the two companies that allow the retiree to stay on the health plan as for the one company that does not allow it. This suggests that individuals who are planning to retire younger are more informed about their health insurance options in retirement, which makes sense considering all of these workers are eligible for Medicare at age 65. We do not find a strong role for general financial literacy in this model, although there may be asymmetric or opposing effects that are not detected in the mean planned retirement age.

VI. CONCLUSIONS AND POLICY IMPLICATIONS

Economists have long been concerned about the timing of retirement. There is a large theoretical literature centered around the use of the lifecycle model where individuals are assumed to make choices on work, leisure, saving, and consumption in order to maximize lifetime utility. These theoretical models assume or predict that retirement ages and individual choices are driven by market variables, risk aversion, and discount rates. Rarely do these models consider the fact that workers may have inadequate or incomplete knowledge about Social Security, Medicare, and their employer pensions. Similarly, empirical studies describe the estimated effects of explanatory variables as if workers made decisions based on the actual characteristics of these plans.

Using the new REXS dataset covering retirement eligible workers at three large employers, we show that older workers nearing retirement are not well informed about company and national retirement plans and that incorrect knowledge affects retirement plans. The impacts of informational errors are asymmetric. Employees who think that benefits can only be obtained at later ages plan to retire at older ages. Workers who believe that normal Social Security benefits can be accessed at earlier ages than allowed by these plans expect to retire earlier, but misbeliefs about early Social Security and company pensions appear to have no effect on planned retirement age.

Our analysis shows that knowledge varies with individual characteristics and that knowledge errors matter in developing retirement plans. Knowledge errors are sizeable, especially for those with less education and those who are further away from retirement. These findings have important policy implications for developing retirement planning and financial

literacy programs and provides initial evidence on the impact for such programs on future retirement behavior.

These results suggest that educational programs that enhance the financial literacy of older workers will improve their retirement decisions. In related research, Clark, Morrill, and Allen (2010) examine the pre-retirement planning programs presented by eight large employers to determine whether these seminars are successful in improving knowledge of retirement programs and financial literacy and whether based on this learning, older workers alter their retirement plans.

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Table 1: Mean Values of Respondent Characteristics

Variable	Mean/Percentage
Age	56.5
Male	48.7%
Married	78.3%
Years of Service	17.7
College Degree	54.5%
Plan to Work After Retire	37.7%
Annual Earnings of $50,000 to $100,000	46.5%
Annual Earnings of $100,000 and over	29.8%
Account Balance in 401(k)/403(b) plans between 1 & 5 years of earnings	56.1%
Account Balance in 401(k)/403(b) plans over 5 years of earnings	18.7%
Home equity $50,000 and $200,000	50.7%
Home equity over $200,000	25.8%
Financial Assets $25,000 to $100,000	25.9%
Financial Assets over $100,000	41.9%
Fair or Poor Health	9.1%
Very Good or Excellent Health	47.5%
Probability of living to 75: 0-24 percent	4.3%
Probability of living to 75: 75 to 100 percent	61.3%
Probability of living to 85: 0 to 24 percent	21.6%
Probability of living to 85: 75 to 100 percent	26.7%
Num Obs. Valid Ret. Age	1131
Mean Ret. Age	63.2

Sample size is 1,501 observations.

Table 2: Retirement Expectations and Plans of Respondents

Response	Percentage
Plans to Take Lump Sum Distribution of Pension Benefits	
Yes	17.1%
No	10.7%
Don't Know or Blank	72.2%
Plans to Annuitize 401(k)/403(b) Account	
Yes	21.8%
No	19.5%
Don't Know or Blank	58.7%
Expected Annual Pension as Percent of Final Salary	
10-25%	24.7%
26-50%	13.0%
51-75%	4.5%
76-100%	1.5%
Not Covered, Don't Know or Blank	56.4%
Expected Income Replacement Rate in Retirement	
Less than 50%	23.9%
50-60%	24.5%
61-70%	16.5%
71-80%	17.4%
81-90%	7.0%
Over 90%	7.2%
Don't Know or Blank	3.5%
Expect to Maintain Living Standard in Retirement	
Yes	33.1%
No	30.8%
Don't Know or Blank	36.1%
Expect to Work for Pay after Retirement	
Plan to work full-time	5.2%
Plan to work part-time	32.5%
Do not plan to work	24.9%
Uncertain or Blank	37.4%
Number of Observations	1,501

Table 3: Mean Responses Knowledge Questions

Question	Percentage Answering as Indicated
Response on earliest age for Social Security	
Age lower than 62	7.9
Age higher than 62	20.0
Don't know (BB&T and WakeMed only)	1.9
No response	1.3
Correct Early Retirement Age (Age 62)	68.9
Response on normal retirement age for Social Security	
Age lower than actual	33.8
Age higher than actual	25.8
Don't know (BB&T and WakeMed only)	1.9
No response	1.3
Correct Normal Retirement Age Given (Age 66)	36.6
Response on age of eligibility for Medicare	
Age lower than 65	16.3
Age higher than 65	16.3
Don't know (BB&T and WakeMed only)	3.9
No response	4.9
Correct Age of Medicare Eligibility (Age 65)	58.6
Response to earliest age one can receive a pension	
Earliest age for pension eligibility is too low	8.8
Earliest age for pension eligibility is too high	36.8
Don't know (BB&T and WakeMed only)	5.0
No response	13.5
Correct age is given (answer varies)	35.8
Percentage with correct responses to other questions	
How much are benefits reduced if started at earliest age?	16.2
Is reduction for starting benefits early permanent?	57.9
Are benefits increased after retirement?	27.6
Is single stock safer than diversified portfolio?	90.9
Impact of inflation on purchasing power	85.3
Can retiree take lump sum distribution from pension?	46.2
Can retiree stay on company health plan?	51.8
Does company offer phased retirement?	13.8
Are pension benefits increased after retirement?	53.0
Are you covered by the company pension? (Note: "don't know" was not an allowable response)	90.9

Notes: Detailed descriptions of each of these questions are presented in Appendix Table A2.

Table 4: Average Knowledge Scores by Categories

Characteristic	Categories	Knowledge Score
Full Sample		7.33
Age	49-58	7.13
	59-65	7.74
Gender	Male	7.92
	Female	6.78
Marital Status	Single	6.82
	Married	7.48
Education	Some College, High School, or Less	6.90
	College or Post-Graduate Degree	7.70
Earnings (Q8)	$50,000 or Less or Blank	6.45
	More than $50,000	7.61
Years of Service	Less than 20 or blank	6.90
	20 or More	7.88
401(k)/403(b) Wealth	Less than 1 year of salary, missing or none	6.04
	More than 1 year of salary	7.77
Housing Wealth	$49,000 or Less, no house or blank	6.36
	More than $50,000	7.64
Other Assets (Stocks, Bonds, etc)	Less than $25,000, Missing or None	6.49
	More than $25,000	7.73
Self-Assessed Knowledge (lowest 1; highest 7)	1-4 or Blank	6.69
	5-7	8.30
Years from Planned Retirement	Less Than 5	8.32
	Five or More or Blank	6.88
Number of Observations		1501

Notes: Coefficients are mean scores out of an index 0-14. Note that for all pairs the differences are statistically significant at the 1% level.

Table 5: Knowledge Score Regression

Variable	Coefficient
Age (Years)	0.087
	[0.018]***
Male	0.143
	[0.139]
Married	0.074
	[0.143]
Years of Service	0.030
	[0.006]***
College Degree	0.422
	[0.126]***
Plan to Work After Retire	-0.211
	[0.141]
Do Not Know if Plan to Work After Retire	-0.427
	[0.142]***
Annual earnings between $50,000 to $100,000	0.221
	[0.159]
Annual Earnings over $100,000	0.657
	[0.204]***
401(k)/403(b) account balance equal to 1 to 5years of salary	0.691
	[0.151]***
401(k)/403(b) account balance greater than 5 years of salary	0.588
	[0.201]***
Home equity between $50,000 to $200,000	0.115
	[0.165]
Home equity greater than $200,000	0.215
	[0.195]
Financial assets between $25,000 and $100,000	0.110
	[0.149]
Financial assets greater than $100,000	0.165
	[0.155]
Self-Assessed Knowledge Score (lowest 1; highest 7; 0 if missing)	0.430
	[0.048]***
Indicator for Self-Assessed Knowledge left blank	1.034
	[0.548]*
Years from Planned Retirement (0 if missing)	-0.083
	[0.019]***
Indicator for Missing Planned Retirement Age	-1.174
	[0.193]***
Number of Observations	1501

Notes: Coefficients are from an ordinary least squares regression. The following covariates are also included: a constant, company fixed effects, indicators for blank response to plans to work after retirement, annual earnings, DC account balance, home equity, and financial assets. Standard errors are in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6: Mean Planned Age of Retirement by Knowledge of Ages of Eligibility

Variable	Mean Retirement Age
Full Sample	63.18
Response on earliest age for Social Security	
Age lower than 62	62.57
Correct Response (Age 62)	63.01
Age higher than 62	63.98
Answered Don't Know	65.58
No response	61.00
Response on normal retirement age for Social Security	
Age lower than 66	62.18
Correct Response (Age 66)	63.67
Age high than 66	63.76
Answered Don't Know	63.41
No response	60.27
Response on age of eligibility for Medicare	
Age lower than 65	62.79
Correct Response (Age 65)	63.15
Age higher than 65	64.00
Answered Don't Know	64.53
No response	60.47
Response to earliest age one can receive pension	
Earliest age for pension eligibility is too low	63.32
Correct age for pension (company specific)	61.36
Earliest age for pension eligibility is too high	64.33
Answered Don't Know	65.34
No response	64.33
Number of Observations	1,130

Notes: Detailed descriptions of each of these questions are presented in Appendix Table A2.

Table 7: Planned Retirement Age Regression

Demographic Variables		Knowledge Variables	
Male	0.528	Early SS age less than 62^	0.107
	[0.232]**		[0.340]
Married	-0.367	Early SS age higher than 62^	0.651
	[0.233]		[0.236]***
Years Service	-0.051	Normal SS age less than 66^	-0.386
	[0.010]***		[0.229]*
College Degree	0.381	Normal SS age higher than 66^	0.759
	[0.206]*		[0.226]***
Plan to Work after retirement	-0.594	Age for Medicare less than 65^	0.207
	[0.219]***		[0.253]
Annual earnings between $50,000 and $100,000	0.253	Age for Medicare higher than 65^	0.263
	[0.252]		[0.239]
Annual earnings over $100,000	0.134	Percent reduction in SS for early acceptance	-0.381
	[0.327]		[0.236]
401(k)/403(b) account balance equal to 1 to 5 years of earnings	-0.503	Is reduction in SS benefits permanent?	-0.221
	[0.247]**		[0.213]
401(k)/403(b) account balance greater than 5 years of earnings	-1.261	Are SS benefits increased after they have begun?	-0.178
	[0.322]***		[0.196]
Home equity between $50,000 and $200,000	-0.010	Single stock vs. diverse portfolio	0.128
	[0.268]		[0.319]
Home equity over $200,000	-0.460	Inflation and purchasing power	0.501
	[0.316]		[0.278]*
Financial assets between $25,000 and $100,000	-0.638	Can you take lump sum distribution from pension?	-0.221
	[0.237]***		[0.220]
Financial assets over $100,000	-1.383	Can you stay on the company health plan after retirement	-0.862
	[0.238]***		[0.191]***
Fair or poor health	-0.042	Company offer phased retirement?	0.101
	[0.328]		[0.248]
Very good or excellent health	-0.072	Pension benefits increased after retirement?	0.119
	[0.195]		[0.192]
Prob of living to 85: 0-24%	-0.369	Covered by the company pension?	0.345
	[0.232]		[0.423]
Prob of living to 85: 75-100%	0.561	Earliest age of eligibility for pension too low ^	-0.387
	[0.216]***		[0.337]
		Earliest age of eligibility for pension too high^	1.204
			[0.205]***

Note: N = 1,130. All coefficients are from one regression, with standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. The specification also includes a constant, age fixed effects, and company fixed effects. For "work after retirement" the omitted category is "no" and controls are included for blank and "don't know" responses. For the wealth and earnings variables the omitted category is "low" and an indicator for missing values is included. For the health and subjective survival probability variables the omitted category is "medium" and an indicator for blank is included. For knowledge variables classified as "high" or "low" (indicated with an "^") the omitted category is "correct" and controls for blank and the response of "don't know" are included. For all other knowledge variables the coefficient is on an indicator for whether the answer was correct.

Data Appendix

    A. Construction of the REXS Data

Appendix Table A1 shows how the sample was created for each employer. The original sample

includes a total of 1,724 observations with valid birth year within the range 1943-1959 (baby

boomer generation). We restricted the regression sample to individuals that had valid entries for

gender, marital status, tenure with the company, and education level, creating a working sample

of 1,701 observations. We then restrict to respondents that have a valid response (including

"don't know") to at least 9 out of 14 knowledge questions (at most 5 blanks allowed). The final

sample is 1,501 observations. For item non-response we include a dummy variable for "blank"

in all regression specifications. We do not impute zeros for any values.

<div align="center"><Appendix Table A1></div>

      Appendix Table A2 explains the knowledge questions in further detail and includes the

percentage answering correctly by company. Note that the final company-specific question

states both the age and vesting requirements for each company. For the correct responses to this

question, we calculated the vesting age for each individual (age at start plus vesting period) and

set the correct answer to be the minimum of the vesting age and age 55. In Appendix Table A2,

the average knowledge score for WakeMed is lower than for BB&T and Williams. In the

regression results presented in Table 5, the coefficient on a dummy variable for WakeMed is

0.568 (standard error is 0.157), (estimates not shown; the omitted category is BB&T and

coefficient on Williams is small and insignificant). This difference in average knowledge scores

is smaller than the raw differences presented in Appendix Table A2, but indicates that, even after

controlling for age, income, and other demographic characteristics, workers at WakeMed

answered about one-half a question fewer correctly relative to the workers at BB&T and

<div align="center">33</div>

Williams. Because each employer is different along many dimensions, including the time the survey was sent, the response rate, the industry, the work environment, the demographic structure of the workforce, etc., we do not attempt to explain the differences by employer further in this study.

<Appendix Table A2>

B. Benchmarking the REXS data against the HRS

The HRS sample used by Lusardi and Mitchell (2006) is composed of individuals that participated in the 2004 Planning Module. This module included a set of questions that were the same (or similar) to the financial knowledge questions that we included in our survey. In this comparison of knowledge between the employees in our three firms to the participants in the HRS, we do not apply sample weights to the HRS data because we will be restricting the sample to more closely match our own and the weights will not necessarily correspond to our sample selection choices. We directly compare our results to the data reported by Lusardi and Mitchell (2006) (which do not use sample weights); then we adjust the HRS sample to be comparable to our sample in terms of age, job status, and participation in a pension plan.

Appendix Table A3 shows the results of this comparison. The top panel of the table shows the basic characteristics of our sample and that of the HRS and the bottom panel shows the proportion of the sample providing correct answers to the questions on stock market risk and inflation. The first column shows data from our sample and the second column reports data from the full HRS sample. The HRS sample has a much larger age range (31 to 96) and includes many young spouses and retirees over age 65. The lack of comparability in the demographic characteristics is a key difference. The second column of HRS results reduces the HRS sample

so that it includes only persons of the same age as our sample. The third column further limits

the HRS sample to include only persons ages 49 to 65 who are currently employed and are

covered by a pension plan. This last HRS sample includes only respondents who have the same

basic characteristics as our sample. Comparing the data in columns one and four, our sample

(column one) is more highly educated and has more years of service at their current employer

than the HRS sample shown in column four.

<Appendix Table A3>

The bottom panel of Appendix Table A3 shows the responses to the two financial literacy

questions included in our data. The first question has identical wording between the two

surveys:

Stock Risk (Identical Question):

Do you think that the following statement is true or ***false***? "Buying a single company stock usually provides a safer return than a stock mutual fund."

The second question has slightly different wording, but a similar theme:

Inflation (Similar Question)

(HRS) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or ***less than*** today with the money in this account?

(Our survey) Assume that your retirement income increases by 2 percent per year and that the annual rate of inflation is 4 percent per year. After one year, will you be able to:
a) buy more goods and services?
b) buy fewer goods and services?
c) buy exactly the same amount of goods and services?
d) don't know

Compared to the full HRS sample, we find much higher scores on the stock risk question. A full

eighty percent of our sample answered correctly, which is statistically significantly higher than

the percent correct in the HRS samples. The difference in the proportion with correct answers

between the two surveys is substantially reduced by restricting the HRS sample to those

respondents who are similar to the employees in our sample. However, even after restricting the HRS to individuals with pension plans, our sample still has a statistically significant higher level of financial knowledge as measured by these questions.

The ability to answer this question correctly appears to be correlated with the sample restrictions in the HRS, so that the higher educated and younger sample is scoring higher than the full sample. It may be the case that the employees in our survey have more experience with stocks, since they are, on average, wealthier and more highly educated. In contrast to higher scores on stock risk, our sample scored very similarly to the HRS sample on the inflation question. Thus, the evidence indicates that the survey data used in this analysis indicate a level of financial knowledge that is reasonably close to the level of knowledge exhibited by the nationally representative (once weighted) data used in Lusardi and Mitchell (2006).

Appendix Table 1A: Response Rate and Sample Creation

	BB&T	WakeMed	Williams
Criteria for Receiving Survey	All employees about age 55 with at least 10 years of service (the criteria for retirement). Anyone without email access was excluded.	All employees were sent the survey, including those without regular email access at work. We then restricted the sample to individuals born 1943-1959.	Active employees age 50 or older.
Employees Sent Survey	2,475	approximately 7,700, 2,088 age 49-65	1,592
Completed a Portion of Survey	605 (Response Rate: 24%)	487 Total (6%) 237 Age 49-65 (11%)	952 (Response Rate: 60%)
Born 1943-1959	572	237	915
Full Demographic Information	564	233	904
Valid Knowledge Score	**502**	**203**	**796**
Valid Expected Retirement Age	483	179	468

Total sample used in the tables is N = 1,501.

Appendix Table A2: Percentage Answering Correctly for 14 Knowledge Questions

Survey Question	BB&T	WakeMed	Williams
Financial Knowledge			
True or false? "Buying a single company stock usually provides a safer return than a diversified portfolio." ***False***	75.9%	70.8%	85.6%*
Assume that your retirement income increases by 2 percent per year and that the annual rate of inflation is 4 percent per year. After one year, will you be able to: a) buy more goods and services? ***b) buy fewer goods and services?*** c) buy exactly the same amount of goods and services? d) don't know	74.6%	72.1%	76.7%
Social Security and Medicare Programs			
What is the earliest age that you can start Social Security benefits? ***62***	69.9%	44.6%	59.6%*
What is the age that you can receive a full or unreduced Social Security benefit ("normal retirement age")? ***66***	45.0%	27.9%	25.6%*
If you start Social Security benefits at the earliest possible age, you will receive a benefit that is __ percent of the benefit you would have received at the normal retirement age. ***75%***	12.4%	15.5%	15.3%
Is the reduction in Social Security benefits for early retirement permanent or does the reduction end when you reach the normal retirement age? ***Permanent***	58.2%	44.6%	48.3%
After you start receiving Social Security benefits, these benefits are: a) the same for the rest of my life ***b) increased annually by the rate of inflation*** c) increased annually but by less than the rate of inflation d) increased annually but by more than the rate of inflation e) Don't know	31.6%	16.3%	21.9%
What is the earliest age that you will be eligible for Medicare? ***65***	53.3%	53.3%	41.6%*
Company-Specific Questions			
Can you take a lump sum distribution of some or all of your pension plan (do not include income for your 401(k) account)?	Yes: 18.3%	Yes: 29.6%	Yes: 59.7%
Does your company offer you the opportunity to stay in the company health plan after you retire?	Yes: 53.5%	No: 40.3%	Yes: 44.9%
Does your company offer any type of phased retirement, flexible work options, or the opportunity to work part-time after you retire?	No: 12.6%	Yes: 24.5%	Yes: 10.5%

The monthly pension benefit that you will receive from your current employer will: a) stay the same for the rest of your life b) be increased annually by the rate of inflation c) be increased annually by the same rate as wages for active workers d) don't know	(a): 54.1%	(a): 36.5%	(a): 44.9%
Are you covered by a pension plan offered by your company?	Yes: 94.0%*	Yes: 76.8%*	Yes: 90.9%*
What is the earliest age that you can retire and start receiving benefits from the plan?	55 (+10 yrs service) 34.4%	55 (+ 3 yrs service) 12.9%	55 (+ 3 yrs service) 40.6%*
Average Knowledge Score (Out of 14)	6.9	5.5	6.8

* Starred items indicate that "Don't Know" was not an allowable response for this question in the survey instrument used with this employer-partner.

Appendix Table A3: Comparison to Nationally Representative Data

Variable	Retirement Expectations Survey (REXS)	HEALTH AND RETIREMENT STUDY		
		Full Sample	Age 49-65 currently employed	Age 49-65, currently employed, has pension
Number of Obs.	1501	1269	458	141
Age (Years)	56.6	65.5	57.9	54.0
Male	48.8%	39.95%	41.05%	45.4%
Married	78.3%	63.1%	68.3%	67.4%
Widowed	2.1%	18.7%	7.6%	1.4%
Years of Service	17.7	11.7	11.1	12.1
College Degree	54.4%	22.5%	30.6%	41.1%
Has a Pension	100%	.	.	.
Reports having a pension	90.9%	35.1%	39.4%	100%
Currently Working	100%		100%	100%
Stock Risk	0.91	0.52 (0.50)	0.61 (0.49)	0.68 (0.46)
Inflation	0.85	0.75 (0.43)	0.83 (0.38)	0.79 (0.40)

Notes: For stock risk, the estimate is statistically significantly higher in the REXS sample as compared with each of the HRS samples. For the inflation question (which has slightly different wording), the responses are statistically significantly different between the REXS sample and the sample from the HRS of individuals age 49-65 that are currently employed.