Determinants of retirement planning behaviour and differences by age

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Abstract

This paper presents the results of an investigation into the determinants of retirement planning behaviour and differences among three age groups: 21- to 39-year-olds, 40- to 59-year-olds and those aged 60 years and older. A national survey of 911 individuals from households with incomes of $75 000 or greater was conducted in the US. The significance of socio-demographic variables, the ability to recover from loss, behavioural tendencies and perceived or actual personal control were investigated; together with their role in the prediction of maximization of retirement contributions and ownership in the personal individual retirement account (IRA) or Keogh accounts. The results identified several significant variables in the prediction of ownership in a personal IRA or Keogh, including age, sources of financial information, being an early investor and investor activity. The results also identified several significant variables in the prediction of the maximization of retirement contributions, including employment, income, savings activity, *ex ante* research, review of investment performance, early investor, investor activity, such as planning for financial future, setting up automatic deposits and reviewing financial information in the mail.

Introduction

The bleak projections of Social Security programs have led individual investors in the US to plan for retirement by investing in alternative retirement programs created through various tax programs, such as 401(k), individual retirement accounts (IRAs/Keogh) and various Roth incarnations. The Federal Government has sought to increase reliance on non-Social Security programs by increasing tax incentives.

Specifically, 401(k) and IRAs play a substantial role in retirement planning for US workers. Forty-two per cent of all working-age, wage and salaried employees do not work for an employer or union that sponsors a retirement plan (Copeland, 2006). Because of this and the need for more retirement funds, many employees turn to IRAs and Keogh accounts. Keogh accounts permit self-employed individuals to invest into a tax-deferred retirement plan, and the allowable maximum contributions are considerably higher than IRAs. The Federal Government has played an increasingly active role to encourage investments into IRAs. In particular, the maximium amount that can be invested in IRAs has been increased. Individuals over 50 years old are alloted an even higher limit. Thus, there is a twofold interest to researchers: whether individuals own an IRA and whether they maximize their contributions.

While the demographic and financial control variables are relevant, financial professionals also need to know the behavioural components that influence retirement investing. Most of the prior research has made use of the Survey of Consumer Finances (SCF). Although the SCF is a robust data set, it does not incorporate behavioural variables. This paper describes the retirement planning behaviour of higher-income Americans and identifies factors that are significant in determining retirement planning behaviour. These factors are grouped into four areas: ability to recover from a loss, perceived personal control, behavioural tendencies and demographic characteristics. The retirement planning behaviour is determined by two variables: have retirement accounts (IRA/Keogh) and maximize retirement contributions.

Background

An extensive search of the current literature produced very few studies that investigated age differences in retirement planning, specifically with emphasis on IRA ownership and retirement contributions. Ekerdt *et al.* (2001) found that 43% of respondents between ages 51 and 61 had no plans for future retirement. But they found that, as individuals began to approach retirement age, the amount of retirement planning increased, and uncertainty levels decreased. Ameriks and Zeldes (2001) found that almost half of the individuals did not make changes to their investment portfolio allocations as they aged over a 9-year study period. Those who did reallocate their portfolio shares primarily increased the proportion of equity assets. When looking at age differences in

risk tolerance, Ballente and Green (2004) found a decreased relative risk aversion for the elderly but they also found that relative risk aversion actually increased modestly as the elderly grow older. Woerheide (1995) found that an increase in age was correlated with a preference for defined benefit pension accounts as opposed to defined contribution.

A thorough review of the literature produced only a handful of studies that explored the factors that explain ownership of IRA. Most of these studies used only socio-demographic variables and not the behavioural factors in their models. Sailer and Gurka's (2003) review of IRA data revealed that the largest proportion of traditional IRA holders were between 45 and 54 years old, and the typical IRA holder was married (filing jointly) and male. DeVaney and Zhang's (2001) research also shows that age is a dominant factor in IRA holdings. Researchers have also shown gender, marital status, education, employment status, income and race as predictors of holding an IRA account (DeVaney and Zhang, 2001; Bernstein, 2004).

According to the 2007 Retirement Confidence Survey, (Helman *et al.*, 2007) only 66% of workers surveyed reported that either they or their spouse had saved money for retirement, and only 60% reported that they were currently saving for retirement. Holden and VanDerhei (2001) found that participants who held a 401(k) retirement account contributed approximately 6.8% of their pre-tax incomes. As can be seen, several studies relating to retirement contributions and savings could be found, but, of the studies explored, none contained information on what proportion of the participants was maximizing their contributions to retirement accounts.

Previous studies have shown that socio-demographic variables are important predictors of owning a retirement account. The focus of this paper is to explore the role of behavioural variables in explaining retirement planning behaviour, that is, owning IRA or Keogh retirement accounts and making maximum contributions to retirement accounts.

Methodology

Sample and data collection

Iowa State University's Center for Statistics and Survey Management (CSSM) administered the data collection process. The data for this study are derived from a national telephone survey. The data collection began by purchasing 7500 phone numbers from Survey Sampling International. Potential households were selected by targeting phone numbers from the sample in geographical areas with average household income of $100 000 per year or higher. The eligible households in the study were primary residences with household incomes over $75 000. Thses data differ from those in other surveys, such as the oft-used SCF and National Longitudinal Survey of Youth, because they target high-income individuals and explore a variety of behavioural factors that may impact retirement planning.

Advance letters explaining the purpose and nature of the project were sent out to 4141 households, of which 911 households actually completed the survey, a 22% response rate. The CSSM followed up with telephone surveys between October 2005 and February 2006. Trained interviewers from CSSM conducted the interview with the individual who was identified as the primary maintainer of finances in the household. On average, it took approximately 22 min to complete a survey.

Conceptual framework

Dulebohn (2002) proposed a conceptual model for investment risk behaviour and retirement planning, which is comprised of three components: ability to recover from loss, perceived personal control and behavioural tendencies. Maintaining a positive return from investments in retirement accounts is crucial because these funds will likely partially, if not completely, supplant labour income upon retirement. Thus, the ability to recover from investment loss is important to ensure comfortable retirement accumulations.

Using Dulebohn's conceptual framework, several variables from the collected data set were selected to represent one's ability to recover from loss, perceived personal control and behavioural tendencies. The level of retirement contribution and IRA/Keogh retirement accounts variables from the collected data set were selected to represent retirement planning.

Fig. 1 presents the conceptual model for this study that is based on Dulebohn's study.

It is hypothesized that one's ability to recover from or cover losses is influenced by one's income, assets, employment status and age. Individuals with higher income or assets levels will be better able to recover from losses. High-income levels will tend to

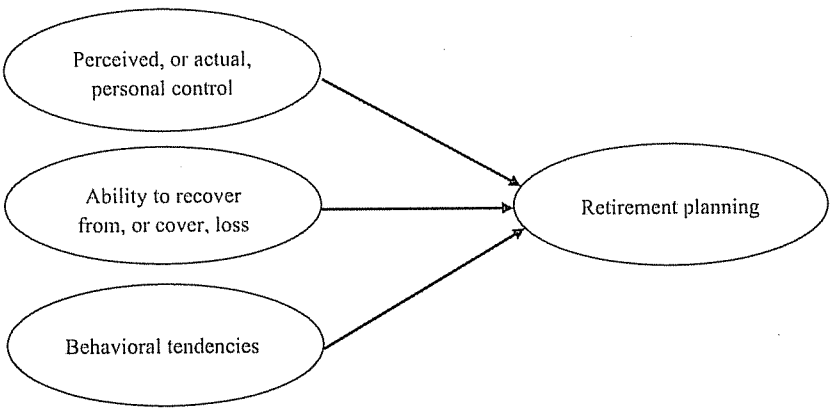

Figure 1 Conceptual framework. Source: Adapted from Dulebohn (2002).

Table 1 Variables for conceptual framework

Variables	Variable type	Hypothesis
Ability to recover from loss		
Employed	Binary	+
Income level	14-point scale	+
Age	Continuous	–
Savings activity	Five-point scale	+
Perceived personal control		
Like to plan for future	Five-point scale	+
Behavioural tendencies		
Review of performance	Five-point scale	+
	Five-point scale	+
Sources of financial info.	Composite of four variables	
Ex ante research	Five-point scale	+
Early investor	Five-point scale	+
	Five-point scale	+
Investor activity	Composite of four variables	
Set up automatic deposits	Five-point scale	+
Review of information from mail	Five-point scale	+
Socio-demographics (control)		
Occupation	10-point scale	+
Education	Five-point scale	+
Gender (female)	Binary	–
Race (Caucasian)	Binary	+

imply a higher amount of disposable, and ultimately, investable income. Even if an investor experiences negative returns, he or she will be more able to recoup his or her losses through additional investments. Because older individials' time horizons are much shorter to plan for retirement, it is hypothesized that they will be less likely to recover from losses in a retirement portfolio because there will be less time to recoup losses. Employment also provides an individual the capability to recover from losses. A job gives a tacit promise for future income, and, because income level helps determine the amount of investable income, an employed worker is more likely to save specifically for retirement.

It is hyptohesized that individuals' amount of perceived personal control is represented by their future financial planning as well as their overall confidence in their investment capabilities. In turn, it is hypothesized that this perceived or personal control is likely to influence IRA/Keogh holdings and level of retirement contributions. For instance, confidence in one's own capability as an investor will likely increase the propensity to invest.

It is also hypothesized that certain behavioural tendencies, such as active involvement in investment, regular saving, reviewing investment performance, using several sources of investment information, and others, will strongly and positively influence retirement planning behaviour, the holding of retirement accounts and the level of retirement contributions.

Model variables

The respondents were asked if they or their spouse owned an IRA/Keogh account, resulting in a yes or no response. They were also asked if they were maximizing their retirement contributions. Responses were measured on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). These two variables were used as dependent variables for the fitted models. Table 1 lists all explanatory and socio-demographic variables and provides information on how they were measured.

The last column of Table 1 indicates the hypothesized relationship with the dependent variables. Income, age, employment, and savings activity were included, as they have been shown to measure one's ability to recover from loss. Information on annual household income was grouped in 14 categories, with an increment of $10 000 per category after the first category. The lowest income category was $75 000–80 000, and the highest was $200 000 and above.

Age is a continuous variable, and employment is a dichotomous variable measured as employed and not employed. Savings behaviour was measured by asking how many months within the past 6 months did the respondent put money into a savings account. The responses varied from 1 = none, 2 = 1 to 2 months, 3 = 3 to 5 months and 4 = all 6 months. Perceived personal control was measured through a single variable that asked if the respondent likes to plan for the future. Responses were measured on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Eight behavioural variables were used in this study: (1) review and compare investment performance; (2) sources of financial information used; (3) research information by self before talking with someone else (herein '*ex ante* research'); (4) started investing early in life; (5) active involvement in the past 12 months; (6) important to set clear financial goals; (7) important to set up automatic deposits; and (8) review information by mail. As seen in Table 1, behavioural variables 1, 3, 4, 7 and 8 were measured on a five-point Likert scale, where 1 = strongly disagree and 5 = strongly agree. Variables 2 and 5 are a composite made of several variables. For example, the 'Sources of information used' variable was created by adding the responses to four information sources used (financial advisors, the Internet, print media or the workplace). Each response was measured on a five-point Likert

scale (1 = hardly ever to 5 = often). The composite score varied from a minimum of 4 (never use any of the sources) to 20 (use all four sources very often). The second composite variable, 'active involvement in the past 12 months', was compiled through a similar process. The participant was asked the following series of questions: 'During the past 12 months, did you: (a) increase the amount you invest; (b) review your investment performance; (c) change your investment mix; or (d) consult with a financial advisor?' A composite was made with a range from 4 to 8, where a score of 4 would mean that the respondent responded no to all four questions, and an 8 would mean that the respondent responded yes to all four variables.

Analytic strategy

The explanatory variables mentioned in the previous sections were modelled against the response variables. The holding of an IRA/Keogh retirement account question was a yes/no response. A logit regression analysis was used in order to address this variable type. The maximization of retirement contribution variable was measured on a five-point scale with 1 as being 'never' and 5 being 'always'. Responses to this question were not greatly skewed so ordinary least squares (OLS) regression was deemed as a good model.

Results

Sample characteristics

A summary of socio-demographic characteristics is presented in Table 2. The average participant was 48 years old, male, married, Caucasian, employed and held a professional or managerial position. The household had, on average, 3.4 occupants, but the occupants' dependency statuses were not specified.

Table 2 Descriptive statistics

	Proportion	Average
IRA/Keogh	0.29	
Maximize contributions		3.79
Employment		1.46
Occupation		2.84
Education		4.15
Age		48.26
Married	0.91	
Female	0.35	
Household size		3.42
Caucasian	0.76	
Income		2.20
Savings activity		3.60
Sources of financial info.		9.90
Ex ante research		3.70
Review performance		3.27
Early investor		3.18
Investor activity		5.45
Like to plan for future		4.31
Set up automatic deposit		4.08
Review information from mail		3.10
I have a clear idea of future.		3.58

IRA, individual retirement account.

It is suspected that the demographic variables will be strongly correlated with a respondent having an IRA/Keogh account and maximizing retirement contributions. Table 3 shows an output of a correlation matrix for all the variables used in this study. For ease, negative correlations are shaded. As expected, the correlation between occupation and the maximization of retirement contributions was positive. Employment also was positively correlated to both owning an IRA or Keogh account and the maximization of contributions. An individual's education and age were positively correlated with both having an IRA or Keogh account and with contribution maximization. Similarly, income and whether a person was Caucasian were positively correlated with having an IRA or Keogh account and positively correlated with contribution maximization. Most of the behavioural variables (items 9 through 18 in Table 3) were positively correlated with one or both of the outcome variables, have an IRA or Keogh account and maximize retirement contributions.

Determinants of retirement planning behaviour

Although a correlation matrix is helpful in showing the existence and direction of relationship between variables, a more accurate way to judge the relationship between an outcome and control variables is through regression analysis. The coding used for having an IRA/Keogh account and for maximizing retirement contributions required the use of two separate regression methods. Logit regression was used to model the dependent variable, had IRA/Keogh account on explanatory variables, while maximizing contributions was regressed using an OLS regression. Both regression models are presented in Table 4.

Retirement accounts (IRA/Keogh)

The first column in Table 4 shows the results of a Logit regression on whether the participant had an IRA/Keogh account. A positive coefficient indicates that the participant was more likely to own an IRA/Keogh account, while a negative coefficient indicates the opposite. Five variables were significant in the regression: age, race (Caucasian), sources of financial information, early investor and investor activity.

Older individuals were more likely to own an IRA/Keogh account. When the marginal effect on the averages is calculated, as an individual grows a year older, the likelihood of owning an IRA increases by 1%. Caucasians were also more likely to hold an IRA/Keogh account than a non-Caucasian respondent. Income was also positively related to holding an IRA/Keogh account but it was not a significant predictor.

A number of behavioural variables were also significant in explaining whether a respondent would or would not have an IRA/Keogh account. Those who were more likely to use more financial information sources (financial advisor, the Internet, print media or the workplace) were also more likely to own an IRA. Those who started investing early in life were also more likely to own an IRA/Keogh account. Also, those respondents who had been active investors during the last 12 months were more likely to have an IRA or Keogh account. Variables selected for this model

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Table 3 Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Employed	1.00																			
2. Occupation	0.15	1.00																		
3. Education	−0.07	−0.43	1.00																	
4. Age	0.26	−0.03	0.08	1.00																
5. Female	0.25	0.06	−0.06	−0.10	1.00															
6. Caucasian	0.04	−0.02	−0.08	0.08	−0.07	1.00														
7. Income	−0.02	−0.13	0.24	0.07	−0.01	−0.01	1.00													
8. Savings activity	−0.15	−0.05	0.06	−0.07	−0.03	0.04	0.16	1.00												
9. Sources of financial information	−0.04	−0.13	0.15	−0.02	−0.13	−0.01	0.24	0.17	1.00											
10. *Ex ante* research	−0.05	−0.01	0.01	−0.07	−0.13	−0.09	0.00	0.04	0.14	1.00										
11. Review performance	0.00	−0.01	0.01	0.08	−0.18	0.06	0.13	0.09	0.31	0.14	1.00									
12. Early investor	0.06	−0.09	0.03	0.00	−0.02	0.05	0.13	0.06	0.19	0.02	0.19	1.00								
13. Investor activity	−0.01	−0.04	0.07	0.04	−0.09	0.10	0.18	0.19	0.32	−0.02	0.29	0.13	1.00							
14. Like to plan for financial future	0.02	0.04	−0.10	−0.05	−0.06	−0.05	0.05	0.06	0.20	0.18	0.32	0.14	0.14	1.00						
15. Important to set clear financial goals	0.00	0.03	−0.04	−0.05	0.05	−0.09	0.07	0.06	0.14	0.11	0.18	0.10	0.11	0.38	1.00					
16. Important to set up automatic deposit	−0.12	−0.05	0.03	−0.15	0.04	−0.03	0.00	0.24	0.17	0.01	0.07	0.04	0.10	0.14	0.18	1.00				
17. Review information from mail	0.03	0.03	−0.04	−0.06	0.05	−0.06	−0.07	0.10	0.16	0.11	0.19	0.08	0.06	0.17	0.18	0.12	1.00			
18. Have clear idea of retirement financial needs	0.08	−0.04	0.01	0.16	−0.07	0.00	0.11	0.08	0.16	0.10	0.29	0.18	0.13	0.25	0.21	0.04	0.18	1.00		
19. Maximized contributions	0.04	−0.08	0.06	0.05	−0.05	0.01	0.22	0.22	0.22	0.12	0.22	0.20	0.19	0.19	0.11	0.17	0.22	0.19	1.00	
20. IRA/Keogh	0.05	−0.08	0.08	0.21	−0.08	0.10	0.14	0.09	0.23	−0.03	0.11	0.17	0.22	0.06	0.01	0.04	0.00	0.08	0.13	1

IRA, individual retirement account.

Table 4 Logit regression on IRA/Keogh holding and OLS regression on maximize retirement contributions

	IRA/Keogh	Maximize contributions
Employed	−0.05	−0.07
Occupation	0.02	0.02
Education	0.05	0.00
Age	0.04***	0.00
Female	−0.13	−0.06
Caucasian	0.26*	0.01
Income	0.01	0.04***
Savings activity	0.01	0.14**
Sources of financial info.	0.11**	0.01
Ex ante research	−0.12	0.08*
Review performance	0.01	0.05
Early investor	0.29***	0.09**
Investor activity	0.38***	0.03
Like to plan for future	0.09	0.11
Important to set financial goals	−0.08	−0.02
Set up automatic deposit	−0.01	0.12**
Review information from mail	−0.05	0.15***
I have a clear idea of future.	−0.06	0.06
Intercept	−5.13	0.42
Number of observations	911	911
Pseudo R^2	0.12	
Adjusted R^2		0.16

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.
IRA, individual retirement account; OLS, ordinary least squares.

were able to explain 12% of the variation in respondents' behaviour in having or not having a retirement account.

Maximizing retirement contributions

Six variables were significant for the OLS regression on the maximization of retirement contributions, which can be observed in column 2 of Table 4. These significant variables were income, savings activity, *ex ante* research, early investor, setting up automatic deposits and reviewing information from the mail.

Income level was positively related to maximizing retirement contributions. This is more than likely because of the fact that a higher income often relates to higher disposable income, which means that an individual with a higher income will have more available income to invest. Similarly, those who engaged in more savings in the past 6 months were more likely to have maximized retirement contributions. This is probably because the maximization of contributions may have been considered as a form of savings.

Behavioural variables played a particularly strong role for determining contribution maximization. Those who engage in *ex ante* research – researching financial information before speaking with an individual – were more likely to maximize their retirement contributions. Reviewing investment materials from the mail was also positively related to contribution level.

Individuals who started investing early in their lives were more likely to maximize their contributions. A preference to set up automatic deposits was positively associated with maximizing contributions. Overall, this model explained 16% of the variation in behaviour of how often the respondents maximized their retirement contributions.

Table 5 Logit regression for IRA/Keogh ownership by age groups

	Age groups		
	21–39	40–59	>60
Employed	0.25	−0.22	−0.22
Occupation	0.04	−0.01	0.68**
Education	0.15	0.02	−0.28
Age	0.04	0.04*	0.06
Female	0.33	−0.34	3.09
Caucasian	−0.10	0.43	−0.18
Income	0.04	0.01	0.08
Savings activity	0.15	−0.11	1.81**
Sources of financial info.	0.01	0.10*	0.99*
Ex ante research	−0.34	−0.03	−0.74
Review performance	0.11	−0.01	−0.58
Early investor	0.31*	0.28**	1.14
Investor activity	0.54***	0.33***	1.18*
Like to plan for future	0.44	0.03	1.06
Important to set financial goals	−0.31	−0.02	0.29
Set up automatic deposit	−0.04	0.01	−0.69
Review information from mail	0.06	−0.06	−0.15
I have a clear idea of future.	0.22	−0.13	−0.79
Intercept	−8.66	−3.14	−24.5
Number of observations	195	601	113
Pseudo R^2	0.17	0.09	0.6

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.
IRA, individual retirement account.

Differences by age

To determine the age differences in retirement planning behaviour, the total sample was grouped in three age groups: 21–39 years old, 40–59 years old and 60 years and over. The same Logit regression was repeated for each age group. The results presented in Table 5 show how the effects of the various socio-demographic and behavioural variables differ for each age group. Occupation was more influential on holding an IRA/Keogh for the 60 and older age group only. Similarly, women in the 40–59 age group were less likely to own an IRA/Keogh account than men, but the difference was not statistically significant for the age groups.

The oldest age group, 60 and over, was uniquely responsive to occupation and savings activity. However, unlike for the 21–59 age group, early investor did not predict having IRA/Keogh account for this group. Participants in all three age groups were more likely to have an IRA/Keogh account if they had been active investors during the past 12 months. Finally, the relationship between the use of financial sources and having an IRA/Keogh account was significant and positive for the 40–59 and 60 and older age groups.

The regression results in Table 6 show differences in maximization of retirement contributions among the three age groups. For the 21–39 and 40–59 age groups, income was statistically significant. In particular, the coefficient was largest for the youngest age group. The respondents in the two younger age categories, 21–39

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Table 6 OLS regression for retirement maximization by age groups

	Age groups		
	21–39	40–59	>60
Employed	–0.11	–0.09	–0.02
Occupation	0.05	0.01	0.02
Education	–0.13	0.06	0.00
Age	–0.02	–0.00	–0.03
Female	0.03	–0.08	–0.23
Caucasian	–0.13	0.03	0.11
Income	0.07***	0.03**	0.03
Savings activity	0.36*	0.17**	–0.06
Sources of financial info.	–0.01	0.00	0.01
Ex ante research	0.06	0.08	0.15
Review performance	0.01	0.09*	–0.16
Early investor	0.06	0.08*	0.12
Investor activity	–0.01	0.03	0.11
Like to plan for future	–0.06	0.11	0.32
Important to set financial goals	–0.13	0.00	0.13
Set up automatic deposit	0.09	0.10*	0.24*
Review information from mail	0.35***	0.12**	0.09
I have a clear idea of future.	0.17*	0.02	0.21
Intercept	1.76	0.75	0.35
Number of observations	195	601	113
Adjusted R^2	0.25	0.13	0.18

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.
OLS, ordinary least squares.

and 40–59 years of age, were more likely to maximize their contributions if they were active savers during the past 6 months. On the other hand, individuals in the 40–59 age group and those over 60 years of age were more likely to maximize retirement contributions if they had set up automatic deposits. Reviewing financial information received in the mail was a variable positively related to and significant for the maximization of contributions in the 21–39 and 40–59 age groups.

Middle-aged individuals (40–59) had a higher tendency to maximize retirement contributions if they reviewed their investment performance and if they began investing early in life, but this was not the case for other two age groups. Among the youngest age group, those who said they had a clear idea for their future needs were more likely to maximize their contributions. A review of adjusted R^2 values shows that the proposed model was a better fit for the youngest age group.

Summary and discussion

Dulebohn's (2002)conceptual framework and the results from the regression analyses for the holding of IRA/Keogh accounts are summarized in Fig. 2. For IRA/Keogh holdings, age, which represented one's ability to recover from losses, was a significant indicator of IRA/Keogh ownership. No variables representing perceived personal, or actual, control were significant predictors of IRA/Keogh ownership. However, variables representing behavioural tendencies were also significant indicators of an individual's IRA/Keogh ownership – sources of financial information, early investor and investor activity.

Dulebohn's conceptual framework and the results from the regression analyses for the maximization of retirement contributions are summarized in Fig. 3. Income level (representing one's ability to recover from loss) was a significant indicator of the maximum retirement contributions. Between savings as a measure of perceived control and actual personal control, the savings activity within the past 12 months was a significant predictor of the maximization of retirement contributions. Other variables representing behavioural tendencies that were significant indicators of an individual's maximization of retirement contributions were the conducting of *ex ante* research, beginning investing early in life, belief that it is important to set up automatic deposits and reviewing financial information received in mail.

Several important facts were discovered when looking at age differences in IRA/Keogh account holdings and the maximization of retirement contributions. Occupation was influential on holding an IRA/Keogh for the 60 and older age group only. Similarly, women in the 40–59 age group were less likely to own an IRA/Keogh account than men. The oldest age group, 60 and older, was uniquely responsive to occupation and savings activity, but, unlike for the 21–59 age group, early investor did not predict having IRA/Keogh account for the 60 and older group. Participants in all three age groups were more likely to have an IRA/Keogh account if they had been active in their investing in the past 12 months. Finally, the relationship between the use of financial sources and having an IRA/Keogh account was significant and positive for the 40–59 and 60 and older age groups.

Several results are noteworthy as we review the factors that help explain the differences among those who maximize of retirement contributions in the three age groups. For the 21–39 and 40–59 age groups, income was positively and significantly related to maximization of retirement contributions. Members of these two groups were more likely to maximize their contributions if they were active savers during the past 6 months. On the other hand, individuals in the 40–59 age group and those over 60 years of age were more likely to maximize retirement contributions if they had set up automatic deposits. Reviewing financial information received in the mail was positively related to and a significant variable for the maximization of contributions in the 21–39 and 40–59 age groups. Middle-aged individuals (40–59) had a higher tendency to maximize retirement contributions if they reviewed their investment performance and if they had started investing early in life. Among the youngest age group, those who said they had clear idea for their future needs were more likely to maximize their contributions.

In addition to age, the demographic variables occupation, education, gender and race were analysed to determine if they had significant relationships with ownership of IRA/Keogh account and the maximization of retirement contributions. Race (Caucasian vs. non-Caucasian) was the only demographic variable that was significant in explaining who did or did not have an IRA or Keogh account, with Caucasians being more likely to have one than non-Caucasians. However, race was not significant in explaining differences among those who did or did not maximize their retirement of contributions.

Conclusion and implications

This study makes valuable contributions to further our understanding about the characteristics and behaviours of Americans who are diligently preparing to be financially secure during retirement. It

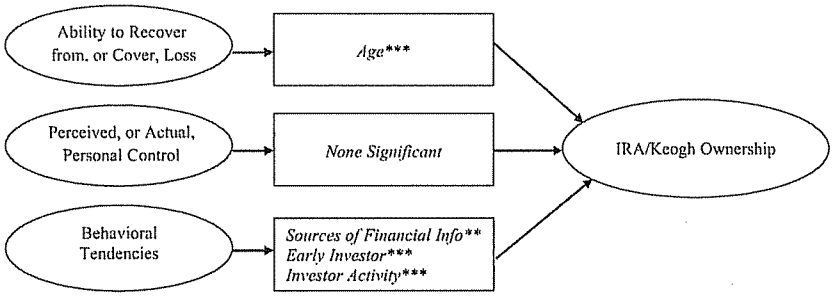

Figure 2 Significant variables for IRA/Keogh holdings. $*P < 0.05$; $**P < 0.01$; $***P < 0.001$. IRA, individual retirement account.

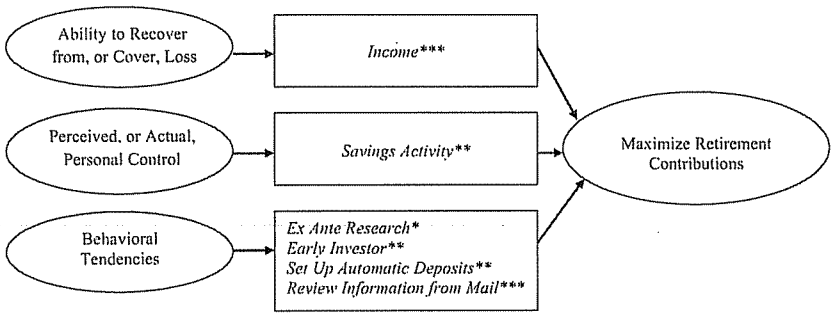

Figure 3 Significant variables for maximizing retirement contributions.

specifically contributes to our understanding about differences that may exist among the three age groups. Most importantly, results presented in this paper expand the understanding of retirement planning behaviour by examining predictive variables beyond socio-economic characteristics by including perceived personal control and behavioural tendencies.

We found that socio-demographic characteristics (such as age and race) were significant predictors of a person making contributions to personal retirement accounts, similar to previous studies mentioned in the background section. Also, income was significant in explaining if the contributions were to be maximized. These outcomes are consistent with hypothesized relationships presented in Figs 2 and 3.

The unique contributions of this study lie in the following two areas: (a) it shows that behavioural tendencies – such as saving, gathering of information, starting to invest at an early age and setting up automatic deposits – play a significant role in explaining who will or will not maximize retirement contributions; and (b) it explores the age differences in the above-discussed areas. Here, we learn that participants who were actually engaged in investment and started doing investing at early age were more likely to own personal retirement accounts (IRAs, Keoghs); and this was true for the two younger age groups (21–39 and 40–59). For the oldest age group, actual involvement in investing was a significant predictor of owning personal retirement accounts.

From these results, we can imply that, if we want individuals to start taking responsibility for their financial security in retirement, we must create opportunities for young adults to learn about investments and encourage them to start investing as early as possible.

This study also provides insight into the characteristics and behaviours of those Americans who not only own personal retirement accounts but also maximize their contributions to these accounts. Among the youngest group, those who maximized their contributions had high incomes; they were savers and informed users of financial information and had strong internal locus of control. They differed from the next age group (40–59) in that this older age group was more likely to make use of automatic deposits to their retirement accounts and did not exhibit a strong internal locus of control. The oldest age group was very different from the other two groups. The only variable that was significant in explaining the maximizing of contribution for them was having automatic deposits set up

It is clear that we need more research to better understand which socio-demographic and behavioural variables significantly influence one's decision to open an IRA/Keogh account. Furthermore, financial professionals may want to target those who actively use sources of financial information and early investors to encourage their participation in IRA/Keogh plans.

Additional implications of these results for policy makers, educators and financial planning professionals to consider are as follows: (1) do everything that can be carried out to introduce and engage people in saving and investment behaviour at an early age; (2) make sure that people appreciate the importance of learning and acquire the skills to sort and utilize appropriate financial information they receive; (3) explore ways to help people build strong internal locus of control among individuals of all ages; and (4) strongly encourage people to set up automatic deposits to make contributions to their retirement accounts.

Limitations

This study clearly chartered into new waters. It explored behavioural factors (both saving and investment behaviours) that play significant role in explaining practices of those individuals who are taking actions to plan for a financially secure retirement. Furthermore, this study explores how these actions differ among three

age groups. Results of this study provide insights that would help all professionals (educators, financial advisors policymakers) who are interested in enhancing retirement planning efforts among people of all ages.

Readers are reminded that these results are based on a sample of high-income Americans, and they should exercise caution when generalizing the results to any other group. Future researchers are encouraged to improve upon the model used in this study to increase its predictability power.

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