

THREE ESSAYS ON THE COMPARISON OF FINANCIAL ADVICE FROM DIFFERENT
TYPES OF ADVISORS WHILE RECOVERING FROM THE GREAT RECESSION

by

AMAN SUNDER

(Under the Direction of Lance Palmer)

ABSTRACT

This three-part dissertation was designed to identify relationships, if any, between the financial decisions or situations of households and the dynamics of their decisions to obtain, retain, or reject financial advisory services. The dissertation covered: (1) households' decisions related to directly-held equity in brokerage accounts, (2) the decisions of working households related to equity held in retirement, and (3) comparison between comprehensive advice and modular advice, in terms of changes in assets and debts of households. The dissertation used the 2007-2009 panel of the Survey of Consumer Finances (SCF) that covered the period before and after the Great Recession of 2008. In the survey, households identified different types of expert financial experts or advisers, such as financial planners, brokers, bankers, and accountants, from whom they received financial advice for either borrowing decisions or savings and investment decisions, or both. The first two parts of the study dealt with *equity* ownership under the premise that during the recovery phase the low-cost equity presented an opportunity to gain from its future growth. This opportunity was especially valuable for those who held defined-contribution retirement plans and had insufficient sources of growth of capital in the low interest-rate environment of the United States. The study found that interactions with financial planners were related to growth in equity positions held

directly in the brokerage accounts and in the retirement accounts for households that had low initial equity. The last part of the study dealt with the scope of financial advice, namely whether the advice was comprehensive or modular in nature, based on whether household used a type of adviser for only one of two types of decisions - borrowing or savings and investments, or both types of decisions. The study found that the comprehensive advice from financial planners and brokers had a similar relationship in terms of advice for savings and investments based on changes in the total assets of the households.

INDEX WORDS: Financial Advice, Investment Advice, Great Recession, Behavioral Finance, Survey of Consumer Finances, Financial Planning, Directly-Held Equity, Retirement Equity

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DEDICATION

I would like to dedicate my doctoral dissertation to my late brother, Gaurav Sunder, who I miss with all my heart and soul, every moment of my life. I would also like to dedicate my dissertation to my wife, Dr. Jasdeep Kaur Saini, my parents, Mr. Kuldeep Kumar and Mrs. Sandhya Sunder, and my parents-in-law, Dr. Gurkirpal Singh and Mrs. Gulabpreet Kaur Saini.

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CHAPTER 1

INTRODUCTION

Purpose of the Study

This dissertation is divided into three related parts, and each part serves a distinct purpose. The dissertation used a nationally-represented panel database of the finances, demographics, and attitudes of the United States' households, called the Survey of Consumer Finances (SCF) conducted by the Federal Reserve Board (FRB) of the United States with the help the non-partisan and objective research organization NORC at the University of Chicago. FRB and NORC conducted the 2007-2009 panel of the SCF in two waves, before and after the Great Recession of 2008. Past studies have shown that people tend to make sub-optimal decisions due to cognitive bias, when presented with a scenario of loss, such as the Great Recession of 2008. Past studies have shown that people also tend to offload complex decisions to experts, in case an expert is available. In the survey, households identified different types of expert financial advisers, such as financial planners, brokers, bankers, and accountants, from whom they received financial advice for either borrowing decisions or savings and investment decisions, or both¹. The study intended

¹ The 2007 - 2009 panel of the Survey of Consumer Finances asked the following question for saving and investments decisions and a similar question for borrowing decisions:

Questions: What sources of information do you (and your family) use to make decisions about saving and investments? (Do you call around, read newspapers, magazines, the material you get in the mail, use information from television, radio, the Internet or advertisements? Do you get advice from a friend, relative, lawyer, accountant, banker, broker, or financial planner? Or do you do something else?)

Response: Call around, magazines/newspapers; books, material in the mail, television/radio, Internet/online service, advertisements, friend/relative, lawyer, accountant, banker, broker, financial planner, self (not shown on card); spouse/partner, do not save/invest, don't shop around; always use same institution, past experience, material from work/business contacts, investment club, investment seminars, other personal research, shop around, store; dealer, insurance agent, other institutional source (e.g., college, social service, agency, etc.), telemarketer, other. (Survey of Consumer Finances, 2009)

to find relationships, if any, between the financial decisions or situations of households and the dynamics of their decisions to obtain, retain, or reject the financial advisory services. The three-part study covers:

- (I) Decisions of households related to equity held directly in the brokerage accounts.
- (II) Decisions of working-households related to equity held in retirement accounts.
- (III) Comparison between comprehensive advice and modular advice in terms of changes in assets and debts of households.

The first two parts of the study dealt with *equity* under the premise that during the recovery phase after the recession the equity was available at relatively low cost. Low-cost equity presented an opportunity to gain from its's future growth, especially for those participating in defined-contribution retirement plans. The last part of the study dealt with the scope of financial advice, namely comprehensive or modular. If the household used a type of adviser for only one of the two types of decisions, either borrowing or savings and investments the study identified the scope of advice as modular. In cases where households used the same type of adviser for both borrowing as well as savings and investment decisions, the scope of advice is classified as comprehensive. The survey did not indicate if the advisers that were identified were the same or different for the two decisions or periods.

Literature Review

Impact of The Great Recession on Households

During the Great Recession, the unemployment rate increased to 7.4 percent, housing prices declined by 17 percent, and the Wilshire 5000 total market index fell 39 percent (Bricker, Bucks, Kennickell, Mach, & Moore, 2011). The stocks held directly by families saw the sharpest decline (Bricker et al., 2011). The median percentage of directly-held stocks went down 31 percent

from \$18,500 to \$12,000 (Bricker et al., 2011). The nonfinancial assets fell as well, but vehicles and residential and non-residential real-estate saw the most substantial decline (Bricker et al., 2011). Median household debt rose from \$70,300 to \$75,600, which included the mortgage on primary residences (Bricker et al., 2011). However, with the sharp decline in house values, the share of total debt secured by primary residences dropped by 2.1 percent (Bricker et al., 2011). Business equity saw a decrease of five percentage points (Bricker et al., 2011). Overall, primary residences, stocks and business equity were the hardest hit and were significant determinants of change in household wealth. (Bricker et al., 2011). The Business Cycle Dating Committee (2010) of the National Bureau of Economic Research concluded that the Great Recession began in December 2007 and lasted for 18 months, and ended in June 2009 and economic recovery began that month.

The Timing of the Survey of Consumer Finances 2007 - 2009 Panel

The Federal Reserve Board (FRB) and NORC² conducted the first wave of interviews in 2007 as a triennial cross-section, between May 2007 and March 2008 (Survey of Consumer Finances, 2009). After the stock market peaked at the beginning of October 2007, Merrill Lynch announced its losses in October (Keoun, 2007). Other banks followed and started raising concerns about liquidity (Bricker et al., 2011; Mian & Sufi, 2010; Verick & Islam, 2010). Loans in the housing sector had already been defaulting at an alarming rate (Mian & Sufi, 2009). By December of 2007, it was clear that an economic recession had begun and the stock market dropped until the first week of March 2009 even after actions and assurances by the Treasury, the Federal Reserve, the SEC, Wall Street, and the federal government (Business Cycle Dating Committee, 2010). The recession ended in June 2009, and economic recovery began that month (Business Cycle Dating

² The non-partisan and objective research organization NORC at the University of Chicago

Committee, 2010). After that, share prices grew steadily, and it was apparent that the worst was over (Bricker, Kennickell, Moore, & Sabelhaus, 2012). The FRB and NORC identified a research opportunity and conducted a series of panel interview between July 2009 and January 2010 at a ground-breaking speed (Bricker et al., 2011). The second wave of interviews coincided with the official recovery phase (K. T. Kim & Hanna, 2016). NORC had conducted the first half of the first wave of the SCF interviews on an uphill stock market rally, but the second half began and ended during a downturn (K. T. Kim & Hanna, 2016). We cannot be sure of the respondents in the two opposing situations in the first wave because SCF does not provide us with the dates of specific interviews in the public data. However, the second wave of interviews was different. K. T. Kim and Hanna (2016) included a graph that is presented in figure 1.1 to help visualize the importance of the survey timing *vis-à-vis* the recession. Table 1.1 presents a summary of the day's closing values of the Wilshire 5000 Total Market Index on the day of the interview with the respondents. The shares' prices were lower for everyone during the second wave in comparison to the first wave. The highest level of the Wilshire 5000 Total Market Index was at 11,800 pts during the second wave, which was 1000 pts lower than the lowest point during the first wave of interviews. Moreover, all respondents in the second wave had witnessed a growth ranging from 26 percent to 69 percent from the lowest point of the recession. The overlaid graph provided by K. T. Kim and Hanna (2016) makes it easy to visualize these conditions during the second wave of SCF, when the markets were lower and had started to recover over the previous four months, which was a perfect time for investors to participate in the financial markets by holding or buying stocks.

Opportunity to Buy and Hold Low Cost Equity

Uninformed investors may make sub-optimal decisions when faced with uncertainty, especially in an expected loss scenario due to behavioral biases (Kahneman & Tversky, 1979;

Shefrin & Statman, 1984). They are known to hold on to a diversifiable falling stock for too long, which is known as the disposition effect (Shefrin & Statman, 1984) and also to buy more equity when the markets are hot and sell when they are down, a typical *buy high – sell low* heuristic (Benartzi & Thaler, 2007). Markets are non-diversifiable, and they have cycles of downturn and recovery (Markowitz, 1952). An informed investor or an expert adviser is capable of overcoming cognitive biases and can avoid making a loss through a poor judgement of the market (Fischer & Gerhardt, 2007). The second wave of the SCF panel data was conducted during the recovery phase and the time before that was a period of a falling and recovering recessionary cycle (K. T. Kim & Hanna, 2016). For many households, low cost equity presented an opportunity to either keep the equity portfolios or to buy new equity (Markowitz, 1952). The same cannot be said about the first wave of interviews which was conducted at the peak of the market and when the downturn had just begun. That was the time to sell the stocks high and reap profits (Benartzi & Thaler, 2007).

Methodology

Survey of Consumer Finances 2007 - 2009 Panel

The Federal Reserve Board (FRB), with the help of the non-partisan and objective research organization NORC at the University of Chicago³, surveys the United States' households on a triennial cross-sectional basis to understand household financials, attitudes, and demographics. The data is called the Survey of Consumer Finances (SCF). The FRB and NORC cope with the analytical demands of the data which constitutes the demographic disparities of the general population and the disproportionately high wealth and income of the wealthy population (Bricker et al., 2011). SCF employs a dual-stage sampling design that includes a multistage area probability sample for the general population, and a list sample that is derived from the income-tax returns

³ Use of name as recommended by NORC.

data of the wealthy (Bricker et al., 2011). Households that constitute one or more financially interdependent individuals are the focus of the survey and are called Primary Economic Unit (PEU) (Bricker et al., 2011). SCF handles the missing data through a multiple-imputation process and provides five imputations for every observation (Bricker et al., 2011). SCF is meant to be a cross-sectional survey, but it has a history of conducting panel interviews as well (Bricker et al., 2011). FRB started the survey in its current form in the year 1983 but reinterviewed the participants briefly in 1986 and again extensively in 1989 (Bricker et al., 2011). That panel captured the market crash of 1987 (Bricker et al., 2011). Before 1983, FRB also conducted a brief panel between 1962 and 1963 (Bricker et al., 2011). SCF has been conducting cross-sectional surveys every three years since the 1983-86-89 panel, which included surveys from 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013, and 2016. Of all these years, the 2007 cross-section received attention because the housing bubble burst right in the middle of the survey (Bricker et al., 2011). The 2007 survey occurred in the middle of the Great Recession that officially ended in June 2009 (Bricker et al., 2011; Business Cycle Dating Committee, 2010). As the market started to recover, the FRB with the help of the NORC⁴ conducted a re-interview starting in July 2009 with a smaller number of variables with the intention of understanding the extent of changes that the families experienced during the crisis (Bricker et al., 2011). The 2007 cross-sectional survey of SCF had 4,422 respondents (Bricker et al., 2011). The re-interview response rate in 2009 was at 88.7 percent with 3,857 respondent PEUs, which excluded the families with significant compositional change for both list sample and the area-probability sample (Bricker et al., 2011; Kennickell, 2010, 2017; Survey of Consumer Finances, 2009)

⁴ NORC at the University of Chicago

The Dynamic-Use of Financial Advisers

This study used the idea presented in Cummings and James (2014) which used the longitudinal dataset called Asset and Health Dynamics among the Oldest Old (AHEAD). Cummings and James divided the decisions of households to obtain, retain, or reject the services of financial advisers into the following four groups namely *No Adviser* (the reference group), *Got Adviser*, *Lost Adviser* and *Keep Adviser*, as given in Table 1.2. Using the same idea, this study created the time-invariant *dynamic-use*⁵ variables from the *contemporaneous-use* variables for a given year, 0 = No adviser and 1 = Used Adviser. If a household did not have an adviser for both years, the dynamic use variable *No Adviser* was assigned a value of 1 for both years, and all other dynamic use variables were assigned 0. If a household did not have an adviser in 2007 but acquired an adviser in 2009, the dynamic use variable *Got Adviser* was assigned a value of 1 for both years, and all other dynamic use variables were assigned 0. If a household had an adviser in 2007 but decided to drop the services of the adviser for 2009, the dynamic use variable *Lost Adviser* was assigned a value of 1 for both years, and all other dynamic use variables were assigned 0. Similarly, if a household kept an adviser in both years, the dynamic use variable *Keep Adviser* was assigned a value of 1 for both years, and all other dynamic use variables were assigned 0. This categorization helped to associate the dynamics of the advisor-related decisions of households to their financial decisions. It is important to note that the newly created variables were *time-invariant*, therefore, any given year a household could belong to only one of these groups for each adviser. This process created a total of 16 time-invariant variables from the four classes of advisers: financial planner,

⁵ This study assumed that if a household reported that they used the same type of adviser for both periods, they used the same adviser for both periods.

For example, $\text{Planner}_{jt} = \text{Planner}_{j[07]} = \text{Planner}_{j[09]} = \text{Planner}_j$ where, $\text{Advisor}_{jt} = \text{Advisor}$ for decision j in period t .

$j = [\text{SI}]$ or $[\text{B}]$, SI = Savings and investments decisions, B = Borrowing decisions.

$t = [07]$ or $[09]$, $[07]$ = period first wave of interviews, $[09]$ = period of second wave of interviews

broker, banker, and accountant for each of the regression models. For any contemporaneous analysis, these variables in a regression equation would not pose a problem. However, as the within-effects panel data analysis requires variability over time, these variables would be eliminated from the regression. Therefore, this study interacted these variables with a *time-variant* factor, such as year, to prevent these variables from getting eliminated (Allison, 2009; Wooldridge, 2010).

Summary of Analytical Methodology

In all three parts, the study exploits the variations in the following regression model to analyze the partial effects of the available independent variables of interest by using the second wave (2009) of SCF panel:

$$Y_{it} = [\text{Dyn adv use}]_i \beta_1 + \text{Ln}(\text{Fin Vars})_{it} \beta_2 + \text{Sit Vars}_{it} \beta_3 + \text{Behav Vars}_{it} \beta_4 + z_{it} \beta_5 + \lambda_i + \varepsilon_{it} \quad (\text{Equation 1.1})$$

Where,

Y_{it} = Dependent variable of interest

$t = 09$ (for the second wave) and i = observation,

$[\text{Dyn adv use}]_i$ = Dynamic advisor-use indicator variables (time-invariant)

Fin Vars_{it} = Financial and nonfinancial variables (ln dollars)

Sit Vars_{it} = Situational indicator variables [0, 1]

Behav Vars_{it} = Behavioral indicator variables. [0, 1]

z_{it} = Other covariates

λ_i = individual-level heterogeneity term (unobservable, time-invariant)

ε_{it} = stochastic error terms

In simple words, this study regresses a financial dependent variable of interest, which could be an individual's financial decision or situation on several independent financial, situational, and behavioral variables. An individual's financial decision, situations, and behavior can be affected by an unobserved individual-level heterogeneity, such as an individual's inherent ability (Wooldridge, 2010). In the Equation 1.1, the individual-level heterogeneity term λ_i can be systematically-correlated with many financial and behavioral variables. If this were not the case, one could use ordinary least squares (OLS) method to find consistent estimators of all β s (Wooldridge, 2010). However, in the given model, the individual-level unobservable heterogeneity can affect other independent covariates. In other words, a capable person could have higher and better financial and behavioral values on both sides of the equation. Such individual-effects are time-constant features of the individuals that can lead to a *self-selection* problem, resulting in inconsistent and biased coefficients of effects of x_j on y (Wooldridge, 2010). When we have only cross-sectional data, we can only use contemporaneous methods, such as a proxy variable approach or an instrumental variable approach to solving our problem (Wooldridge, 2010). However, panel data allows us new possibilities of eliminating individual-level heterogeneity (Wooldridge, 2010).

Tackling the Individual Level Heterogeneity with Within-Effects Regression

The SCF 2007-09 is a strongly-balanced panel dataset, which means that the data includes the 2007 observations only for households that were re-interviewed in 2009 with no missing observations in any of the two years (Bricker et al., 2011; Kennickell, 2010; Survey of Consumer Finances, 2009). This data allows use of within-effects methods, such as time-demeaning (*Fixed effects*) or time-differencing (*first differencing*) approaches of the panel data to eliminate the time-invariant individual heterogeneity and to obtain the consistent estimates of β for x_j (Allison, 2009;

Wooldridge, 2010). With only two time-periods, SCF presents a unique opportunity when the fixed effects and first differencing procedures produce the same inferences and estimates (Allison, 2009; Wooldridge, 2010). The within-effects methods eliminate the unobserved individual heterogeneity, and with only two time-periods, we do not need to worry about serial correlations (Wooldridge, 2010).

Complexities related to Dual-Sampling Design and Multiple-Implicates

The 2007 – 2009 panel of the Survey of Consumer Finances (2009) employed a dual stage sample design, just like all other versions of the SCF surveys, which included a multi-stage area probability sample for the general population and a list sample that was derived from the income tax-returns data of the wealthy (Bricker et al., 2011; Survey of Consumer Finances, 2009). The list-sample portion of the population was oversampled for wealthy households (Bricker et al., 2011; Survey of Consumer Finances, 2009). SCF also provided five implicates for each observation that were generated from the multiple-imputation process to handle the missing data (Bricker et al., 2011; Survey of Consumer Finances, 2009). SCF provided the users with suggestions to handle the complex sampling design, and multiple implicates, without which one could easily over-estimate the reliability of the statistical analysis (Bricker et al., 2011; Kennickell, 2010, 2017; Nielsen, 2015; Survey of Consumer Finances, 2009; The Federal Reserve Board, 2014).

Adjusting the Standard Errors

The Survey of Consumer Finances (2009) suggested that standard error calculations must account for sample variability error and imputation error to avoid overestimation of the reliability statistical analysis (The Federal Reserve Board, 2014). SCF provided two kinds of weights: 1. the sampling weights, known as the Kennickell-Woodburn consistent weights, to obtain unbiased

population estimates; and 2. replicate weights to account for sampling error and heterogeneity (Bricker et al., 2011; Kennickell, 2010, 2017; Nielsen, 2015; Survey of Consumer Finances, 2009; The Federal Reserve Board, 2014). This study employed the within-effects regression (with clustered robust standard errors to account for heterogeneity) which eliminated the need for the use of the replicate weights for individual-level adjustments (Wooldridge, 2010). However, even without the use of replicate weights, there was still the need to adjust the standard errors for both kinds of errors. The study used two different ways to achieve the adjustment of standard errors: 1. Manual-adjustments 2. Repeated-Imputation Inference (RII) based adjustments. The study employed the manual-adjustment by running the regression (using Kennickell-Woodburn consistent sampling weights and clustered robust standard errors) for each of the five imputates separately, obtained the coefficients by simple average, and used the following formula to average the standard errors in the five regression results (Pence, 2001; Shin & Hanna, 2016; Wenzlow, Mullahy, Robert, & Wolfe, 2004):

$$\text{Standard Error} = \sqrt{(6/5 * \text{Imputation Variance} + \text{Sampling Variance})} \quad (\text{Equation 1.2})$$

SCF has suggested a procedure called *SCFCombo*, a macro designed for STATA[®], which performs the RII-based adjustments (Center for Financial Security, 2015; Nielsen, 2015). *SCFCombo* utilizes a bootstrapping procedure to use the replicate weights which handles complex survey design and the inherent heterogeneity in the data (Center for Financial Security, 2015; Nielsen, 2015). *SCFCombo* also averages the coefficients of the regression over the five imputates and adjusts the standard errors for both complex survey design and the five imputations (Nielsen, 2015). *SCFCombo* successfully works with most of the E-class commands on STATA[®], including regress, logit, and probit (Center for Financial Security, 2015; Nielsen, 2015). *SCFCombo* provides the convenience of a single command analysis and a high degree of reliability based on its use with

cross-sectional SCF datasets. However, *SCFCombo* lacks the flexibility to allow panel regression in STATA[®]. The first part of this study that dealt with directly-held equity also compared the results using the following combinations of procedures:

1. Fixed-Effects Panel Regression⁶ with manually-adjusted clustered robust standard errors.
2. First-differenced ordinary least squares (OLS) regression⁷ with manually-adjusted clustered robust standard errors.
3. First-differenced ordinary least squares (OLS) regression using *SCFCombo*⁸.

The other two parts of the study used the first-differenced ordinary least squares (OLS) regression with manually-adjusted clustered robust standard errors to get consistent estimates of the regressors.

⁶ The fixed effects regression was run using XTREG command on STATA[®]14 with FE option using sampling weights (P42001), and robust standard errors clustered on the implicate ID variable Y1. This procedure was run after converting the wide-form SCF data to long-form panel data using RESHAPE command on STATA[®]14.

⁷ The first-differenced OLS procedures are run on the standard wide-form SCF data after differencing the variables in the regression equation of 2007 from 2009 and running the differenced equation with the REGRESS command on STATA[®]14 with using sampling weights (P42001), and robust standard errors clustered on the implicate ID variable Y1. A separate regression was run for each of the five implicates, and then the coefficients and standard errors were manually calculated on MS Excel using adjustments suggested in the Equation 1.2.

⁸ *SCFCombo* was used only for making comparison with the estimates using traditional clustered robust standard errors. *SCFCombo* does not allow for robust standard errors for accounting for heterogeneity, or the suppression of intercept in the first-differenced OLS model. *SCFCombo* uses the SCF provided replicate weights in a bootstrapping procedure to achieve the same purpose. It also uses the sampling weights (P42001). *SCFCombo* requires installation, initial set-up, and a dedicated syntax. The details can be found in (Nielsen, 2015)

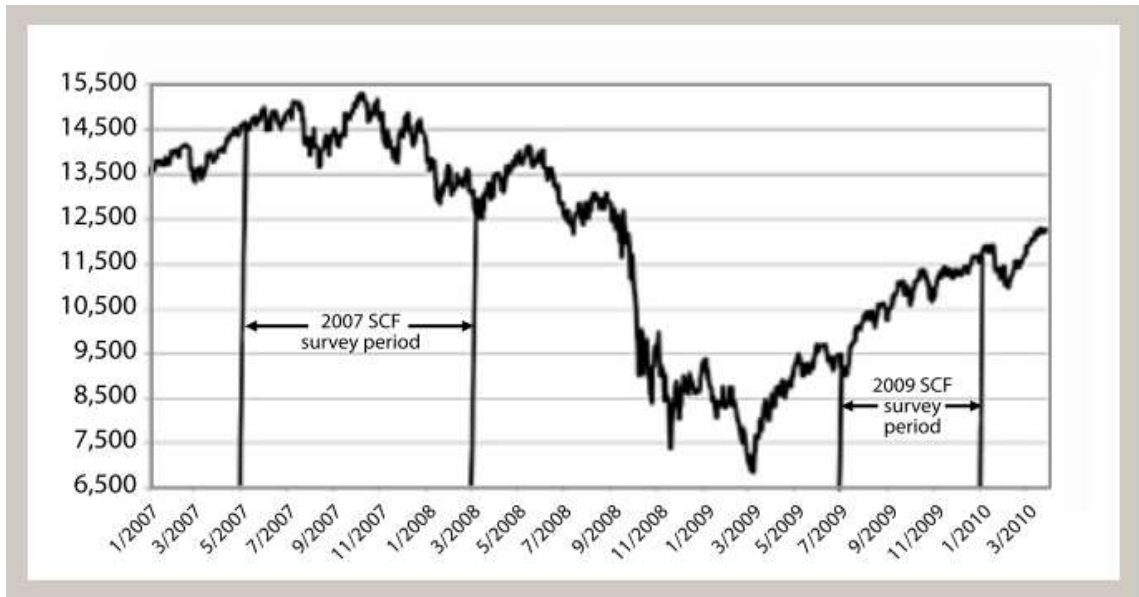


Figure 1.1: Overlay of the SCF Survey Waves' Dates on the Wilshire 5000 Total Market Index Daily Closing (K. T. Kim & Hanna, 2016)

Table 1.1: Summary of Wilshire 5000 Total Market Index During the SCF 2007-2009 Panel

Variable	Mean	Std. Dev.	Min	Max
Wilshire 5000 ₍₂₀₀₇₎ (Wave 1: May 07 to Mar 08)	15156.0	442.1	12800.0	15800.0
Wilshire 5000 ₍₂₀₀₉₎ (Wave 2: Jul 09 to Jan 10)	10576.0	377.6	10100.0	11800.0
Wilshire (Wave 2 - Wave 1)	-4584.4	619.8	-5700.0	-1700.0
Wilshire % diff	-30.2	3.6	-36.1	-12.8

Table 1.2: Tabulation of the Advisers' Dynamic-Use

Variable Name	Advisor in the Year	
	First Wave [07]	Second Wave [09]
No Advisor	No	No
Got Advisor	No	Yes
Lost Advisor	Yes	No
Keep Advisor	Yes	Yes

Note: [07] = first wave of interviews, [09] = second wave of interviews

Table 1.3: Summary of Advisers in 07 and 09 (N=3856)⁹

Adviser Types	Wave 1 [07]	Wave 2 [09]	t ₍₀₉₋₀₇₎	Dynamic Use		
				Keep- Adviser	Got- Adviser	Lost- Adviser
Planners	22.50% (0.417)	20.90% (0.407)	-1.72 [#]	10.30% (0.304)	10.34% (0.305)	11.90% (0.323)
Brokers	11.70% (0.322)	9.70% (0.296)	-.020**	3.71% (0.189)	5.70% (0.232)	7.70% (0.266)
Bankers	32.00% (0.466)	30.10% (0.459)	-.016	14.04% (0.347)	15.99% (0.367)	17.57% (0.381)
Accountants	10.70% (0.310)	7.50% (0.263)	-.030***	2.67% (0.161)	4.78% (0.213)	7.90% (0.269)
Lawyers	4.60% (0.209)	3.50% (0.185)	-.008	0.80% (0.090)	2.90% (0.162)	3.70% (0.190)
Insurance Agents	0.10% (0.034)	0.10% (0.027)	0.00	0.00% (0.000)	0.06% (0.026)	0.01% (0.033)

(Mean of the indicator variables [0,1] expressed as a percentage. The standard deviation in parenthesis.)

Table 1.4: Advisers Among the Samples of Various SCF Surveys from 2004 to 2013¹⁰

Adviser Types	2004	2007	2007p*	2009p*	2010	2013
Planner	19.30%	21.90%	22.50%	20.90%	24.40%	25.50%
Broker	11.10%	11.20%	11.70%	9.70%	8.50%	8.70%
Banker	26.00%	31.70%	32.00%	30.10%	33.30%	33.00%
Accountant	7.10%	10.50%	10.70%	7.50%	9.40%	10.20%
Lawyer	3.10%	4.50%	4.60%	3.50%	3.50%	3.80%
Insurance Agent	0.03%	0.08%	0.10%	0.10%	0.04%	0.05%
Financial Advisor	49.60%	54.90%	44.70%	39.70%	56.70%	56.60%
% with > 1 advisor	18.20%	25.90%	26.50%	21.20%	21.50%	23.10%
N	4519	4417	3856	3856	6482	6015

*2007p = the first wave of the 2009 panel survey. *2009p = the second wave of the 2009 panel survey.

⁹ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

¹⁰ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

CHAPTER 2

ESSAY I: RECOVERY OF THE HOUSEHOLDS FROM THE GREAT RECESSION: A STUDY OF CHOICE OF FINANCIAL ADVISER AND CHANGE IN DIRECTLY-HELD EQUITY

The purpose of this study was to find if a relationship existed between households' portfolio allocation decisions that related to their directly-held equity in brokerage accounts and their decisions to obtain, retain, or reject the services of the financial advisers that they used while recovering from the Great Recession of 2008, *ceteris paribus*. During the Great Recession, households in the United States received advice from many types of financial service providers. The respondent households in the Survey of Consumer Finances (2009) identified them as financial planners, bankers, brokers, accountants, insurance agents, and lawyers¹¹.

Types of Financial Advisers

The United States has various types of financial advisers in the United States who provide advice or sell products and services, work for various types of firms, are paid under different types of compensation structure, and are licensed and certified by various public and private bodies

¹¹ The 2007 - 2009 panel of the Survey of Consumer Finances asked the following question for saving and investments decisions and a similar question for borrowing decisions:

Questions: What sources of information do you (and your family) use to make decisions about saving and investments? (Do you call around, read newspapers, magazines, the material you get in the mail, use information from television, radio, the Internet or advertisements? Do you get advice from a friend, relative, lawyer, accountant, banker, broker, or financial planner? Or do you do something else?)

Response: Call around, magazines/newspapers; books, material in the mail, television/radio, Internet/online service, advertisements, friend/relative, lawyer, accountant, banker, broker, financial planner, self (not shown on card); spouse/partner, do not save/invest, don't shop around; always use same institution, past experience, material from work/business contacts, investment club, investment seminars, other personal research, shop around, store; dealer, insurance agent, other institutional source (e.g., college, social service, agency, etc.), telemarketer, other. (Survey of Consumer Finances, 2009)

(Lytton, Grable, & Klock, 2013). For this study, an understanding of how to differentiate the advisers based on some of these distinguishing aspects is essential.

Providing advice vs. selling products. Many financial advisers could provide financial advice as their core service while others are known to sell suitable investments, insurance products, or provide a specific module of financial services (Lytton et al., 2013). The financial professionals and firms that primarily are in the business of sales of suitable financial instruments and services are licensed and regulated by FINRA (Financial Industry Regulatory Authority) (Lytton et al., 2013). The primary objective of these firms is sales, not advice, although advice could be a part of the sales conversations (Lytton et al., 2013). For example, brokers and brokerage firms that provide solutions for brokerage accounts, IRAs, retirement accounts, margin accounts and handle sale and purchase of securities for commissions are licensed through FINRA (Lytton et al., 2013). On the other hand, the firms and professionals who primarily provide financial advice, are licensed and regulated by the SEC (Securities and Exchange Commission), usually as a RIA (Registered Investment Adviser) (Lytton et al., 2013). Many times, the advice-giving RIAs tend to make commission on sales of products, but that is not the primary objective of their business (Lytton et al., 2013). The overlap of business objectives is due to the fact that both type of registrants (SEC and FINRA) tend to choose from the many available channels to do business, such as banks, brokerage firms, insurance companies, RIA firms, and family-owned businesses (Lytton et al., 2013). These channels become the business fronts for the clients to choose from, based on their needs which could be specific advice or products, or comprehensive advice (Lytton et al., 2013).

Factors Affecting Financial Advice

The panel of Survey of Consumer Finances (2009) asked respondents to identify their primary source of financial advice in relation to borrowing decisions and savings and investment

decisions. Some of the responses pointed to use of financial advisers, such as a lawyer, accountant, banker, broker, financial planner, or an insurance agent (Survey of Consumer Finances, 2009). However, the survey did not ask the respondents any other follow up questions, such as to distinguish whether their responses were pointing to an individual or the associated firm (the channel), advisers' qualification, certifications, modes of compensation, extent of services, and the standard of care in the client-adviser relationship (Lytton et al., 2013). Such factors could provide useful insights in association with research of household decisions that involve expert financial advice. The distinction between the expert and the firm becomes especially important when the mentioning of a broad-spectrum service, such as financial planning is present. For example, an RIA advisory firm that usually offers comprehensive planning could also hire accountants to provide several specific modular services, such as tax-management, book-keeping and accounting for small and large businesses, payroll, and employee benefits. In this case, the respondent who was seeking such modular service could have identified the advisory service as either that of an accountant (the individual expert) or that of a financial planner (the RIA firm). The Survey of Consumer Finances (SCF) in its usual triennial cross-sectional survey solves this problem, in part, by asking the respondents to identify the financial institution where they do the most business. Combined responses on the institution and the expert, could increase our confidence. The 2009 panel survey of SCF was different and did not ask the respondents to identify the institutions. SCF conducted the panel survey in 2009 with respondent from the 2007 triennial cross-sectional survey to study the impact of the aftermath of the Great Recession of 2008. In the panel survey, SCF reduced the number of questions, and the question about financial institutions was seemingly omitted (Survey of Consumer Finances, 2009).

Extent of service. In order to understand the importance of extent of service, the specific modular services provided by the brokers, bankers, lawyers, planner, and accountants, in comparison to the comprehensive financial plans provided by the fee-only fiduciary financial advisers must be considered. While all advisers could be functioning in the same personal financial advice space with their specific services, the comprehensive financial planning profession tends to cover a larger number of such specific modules (Lytton et al., 2013). The CFP Board (2015), which is a certifying body in financial planning, states that comprehensive plans cover and review seven broad areas, including current financial state, taxes, risk, retirement, investments, estate planning, and education planning. However, financial planners do not always provide comprehensive plans covering all areas (Lytton et al., 2013). Many planners could provide single services, and the financial planning firms could use modular experts for these purposes (Lytton et al., 2013). Similarly, brokers and bankers do not always provide modular services and could cover more aspects for certain clients (Lytton et al., 2013). A more comprehensive service could likely have a different impact on the clients than a smaller service¹².

Compensation structure. The extent of involvement of the advisers is also closely related to the compensation structure and the standard of care followed by them (Lytton et al., 2013). There are several modes of compensation, such as commissions on sales, flat-fees based on a formula, hourly-charge, or a combination of these based on certain underlying factors (Lytton et al., 2013). All financial advisers have incentives to stretch these underlying factor in order to increase their compensation.

Standard of care. The standard of care also creates a divide among the advisers. During the past few years, the law for the standard of care has seen some changes, especially in the wake

¹² Part III of this dissertation tries to compare the relationship between the financial situations of households to comprehensive advice vs modular advice.

of the Great Recession of 2008. However, it is important to understand the structure of these standards during the focus of this study. During that time, the SEC covered some of the financial planners, and the American Bar Association covered the lawyers under the *fiduciary standard*, which made for a trustworthy and responsible code of care, which placed the clients' interests first (Lytton et al., 2013). Apart from the SEC, the CFP Board, Financial Planning Association (FPA), and National Association of Personal Financial Advisers (NAPFA) covered (and still covers) many financial planners under the definitions of standards of care, code of ethics, and the fiduciary oath (Lytton et al., 2013). In contrast to the fiduciary standard, other financial advisers, including many brokers, bankers, insurance agents and even some financial planners, were only covered under the *suitability standard* as defined by FINRA which required the adviser to recommend products that suited the clients' investment profiles including age, financial situations, time horizon, and objectives (Lytton et al., 2013). The suitability standard did not require the advisers' recommendations to be in the clients' best interest and the advisers did not need to be caring or loyal to the client (Lytton et al., 2013). Fiduciary law has been especially fast changing since the Great Recession. However, during the Great Recession, the FINRA registrants, such as the brokers, bankers, and insurance agents were covered under the fraud protection law, code of ethics, and the suitability standard but not the fiduciary law.

Validity of Positive Identification of Advisers in the Survey

Most of the advisers that were identified by the respondents are well-known, but there could be some confusion about the financial planners because financial planning is a relatively new profession and not well known by the masses. A survey-respondent could be identifying an insurance agent who works for an insurance agency, as a financial planner, only because the insurance agent offered a more extensive range of products and services to cover a broader range

of the respondent's concerns. Such comprehensiveness of services is not uncommon among financial advisers because many feel the need to solve their customers' problems in order to create and maintain strong business relationship. In the absence of additional questions in the survey, this study assumed that the respondents positively identified the financial service providers.

Literature Review

Revisiting the Great Recession

The Business Cycle Dating Committee (2010) of the National Bureau of Economic Research (NBER) concluded that the Great Recession began in December 2007 and lasted for 18 months, and ended in June 2009 and economic recovery began that month. The total output loss of \$6 trillion to \$14 trillion equated to roughly \$50,000 to \$120,000 loss per household (Luttrell, Atkinson, & Rosenblum, 2013). In other words, United States lost almost a year's worth of output (Luttrell et al., 2013). The mean (median) net worth of households in the United States fell to \$481,000 (\$96,000) in 2009 from \$595,000 (\$125,000) in 2007 (Bricker et al., 2011). The median income reduced from \$76,678 in 2007 to \$71,726 in 2009 (Bricker et al., 2011). Most income and net-worth loss occurred in the high-net-worth category (Bricker et al., 2011). The Great Recession was a time of downturn and panic for households as the unemployment rate increased to 7.4 percent, housing prices declined 17 percent, and the Wilshire 5000 total market index fell 39 percent during the recession (Bricker et al., 2011). The stocks that were held directly by families suffered the sharpest decline (Bricker et al., 2011). The median percentage of directly-held stocks dropped 31 percent from \$18,500 to \$12,000 (Bricker et al., 2011). The nonfinancial assets dropped similarly, but the vehicles, and residential and non-residential real-estate saw the largest decline (Bricker et al., 2011). Total household debt (median) rose from \$70,300 to \$75,600, which included the mortgage on primary residences (Bricker et al., 2011). However, with the sharp

decline in home values, the share of total debt that was secured by primary residences dropped by 2.1 percent (Bricker et al., 2011). Business equity suffered a decrease of five percentage points (Bricker et al., 2011). Overall, primary residences, stocks and business equity suffered the most and were major determinants of change in household wealth (Bricker et al., 2011).

The Timing of the Survey of Consumer Finances 2007 - 2009 Panel

The Great Recession began in December 2007 and lasted for 18 months before officially ending in June 2009, and economic recovery began that month (Business Cycle Dating Committee, 2010). The Federal Reserve Board (FRB) and NORC¹³ conducted the first wave of interviews in 2007 as a triennial cross-section between May 2007 and March 2008 (Bricker et al., 2011). The first wave began before the beginning of the recession and ended after the recession had begun. After the recession ended, the FRB and the NORC identified a research opportunity and conducted a series of panel interview between July 2009 and January 2010 (Bricker et al., 2011). The second wave of interviews coincided with the official recovery phase. K. T. Kim and Hanna (2016) included a graph that is presented in figure 1.1 to visualize the importance of the survey timing *vis-à-vis* the recession. The shares' prices were lower for everyone during the second wave in comparison to the first wave. However, the market during the second wave was growing. All respondents in the second wave had witnessed a growth ranging from 26 percent to 69 percent from the lowest point of the recession.

Opportunity to Hold and Buy Low-Cost Equity

As discussed in the chapter 1, uninformed investors may make sub-optimal decisions when they face uncertainty, especially in an expected loss scenario due to behavioral biases (Kahneman & Tversky, 1979; Shefrin & Statman, 1984). They are known hold on to a diversifiable falling

¹³ The non-partisan and objective research organization NORC at the University of Chicago

stock for too long which is known as the *disposition effect* (Shefrin & Statman, 1984) and also to buy more equity when the markets are hot and sell when they are down, which is a typical *buy high – sell low* heuristic (Benartzi & Thaler, 2007). Markets are non-diversifiable, and they have cycles of downturn and recovery (Markowitz, 1952). An informed investor or an expert adviser is capable of overcoming the cognitive biases and would avoid making loss through a poor judgement of the market (Fischer & Gerhardt, 2007). The second wave was conducted during the recovery phase and the time before that was of a falling and recovering recessionary cycle (Business Cycle Dating Committee, 2010; K. T. Kim & Hanna, 2016). A rational decision during this time was to either keep the equity portfolios or to buy new equity while it was cheap (Markowitz, 1952). The same cannot be said about the first wave of interviews which was conducted at the peak of the market when the downturn had just begun. That was the time to sell the stocks high and reap profits.

Stock Market Participation

Households in the United States have consistently shied away from stock market, which has made the participation of households in the stock market (and the lack thereof) an intriguing subject for a long time (Bertaut, 1998; Bertaut & Starr-McCluer, 2000; Haliassos & Bertaut, 1995; Vissing-Jorgensen & Attanasio, 2003). The *stock market participation puzzle* has become especially attractive during the past two decades of the equity markets' roller-coaster ride that the investors have witnessed (Bertaut, 1998; Bertaut & Starr-McCluer, 2000; Haliassos & Bertaut, 1995; Vissing-Jorgensen & Attanasio, 2003). Since 1999, two major booms occurred followed by two infamous market shocks, the '*Dot-Com*' collapse of 2002 and the Great Recession of 2008. According to the 2001 wave of the Survey of Consumer Finances (SCF), a triennial cross-sectional survey of household finances funded by the Federal Reserve, 52.3 percent of households were

exposed to equity held directly or indirectly in various accounts, such as brokerage, retirement, or savings (Bricker et al., 2014). Only 21.5 percent households held stocks directly in brokerage accounts (Bricker et al., 2014). The 2004 survey reported that the total equity exposure (direct and indirect) reduced to 50.3%, but households holding the equity directly decreased to 17.5 percent from 21.5 percent. The financial boom occurred in 2007 and 53.2 percent of households participated in total equity while only 17.9 percent held shares directly (Bricker et al., 2014). Directly-owned shares reduced to 15.1 percent households in 2010 (Bricker et al., 2012) and 13.8 percent in 2013 (Bricker et al., 2014). While the total equity exposure (direct and indirect) has stayed at 50 percent, peaking at 53 percent of households in 2007 and falling to 48.8 percent in 2013, the directly-held equity participation has declined from 21 percent to 13.8 percent in 2013 (Bricker et al., 2014).

Factors Affecting Households' Decisions to Invest in Equity

The cycles of economic booms and busts are not new to many individual investors in the United States, which means that many investors are aware that busts can follow booms and that market-recovery can follow the bust (Barberis, Huang, & Thaler, 2006; Bertaut, 1998). Therefore, their decision not to participate in equity markets seems sub-optimal (Barberis et al., 2006; Bertaut, 1998). An even more interesting observation is the behavior of the investor during a period closer to an economic recession (Barberis et al., 2006; Bertaut, 1998). Barberis, Huang, and Thaler (2006) emphasized that evaluation of a gamble in isolation could be important and such 'narrow-framing' of the stock market by individual investors could be at play in their nonparticipation in the stock market. Bertaut (1998) studied the market crash of 1987 using the 1983 to 1989 panel of the Survey of Consumer Finances when the stock market participation by households was at 20% and was considered small and a matter of concern. Bertaut hypothesized, based on the *Consumption Capital*

Asset Pricing Model (CCPAM), that risk aversion, lack of resources and increased risk of losing income can deter share purchase. Bertaut found that the probability of involvement in stocks increased for households with higher education, lower risk aversion, and greater wealth and decreased for households with less education, limited resources, and a higher risk-aversion. Haliassos and Bertaut (1995) argued that departures from expected-utility maximization and inertia and non-diversifiable income risk explained the low stock market participation. Many other researchers have sought answers and have linked stock market participation to individual attributes, such as behavior, risk tolerance, and sophistication. For example, Hong, Kubik, and Stein (2004) found that socially interactive households were more likely to participate in the stock market. Guiso and Jappelli, (2005) and Brown, Ivković, Smith, and Weisbenner (2008) also found a correlation between increased awareness due to socializing by household investors, and stock market participation. Van Rooij, Lusardi, and Alessie (2011) found that survey respondents with lower financial literacy were less likely to purchase shares. Similarly, Christiansen, Joensen, and Rangvid (2008) attributed sophistication from knowledge of economics to a stock purchase. Grinblatt, Keloharju, and Linnainmaa (2011) linked the stock market participation to an individual's IQ, and Guiso et al. (2008) linked the lack of involvement to the lack of trust due to ambiguity. Bogan (2008) found that households which used the Internet and computers increased their participation in the equity markets substantially.

Relationship of Financial Advice with Investor Rationality

Engelmann et al. (2009) found that investors tend to neurobiologically offload complex decisions from their brain onto the financial expert, especially in times of uncertainty, such as an economic recession. Fischer and Gerhardt (2007) suggested that sub-optimal decisions of an investor can lead to losses, but financial advice from experts can reduce such problems. Individual

investors tend to react to the change in stock prices (Malkiel, 2003), but often the normative decisions are far from the positive decisions, especially when individual investors face an expected loss scenario (Kahneman & Tversky, 1979). Kahneman and Tversky (1979) postulated the *Prospect Theory* based on a controlled experiment and found that participants showed more aversion to losses than affinity to gains under the situation of uncertainty. Shefrin and Statman (1984) extended the study further and included tax considerations, mental accounting, self-control, and regret aversion and suggested the *disposition effect* in which investors held losing stocks for too long and sold winning stocks too early. Such behavioral biases in individual investors can lead to substandard investment decisions based on their limited knowledge (Barber & Odean, 2013). Therefore, during the Great Recession, the uninformed individual investors could have made wrong decisions in the absence of an adviser due to behavioral biases. Investors could have also chosen the type of advisers, trusted the expert's advice, and offloaded complex decisions onto the advisers based on the same behavioral biases. The offloading of complex decisions, in part, allows us to isolate the investment decisions from the investors' own biases in the presence of an expert if we can control for the individual effects. In such a case, we can attribute the optimality of an investment decision to the adviser and not the individual investor, *ceteris paribus*.

Decisions to Use Financial Advisory Services and Related Heuristics

The decisions of the individuals to select a financial expert for advice during the Great Recession could be the result of sub-optimal decisions due to behavioral biases because the recession presented the investors with uncertainty and loss scenario (Kahneman & Tversky, 1979; Shefrin & Statman, 1984). Many studies have tried to find a relationship between decisions to seek financial advice and attributes of individuals. Hanna (2011) used the pooled cross-sections of 1998 to 2007 SCF data to explain the demand for financial planning services for both investments and

savings decisions and borrowing decisions, pooled together and found that households that used financial planners grew from 21.7 percent in 1998 to 25 percent in 2007. Hanna also concluded that there was an association between investor attributes, such as risk-tolerance, race, and net-worth with the decision to use planner services. Joo and Grable (2001) found that among the pre-retirees the factors that associated positively with help-seeking behavior for retirement were higher income, better behaviors, higher risk tolerance, and proactivity toward retirement. It is important to acknowledge that the expert financial services are by nature *credence services* (Dulleck & Kerschbamer, 2006; Emons, 1997) that are hard to understand or evaluate by many seekers of the services. We know that expert services create *an information asymmetry* which favors those who have more information, which are the experts (Akerlof, 1970; Rothschild & Stiglitz, 1976; Spence, 1973, 1974). Moreover, differentiating between the merits of using a particular type of financial adviser is not very easy because uninformed consumers cannot easily understand or evaluate such *credence goods or services* (Dulleck & Kerschbamer, 2006; Emons, 1997). People still use different types of expert advisers and tend to rely inordinately on the expert's advice (Engelmann et al., 2009).

Individual Effects and Self-Selection

Many of the previous studies attribute investor behavior to individuals' ability either directly or indirectly. These results are not surprising because higher individual-specific ability and IQ can help them to make better decisions on an overall basis. We can classify such attributes as *individual effects* (Wooldridge, 2010). It is understandable that the individuals who have higher general ability could have better cognizance, higher ability to understand financial matters, make better financial decisions, critique the advice they receive, and choose the adviser that suits them (Wooldridge, 2010). In other words, individual effects could also lead to the *self-selection*

problem, which means that more able individuals can have the ability to make optimal financial decisions, and they can also use the same ability to *self-select* into the decision to use the right financial adviser (Wooldridge, 2010). While general ability and IQ can be inherent to a person, attributes, such as knowledge, socializing, education, experience, and exposure can change with enough time (Wooldridge, 2010). However, for a short period, such as a two-year study in this paper, most of such individual attributes might remain unchanged which adds to the list of individual-specific attributes, which could amplify *individual effects*. Therefore, while evaluating the merits of using an adviser, it is important to appreciate that an investor's ability to make sound decisions, including the choice of right type of financial adviser, is a *self-selection* problem that we must address (Wooldridge, 2010). The turmoil of the Great Recession was too complicated and ambiguous, even for many sophisticated individual investors. In case these people used the services of financial advisers during the downturn, some of them would tend to offload the complex decision-making onto the experts (Engelmann et al., 2009) which could help us to somewhat attribute the decisions on to the experts after remedying the self-selection problem.

Methodology

Survey of Consumer Finances 2007 - 2009 Panel

The Federal Reserve Board (FRB), with the help of the NORC¹⁴, surveys the United States' households on a triennial cross-sectional basis to understand household financials, attitudes, and demographics (Bricker et al., 2011). The data is called the Survey of Consumer Finances (SCF). SCF employs a dual-stage sampling design that includes a multistage area probability sample for the general population and a list sample derived from the income-tax returns data of the wealthy (Bricker et al., 2011). Households constituting one or more financially interdependent individuals

¹⁴ The non-partisan and objective research organization NORC at the University of Chicago

are the focus of the survey and are called Primary Economic Unit (PEU) (Bricker et al., 2011). SCF handles the missing data through a multiple-imputation process and provides five imputations for every observation. FRB with the help of the NORC conducted the first wave of the survey in the middle of the Great Recession (Bricker et al., 2011). As the market started to recover, the FRB and NORC conducted a re-interview starting in July 2009 with a smaller number of variables with the intention of understanding the extent of changes that the families experienced during the crisis (Bricker et al., 2011). The 2007 cross-sectional survey had 4,422 respondents. The re-interview response rate during the second wave of the panel interviews was at 88.7 percent with 3,857 respondent PEUs, which also excluded the families with significant compositional change, for both the list sample and the area-probability sample of the survey (Bricker et al., 2011; Kennickell, 2010, 2017).

Dependent Variables

The interest of the study rested in the directly-held equity in the brokerage accounts of households. SCF provided a variable called ‘DEQ’ which is equity in the directly-held stocks, stock mutual funds, and combination mutual funds. This study used the natural log of DEQ as the dependent variable. One part of panel data analysis also used ‘Have DEQ’ which was the dichotomous indicator variable [0,1] that indicated the decision for having directly-held equity, as the dependent variable for the logistic regression.

The Dynamic-Use of Financial Advisers

As discussed in chapter 1, this study used the idea presented in Cummings and James (2014) and created these time-invariant *dynamic-use*¹⁵variables from the *contemporaneous-use*

¹⁵ This study assumed that if a household reported that they used the same type of adviser for both periods, they used the same adviser for both periods. For example, $Planner_{jt} = Planner_{j[07]} = Planner_{j[09]} = Planner_j$ where, $Advisor_{jt} = Advisor_j$ in period t.

variables for a given year, 0 = No adviser and 1 = Used Adviser. This study divided financial advisers into the following four groups namely *No Adviser* (the reference group), *Got Adviser*, *Lost Adviser* and *Keep Adviser*, as given in Table 1.2. This categorization helped to associate the dynamics of the advisor-related decisions of households to their financial decisions. As the newly created variables were *time-invariant*, so this study interacted them with the year-indicator, to induce time-related variability, and prevented these from getting eliminated from the within-effects regression.

Independent Financial Covariates

The independent financial covariates of interest in the data are income, assets, and debt of which this study included income and debt in the regression model after natural log transformation. The income in the first wave ranged from zero to \$ 189 Mn with a mean (median) of \$88,972 (\$ 50,053) (Bricker et al., 2011). The total assets is a sum of financial assets and non-financial assets. The financial assets include liquid assets, certificates of deposit, mutual funds, stocks, bonds, quasi-liquid retirement accounts, savings bonds, cash value of whole life insurance, trusts, annuities, managed investment accounts, and other financial assets (Survey of Consumer Finances, 2009). This study did not control for financial assets in the regression model to allow the movement of investment assets from directly-held equity to other financial assets. The non-financial assets include the value of all vehicles, primary residence, residential real estate, net equity in nonresidential real estate, business interests, and other nonfinancial assets (Survey of Consumer Finances, 2009). Among the non-financial assets, a handful of cases of business assets (6 cases in the second wave) and nonresidential real estate assets (3 cases in the first wave and 31 cases in the second wave) had negative values due to money that was owed to active business and loans taken

j = [SI] or [B], SI = Savings and investments decisions, B = Borrowing decisions.
t = [07] or [09], [07] = period first wave of interviews, [09] = period of second wave of interviews

out for investment real estate, respectively. This study segregated these cases and moved the negative values to the debt side as new variables. The new variables were added to existing debt. Table 2.5 presents the summary of the original and the new variables. This study included the controls for non-financial assets and debt after natural log transformations.

Independent Categorical Variables

This study controlled for several important time-variant situations, behaviors, and shocks in financial markets based on previous studies. Some basic controls include changes in family demographics, such as a change in marital status and number of children. Heaton and Lucas (2000) associated background risks, such as risks from labor, business income, and house-price risk to portfolio choice. Heaton and Lucas (2000) also found that households with business risk exposure were less likely to take risks in the stock market. Their finding was inconsistent with the findings of Polkovnichenko (1998) who found using the SCF 1992 data that the entrepreneurs were less risk averse than the salaried and that they were more likely to participate in the stock market. Heaton and Lucas (1997) found an association between shocks to household income and increased risk aversion in portfolio choice. Other studies have also linked background risks, such as uninsurable income risk, household health risk, and borrowing constraints to less risky portfolio choices (Guiso, Jappelli, & Terlizzese, 1996; Heaton & Lucas, 1997). The ability to gain credit has an association with riskier portfolio choices (Heaton & Lucas, 1997). This study tried to capture most of these controls by including situational variables, such as indicators for labor-force participation as salaried or self-employed and an indicator for a period of an unemployment during the past year. This study also included an indicator for changes in home-ownership, poor health of respondent or spouse, having health insurance, and denial of credit and the fear that the credit could be denied. This study also controls for changes in certain behaviors. The behavioral aspects

include variables, such as risk-aversion¹⁶ (Kahneman & Tversky, 1979), and the factors which indicate financial literacy and awareness (Van Rooij et al., 2011; Von Gaudecker, 2015), such as actively shopping for investments and savings and use of the Internet for savings and investments decisions (Bogan, 2008). Other important behavioral aspects that relate to savings include time-horizon and spending. This study included an indicator for regular savers because several studies have found that regular savings behavior is an optimal financial behavior¹⁷ (Benartzi & Thaler, 2007, 2013). Past studies have also linked credit card debt to sub-optimal behavior and lack of financial sophistication (Norvilitis et al., 2006). Revolving credit card users are the individuals who carry the credit card debt month after month (Bird, Hagstrom, & Wild, 1997; H. Kim & DeVaney, 2001). Credit card transactors are defined as the individuals who pay the credit cards in full by the end of the month, unlike the credit card revolvers (Yang, Markoczy, & Qi, 2007). This study included credit card transactors as one of the controls for optimal financial behavior¹⁸. Hong, Kubik, and Stein (2004) found that the socializing households were more likely to participate in the stock market. This study included an indicator for taking saving and investment advice from friends and coworkers as a proxy for social interactions. Khwaja, Sloan, and Salm (2006) found some links between smoking and investment time horizon. This study included indicators for presence of smokers in household (respondent or spouse) and a separate indicator for self-reported

¹⁶ Not Risk Averse = X3014 and P3014 (response =1, 2 or 3)

Question: Which of the following statements comes closest to describing the amount of financial risk that you (and your [husband/wife/partner]) are willing to take when you save or make investments?

Responses: 1. Take substantial financial risks expecting to earn substantial returns. 2. Take above average financial risks expecting to earn above average returns. 3. Take average financial risks expecting to earn average returns. 4. Not willing to take any financial risks.

¹⁷ X3020 and P3020 Save regularly by putting money aside each month

¹⁸ Credit Card Transactor = X432 P432 (response =1)

Question: (Do/Thinking about all your cards, do) you almost always, sometimes, or hardly ever pay off the total balance owed on the account(s) each month?

Responses: 1. Always or almost always 3. Sometimes 5. Hardly ever 7. No such cards 0. No credit cards

long-term horizon for savings and for spending plans for the family¹⁹. This study also includes an indicator of doing active trading of stocks during the past year to indicate involvement in the markets and the change in Wilshire 5000 index value on the dates of the two interviews to control for shocks in the stock market.

Summary of Analytical Methodology

This study exploited the variations in the following regression model to analyze the partial effects of the available independent variables of interest in the second wave (2009) of SCF panel:

$$\ln(\text{DEQ})_{it} = [\text{Dyn adv use}]_i \beta_1 + \ln(\text{Fin Vars})_{it} \beta_2 + \text{Sit Vars}_{it} \beta_3 + \text{Behav Vars}_{it} \beta_4 + z_{it} \beta_5 + \lambda_i + \varepsilon_{it} \quad (\text{Equation 2.1})$$

Where, DEQ = Total directly-held equity in the form of stocks and stock mutual funds

t = 09 (for the second wave) and i = observation

[Dyn Adv Use]_i = Dynamic advisor-use indicator variables (time-invariant)

Fin Vars_{it} = Financial and nonfinancial variables (ln dollar values)

Sit Vars_{it} = Situational indicator variables

Behav Vars_{it} = Behavioral indicator variables

z_{it} = Other covariates

λ_i = Individual-level heterogeneity term (unobservable, time-invariant)

ε_{it} = Stochastic error terms

In the Equation 2.1, the individual-level unobservable heterogeneity term λ_i can be systematically correlated with many financial and behavioral variables (Wooldridge, 2010). As discussed in Chapter 1, such individual-effects are time-constant features of the individuals that

¹⁹ Self-reported Long-Term Horizon = X3008 and P3008 (response = 5)

Question: In planning (your/your family's) saving and spending, which of the following is most important to [you/you and your (husband/wife/partner)]
 Responses: 1. next few months. 2. next year. 3. next few years. 4. next 5-10 years. 5. longer than 10 years.

can lead to a *self-selection* problem that could result in inconsistent and biased coefficients of effects of x_j on y (Wooldridge, 2010). This study used the within-effects regression, such as fixed-effects or first-differencing, on the panel data for eliminating individual-level heterogeneity (Wooldridge, 2010). With only two time-periods, the fixed effects and first differencing procedures produced the same inferences and estimates (Wooldridge, 2010).

Fixed-effects panel regression. The fixed effects panel regression method requires at least two time periods and uses a fixed-effects transformation of the regression equation which is also known as the within-transformation or the time-demeaning transformation²⁰ (Allison, 2009; Wooldridge, 2010). This study used the XTREG command on STATA[®] 14 with the fixed-effects (FE) option to get the results. The fixed-effects panel regression follows a time-demeaning process. Therefore, the new time-demeaned model became:

$$\text{Ln}(\ddot{\text{D}\ddot{\text{E}}\text{Q}})_{it} = ([\text{Dyn } \ddot{\text{a}}\ddot{\text{d}}\text{v use}]_i)\beta_1 + \text{Ln}(\ddot{\text{F}}\ddot{\text{i}}\ddot{\text{n}} \text{ Vars}_{it})\beta_2 + \text{Sit } \ddot{\text{V}}\ddot{\text{a}}\ddot{\text{r}}\text{s}_{it} \beta_3 + \text{Behav } \ddot{\text{V}}\ddot{\text{a}}\ddot{\text{r}}\text{s}_{it} \beta_4 + \ddot{z}_{it}\beta_5 + \ddot{\lambda}_i + \ddot{\epsilon}_{it} \quad (\text{Equation 2.2})$$

Where, $\ddot{y}_{it} = y_{it} - \bar{y}_i$ and $t = 07$ and 09

The time-demeaning procedure eliminated the time-invariant variables, such as the variables for dynamic-use of advisers and the individual effects λ_i . However, the variables for dynamic use of financial advisers were of interest, therefore, this study included the variables of interest into the regression model after interacting them with time, as shown²¹:

$$\text{Ln}(\ddot{\text{D}\ddot{\text{E}}\text{Q}})_{it} = (t \cdot [\text{Dyn } \ddot{\text{a}}\ddot{\text{d}}\text{v use}]_i)\beta_1 + \text{Ln}(\ddot{\text{F}}\ddot{\text{i}}\ddot{\text{n}} \text{ Vars}_{it})\beta_2 + \text{Sit } \ddot{\text{V}}\ddot{\text{a}}\ddot{\text{r}}\text{s}_{it} \beta_3 + \text{Behav } \ddot{\text{V}}\ddot{\text{a}}\ddot{\text{r}}\text{s}_{it} \beta_4 + \ddot{z}_{it}\beta_5 + \ddot{\epsilon}_{it} \quad (\text{Equation 2.3})$$

²⁰ The fixed effects regression was run using XTREG command on STATA[®]14 with FE option, using sampling weights (P42001), and robust standard errors clustered on the implicate ID variable Y1. This procedure was run after converting the wide-form SCF data to long-form panel data using RESHAPE command on STATA[®]14.

²¹ Table 2.10 presents results of robustness check to see if inclusion of time-invariant variables adversely affects the coefficients of other variables by comparing the time-variant and time-invariant models side by side.

Panel regression with long-form data presented another opportunity for running the fixed effects model for panel logit regression with the dichotomous indicator dependent variable as Have Directly-Held Equity (0,1). Table 2.14 presents the results with coefficients, robust standard errors, and odds-ratios.

$$\text{LOGIT (Have DEQ [0,1])}_{it} = (\text{t} \cdot [\text{Dyn adv use}]_i) \beta_1 + \text{Ln (Fin Vars}_{it}) \beta_2 + \text{Sit Vars}_{it} \beta_3 + \text{Behav Vars}_{it} \beta_4 + \zeta_{it} \beta_5 + \epsilon_{it} \quad (\text{Equation 2.4})$$

First-differenced OLS regression. The study used the first-differencing method by differencing-out the dependent and independent variables of the two time period, before running the Ordinary Least Squares (OLS) regression (Allison, 2009; Wooldridge, 2010). Therefore, the model became:

$$\Delta \text{Ln(DEQ)}_{it} = \Delta ([\text{Dyn Adv Use}]_i) \beta_1 + \Delta \text{Ln (Fin Vars}_{it}) \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta \zeta_{it} \beta_5 + \Delta \epsilon_{it} \quad (\text{Equation 2.5})$$

Where, $\Delta y_{it} = \Delta y_{i09} - \Delta y_{i07}$ and $\Delta x_{it} = \Delta x_{i09} - \Delta x_{i07}$ and $t= 07$ and 09

The differencing procedure eliminates the time-invariant variables including the individual effects λ_i (Allison, 2009; Wooldridge, 2010). However, the variables for dynamic use of financial advisers were of interest; therefore, this study included the variables of interest into the regression model after interacting them with time, as shown²²:

$$\Delta \text{Ln(DEQ)}_{it} = \Delta (\text{t} \cdot [\text{Dyn Adv Use}]_i) \beta_1 + \Delta \text{Ln (Fin Vars}_{it}) \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta \zeta_{it} \beta_5 + \Delta \epsilon_{it} \quad (\text{Equation 2.6})$$

However, due to the wide-format of data, the study could include the time-invariant variables, which have not been differenced, directly into the model.

²² Tables 2.11 and 2.12 present results of robustness check to determine if inclusion of time-invariant variables adversely affects the coefficients of other variables by comparing the time-variant and time-invariant models side by side.

$$\Delta \text{Ln}(\text{DEQ})_{it} = ([\text{Dyn Adv Use}]_i) \beta_1 + \Delta \text{Ln}(\text{Fin Vars}_{it}) \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta(\text{Behav Vars}_{it}) \beta_4 + \Delta z_{it} \beta_5 + \Delta \varepsilon_{it} \quad (\text{Equation 2.7})$$

The first-differenced OLS regression was run using the *SCFCombo* and was also run separately for each of the five implicates with robust standard errors clustered over the implicate ID. The study averaged the coefficients for the regression results of each implicate and averaged and adjusted the standard errors using the Equation 2.9.

Adjusting the standard errors. As discussed in Chapter 1, the Survey of Consumer Finances (2009) suggested that the standard error calculations must account for sample variability error and imputation error in order to avoid overestimation of the reliability of the statistical analysis (The Federal Reserve Board, 2014). SCF provided two kinds of weights: 1. Sampling weights, known as the Kennickell-Woodburn consistent weights, to obtain unbiased population estimates and 2. Replicate weights to account for sampling error and heterogeneity. This study employed the within-effects regression which eliminated the need for the use of the replicate weights for individual-level adjustments. However, even without the use of replicate weights, the need to adjust the standard errors for both kinds of errors still existed. The study used two different ways to achieve the adjustment of standard errors to gain flexibility of analysis: 1. Manual-adjustments 2. Repeated-Imputation Inference (RII) based adjustments

The study employed the manual-adjustment by running the regression (using Kennickell-Woodburn consistent sampling weights and clustered robust standard errors) for each of the five implicates separately. The study obtained the coefficients by simple average and used the following formula to average the standard errors in the five regression results (Pence, 2001; Shin & Hanna, 2016; Wenzlow et al., 2004):

$$\text{Standard Error} = \sqrt{((6/5) * \text{Imputation Variance} + \text{Sampling Variance})} \quad (\text{Equation 2.8})$$

SCF suggested a procedure called *SCFCombo*, a macro designed for STATA[®], which performs the RII-based adjustments (Center for Financial Security, 2015; Nielsen, 2015). *SCFCombo* invokes a bootstrapping procedure to use the replicate weights which handles complex survey design survey design and the inherent heterogeneity in the data. *SCFCombo* also averages the coefficients of the regression over the five imputates and adjusts the standard errors for both complex survey design and the five imputations (Nielsen, 2015). *SCFCombo* successfully works with most of the E-class commands on STATA[®] including regress, logit, and probit. *SCFCombo* also provides the convenience of a single command analysis and a high degree of reliability based on its use with cross-sectional SCF datasets. However, *SCFCombo* lacks the flexibility to allow conditional analysis and panel regression in STATA[®].

Finally, this study used the following three combinations of method and standard error adjustments:

1. Fixed-Effects Panel Regression with manually-adjusted clustered robust standard errors.
2. First-differenced ordinary least squares (OLS) regression with manually-adjusted clustered robust standard errors.
3. First-differenced ordinary least squares (OLS) regression using *SCFCombo*.

Comparison Over Different Levels of Initial Equity

This study used ordinary least squares (OLS) regression on the first-differenced model with manually adjusted standard errors, and compared the results restricted over different levels of initial equity. This study calculated the levels of initial equity as different levels of total directly-held equity (DEQ) as a percentage of total financial assets (FIN) during the first wave. The results are presented in the Table 2.13.

$$\% \text{ directly-held equity} = 100 * \text{DEQ } 07 / \text{FIN } 07 \quad (\text{Equation 2.9})$$

Results

Comparison of Methods

Tables 2.1 to 2.7 present the summary statistics. Tables 2.8 to 2.14 present the regression results. Table 2.8 (Results 1, 2, and 3) presents the comparison of the regression results of models with time-variant contemporaneous adviser variables and Table 2.9 (Results 4, 5, and 6) with time-invariant dynamic-use adviser variables. The two tables compared the results among the following: Fixed-effects panel regression with clustered robust standard errors (1 and 4), First-differenced ordinary least squares (OLS) regression using *SCFCombo* RII-adjusted standard errors (2 and 5), and First-differenced OLS regression with clustered robust standard errors (3 and 6). As expected, the results 1, 2, and 3 in Table 2.8 have similar coefficients and Results 4, 5, and 6 in Table 2.9 also have similar coefficients. The clustered robust standard errors (results 1, 3, 4, and 6) are somewhat higher (more conservative) than the RII adjusted standard errors (results 2 and 5).

Comparison of Models: Time-Variant vs Time-Invariant

Tables 2.10, 2.11, and 2.12 offer comparisons between similar models with time-variant vs time-invariant adviser variables, as a robustness check. The models with time-variant adviser variables follow the econometric theory of within-effects regression that requires variation in time for all variables included. A within-effects regression would eliminate all time-invariant elements, including variables and individual-level heterogeneity. However, in practice we can add the time-invariant variables of interest back into the model by interacting them with a time-variant variables, such as time itself, as done in models 4, 5, and 6 (Allison, 2009; Wooldridge, 2010). The results show that the non-adviser variables of the time-variant and time-invariant results in all models have comparable coefficients and standard errors. The replacement of time-variant variables with time-interacted, time-invariant variables did not affect the consistency of the models.

Analysis of Models with Time-Variant Adviser Variables

Table 2.8 (Results 1, 2, and 3) show no statistical significance on adviser variables. Households that engaged in active trading in the previous year witnessed a positive rate of change of directly-held equity when compared to households that did not do active trading. The self-employed households witnessed more than 50 percent rate of change in directly-held equity in the brokerage accounts when compared to the retired or unemployed households²³. The use of the Internet was partially significant in the RII regression results and positively associated with the rate of change in directly-held equity²⁴.

Analysis of Models with Time-Invariant Adviser Variables

Table 2.9 (Results 4, 5, and 6) presents the results for the dynamic-use adviser variables. Households that used a financial planner in the first wave but lost the planner in the second wave also saw a negative rate of change of 36 percent in directly-held stocks, as compared to households that did not use financial planners for savings and investment decisions. Households that did not have a financial planner in the first wave but obtained a planner in the second wave witnessed a negative 30 percent rate of change in directly-held stocks, as compared to households that did not use financial planners for savings and investment decisions. Households that retained the services of brokers in both waves had a negative 60 percent rate of change in directly-held equity, as compared to households that did not use brokers for savings and investment decisions. A shortcoming of these results is that we do not know the initial percentage equity levels of

²³ Variable: work status categories for head (OCCAT1 in extract variables): 1=work for someone else. 2=self-employed/partnership. 3=retired/disabled + (student/homemaker/misc. not working and age 65 or older). 4=other groups not working (mainly those under 65 and out of the labor force)
Salaried = 1. Self-employed = 2. Reference = Retired/Disabled/Not-working.

²⁴ This study did not use the RII (SCFCombo) results for inference. The SCFCombo result table is only for the sake of comparison.

households during the first wave. A household with very high equity, to begin with, may not be left with enough funds to purchase low-cost equity in the second wave. Table 2.13 shows results at different levels of initial percentage equity in the first wave²⁵. The results are shown at zero, less than 15 percent, less than 25 percent, and more than zero levels of equity in the first wave. Households that had no equity, to begin with, could not sell it later in the second wave. These households would only witness a positive change. Their interaction with brokers (losing, obtaining, or retaining) led to positive rates of change in directly-held equity when compared to households that did not use brokers for savings and investment decisions. Households that did not hold equity directly during the first wave and retained the financial planner services for savings and investment decisions witnessed a positive rate of change in directly-held equity when compared to households who did not use financial planner services. Households that held less than 15 percent of the total financial assets as directly-held equity during the first wave, and retained the financial planner services for savings and investment decisions witnessed a positive rate of change of directly-held equity, as compared to households that did not use financial planners for savings and investment decisions. Households that obtained a banker for savings and investments advice in the second wave and had low initial equity realized a positive rate of change in their equity held in brokerage accounts when compared to households that did not use services of bankers. In the same group, households that retained the accountant services for savings and investments advice in both waves witnessed a positive rate of change in directly-held equity when compared to households that did not consult the accountants. Households that rejected the financial planners in the second wave saw negative rate of change in directly-held equity when compared to households that did not consult the financial planners for savings and investments decisions.

²⁵ Percentage Directly-Held Equity in 2007 = % Total Directly-held Equity in 2007 / Total Financial Assets in 2007

Table 2.14 presents a comparison of fixed-effects panel logit regression results between models with time-variant and time-invariant adviser variables. The dependent variable in these results is Have Directly-Held Equity [0,1] which represents households' decision of extensive margin about stock market participation. These results should be compared to Table 2.10 (Fixed Effects Regression) which represents households' decision of intensive margin related to the level of equity in the brokerage accounts. The results are comparable, but the only statistically significant result in the logit table is the most obvious one which is an indicator for stock trading.

Conclusions

Active participation in the equity markets by doing trading last year was associated with the positive rate of change in directly-held equity, probably because active trading made the investors more self-confident (Daniel, Hirshleifer, & Subrahmanyam, 1998). Self-employed households witnessed a positive rate of change in directly held equity that was higher than the rate of change witnessed by households that were not self-employed. This result was consistent with Polkovnichenko (1998) who found similar results that self-employed households were less risk-averse toward the stock market than the ones receiving salaries. However, this result was not consistent with Heaton and Lucas (2000) who found that households with substantial business risk would not take on additional risk from the stock market on average. Neither of these previous studies covered the time-period of an economic recession, and both studies acknowledged that the business risks and stock market risks are correlated due to common business cycle. This study covers the period of post-recession recovery which could mean that some of the self-employed households could have found a way to diversify their total risk by investing in stocks in the post-recession era. The use of the Internet was partially significant in the regression table with RII-adjusted standard errors and was associated with a positive rate of change in directly-held equity

which was consistent with Bogan (2008). Households that retained the brokers in waves of 07 and 09 had a negative 60 percent rate of change in directly-held equity when compared to households that did not consult the brokers. It is likely that these households bought stocks in the first wave and sold during the market recovery in the second wave of interviews, relatively. If a household bought enough stocks during the first wave, it might not be left with any room to purchase any more stocks during market recovery in 2009. Purchase of stocks during the first wave and sale of stocks in the fallen market of 2009 could be construed as the *buy high – sell low* heuristic (Benartzi & Thaler, 2007). The results at lower initial equity presented a very different picture. Overall, for households with low initial equity, staying with the advisers seemed beneficial, which is consistent with Fischer and Gerhardt (2007) who suggested that an investor's sub-optimal decisions can lead to losses, but financial advice from experts can reduce such problems. The Wilshire 5000 Total Market Index closing values were not significantly associated with the rate of change in directly-held equity on an overall basis. However, the market index was positively associated with the rate of change in directly-held equity for households that held at least some equity directly in their brokerage accounts. The index was negatively associated with the rate of change in the direct-equity for households with low or zero initial equity. The logit regression did not present useful results. The logit regression represents households' decision in terms of extensive margin about stock market participation whereas the fixed effects regression represents households' decision in terms of intensive margin related to the level of equity in the brokerage accounts. The reason for not finding statistical significance in the logit table could be attributed to the increase in equity in several accounts increased in value due to portfolio allocation decisions, and not just due to stock market participation *per se*.

An important point to note here is the lack of information in the data. This study was dependent on the respondents' identification of the advisers' professions, such as planners, brokers, and bankers. Respondents could have misidentified the advisers due to overshadowing from the associated firms. There was no information in the survey data on the extent and nature of services imparted, compensation, span and scope of the relationship, and the criteria for identifying the expertise. Further, the study fundamentally assumed that a type of adviser for the two periods was the same person or firm. This fundamental assumption was at the core of the definition of 'dynamic-use, which will become much weaker if the adviser in the two periods was not the same person or firm. This study controlled for many attributes and shocks, including individual-level heterogeneity, which was not enough to entirely attribute the decisions to advisers. This paper does not try to solve the *stock market participation puzzle* or try to credit or discredit advisers for situations of households. This paper is more of an effort to emphasize the need for a detailed survey of advisers and client engagement, which is especially important with the changing legislation after the shocks and lessons from the Great Recession.

Table 2.1: Summary of Wilshire 5000 Total Market Index During the SCF 2007-2009 Panel

Variable	Mean	Std. Dev.	Min	Max
Wilshire 5000 ₍₂₀₀₇₎ (Wave 1: May 07 to Mar 08)	15156.0	442.1	12800.0	15800.0
Wilshire 5000 ₍₂₀₀₉₎ (Wave 2: Jul 09 to Jan 10)	10576.0	377.6	10100.0	11800.0
Wilshire (Wave 2 - Wave 1)	-4584.4	619.8	-5700.0	-1700.0
Wilshire % diff	-30.2	3.6	-36.1	-12.8

Table 2.2: Summary of Advisers²⁶ in 07 and 09 (N=3856)

Adviser Types	Year 07	Year 09	t ₍₀₉₋₀₇₎	Dynamic Use		
				Keep-Adviser	Got-Adviser	Lost-Adviser
Planners	22.50% (0.417)	20.90% (0.407)	-1.72 [#]	10.30% (0.304)	10.34% (0.305)	11.90% (0.323)
Brokers	11.70% (0.322)	9.70% (0.296)	-.020**	3.71% (0.189)	5.70% (0.232)	7.70% (0.266)
Bankers	32.00% (0.466)	30.10% (0.459)	-.016	14.04% (0.347)	15.99% (0.367)	17.57% (0.381)
Accountants	10.70% (0.310)	7.50% (0.263)	-.030***	2.67% (0.161)	4.78% (0.213)	7.90% (0.269)
Lawyers	4.60% (0.209)	3.50% (0.185)	-.008	0.80% (0.090)	2.90% (0.162)	3.70% (0.190)
Insurance Agents	0.10% (0.034)	0.10% (0.027)	0.00	0.00% (0.000)	0.06% (0.026)	0.01% (0.033)

Table 2.3: Advisers²⁷ Among the Samples of Various SCF Surveys from 2004 to 2013

Adviser Types	2004	2007	2007p*	2009p*	2010	2013
Planner	19.30%	21.90%	22.50%	20.90%	24.40%	25.50%
Broker	11.10%	11.20%	11.70%	9.70%	8.50%	8.70%
Banker	26.00%	31.70%	32.00%	30.10%	33.30%	33.00%
Accountant	7.10%	10.50%	10.70%	7.50%	9.40%	10.20%
Lawyer	3.10%	4.50%	4.60%	3.50%	3.50%	3.80%
Insurance Agent	0.03%	0.08%	0.10%	0.10%	0.04%	0.05%
Financial Advisor	49.60%	54.90%	44.70%	39.70%	56.70%	56.60%
% with > 1 advisor	18.20%	25.90%	26.50%	21.20%	21.50%	23.10%
N	4519	4417	3856	3856	6482	6015

*2007p = the first wave of the 2009 panel survey. *2009p = the second wave of the 2009 panel survey.

²⁶ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

²⁷ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

Table 2.4: Summary of the Dependent Variable

Variable [N = 3856]	Mean	Std. Dev	Min	Q25	Q50	Q75	Max
Directly-held Equity (DEQ)							
2007	63536.7	1086080.0	0.0	0.0	0.0	103.6	6.88e+08
2009	40162.4	712933.4	0.0	0.0	0.0	30.0	5.71e+08
<i>Diff (09-07)</i>	-23374.3	788302.5	-2.76e+08	0.0	0.0	0.0	2.00e+08
Ln Directly-held Equity (Ln DEQ)							
2007	2.5	4.5	0.0	0.0	0.0	4.7	20.4
2009	2.4	4.3	0.0	0.0	0.0	3.4	20.2
<i>Diff (09-07)</i>	-0.1	3.5	-17.7	0.0	0.0	0.0	19.1
Have Directly-held Equity (HDEQ) [0,1]							
2007	24.7%	0.43	0	0	0	0	1
2009	24.5%	0.43	0	0	0	0	1
<i>Diff (09-07)</i>	-0.2%	0.37	-1	0	0	0	1

Table 2.5: Summary of Financial Covariates

Variable [N=3856]	Mean	Std. Dev	Min	Q25	Q50	Q75	Max
Income							
2007	88971.9	402841.6	0.0	26624.4	50053.9	89458.01	1.88E+08
2009	80660.2	232078.7	0.0	25901.3	49810.3	89658.44	6.86E+07
<i>Diff (09-07)</i>	-8311.6	361581.7	-1.88E+08	-12000.0	98.3	10920.93	4.32E+07
Financial Assets							
2007	247334.0	1721150.0	0.0	2278.3	25993.5	140000	6.99E+08
2009	207669.2	1532787.0	0.0	2150.0	24200.0	130000	8.39E+08
<i>Diff (09-07)</i>	-39664.8	1065290.0	-3.36E+08	-22000.0	-132.7	9256.37	2.19E+08
Non-Financial Assets							
2007	449573.4	2597185.0	-4345989	18640.8	162588.8	353138.8	1.41E+09
2009	374780.0	2114744.0	-1.71E+07	15000.0	145000.0	307000.0	9.46E+08
Non-Financial Assets (New)							
2007	448475.6	2753672.0	0.0	18640.8	162588.8	353138.8	1.17E+09
2009	374185.2	2127874.0	0.0	15000.0	145000.0	307500.0	7.68E+08
<i>Diff (09-07)</i>	-74290.4	2061588.0	-6.69E+08	-58000.0	-7799.2	4614.89	3.65E+08
Debt							
2007	102105.8	196763.0	0.0	838.8	33139.1	140323.5	1.10E+08
2009	103504.2	207054.3	0.0	530.0	32200.0	141400.0	4.52E+07
Debt (New)							
2007	102150.3	196939.3	0.0	838.8	33139.1	140323.5	1.10E+08
2009	103971.6	210983.8	0.0	530.0	32300.0	141500.0	4.52E+07
<i>Diff (09-07)</i>	1821.3	154786.5	-6.43E+07	-13000.0	0.0	8782.9	2.80E+07
Stock and Stock Trading Indicators							
Did Stock Trad 07	10.0%	0.30	0.0	0.0	0.0	0.0	1
Did Stock Trad 09	9.6%	0.30	0.0	0.0	0.0	0.0	1
No of Trades 07	9.1	665.68	0.0	0.0	0.0	0.0	64000.0
No of Trades 09	2.6	51.85	0.0	0.0	0.0	0.0	2600.0

Table 2.6: Summary of the Situational Variables²⁸

Variable [N=3856]	[07]	[09]	t₍₀₉₋₀₇₎
Denied Loan	17.10% (0.377)	12.10% (0.326)	-6.30***
Fear denial of loan	15.50% (0.362)	17.50% (0.38)	2.54*
Home Owner	68.90% (0.463)	70.30% (0.457)	2.91*
Salaried	61.20% (0.487)	55.30% (0.497)	-8.03***
Self Employed	10.60% (0.307)	11.10% (0.314)	1.15
Unemployment Spell	15.10% (0.358)	21.40% (0.41)	6.98***
Poor health in HH	7.40% (0.262)	6.90% (0.254)	-3.11**
Married, live together	59.70% (0.491)	53.90% (0.499)	-9.09***

Note: [07] = first wave of interviews [09] = second wave of interviews

Table 2.7: Summary of the Behavior Variables²⁹

Variable [N=3856]	[07]	[09]	t₍₀₉₋₀₇₎
Not Risk Averse	59.30% (0.491)	53.70% (0.499)	-5.63***
Credit Card Transactor	40.00% (0.49)	39.10% (0.488)	-1.07
Regular Saver	42.50% (0.494)	38.40% (0.486)	-3.81***
Use the Internet for SI	29.70% (0.457)	31.70% (0.466)	2.13*
Ask friends & Coworkers for SI	43.00% (0.495)	38.40% (0.486)	-3.90***
Smoker in HH	26.10% (0.439)	26.50% (0.441)	1.39
Long term Horizon for SI	14.50% (0.352)	11.20% (0.316)	-4.00***
Have Health Insurance	92.20% (0.267)	92.00% (0.272)	-0.46

Note: [07] = first wave of interviews [09] = second wave of interviews

²⁸ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

²⁹ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

Table 2.8: Regression Results of the Model Containing *Time-Variant* Adviser Variables Comparing Results of Three Different Methods³⁰ to Obtain Coefficients and Standard Errors

Ln (Direct Equity)	(1)		(2)		(3)	
	Fixed-Effects Panel Regression (Clustered Robust Std. Errors)		First-Difference OLS Regression (RII-Adjusted Std. Errors)		First-Difference OLS Regression (Clustered Robust Std. Errors)	
	Coef.	SE	Coef.	SE	Coef.	SE
Planner [0,1]	0.04	0.160	0.04	0.119	0.04	0.160
Broker [0,1]	-0.01	0.223	-0.01	0.165	-0.01	0.220
Banker [0,1]	0.05	0.119	0.05	0.084	0.05	0.120
Accountant [0,1]	-0.18	0.180	-0.18	0.162	-0.18	0.180
Ln (Income)	0.06	0.048	0.06	0.040	0.06	0.050
Ln (Non-Financial Assets)	0.01	0.022	0.01	0.018	0.01	0.020
Ln (Debt)	0.01	0.021	0.01	0.018	0.01	0.020
Not Risk Averse [0,1]	0.05	0.135	0.05	0.107	0.05	0.130
Credit Card Transactor [0,1]	-0.01	0.176	-0.01	0.128	-0.01	0.180
Regular Saver [0,1]	0.06	0.116	0.06	0.086	0.06	0.120
Used Internet for S&I decisions [0,1]	0.19	0.139	0.19 [#]	0.099	0.19	0.140
Friends & Co-workers' advice [0,1]	0.01	0.116	0.01	0.080	0.01	0.120
Denied Loan [0,1]	0.03	0.140	0.04	0.103	0.03	0.140
Feared Denial of Loan [0,1]	0.06	0.140	0.06	0.115	0.06	0.140
Home Owner [0,1]	0.13	0.281	0.12	0.195	0.13	0.280
Smoker in HH [0,1]	0.32	0.558	0.32	0.418	0.32	0.560
Long term horizon for S&I [0,1]	-0.09	0.157	-0.09	0.116	-0.09	0.160
Salaried [0,1]	-0.02	0.184	-0.02	0.125	-0.02	0.180
Self Employed [0,1]	0.42 [#]	0.255	0.42 [*]	0.201	0.42 [#]	0.260
Unemployment Spell [0,1]	-0.12	0.134	-0.12	0.111	-0.12	0.130
Had Health Insurance in HH [0,1]	0.14	0.147	0.13	0.107	0.14	0.150
Poor health in HH [0,1]	0.83	0.713	0.83	0.639	0.83	0.710
Number of children	0.00	0.112	0.00	0.089	0.00	0.110
Married [0,1]	0.06	0.222	0.06	0.170	0.06	0.220
Wilshire 5000 Index	0.00002	0.000	0.00007	0.000	0.00002	0.000
Did Stock Trading Last Yr [0,1]	1.44 ^{***}	0.323	1.45 ^{***}	0.245	1.44 ^{***}	0.320
Intercept	0.51	0.771	0.23	0.407		
N	3,857		3,857		3,857	
R ²	0.0211		0.0203		0.0211	
F-Statistic	1.61		3.05		1.60	
Prob > F	0.0265		0.0000		0.0273	

[#] $p < .1$, ^{*} $p < .05$, ^{***} $p < .01$, ^{****} $p < .001$

³⁰ Regression (1) is the fixed effects regression with *manually-adjusted* clustered robust standard errors on the data converted to panel (long) format, regression (2) is the OLS regression on the first-differenced model using *SCFCombo* for RII-adjusted standard errors, and regression (3) is the OLS regression on the first-differenced model with *manually-adjusted* clustered robust standard errors (See Equation 2.2).

Note: The coefficients obtained from the three methods are similar and the standard errors are comparable, but the standard errors obtained from *SCFCombo* are less conservative than the other two methods.

Table 2.9: Regression Results of the Model Containing *Time-Invariant*³¹ Adviser Variables Comparing Results of Three Different Methods³² to Obtain Coefficients and Standard Errors

Ln (Direct Equity)	(4)		(5)		(6)	
	Fixed-Effects Panel Regression (Clustered Robust Std. Errors)		First-Difference OLS Regression (RII-Adjusted Std. Errors)		First-Difference OLS Regression (Clustered Robust Std. Errors)	
	Coef.	SE	Coef.	SE	Coef.	SE
Keep Planner [0,1]	0.02	0.299	0.02	0.204	0.02	0.300
Lost Planner [0,1]	-0.45#	0.256	-0.46*	0.193	-0.45#	0.260
Got Planner [0,1]	-0.37#	0.212	-0.37*	0.168	-0.37#	0.210
Keep Broker [0,1]	-0.92#	0.509	-0.92*	0.361	-0.92#	0.510
Lost Broker [0,1]	0.20	0.296	0.20	0.229	0.20	0.300
Got Broker [0,1]	0.25	0.365	0.25	0.249	0.25	0.370
Keep Banker [0,1]	-0.09	0.180	-0.10	0.134	-0.09	0.180
Lost Banker [0,1]	0.13	0.173	0.12	0.133	0.13	0.170
Got Banker [0,1]	0.26	0.207	0.26	0.186	0.26	0.210
Keep Accountant [0,1]	0.50	0.515	0.50	0.421	0.50	0.520
Lost Accountant [0,1]	0.23	0.239	0.22	0.182	0.23	0.240
Got Accountant [0,1]	-0.16	0.315	-0.16	0.301	-0.16	0.320
Ln (Income)	0.05	0.049	0.05	0.039	0.05	0.050
Ln (Non-Financial Assets)	0.01	0.023	0.01	0.018	0.01	0.020
Ln (Debt)	0.01	0.021	0.01	0.018	0.01	0.020
Not Risk Averse [0,1]	0.06	0.134	0.06	0.105	0.06	0.130
Credit Card Transactor [0,1]	0.00	0.176	0.00	0.128	0.00	0.180
Regular Saver [0,1]	0.05	0.116	0.05	0.086	0.05	0.120
Used Internet for S&I decisions [0,1]	0.18	0.139	0.18#	0.099	0.18	0.140
Friends & Co-workers' advice [0,1]	0.01	0.115	0.01	0.080	0.01	0.120
Denied Loan [0,1]	0.06	0.139	0.06	0.101	0.06	0.140
Feared Denial of Loan [0,1]	0.05	0.142	0.05	0.115	0.05	0.140
Home Owner [0,1]	0.17	0.281	0.17	0.197	0.17	0.280
Smoker in HH [0,1]	0.32	0.559	0.32	0.418	0.32	0.560
Long term horizon for S&I [0,1]	-0.08	0.156	-0.08	0.115	-0.08	0.160
Salaried [0,1]	-0.05	0.184	-0.05	0.123	-0.05	0.180
Self Employed [0,1]	0.39	0.253	0.39*	0.197	0.39	0.250
Unemployment Spell [0,1]	-0.11	0.133	-0.11	0.114	-0.11	0.130
Had Health Insurance in HH [0,1]	0.14	0.147	0.13	0.110	0.14	0.150
Poor health in HH [0,1]	0.82	0.705	0.83	0.637	0.82	0.710
Number of children	-0.01	0.113	-0.01	0.089	-0.01	0.110
Married [0,1]	0.04	0.225	0.03	0.175	0.04	0.230
Wilshire 5000 Index	0.00002	0.000	0.00008	0.000	0.00002	0.000
Did Stock Trading Last Yr [0,1]	1.44***	0.320	1.44***	0.243	1.44***	0.320
Intercept	0.74	0.848	0.25	0.427		
N	3,857		3,857		3,857	
R ²	0.0276		0.0181		0.0276	
F-Statistic	1.60		3.10		1.59	
Prob > F	0.0155		0.0000		0.0163	

#p < .1, *p < .05, ***p < .01, ****p < .001

³¹ The time-invariant variables were interacted with time to include in the within-effects models.

³² See the Table 2.8 footnote for description of methods used.

Table 2.10: Robustness Check: Comparison of the Regression Result of the Models with *Time-Variant* Vs *Time-Invariant* Adviser Variables in the Fixed-Effects Panel Regression (1) and (4)

Ln (Direct Equity)	(1)		(4)	
	Coef.	SE	Coef.	SE
Planner [0,1]	0.04	0.160		
Keep Planner [0,1]			0.02	0.299
Lost Planner [0,1]			-0.45#	0.256
Got Planner [0,1]			-0.37#	0.212
Broker [0,1]	-0.01	0.223		
Keep Broker [0,1]			-0.92#	0.509
Lost Broker [0,1]			0.20	0.296
Got Broker [0,1]			0.25	0.365
Banker [0,1]	0.05	0.119		
Keep Banker [0,1]			-0.09	0.180
Lost Banker [0,1]			0.13	0.173
Got Banker [0,1]			0.26	0.207
Accountant [0,1]	-0.18	0.180		
Keep Accountant [0,1]			0.50	0.515
Lost Accountant [0,1]			0.23	0.239
Got Accountant [0,1]			-0.16	0.315
Ln (Income)	0.06	0.048	0.05	0.049
Ln (Non-Financial Assets)	0.01	0.022	0.01	0.023
Ln (Debt)	0.01	0.021	0.01	0.021
Not Risk Averse [0,1]	0.05	0.135	0.06	0.134
Credit Card Transactor [0,1]	-0.01	0.176	0.00	0.176
Regular Saver [0,1]	0.06	0.116	0.05	0.116
Used Internet for S&I decisions [0,1]	0.19	0.139	0.18	0.139
Friends & Co-workers' advice [0,1]	0.01	0.116	0.01	0.115
Denied Loan [0,1]	0.03	0.140	0.06	0.139
Feared Denial of Loan [0,1]	0.06	0.140	0.05	0.142
Home Owner [0,1]	0.13	0.281	0.17	0.281
Smoker in HH [0,1]	0.32	0.558	0.32	0.559
Long term horizon for S&I [0,1]	-0.09	0.157	-0.08	0.156
Salaried [0,1]	-0.02	0.184	-0.05	0.184
Self Employed [0,1]	0.42#	0.255	0.39	0.253
Unemployment Spell [0,1]	-0.12	0.134	-0.11	0.133
Had Health Insurance in HH [0,1]	0.14	0.147	0.14	0.147
Poor health in HH [0,1]	0.83	0.713	0.82	0.705
Number of children	0.00	0.112	-0.01	0.113
Married [0,1]	0.06	0.222	0.04	0.225
Wilshire 5000 Index	0.00	0.000	0.00	0.000
Did Stock Trading Last Yr [0,1]	1.44***	0.323	1.44***	0.320
Intercept	0.51	0.771	0.74	0.848
	N	3,857	3,857	
	R ²	0.0211	0.0276	
	F-Statistic	1.61	1.60	
	Prob > F	0.0265	0.0155	

$p < .1$, * $p < .05$, *** $p < .01$, **** $p < .001$

Table 2.11: Robustness Check: Comparison of the Regression Result of the Models with *Time-Variant* Vs *Time-Invariant* Adviser Variables in the First-Differenced OLS (*SCFCombo*) Models (2) and (5)

Ln (Direct Equity)	(2)		(5)	
	Coef.	SE	Coef.	SE
Planner [0,1]	0.04	0.119		
Keep Planner [0,1]			0.02	0.204
Lost Planner [0,1]			-0.46*	0.193
Got Planner [0,1]			-0.37*	0.168
Broker [0,1]	-0.01	0.165		
Keep Broker [0,1]			-0.92*	0.361
Lost Broker [0,1]			0.20	0.229
Got Broker [0,1]			0.25	0.249
Banker [0,1]	0.05	0.084		
Keep Banker [0,1]			-0.10	0.134
Lost Banker [0,1]			0.12	0.133
Got Banker [0,1]			0.26	0.186
Accountant [0,1]	-0.18	0.162		
Keep Accountant [0,1]			0.50	0.421
Lost Accountant [0,1]			0.22	0.182
Got Accountant [0,1]			-0.16	0.301
Ln (Income)	0.06	0.040	0.05	0.039
Ln (Non-Financial Assets)	0.01	0.018	0.01	0.018
Ln (Debt)	0.01	0.018	0.01	0.018
Not Risk Averse [0,1]	0.05	0.107	0.06	0.105
Credit Card Transactor [0,1]	-0.01	0.128	0.00	0.128
Regular Saver [0,1]	0.06	0.086	0.05	0.086
Used Internet for S&I decisions [0,1]	0.19 [#]	0.099	0.18 [#]	0.099
Friends & Co-workers' advice [0,1]	0.01	0.080	0.01	0.080
Denied Loan [0,1]	0.04	0.103	0.06	0.101
Feared Denial of Loan [0,1]	0.06	0.115	0.05	0.115
Home Owner [0,1]	0.12	0.195	0.17	0.197
Smoker in HH [0,1]	0.32	0.418	0.32	0.418
Long term horizon for S&I [0,1]	-0.09	0.116	-0.08	0.115
Salaried [0,1]	-0.02	0.125	-0.05	0.123
Self Employed [0,1]	0.42*	0.201	0.39*	0.197
Unemployment Spell [0,1]	-0.12	0.111	-0.11	0.114
Had Health Insurance in HH [0,1]	0.13	0.107	0.13	0.110
Poor health in HH [0,1]	0.83	0.639	0.83	0.637
Number of children	0.00	0.089	-0.01	0.089
Married [0,1]	0.06	0.170	0.03	0.175
Wilshire 5000 Index	0.00	0.000	0.00	0.000
Did Stock Trading Last Yr [0,1]	1.45***	0.245	1.44***	0.243
Intercept	0.23	0.407	0.25	0.427
	N	3,857	3,857	
	R ²	0.0203	0.0181	
	F-Statistic	3.05	3.10	
	Prob > F	0.0000	0.0000	

[#] $p < .1$, * $p < .05$, *** $p < .01$, **** $p < .001$

Table 2.12: Robustness Check: Comparison of the Regression Result of the Models with *Time-Variant* Vs *Time-Invariant* Adviser Variables in the First-Differenced OLS (Manually Adjusted Clustered Robust SE) Models (3) and (6)

Ln (Direct Equity)	(3)		(6)	
	Coef.	SE	Coef.	SE
Planner [0,1]	0.04	0.160		
Keep Planner [0,1]			0.02	0.300
Lost Planner [0,1]			-0.45#	0.260
Got Planner [0,1]			-0.37#	0.210
Broker [0,1]	-0.01	0.220		
Keep Broker [0,1]			-0.92#	0.510
Lost Broker [0,1]			0.20	0.300
Got Broker [0,1]			0.25	0.370
Banker [0,1]				
Keep Banker [0,1]	0.05	0.120	-0.09	0.180
Lost Banker [0,1]			0.13	0.170
Got Banker [0,1]			0.26	0.210
Accountant [0,1]	-0.18	0.180		
Keep Accountant [0,1]			0.50	0.520
Lost Accountant [0,1]			0.23	0.240
Got Accountant [0,1]			-0.16	0.320
Ln (Income)	0.06	0.050	0.05	0.050
Ln (Non-Financial Assets)	0.01	0.020	0.01	0.020
Ln (Debt)	0.01	0.020	0.01	0.020
Not Risk Averse [0,1]	0.05	0.130	0.06	0.130
Credit Card Transactor [0,1]	-0.01	0.180	0.00	0.180
Regular Saver [0,1]	0.06	0.120	0.05	0.120
Used Internet for S&I decisions [0,1]	0.19	0.140	0.18	0.140
Friends & Co-workers' advice [0,1]	0.01	0.120	0.01	0.120
Denied Loan [0,1]	0.03	0.140	0.06	0.140
Feared Denial of Loan [0,1]	0.06	0.140	0.05	0.140
Home Owner [0,1]	0.13	0.280	0.17	0.280
Smoker in HH [0,1]	0.32	0.560	0.32	0.560
Long term horizon for S&I [0,1]	-0.09	0.160	-0.08	0.160
Salaried [0,1]	-0.02	0.180	-0.05	0.180
Self Employed [0,1]	0.42#	0.260	0.39	0.250
Unemployment Spell [0,1]	-0.12	0.130	-0.11	0.130
Had Health Insurance in HH [0,1]	0.14	0.150	0.14	0.150
Poor health in HH [0,1]	0.83	0.710	0.82	0.710
Number of children	0.00	0.110	-0.01	0.110
Married [0,1]	0.06	0.220	0.04	0.230
Wilshire 5000 Index	0.00002	0.000	0.00002	0.000
Did Stock Trading Last Yr [0,1]	1.44***	0.320	1.44***	0.320
Intercept				
	N	3,857	3,857	
	R ²	0.0211	0.0276	
	F-Statistic	1.60	1.59	
	Prob > F	0.0273	0.0163	

$p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.13: Comparison of Results for Different Levels of Initial Exposure to Directly-Held Equity using First-Differenced OLS with Manually-Adjusted Clustered Robust Standard Errors

OLS – First Differenced Coefficients (Robust Clustered Standard Errors)								
Ln (Direct Equity)	(6a)		(6b)		(6c)		(6d)	
	Level of Initial Equity as % Equity by Total Financial Assets in 2007							
	Zero		15% or less		25% or less		More than zero	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
Keep Planner [0,1]	1.79***	0.360	0.83**	0.320	0.46	0.320	-0.42	0.390
Lost Planner [0,1]	0.28	0.210	-0.11	0.240	-0.28	0.250	-1.09*	0.490
Got Planner [0,1]	-0.05	0.190	-0.13	0.200	-0.21	0.210	-0.24	0.430
Keep Broker [0,1]	1.46*	0.640	-0.49	0.670	-0.74	0.600	-0.38	0.590
Lost Broker [0,1]	1.09***	0.330	0.26	0.330	0.30	0.330	0.26	0.430
Got Broker [0,1]	1.21**	0.430	0.38	0.410	0.34	0.390	0.74	0.500
Keep Banker [0,1]	-0.19	0.140	-0.15	0.170	-0.09	0.170	-0.82	0.500
Lost Banker [0,1]	-0.04	0.150	0.15	0.160	0.18	0.160	-0.36	0.440
Got Banker [0,1]	0.37*	0.180	0.42*	0.190	0.40*	0.190	-0.71	0.450
Keep Accountant [0,1]	0.86	0.600	0.69	0.630	0.76	0.560	1.32*	0.660
Lost Accountant [0,1]	-0.19	0.240	0.03	0.240	0.13	0.230	0.77	0.480
Got Accountant [0,1]	-0.31	0.310	-0.09	0.280	-0.19	0.300	0.60	0.590
Ln (Income)	0.03	0.040	0.02	0.050	0.03	0.060	0.03	0.100
Ln (Non-Financial Ass)	0.00	0.020	0.01	0.020	0.01	0.020	0.24**	0.090
Ln (Debt)	-0.03	0.020	-0.02	0.020	-0.01	0.020	0.07	0.050
Not Risk Averse [0,1]	-0.06	0.120	-0.05	0.120	-0.01	0.130	1.04**	0.400
Credit Card Trans [0,1]	-0.05	0.140	-0.13	0.150	-0.15	0.160	-0.13	0.440
Regular Saver [0,1]	-0.04	0.100	0.02	0.110	0.03	0.110	-0.06	0.280
Used Internet [0,1]	0.01	0.120	0.08	0.130	0.13	0.130	0.13	0.300
Friends advice [0,1]	0.04	0.090	0.00	0.100	-0.02	0.110	-0.16	0.290
Denied Loan [0,1]	0.31**	0.110	0.14	0.130	0.06	0.130	0.04	0.440
Feared Denial [0,1]	0.12	0.100	-0.06	0.120	-0.04	0.120	-0.16	0.650
Home Owner [0,1]	0.50*	0.250	0.32	0.260	0.26	0.270	-1.27	0.770
Smoker in HH [0,1]	-0.06	0.510	0.16	0.510	0.19	0.520	1.93	1.630
LT Horizon [0,1]	-0.08	0.150	-0.16	0.160	-0.09	0.160	-0.30	0.290
Salaried [0,1]	-0.13	0.120	-0.03	0.170	-0.09	0.170	1.16*	0.540
Self Employed [0,1]	-0.02	0.230	0.27	0.250	0.32	0.250	1.51*	0.600
Unemployment [0,1]	0.09	0.110	-0.04	0.120	-0.08	0.130	-0.22	0.380
Health Insurance [0,1]	0.05	0.120	0.13	0.130	0.13	0.130	-1.17	0.780
Poor health in HH [0,1]	0.55*	0.220	0.63	0.390	0.48	0.390	1.32	2.060
Number of children	0.14#	0.080	0.09	0.090	0.12	0.090	-0.57#	0.330
Married [0,1]	-0.04	0.200	0.13	0.200	0.09	0.210	-0.89	0.580
Wilshire 5000 Index	-0.0001***	0.00	-0.00005*	0.00	-0.00002	0.00	0.0005***	0.00
Did Stock Trad [0,1]	1.71**	0.620	1.66***	0.400	1.65**	0.370	0.29	0.294
N	2,294		2,850		3,075		1,563	
R ²	0.1744		0.0518		0.0374		0.3519	
F-Statistic	6.87		2.41		1.75		11.76	
Prob > F	0.0000		0.000		0.0374		0.0000	

#p < .1, *p < .05, **p < .01, ***p < .001

Table 2.14: Fixed-Effects Panel Logit Regression with OIM Standard Errors Presenting Regression Result with Time- Invariant Variables and Comparison with the Time-Variant Model as a Robustness Check³³

Have Direct Equity [0,1]	(7)			(8)		
	Coef.	SE	OR ³⁴	Coef.	SE	OR
Planner [0,1]	0.18	0.163	1.20			
Keep Planner [0,1]				-0.11	0.229	0.89
Lost Planner [0,1]				-0.40	0.257	0.67
Got Planner [0,1]				-0.05	0.280	0.96
Broker [0,1]	0.13	0.179	1.14			
Keep Broker [0,1]				-0.28	0.318	0.76
Lost Broker [0,1]				-0.34	0.257	0.72
Got Broker [0,1]				-0.15	0.316	0.86
Banker [0,1]	0.14	0.152	1.15			
Keep Banker [0,1]				-0.13	0.272	0.87
Lost Banker [0,1]				0.04	0.259	1.04
Got Banker [0,1]				0.31	0.241	1.36
Accountant [0,1]	-0.08	0.216	0.92			
Keep Accountant [0,1]				0.34	0.404	1.41
Lost Accountant [0,1]				0.22	0.298	1.25
Got Accountant [0,1]				0.08	0.359	1.09
Ln (Income)	0.03	0.035	1.03	0.02	0.035	1.02
Ln (Non-Financial Assets)	0.02	0.065	1.02	0.02	0.066	1.02
Ln (Debt)	0.03	0.025	1.03	0.03	0.026	1.03
Not Risk Averse [0,1]	0.21	0.187	1.24	0.20	0.189	1.22
Credit Card Transactor [0,1]	-0.03	0.218	0.97	0.03	0.220	1.03
Regular Saver [0,1]	-0.07	0.157	0.93	-0.08	0.158	0.93
Used Internet for S&I decisions [0,1]	0.16	0.160	1.17	0.16	0.162	1.18
Friends & Co-workers' advice [0,1]	0.10	0.149	1.10	0.10	0.150	1.11
Denied Loan [0,1]	0.10	0.255	1.10	0.10	0.258	1.10
Feared Denial of Loan [0,1]	0.08	0.285	1.08	0.07	0.288	1.07
Home Owner [0,1]	0.47	0.439	1.60	0.52	0.444	1.68
Smoker in HH [0,1]	0.19	0.661	1.21	0.28	0.668	1.32
Long term horizon for S&I [0,1]	0.17	0.183	1.18	0.14	0.186	1.15
Salaried [0,1]	0.03	0.308	1.03	-0.02	0.311	0.99
Self Employed [0,1]	0.11	0.368	1.12	0.11	0.373	1.12
Unemployment Spell [0,1]	-0.10	0.240	0.90	-0.14	0.242	0.87
Had Health Insurance in HH [0,1]	-0.10	0.486	0.90	-0.05	0.495	0.95
Poor health in HH [0,1]	1.13	1.448	3.08	1.20	1.474	3.32
Number of children	-0.04	0.149	0.96	-0.06	0.151	0.94
Married [0,1]	-0.10	0.318	0.91	-0.10	0.321	0.91
Wilshire 5000 Index	0.00	0.000	1.00	0.00	0.000	1.00
Did Stock Trading Last Yr [0,1]	1.00***	0.213	2.72	0.99***	0.217	2.69
	N	1,150		1,150		
	LL	-375.55		-372.61		
	LR Chi2	46.01		51.91		

#p < .1, *p < .05, ***p < .01, ****p < .001

³³ OIM = Observed Information Matrix

³⁴ OR = Odds Ratio

CHAPTER 3

ESSAY II: RECOVERY OF THE WORKING HOUSEHOLDS FROM THE GREAT RECESSION: A STUDY OF CHOICE OF FINANCIAL ADVISER AND CHANGE IN RETIREMENT EQUITY

The purpose of this part of the study is to investigate the relationship between changes in retirement equity of the working population in the United States and the changes in their choice of advisory services from different types of financial advisers while recovering from the Great Recession. The model of retirement in the United States comprises of *social security*, *pensions*, and *savings*, out of which social security provides a secure and defined benefit at retirement. Social security forms a risk-free safety net but cannot replace most of the income, especially for the middle and upper-income strata. The underlying risks in personal savings and the defined-contribution plans lie with the employees, which means that the adequacy of retirement income depends on their ability to generate high enough returns, for long enough time, which requires them to take certain investment risks. Taking risks for higher returns becomes especially important in the low-interest rate environment of the United States in which the bank interest rates cannot be expected to generate higher returns from investable financial assets. Investing in stocks and equity-based funds usually are among the handful of opportunities that Americans have today. It is important for household investors to seize the opportunities, if present, to buy these investments at low-cost. The recovering market after the Great Recession presented an opportunity to purchase low-cost equity. While households could make wrong decisions under stress due to negative framing from the recent market downturn, the advisers knew better and could have helped their

clients to clearly comprehend their options. This study used the 2007 - 2009 panel of the Survey of Consumer Finances that constitutes the pre-recession wave of 2007-08, and the post-recession wave of 2009-10. The timing of the interviews in the panel presents an opportunity to test the relationship of the decisions of households to choose a type of adviser and to make the right portfolio choices. Being a panel survey, it also allowed the control for individual-level heterogeneity along with other contemporaneous factors in models.

Literature Review

Understanding Retirement in the United States

American households desire to have the financial independence to maintain their lifestyle in retirement after the income from employment ceases. There are two hypotheses whose mention is warranted: the *permanent income hypothesis* (Friedman, 1957) and the *life cycle hypothesis* (Ando & Modigliani, 1963; Modigliani, 1966). While both hypotheses present similar ideas, they differ in their approach. The *life-cycle hypothesis* proposes that people move from saving mode to dissaving mode based on their stage of life and income. The *permanent income hypothesis* proposes that people's assets accrued over a lifetime, generate a permanent income that they consume over their lives. The permanent income hypothesis also proposes the idea of a transitory income which decides the saving or dissaving mode of an individual, based on its size and sign. In other words, in order to have a financially independent retirement, one must forgo a part of the current consumption and invest it to allow it to grow and accumulate at a given rate, over time (Ibbotson, Xiong, Kreitler, Kreitler, & Chen, 2007). These hypotheses are among other theories of consumption that form the core idea behind retirement. The United States' retirement system broadly provides three major opportunities anyone can avail to retire: 1. Social security 2. Individual savings 3. Employer-sponsored pension programs. Often referred to as the *three-legged*

stool, Munnell, Sundén, and Taylor (2001) called the retirement system ‘*pretty wobbly*’ because of the imbalance of participation by the masses and insufficiency of required total benefits. It is important to understand all three parts of retirement and their implications in terms of the investor demographics.

Social security. Social security forms the backbone and safety-net of the United States’ retirement system and helps about half of the population above 65 years of age with at least 50 percent of their household income and about 25 percent of the older population with at least 90 percent of their earnings (Dushi, Iams, & Trenkamp, 2017). Social security is a progressive *defined-benefit* system that helps household with lower wages more than the middle and upper-income households (Befort, 2007). *For example*, a single person with average earnings over their work history of \$15,000 (indexed to 2013) would have had more than 70 percent of the wage replaced by the workers’ benefit of Social Security. The wage-replacement reduces to 36 percent for someone with average earnings over their work history of \$75,000 and only 30 percent for someone with historical earnings of \$109,000 (Clingman, Burkhalter, & Chaplain, 2014). Social security uses the *Average Indexed Monthly Earnings (AIME)* which is equal to the highest indexed earnings in any 35 years of workers’ lives to compute the benefits. Therefore, anyone who has had a period of unemployment might lose some of the retirement benefits, hence the ‘*wobbliness*’ (Munnell, Sundén, & Taylor 2001). Also, the Social Security Administration caps the wage base at an adjusted limit which in 2017 was \$127,200 (Social Security Administration, 2017) and this limit also caps the maximum benefit every year³⁵ (Butrica, Johnson, & Smith, 2011). The social security leg of the retirement stool usually becomes too short for the middle and high-income families, and they must rely on the other two legs which are the personal savings and the employer-

³⁵ The wage base was \$ 97,500 in year 2007, \$ 102,000 in the year 2008, and \$ 106,800 in the year 2009.

sponsored pensions. If one was only concerned with the ‘return’ aspect of the retirement legs, then the total retirement model with social security, savings, and pensions may not sound so bad. A major problem rests with the underlying risk of the model. Social security, however inadequate, provides a source of retirement income with a *collectivized risk* due to its ‘defined benefit’ nature backed by the federal government (Herd, 2009). The nature of risk is not the same as the other two legs. Employees have witnessed a shift in the employer-sponsored pensions from defined-benefit plans (DB) to defined-contribution plans (DC) during the past few decades (Herd, 2009). As the number of defined contribution plans have grown, the risk has been shifted to more *individualized* than *collectivized* in the pension accounts (Herd, 2009). The nature of the risk of the individual savings and the defined-contribution plans forces us to combine them into one leg, the risk of which the employee must bear (Herd, 2009). The individualized risk problem becomes amplified for the middle and higher-income families because of low wage-replacement ratios under social security which forces them to fall back more on their own ability to arrange for the savings and pensions (Herd, 2009). In other words, the middle and higher income must shoulder the risk of their retirement if they want adequacy of income in old age. This factor leaves them with no other choice but to make the right investment decisions and hope for no systemic problems when the distributions begin.

Employer-sponsored retirement pension plans. The employer-sponsored retirement plans allow employees to offset a limited amount of the earned wages into a tax-sheltered account managed by a financial institution at the behest of the employer. Employees can receive distributions after the age of 59½, at which time they can avoid the 10 percent penalty. The employers match the employee’s contributions to some extent. In rare cases, these plans are ‘non-qualified’ for income tax deferment. The qualified plans could either be a defined benefit (DB)

plan or a defined contributions (DC) plan. The defined-benefit plans provide a predefined life-annuity type benefit to its participants, based on a formula. The defined-contribution plans, such as the 401(k) plan, allow contributions to a maximum limit of the predefined amount of pre-tax wages (CFP Board, 2015). The defined benefit plans, like the social security, are the responsibility of the institutions offering the plan under their collective risk. On the other hand, the defined-contribution plans move the risk to the individuals who hold the plan. There has been a shift in the retirement plans from defined benefit plans to defined contribution plans. Poterba, Venti, and Wise (2009) used the Survey of Income and Program Participation (SIPP) data to study the participation in the defined-benefit plans for several cohorts. The findings for the members of the cohort “C45” who were 45 years old in 1984, were most interesting. Poterba et al. (2009) found that the participation rate reduced from 45 percent (in 1984) to 20 percent (in 2003). Interestingly, Poterba, Venti, and Wise (2008) had reported a corresponding increase in 401(K) plan participation for the same cohort (C45) from 12 percent (in 1984) to 35 percent (in 2003). Today a substantial population of employees in the private sector is part of the defined-contribution plans. The Bureau of Labor Statistics (BLS) reported that approximately 41 percent of all workers in the United States participated in the defined contribution plans (Stoltzfus, 2016). On the other hand, only 15 percent of privately-employed individuals and 75 percent of state and local government employees participated in the defined-benefit pension plans (Wiatrowski, 2016). Defined-contribution plans have become popular because they are portable and flexible. However, these plans also need the participants to make wise choices responsibly (Benartzi & Thaler, 2007) because the participants bear the risk of a shortfall of plan funding, not the employers as was in case of the defined-benefit plans (Befort, 2007; Herd, 2009).

Personal saving. The employers do not sponsor the personal savings of the employees. People have a choice to save financial assets and nonfinancial assets, such as real or tangible property. Some of the savings accounts, such as traditional-IRA and Roth-IRA are tax-advantaged to a limited amount. For example, taxpayers can deduct the traditional IRA contributions from their current income on the income tax return and defer taxes until retirement (Internal Revenue Service, 2017). On the other hand, households fund the Roth IRA account with after-tax dollars and get tax-free earnings even at retirement (Internal Revenue Service, 2017). The federal government also provides other tax-advantaged opportunities for specific purposes, such as 529 plans for education, and the health savings accounts (HSA) for health expenses (Internal Revenue Service, 2016). The personal savings rate identifies the amount that is available to the individuals, which they can choose to save for retirement³⁶. Just before the Great Recession of 2008, the savings rate in the United States fell sharply to 1.5 percent in 2005 and stayed low before the downturn (See Figure 3.1 and Figure 3.2) (U.S. Bureau of Economic Analysis, 2017d).

For several years before the recession hit, the personal expenditure of the households in the United States grew substantially (see Figures 3.3 and 3.4), which could be the reason for the decline in savings (Guidolin & La Jeunesse, 2007). Even in the current scenario, the saving rate is decreasing, which is a matter for concern. The savings rate was 3.8 percent in June 2017, lower than 2016 (4.9 percent), 2015 (6.1 percent) and 2014 (5.7 percent) (Rankin, Davis, Smith, & Aversa, 2017). Clearly, these saving rates are far from adequate. An individual of 25-35 years of age with a reasonable risk portfolio and regular raises, would require a long-term investment with a savings rate of 10-13 percent annually in order to achieve the retirement goal of 80 percent wage

³⁶ Personal income less current taxes and personal expenses constitute personal saving. Income minus taxes constitutes disposable personal income, and the personal savings rate is the percentage of personal saving divided by disposable personal income (U.S. Bureau of Economic Analysis, 2017d)s.

replacement (Ibbotson et al., 2007). The required savings rate is even higher for the individuals who begin saving late. Individuals can be ill-prepared for retirement because of reasons, such as low savings rate and the delay in participation in retirement planning. Another consideration is the required rate of return on investments. It is evident that a retirement portfolio with a sufficiently high rate of return can mitigate the ill-effects of low savings and late starting. However, a choice of the portfolio should be suitable for an investor based on risk-tolerance and time horizon. A well-diversified portfolio with a significant portion of common-stocks can provide better returns in the long-term along with purchasing power hedge (Markowitz, 1952).

Impact of the Great Recession on Retirement

Before the Great Recession started, the stock market peaked at the beginning of the last quarter of 2007 (Bricker et al., 2011; Mian & Sufi, 2009; Verick & Islam, 2010). Major banks had raised concerns about liquidity, and many experts had been blowing the whistle on the alarming rate of loan defaults in the housing sector (Mian & Sufi, 2009, 2010). Merrill Lynch announced its losses in October and it became apparent by December of 2007 that this was not an isolated incident but was the beginning of an economic recession (Keoun, 2007; Mian & Sufi, 2010). Between early October 2007 and March 2009, the prices of equities fell nearly 50 percent (Bricker et al., 2011). While the collectivized nature of the risk in the defined benefit plan insulated its participants from the shock, the recession hit the 401(K) balances directly (Munnell & Rutledge, 2013). Bond prices increased with lowered interest rates but to no avail of the investors (Munnell & Rutledge, 2013). If the investors sold the higher priced bonds, the reduced interest rates on the replacement bonds offset the benefit from the capital gains (Munnell & Rutledge, 2013). If the investors hold the bonds to maturity, then the price change had no impact on the bonds (Munnell & Rutledge, 2013). Social Security and pensions cushioned the near-retirement individuals from

losses in wealth during the recession, especially for the lowest wealth quartile (Munnell & Rutledge, 2013). More individuals who held defined-contribution plans, IRA, and financial assets had losses than gains (Munnell & Rutledge, 2013). Many people delayed retirement, and others who were laid off were not very likely to leave the labor force, which offset the job-losses in recession (Goda, Shoven, & Slavov, 2011; Gustman, Steinmeier, & Tabatabai, 2012). Butrica et al. (2011) used a microsimulation model to show that the weak wage growth during the recession would lead to a reduction of 4.3 percent in the average annual incomes of the working-age individuals, at the age of 70, assuming a permanent reduction in wages. Overall, buying low-cost equity after the recession could break the bias related to market timing and provide a growth opportunity for the investors' retirement accounts (Benartzi & Thaler, 2007).

Heuristics in Retirement Planning

Benartzi and Thaler (2007) compiled a set of heuristics and biases in the successive decisions that households confronted for retirement. These decisions are *enrollment decision; to join or not to join, rates of contribution, and asset allocation strategies* (Benartzi & Thaler, 2007). This part of the study had restricted the attention to the biases related to asset allocation, but an understanding of other heuristics is also essential.

To join or not to join. This heuristic affects the participation decision or take-up rates. Table 3.1 (National Compensation Survey, 2017) presents the access, participation, and take-up rates of retirement benefits in the United States as of March 2017³⁷. The take-up rates were nearly 75-76 percent for all workers in the private industry, which was a group that represented the defined contribution plans (Stoltzfus, 2016; Wiatrowski, 2016). A fourth of the employees who had access to the retirement plans chose not to participate (National Compensation Survey, 2017).

³⁷ Take-up rates = percentage participation of the employees who have access to a plan.

The take-up rates were even worse for part-time and low-wage workers and also for the employees of smaller firms (National Compensation Survey, 2017). Because of the low access rates to these groups, one would expect them to seize the opportunity presented and participate, but surprisingly they did not. Benartzi and Thaler (2007) presented a couple of extreme examples: The first one was from the United Kingdom where only 51 percent of the eligible employees joined a defined benefit plan fully funded by the employer (Benartzi & Thaler, 2007). Another extreme example was a finding and a field experiment conducted by Choi, Laibson, and Madrian (2005) on a cohort of employees aged 59½ and still working. These employees were allowed to take non-penalized distributions from their currently invested, and company matched 401(K) accounts (Choi et al., 2005). Thirty six percent of these employees not only forwent a clear arbitrage opportunity, but they also showed an insignificant change even after getting informed through a controlled survey (Choi et al., 2005).

Rates of contribution and asset allocation. Apart from lack of participation, Benartzi and Thaler (2007) pointed to the low rates of contribution and the heuristic related to asset allocation strategies. Mostly, private industry uses the defined contribution 401(K) plans for employee retirement and makes the employees choose their own contribution rate and portfolio allocations in these accounts (Befort, 2007; Benartzi & Thaler, 2007; Herd, 2009). While the contribution rates can stay as low as the default rate that is presented to the employees, Benartzi and Thaler (2007) also suggested that people tend to embrace naïve diversification heuristic. For example, when presented with n options in a plan, people tend to split the investments by the $1/n$ rule which means that most of the people would split the investments as 50 percent bonds and 50 percent stocks if presented with an option of just one stocks fund and one bond fund (Benartzi & Thaler, 2001). However, in the case of several pre-mixed funds, the $1/n$ heuristic does not work because

people cannot tell the difference between funds (Benartzi & Thaler, 2007). Past studies have found that the *automatic enrollment* strategy could lead to increased tendency of the employees to retain the default rate of contribution and asset allocations and not just higher participation in 401(K) plans (Benartzi & Thaler, 2007; Choi, Laibson, Madrian, & Metrick, 2002; Madrian & Shea, 2001).

Another instance of naïve diversification comes to light when companies provide their stocks as an investment opportunity and as *company-match* (Benartzi & Thaler, 2007). Employees usually perceive such offers as implicit investment advice which is due to the *endorsement effect* (Benartzi, 2001). Other explanations were derived from employees' bias due to familiarity with the company (Huberman, 2001) and the representativeness (Benartzi, 2001). Representativeness occurs when employees excessively extrapolate the good past performance of their employer's stock to an anticipation of good future performance and overexpose their portfolio to the employer's stock (Benartzi, 2001; Tversky & Kahneman, 1974). The two primary problems with excessive exposure to company stock are 1. severe under-diversification and 2. excessive personal risk to both the current job and future retirement in case the company went bankrupt Enron and Worldcom being examples (Benartzi & Thaler, 2007). Mitchell and Utkus (2002) reported that over 5 million of employees in the United States had company stocks representing 60 percent of their retirement savings. WorldatWork and American Benefits Institute (2013) reported through their survey findings that in 2012 only 3 percent of the companies were solely matching the 401(K) with company stock, as compared to 17 percent of companies in 2002.

Heuristics Related to Equity Decisions

The focus in this part of the study was on underexposure to equity and the heuristics related to market timing. Benartzi and Thaler (2007) found that the equity participation of the employees

increased throughout the 1990s when the markets were climbing up, and equity was becoming successively more expensive. The equity participation grew to 65 percent in 2000 from 52 percent in 1992 (Benartzi & Thaler, 2007). However, after the markets fell due to the *Dot-Com* bubble burst, and the employees reduced their equity exposure to 54 percent (Benartzi & Thaler, 2007). Understandably, the time of economic recessions can be very confusing for any investor to make a buy, sell, or hold decision, especially at a time when the market is falling drastically (Kahneman & Tversky, 1979). Such are the times when inherent ambiguity, negativity, complex policy decisions, and distrust in the system can become palpable (Bricker et al., 2011; Verick & Islam, 2010). When the falling indices seem abysmal, investors can find themselves caught between the *disposition effect* (Shefrin & Statman, 1984) of holding on to the losing securities for too long, and the *buy high -sell low* heuristic (Benartzi & Thaler, 2007) of selling and booking the loss on diversified portfolios.

Opportunity to Hold and Buy Low-Cost Equity

The Business Cycle Dating Committee (2010) of the National Bureau of Economic Research concluded that the Great Recession began in December 2007 and lasted for 18 months, and ended in June 2009 and economic recovery began that month. The timing of the two waves of the SCF's interview solves this problem for us. SCF conducted the pre-recession wave between May 2007 to March 2008, and the post-recession wave between July 2009 and January 2010. K. T. Kim and Hanna (2016) included a graph that is presented in Figure 1.1 to help us visualize the importance of the survey period *vis-à-vis* the recession. The first wave of the survey was randomly conducted well before the beginning of the recession but continued until after the recession had already begun. SCF conducted the second wave of interviews after the market recovery was well underway. SCF captured the Wilshire 5000 Total Market index closing value on the day of the

interviews which helps us to understand the crucial timing aspect in detail. Table 3.2 presents a summary of the closing values of the Wilshire 5000 Total Market index from the survey. Between early 2005 and late 2012, the Wilshire 5000 index peaked at approximately 15800 in October 2007. The first wave of SCF interviews occurred before, during, and after this peak. SCF restricted access to the date of interview of households. The mean of the Wilshire 5000 in the first wave was at 15,155 with a standard deviation of 442 and a range of 3000 points (12800 to 15800). The first wave lies on both sides of the peak and without actual interview dates, clear discernment between the respondents before and after the peak was impossible. The timing of the second wave of the survey was more consistent and reliable. The Wilshire 5000 index ranges between 10100 and 11800 and grew well above the rock bottom of early March 2009 at 7000 points, and all respondents witnessed a continuous uptrend ranging from 26 percent to 69 percent since the rock-bottom. Overall, the market was still low. The maximum level of Wilshire during the second wave was 1000 points lower than the minimum level during the first wave. In other words, during the second wave of interviews, the total market index was indicating a consistent market recovery, but the stocks were still much cheaper than at the time of the first wave of interviews with the same respondents. Such a scenario presents an opportunity to invest in low-cost equity. Therefore, this study used the second wave to test if some of the respondents could break the *buy high – sell low* heuristic (Benartzi & Thaler, 2007) with the purchase of low-cost equity in their retirement portfolio and the factors that are associated with the decision. We cannot blame the irrationality exhibited by unaware investors because they will likely show more aversion to losses than affinity to gains during a situation of uncertainty (Kahneman & Tversky, 1979) and make sub-optimal decisions that can lead to losses. Such situations can be stressful and tricky and financial advice from experts can reduce such problems (Fischer & Gerhardt, 2007).

Financial Advisers in the United States

Financial professionals and firms that primarily are in the business of sales of suitable financial instruments and services are licensed and regulated by FINRA (Financial Industry Regulatory Authority) (Lytton et al., 2013). The primary objective of these firms is sales, not advice, although advice could be a part of the sales conversations. During the Great Recession, the FINRA registrants, such as the brokers, bankers, and insurance agents were covered under the fraud protection law, code of ethics, and the *suitability standard* as defined by FINRA (Lytton et al., 2013). The suitability standard required the adviser to recommend the products that suited the clients' investment profile including age, financial situations, time horizon, and objectives. However, under the suitability standard the financial advice did not require to be in the clients' best interest and the advisers did not need to be loyal or caring for the client (Lytton et al., 2013). On the other hand, some of the firms and professionals that primarily provided financial advice were licensed and regulated by the SEC (Securities and Exchange Commission) usually as an RIA (Registered Investment Adviser) (Lytton et al., 2013). The SEC and the American Bar Association define the *fiduciary standard* of care and cover financial planners and lawyers. The fiduciary standard makes for a trustworth, and responsible code of care because it puts the clients' interest first (Lytton et al., 2013). Fiduciary law has been fast changing since the Great Recession. However, during the Great Recession, the FINRA registrants, such as the brokers, bankers, and insurance agents, were covered under the fraud protection law, code of ethics, and the suitability standard, but not the fiduciary law (Lytton et al., 2013).

In practice, the division among the advisers is not very clear to the customers because of the overlap of business objectives and because both type of registrants (SEC and FINRA) tend to choose from the many available channels to do business, such as banks, brokerage firms, insurance

companies, RIA firms, and family-owned businesses (Lytton et al., 2013). These channels become the business fronts for the clients to choose from based on their needs which could be specific advice or products or comprehensive advice (Lytton et al., 2013). The financial advisers are motivated by type and extent of services provided, including primary sources of compensation, industry, standard of care, and the governing law. The 2009 panel survey included respondents' identification of the financial advisers, without providing any information about the advisers' qualifications, certifications, associated firms, modes of compensation, extent of services, or their associated firm (the channel).

Factors affecting the decisions to use the financial advisors. This part of the study focused on the question for savings and investment decisions and the answer choices with the top four types of financial advisers, including financial planner, broker, banker, and accountant. Hanna (2011) used the pooled cross-sections of 1998 to 2007 SCF data to explain the demand for financial planning services for both investments and savings decisions or borrowing decisions pooled together. Hanna found that households using financial planners grew from 21.7 percent in 1998 to 25 percent in 2007. Hanna also noted an association between investor attributes, such as risk-tolerance, race, and net-worth with the decision to use planner services. Joo and Grable (2001) found that among the pre-retirees the factors that associated positively with help-seeking behavior for retirement were higher income, better behaviors, higher risk tolerance, and proactivity toward retirement. Collins (2012) argued that individuals with higher financial literacy were more likely to seek financial advice related to savings and investments, and not related to debt and borrowing. We know that expert services create *an information asymmetry* favoring those that have more information (Akerlof, 1970; Rothschild & Stiglitz, 1976; Spence, 1973, 1974). The expert financial services are by nature *credence services* that tend to be difficult to understand or evaluate by

households which can include the decisions to choose an adviser (Dulleck & Kerschbamer, 2006; Emons, 1997). Even if households cannot positively evaluate the merits of using an expert's advice, they tend to overly fall back on it, especially for problems of high complexity (Engelmann et al., 2009).

Views on effectiveness of financial advisors. Chalmers and Reuter (2010) used the Oregon University System's Optional Retirement Plan (ORP) to study the decisions and outcomes related to retirement savings between 1999 and 2009. They found that the advisor-guided portfolios underperformed as compared to the ones without advisers, by 1 percent, based on after-fee returns. Chalmers and Reuter concluded that "access to a financial adviser is a costly and imperfect substitute for financial literacy". Chalmers and Reuter did not specify the type of investment advisers in the study. However, Chalmers and Reuter found that the investors using *fee-based* face-to-face financial advice had more diverse portfolios, more likely to be far from the default options, invested in equity higher than the other group, and were unlikely to change their equity position during the market downturn. Later, Collins (2012) argued that financial advice was a compliment of, not substitute for financial literacy. An uninformed investor may make sub-optimal decisions when faced with uncertainty, especially in an expected loss scenario, due to behavioral biases (Kahneman & Tversky, 1979; Shefrin & Statman, 1984). However, studies have shown that financial advice from experts can reduce such problems (Fischer & Gerhardt, 2007). This study intended to find the relationship between decisions related to retirement equity and the decisions related to retain, obtain, or reject the different types of financial advisors, after the recent loss scenario of the Great Recession.

Methodology

Survey of Consumer Finances 2007 - 2009 Panel

The Federal Reserve Board (FRB), with the help of the NORC³⁸, surveys the United States' households on a triennial cross-sectional basis in order to understand household financials, attitudes, and demographics. The data is called the Survey of Consumer Finances (SCF) and employs a dual-stage sampling design that includes a multistage area probability sample for the general population, and a list sample that is derived from the income-tax returns data of the wealthy. Households constituting one or more financial interdependent individuals are the focus of the survey and are called Primary Economic Unit (PEU). SCF handles the missing data through a multiple-imputation process and provides five imputations for every observation. The 2007 survey occurred in the middle of the Great Recession which officially ended in June 2009. As the market started to recover, the FRB with the help of the NORC conducted a re-interview starting in July 2009 with a smaller number of variables with the intention of understanding the extent of changes that the families experienced during the crisis. The 2007 cross-sectional survey had 4,422 respondents. The re-interview response rate in 2009 was at 88.7 percent with 3,857 respondent PEUs that excluded the families with significant compositional change, for both list sample and the area-probability sample. (Bricker et al., 2011; Kennickell, 2010, 2017)

Dependent Variable

SCF provides us with a variable called RETEQ, which is the sum of equity held in IRA/Keogh accounts, 401(K) and all accounts with current or future pension benefits. This study used the natural log of RETEQ as a dependent variable. See Table 3.5 for a summary of the dependent variable.

³⁸ The non-partisan and objective research organization NORC at the University of Chicago

The Dynamics Of Use of Financial Advisers³⁹

As discussed in Chapter 1, this study used the idea presented in Cummings and James (2014) and created these time-invariant *dynamic-use* variables from the *contemporaneous-use* variables for a given year, 0 = No adviser and 1 = Used Adviser. This study divided financial advisers into the following four groups namely *No Adviser* (the reference group), *Got Adviser*, *Lost Adviser* and *Keep Adviser*, as given in Table 1.2. This categorization helped to associate the dynamics of the advisor-related decisions of households to their financial decisions. As the newly created variables were *time-invariant*, so this study interacted them with the year-indicator, to induce time-related variability, and prevented these from getting eliminated from the within-effects regression.

Summary of Analytical Methodology

This study exploited the variations in the following regression model in order to analyze the partial effects of the available independent variables of interest in the second wave (2009) of the SCF panel:

$$\begin{aligned} \text{Ln (RETEQ)}_{it} = & [\text{Dyn adv use}]_i \beta_1 + \text{Ln (Fin Vars)}_{it} \beta_2 + \text{Sit Vars}_{it} \beta_3 + \text{Behav Vars}_{it} \beta_4 \\ & + \text{Z}_{it} \beta_5 + \lambda_i + \varepsilon_{it} \end{aligned} \quad (\text{Equation 3.1})$$

Where, RETEQ = Total equity in retirement accounts

t = 09 (for the second wave) and i = observation,

[Dyn Adv Use]_i = Dynamic advisor-use indicator variables (time-invariant)

Fin Vars_{it} = Financial and nonfinancial variables (ln dollar values)

³⁹ This study assumed that if a household reported that they used the same type of adviser for both periods, they used the same adviser for both periods.

For example, Planner_{jt} = Planner_{j [07]} = Planner_{j [09]} = Planner_j

where, Advisor_{jt} = Adviser for decision j in period t.

j = [SI] or [B], SI = Savings and investments decisions. B = Borrowing decisions.

t = [07] or [09], [07] = period first wave of interviews. [09] = period of second wave of interviews.

Sit Vars_{it} = Situational indicator variables

Behav Vars_{it} = Behavioral indicator variables

z_{it} = Other covariates

λ_i = Individual-level heterogeneity term (unobservable, time-invariant)

ε_{it} = Stochastic error terms

In Equation 3.1, the individual-level unobservable heterogeneity term λ_i can be systematically correlated with many financial and behavioral variables. As discussed in Chapter 1, such individual-effects are time-constant features of the individuals that can lead to a *self-selection* problem which could result in inconsistent and biased coefficients of effects of x_j on y (Wooldridge, 2010). This study used the first-differencing within-effects regression for eliminating individual-level heterogeneity (Wooldridge, 2010). With only two time-periods, the fixed effects and first differencing procedures produced the same inferences and estimates (Allison, 2009; Wooldridge, 2010).

First-differenced OLS regression. The study used the first-differencing method by differencing-out the dependent and independent variables of the two time periods before running the OLS regression. Therefore, the model became:

$$\Delta \ln(\text{RETEQ})_{it} = \Delta[\text{Dyn adv use}]_i \beta_1 + \Delta \ln(\text{Fin Vars})_{it} \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta z_{it} \beta_5 + \Delta \lambda_i + \Delta \varepsilon_{it} \quad (\text{Equation 3.2})$$

Where, $\Delta y_{it} = \Delta y_{i09} - \Delta y_{i07}$ and $\Delta x_{it} = \Delta x_{i09} - \Delta x_{i07}$ and $t = 07$ and 09

The differencing procedure eliminated the time-invariant variables including the individual effects λ_i . However, the variables for dynamic use of financial advisers were of interest, therefore,

this study included the variables of interest into the regression model after interacting them with time as shown⁴⁰:

$$\Delta \text{Ln (RETEQ)}_{it} = \Delta(t.[\text{Dyn adv use}]_i) \beta_1 + \Delta \text{Ln (Fin Vars)}_{it} \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta Z_{it} \beta_5 + \Delta \varepsilon_{it} \quad (\text{Equation 3.3})$$

However, due to the wide format of the data, the study could include the time-invariant variables, that have not been differenced, directly into the model without losing mathematical consistency.

$$\Delta \text{Ln (RETEQ)}_{it} = [\text{Dyn adv use}]_i \beta_1 + \Delta \text{Ln (Fin Vars)}_{it} \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta Z_{it} \beta_5 + \Delta \varepsilon_{it} \quad (\text{Equation 3.4})$$

The first-differenced OLS regression was run using the *SCFCombo* was run separately for each of the five implicates with robust standard errors clustered over the implicate ID. The coefficients were averaged for the five regression tables, and the standard errors were averaged and adjusted using the Equation 3.5.

Adjusting the standard errors. This part of the study employed the manual-adjustment by running the regression (using Kennickell-Woodburn consistent sampling weights and clustered robust standard errors) for each of the five implicates separately. The study obtained the coefficients by simple average, and used the following formula to average the standard errors in the five regression results (Pence, 2001; Shin & Hanna, 2016; Wenzlow et al., 2004):

$$\text{Standard Error} = \sqrt{((6/5) * \text{Imputation Variance} + \text{Sampling Variance})} \quad (\text{Equation 3.5})$$

⁴⁰ Tables 3.14 and 3.15 present results of robustness check to determine if inclusion of time-invariant variables adversely affects the coefficients of other variables by comparing the time-variant and time-invariant models side by side.

Comparison of Different Levels of Initial Equity

This study used the ordinary least squares (OLS) regression on the first-differenced model with manually adjusted clustered robust standard errors, and compared the result by restricting the data for different levels of initial equity. This study calculated the levels of initial equity as different levels of total equity in quasi-liquid retirement assets (RETEQ) as a percentage of the total quasi-liquid: the sum of IRAs, thrift accounts, and future pensions (RETQLIQ). Tables 3.11 and 3.13 present the results.

$$\% \text{ RETEQ} = 100 * \text{RETEQ } 07 / \text{RETQLIQ } 07 \quad (\text{Equation 3.6})$$

Independent Financial Covariates

The independent financial covariates of interest in the data are income, assets, and debt of which income and debt were included in the regression model after natural log transformation. The income in the first wave ranged from zero to \$189 Mn with a mean (median) of \$88,972 (\$ 50,053). The total assets are a sum of financial assets and non-financial assets. The financial assets included liquid assets, certificates of deposit, mutual funds, stocks, bonds, quasi-liquid retirement accounts, savings bonds, cash value of whole life insurance, trusts, annuities, managed investment accounts, and other financial assets, such as loans from household to someone else, future proceeds, royalties, futures, non-public stock, deferred compensation, and oil/gas/mineral investment (Survey of Consumer Finances, 2009). This study did not control for financial assets in the regression model to allow the movement of capital assets from directly-held equity to other financial assets. The non-financial assets included value of all vehicles, value of primary residence, value of other residential real estate, net equity in nonresidential real estate, business interests, and other nonfinancial assets (Survey of Consumer Finances, 2009). Among the non-financial assets, a handful of cases of business assets (6 cases in 2009) and non-residential real estate assets (3 cases

in 2007 and 31 cases in 2009) had negative values because of money owed to active business and loans taken out for investment real estate. These cases were segregated, and the negative values were moved to the debt side as new variables. The new variables were added to the existing debt variable to form new debt variable. This study included the control for non-financial assets and debt after natural log transformations.

Independent Categorical Variables

This study controls for several important time-variant situations, behaviors, and shocks in households and financial markets based on previous studies. Some basic controls include changes in family demographics, such as change in marital status and number of children. Heaton and Lucas (2000) associated background risks, such as risks from labour, business income, and house-price risk to portfolio choice. Heaton and Lucas (1997) found association between shocks to household income and increased risk aversion to portfolio choice. Other studies have also linked background risks, such as uninsurable income risk, household health risk, and borrowing constraints to less risky portfolio choices (Guiso et al., 1996; Heaton & Lucas, 1997). Ability to gain credit has association with riskier portfolio choices (Heaton & Lucas, 1997). This study tried to capture most of these controls by including situational variables, such as indicators for labor-force participation as salaried or self-employed and an indicator for periods of unemployment during the previous year. It also included an indicator for changes in home-ownership, poor health of respondent or spouse, and having health insurance, denial of credit and the fear that the credit could be denied. This study also controls for changes in certain behaviors. The behavioral aspects include variables, such as risk-aversion⁴¹ (Kahneman & Tversky, 1979), and the factors indicating

⁴¹ Not Risk Averse = X3014 and P3014 (response =1, 2 or 3)

Which of the following statements comes closest to describing the amount of financial risk that you (and your [husband/wife/partner]) are willing to take when you save or make investments?

financial literacy and awareness (Van Rooij et al., 2011; Von Gaudecker, 2015), such as actively shopping for investments and savings, and use of the Internet for saving and investment decisions (Bogan, 2008). Other important behavioral aspects relate to savings, time-horizon, and spending. This study included an indicator for regular savers because several studies have found that regular savings behavior is an optimal financial behavior (Benartzi & Thaler, 2007, 2013)⁴². Khwaja, Sloan, and Salm (2006) found some link between smoking with investment time horizon. This study included indicators for presence of smokers in household (respondent or spouse) and a separate indicator for self-reported long-term horizon for savings and spending plans for the family⁴³. Past studies have also linked credit card debt to sub-optimal behavior and lack of financial sophistication (Norvilitis et al., 2006). Revolving credit card users are the individuals who carry the credit card debt month after month (Bird et al., 1997; H. Kim & DeVaney, 2001). Credit card transactors are defined as individuals who pay the credit cards in full by the end of the month, unlike the credit card revolvers (Yang et al., 2007). This study included credit card transactors as one of the controls for optimal financial behavior⁴⁴. Hong, Kubik, and Stein (2004) found that socially interactive households were more likely to participate in the stock market. This study included an indicator for taking savings and investments advice from friends and coworkers as a

Responses: 1. Take substantial financial risks expecting to earn substantial returns, 2. Take above average financial risks expecting to earn above average returns, 3. Take average financial risks expecting to earn average returns, 4. Not willing to take any financial risks

⁴² X3020 and P3020 Save regularly by putting money aside each month

⁴³ Self-reported Long-Term Horizon = X3008 and P3008 (response = 5)

In planning (your/your family's) saving and spending, which of the following is most important to [you/you and your (husband/wife/partner)]: the next few months, the next year, the next few years, the next 5 to 10 years, or longer than 10 years?

Responses: 1. *next few months 2. *next year 3. *next few years 4. *next 5-10 years 5. *longer than 10 years

⁴⁴ Credit Card Transactor = X432 P432 (response =1)

(Do/Thinking about all your cards, do) you almost always, sometimes, or hardly ever pay off the total balance owed on the account(s) each month?

Responses: 1. *Always or almost always 3. *Sometimes 5. *Hardly ever 7. *NO SUCH CARDS 0. Inap. (no credit cards: X/P410=5)

proxy for social interactions. This study also includes an indicator for defined-benefit accounts as a control and also the variable for the Wilshire 5000 index value on the dates of the two interviews to control for shocks from the stock market.

Results

This study compared the results for the working population (sample size = 2,909) with the total population (sample size = 3,857), for all models⁴⁵. The two types of models tested consisted either of the time-variant contemporaneous-use adviser variables, or the time-invariant dynamic-use adviser variables. The third test was conducted based on level of initial equity at zero, non-zero, and 25 percent or less. All tests used the first-differenced ordinary least squares (OLS) regression with manually adjusted robust standard errors clustered over the implicate ID variable Y1.

Table 3.10 presents the comparison of the results of regressions with time-variant adviser variables with (1) all respondents vs. (2) working respondents. These regressions were not conditioned on initial equity levels. The adviser variables did not show any statistical significance. However, the rate of growth of income was positively associated with the rate of change in the equity in the retirement accounts for everyone, including the working households. When compared to the risk-averse households, households that were not risk averse witnessed a rate of change of 70 to 80 percent in equity in retirement accounts for all households, including the working households. Being a homeowner was associated with a 150 percent rate of change in retirement-equity for all households, including the working households when compared to households that were not homeowners. Being salaried was associated with a 60 percent rate of change in the retirement equity, for all households put together in comparison to households that were either not

⁴⁵ Suggested by SCF in the macro: labor force participation: 1=working in some way. 0=not working at all based on the variables X4100 and P4100 (current work status of the respondent)

working or were retired. Having health insurance for household was associated with 55 percent rate of change in the retirement equity for the working population as compared to households that who did not have health insurance. The Wilshire 5000 Total Market index was negatively associated with the rate of change in the retirement equity, on an overall basis, which is also a motivation to investigate further the results based on initial equity levels.

Table 3.11 presents the comparison of the results of regressions with time-variant adviser variables for the working population with (3) zero initial equity, (4) non-zero initial equity, and (5) 25 percent initial equity or less. The adviser variables did not show any statistical significance. However, the rates of change of income and the retirement equity were positively associated for the working population who had at least some level of initial retirement equity in the first wave. When compared to the risk-averse group, not being risk averse was associated with a rate of change of 60 to 80 percent in equity held in retirement accounts, for all groups irrespective of the initial equity. Being a homeowner was associated with the approximately 200 percent rate of change in the retirement equity for households with low or zero initial equity in comparison to households that did not own a home. Having health insurance for household was associated with 60 to 70 percent rate of change in retirement-equity for households with low or zero initial equity in their retirement accounts when compared to households that did not have health insurance. The Wilshire 5000 Total Market index was negatively associated with the rate of change in the retirement equity for households with low initial equity. The Wilshire 5000 Total Market index was positively associated with the retirement equity for households that had at least some initial level of equity in the retirement accounts during the first wave.

Table 3.12 presents the comparison of the results of regressions with time-invariant dynamic-use adviser variables with (6) all respondents vs. (7) working respondents. These

regressions were not conditioned on initial equity levels. The non-adviser variables showed similar results as in Table 3.10 (results 1 and 2). The dynamic-use variables showed statistically significant results. Rejecting the services of a broker, as well as obtaining the services of an accountant were both associated with a negative rate of change of 50 percent in the retirement equity when compared to the those who did not use these advisers for savings and investment decisions.

Table 3.13 presents the comparison of the results of regressions with time-invariant dynamic-use adviser variables for the working population with (8) zero initial equity, (9) non-zero initial equity, and (10) 25 percent initial equity or less. The non-adviser variables showed similar results as in Table 3.11 (results 3, 4, and 5). The dynamic-use variables showed statistically significant results. For the groups with zero or low initial equity, all kinds of interactions with financial planners, including retaining, obtaining and rejecting their services, were associated with positive rate of change in retirement-equity comparison to households in the same group that did not consult financial planners for savings and investment decisions. Retaining or obtaining the financial planner were associated with a positive rate of change in the retirement equity than rejecting the planner. For the group with non-zero initial equity, no other interactions with financial advisers showed significance except retaining the financial planner that was associated with a 65 percent rate of change in the retirement equity in comparison to households that did not consult the financial planners. For the group with zero initial equity, the rate of change in the retirement equity was also highly significant for households that retained brokers, as compared to households that did not use broker services for savings and investments decisions. However, this significance disappeared for the other two non-zero initial equity groups, including the group with 25 percent or less. Tables 3.14 (results 1 and 6) and 3.15 (results 2 and 7) present the convenience of

comparison of non-adviser variables between models containing time-variant and time-invariant adviser variables, as a robustness check.

Conclusions

The positive relationship of not being risk averse and the rate of change in the retirement equity during market recovery is intuitive and consistent with many previous studies (Bertaut, 1998; Heaton & Lucas, 1997; Kahneman & Tversky, 1979). A positive relationship of rate of change in the retirement equity with higher income could be due to higher available opportunity to buy equity due to higher income and lower risk of loss of income (Bertaut, 1998; Haliassos & Bertaut, 1995). The positive association of home ownership and the rate of change in the retirement equity is inconsistent with Heaton and Lucas (2000) who found households with background risks such a house-price risk and income risk were less likely to participate in equity perhaps because the reduction in house value caused some of these households to find an arbitrage in the stock market or that the risk was almost over during the market recovery phase. Being salaried was associated with a positive rate of change in the equity in retirement accounts than for those who were not working. Being self-employed had no significant relationship with the rate of change in the equity in retirement accounts. There could be two reasons for this result. First, the salaried individuals were more likely to have company-sponsored retirement plans. Second, the risk associated with business and loss of retirement savings for those not working was higher during this time than for those who were employed. The relative income-risk profile could be the reason for the positive rate of change in the equity levels for the salaried households (Guiso et al., 1996; Heaton & Lucas, 1997, 2000). Having health insurance for the family indicates high general awareness and its link to a positive rate of change in the retirement equity is consistent with previous studies (Bertaut, 1998; Van Rooij et al., 2011; Von Gaudecker, 2015). Overall, for

households with low initial equity, interactions with the financial planners seemed fruitful, which is consistent with Fischer and Gerhardt (2007) who suggested that an investor's sub-optimal decisions can lead to losses, but financial advice from experts can reduce such problems. Retaining a broker was rewarding for those who had the broker during both waves but only if they had no equity during the first wave. In cases where the study did not control for initial equity, rejecting a broker during market recovery, and obtaining an accountant during market recovery were associated with a negative rate of change in the retirement equity. Households that had a broker during the first wave but lost value in retirement equity could have panicked and fired the brokers. For those who possibly lost value in retirement equity but decided to obtain an accountant in 2009 didn't realize an increase in retirement account equity, which could be pointing to a general conservativeness of the accounting profession. This study had several weaknesses. The survey data lacked the details on the advisers' roles, relationships, services, compensations, and competence. Such information could have changed the results and their meaning, drastically. Further, the study fundamentally assumed that a type of adviser for the two periods was the same person or firm. This fundamental assumption was at the core of the definition of dynamic-use, which will become much weaker if it were not the same person or firm. These factors can be taken into account in future research.

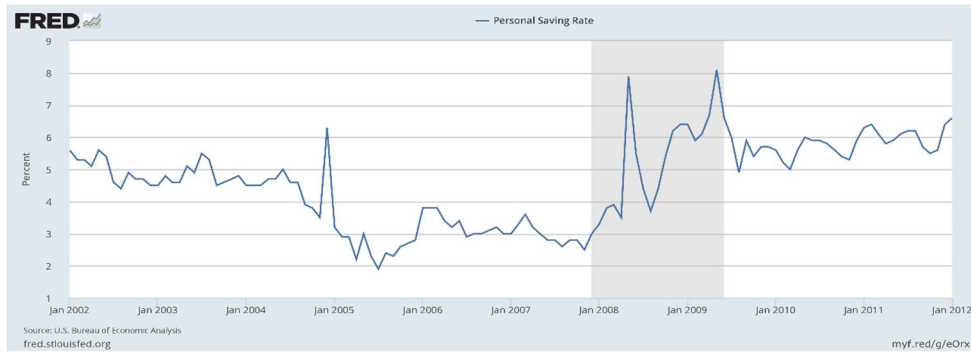


Figure 3.1: Personal Saving Rate (PSAVERT) between Jan-2006 and Jan-2010 (U.S. Bureau of Economic Analysis, 2017d).

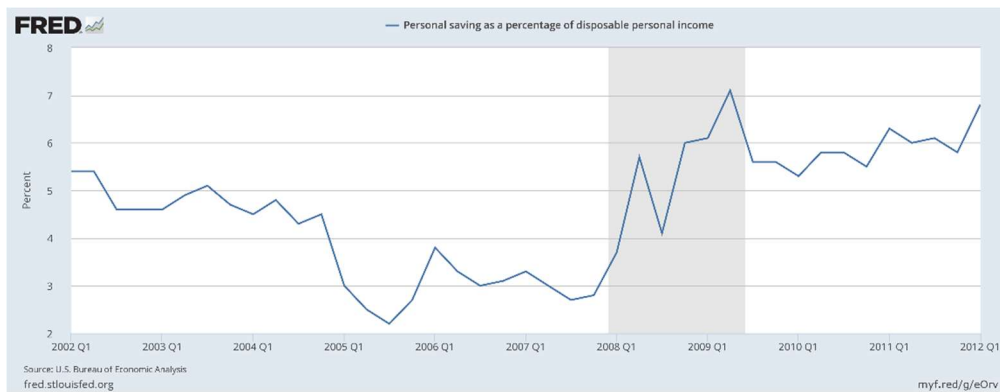


Figure 3.2: Personal saving as a percentage of disposable personal income between Jan-2006 and Jan-2010 (U.S. Bureau of Economic Analysis, 2017a)

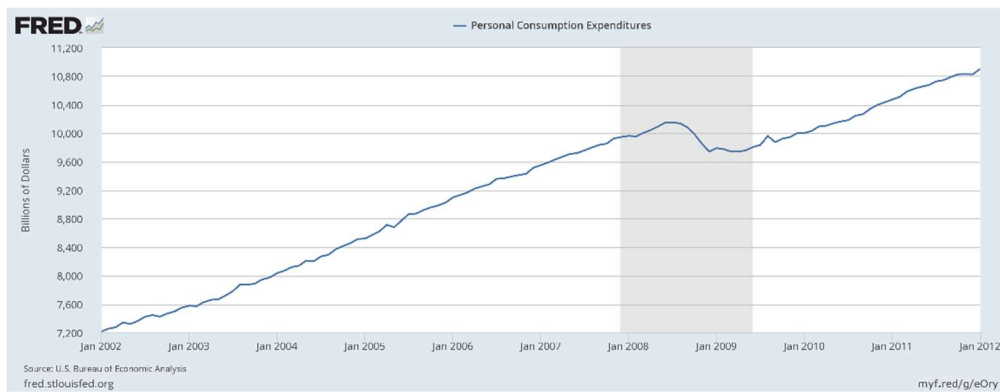


Figure 3.3: Personal Consumption Expenditures (PCE) between Jan-2006 and Jan-2010 (U.S. Bureau of Economic Analysis, 2017c)

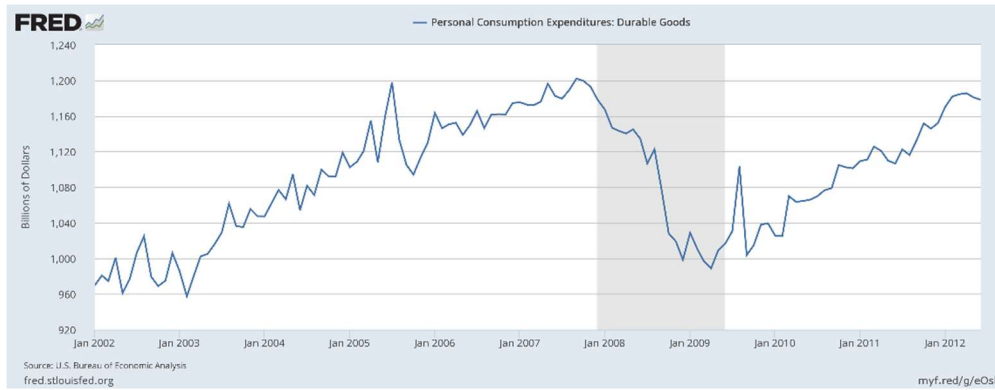


Figure 3.4: Per Personal Consumption Expenditures: Durable Goods (PCEDG) between Jan-2006 and Jan-2010 (U.S. Bureau of Economic Analysis, 2017b)⁴⁶

Table 3.1: Retirement benefits in United States (National Compensation Survey, 2017)

Figures in %	Private industry			State and local government		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate
All workers	66	50	76	91	80	88
Full time	77	60	78	99	87	88
Part time	38	21	55	46	39	85
Average wage categories						
Lowest 10 percent	33	14	42	67	58	87
Lowest 25 percent	42	21	50	78	68	87
Second 25 percent	66	46	70	94	83	88
Third 25 percent	78	64	82	98	86	88
Highest 25 percent	88	77	88	97	84	87
Highest 10 percent	89	81	91	96	82	85
Firm size						
1 to 99 workers	53	37	70	87	79	91
1 to 49 workers	49	34	69	85	78	92
50 to 99 workers	65	46	71	90	80	89
100 workers or more	83	65	78	93	80	86
100 to 499 workers	79	58	73	91	81	89
500 workers or more	89	76	85	93	80	86

⁴⁶ The gray-shaded area marks the Great Recession in the figures 3.1, 3.2, 3.3, and 3.4.

Table 3.2: Summary of Wilshire 5000 Total Market Index During the SCF 2007-2009 Panel

Variable	Mean	Std. Dev.	Min	Max
Wilshire 5000 ₍₂₀₀₇₎ (<i>Wave 1: May 07 to Mar 08</i>)	15156	442.1	12800	15800
Wilshire 5000 ₍₂₀₀₉₎ (<i>Wave 2: Jul 09 to Jan 10</i>)	10576	377.6	10100	11800
Wilshire (Wave 2 - Wave 1)	-4584.4	619.8	-5700	-1700
Wilshire % diff	-30.15	3.6	-36.08	-12.78

Table 3.3: Summary of Advisers⁴⁷ in 07 and 09

Adviser Types	Wave 1 [07]		Wave 2 [09]	
	All	Working	All	Working
Planners	22.50% (0.4174)	24.30% (0.429)	20.90% (0.407)	22.70% (0.419)
Brokers	11.70% (0.322)	11.70% (0.321)	9.70% (0.2961)	9.50% (0.293)
Bankers	32.00% (0.4664)	31.70% (0.466)	30.10% (0.4588)	28.90% (0.453)
Accountants	10.70% (0.3097)	11.70% (0.322)	7.50% (0.263)	8.40% (0.277)
Lawyers	4.60% (0.2088)	4.40% (0.205)	3.50% (0.1845)	3.70% (0.19)
Insurance Agents	0.10% (0.034)	0.00% (0.022)	0.10% (0.0271)	0.10% (0.028)
N	3856	2909	3856	2909

Table 3.4: Summary of Dynamic-Use of Advisers⁴⁸ in 07 and 09

Adviser Types	Dynamic Use of Advisers					
	Keep-Advisor		Got-Advisor		Lost- Advisor	
	All	Working	All	Working	All	Working
Planners	10.30% (.304)	11.40% (0.318)	10.34% (0.305)	11.20% (0.316)	11.90% (.323)	12.90% (0.335)
Brokers	3.71% (.189)	3.40% (0.181)	5.70% (.232)	6.10% (0.239)	7.70% (.266)	8.30% (0.275)
Bankers	14.04% (.347)	13.40% (0.34)	15.99% (.367)	15.50% (0.362)	17.57% (0.381)	18.40% (0.387)
Accountants	2.67% (.161)	3.20% (0.176)	4.78% (0.213)	5.20% (0.221)	7.90% (.269)	8.50% (0.279)
Lawyers	0.80% (0.0904)	0.80% (0.088)	2.90% (0.1622)	3.00% (0.17)	3.70% (0.1898)	3.60% (0.187)
Insurance Agents	0.00% (0.00)	0.00% (0.00)	0.06% (0.0261)	0.10% (0.028)	0.01% (0.033)	0.00% (0.022)
N	3856	2909	3856	2909	3856	2909

⁴⁷ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

⁴⁸ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

Table 3.5: Summary of Retirement Equity and Retirement Accounts

Variable (Std. Dev)	All [N = 3856]		Working [N = 2909]	
	[07]	[09]	[07]	[09]
Equity in Ret A/c	52924.5 (220178.2)	39027.8 (139542.6)	58814.1 (223714.7)	44323.6 (139179.2)
Ln Equity in Ret A/c	4.6 (5.2)	4.7 (5.1)	5.2 (5.3)	5.6 (5.1)
Total Amt in Retirement	93114.2 (347933.3)	77946.2 (252079.9)	101974.2 (364523.2)	86384.1 (246131.4)
% Equity in Ret A/c	28% (0.368)	27% (0.362)	32% (0.379)	32% (0.373)
Have Equity in Ret A/c [0,1]	45% (0.498)	48% (0.500)	52% (0.500)	57% (0.495)
Have Amount in Ret A/c [0,1]	56% (0.497)	56% (0.496)	63% (0.483)	64% (0.479)

Table 3.6: Summary of Financial Covariates for All Respondents⁴⁹

Variable [N=3856]	Mean	Std. Dev	Min	Q25	Q50	Q75	Max
Income							
Wave 1 [07]	88971.9	402841.6	0.0	26624.4	50053.9	89458.0	1.88E+08
Wave 2 [09]	80660.2	232078.7	0.0	25901.3	49810.3	89658.4	6.86E+07
Ln (Income)							
Wave 1 [07]	10.8	1.2	0.0	10.2	10.8	11.4	19.1
Wave 2 [09]	10.8	1.1	0.0	10.2	10.8	11.4	18.0
Financial Assets							
Wave 1 [07]	247334.0	1721150.0	0.0	2278.3	25993.5	140000.0	6.99E+08
Wave 2 [09]	207669.2	1532787.0	0.0	2150.0	24200.0	130000.0	8.39E+08
Ln Financial Assets							
Wave 1 [07]	9.4	3.5	0.0	7.7	10.2	11.9	20.4
Wave 2 [09]	9.3	3.5	0.0	7.7	10.1	11.8	20.6
Non-Financial [New]							
Wave 1 [07]	448475.6	2753672.0	0.0	18640.8	160000.0	350000.0	1.17E+09
Wave 2 [09]	374185.2	2127874.0	0.0	15000.0	150000.0	310000.0	7.68E+08
Ln Non-Financial [New]							
Wave 1 [07]	10.9	3.5	0.0	9.8	12.0	12.8	20.9
Wave 2 [09]	10.7	3.5	0.0	9.6	11.9	12.6	20.5
Debt [New]							
Wave 1 [07]	102150.3	196939.3	0.0	838.8	33139.1	140000.0	1.10E+08
Wave 2 [09]	103971.6	210983.8	0.0	530.0	32300.0	140000.0	4.52E+07
Ln Debt [New]							
Wave 1 [07]	8.5	4.6	0.0	6.7	10.4	11.9	18.5
Wave 2 [09]	8.3	4.8	0.0	6.3	10.4	11.9	17.6

⁴⁹ New variables for non-financial assets (part of total assets) and debt were created after the negative assets, including negative business assets and negative nonresidential real estate assets (owing to loans), where moved to the debt variable. Comparison of the old and new variables are summarized in Table 2.5

Table 3.7: Summary of Financial Covariates for the Working Respondents⁵⁰

Variable [N=3856]	Mean	Std. Dev	Min	Q25	Q50	Q75	Max
Income							
Wave 1 [07]	101494.3	431506.4	0.0	34079.2	59638.7	1.00E+05	1.88E+08
Wave 2 [09]	93951.5	248833.3	0.0	33871.0	60768.5	1.00E+05	4.40E+07
Ln (Income)							
Wave 1 [07]	10.9	1.2	10.9	1.2	11.0	11.5	1.2
Wave 2 [09]	11.0	1.1	11.0	1.1	11.0	11.5	1.1
Financial Assets							
Wave 1 [07]	234992.4	1563895.0	0.0	2796.1	27132.6	1.40E+05	4.01E+08
Wave 2 [09]	201610.8	1355089.0	0.0	2750.0	27500.0	1.40E+05	3.83E+08
Ln Financial Assets							
Wave 1 [07]	9.6	3.4	9.6	3.4	10.2	11.9	3.4
Wave 2 [09]	9.5	3.3	9.5	3.3	10.2	11.8	3.3
Non-Financial [New]							
Wave 1 [07]	492956.2	3113634.0	0.0	19676.4	1.80E+05	3.90E+05	1.17E+09
Wave 2 [09]	415459.4	2419226.0	0.0	18000.0	1.70E+05	3.30E+05	7.68E+08
Ln Non-Financial [New]							
Wave 1 [07]	11.1	3.3	11.1	3.3	12.1	12.9	3.3
Wave 2 [09]	11.0	3.2	11.0	3.2	12.0	12.7	3.2
Debt [New]							
Wave 1 [07]	125950.7	212808.4	0.0	7249.2	67624.5	1.70E+05	1.10E+08
Wave 2 [09]	130106.3	228061.2	0.0	9130.0	69300.0	1.80E+05	4.52E+07
Ln Debt [New]							
Wave 1 [07]	9.6	4.0	9.6	4.0	11.1	12.1	4.0
Wave 2 [09]	9.6	4.0	9.6	4.0	11.2	12.1	4.0

⁵⁰ New variables for non-financial assets (part of total assets) and debt were created after the negative assets, including negative business assets and negative nonresidential real estate assets (owing to loans), where moved to the debt variable. Comparison of the old and new variables are summarized in Table 2.5

Table 3.8: Summary of the Situational Variables

Variable (Std. Dev)	All (N = 3856)		Working (N = 2909)	
	[07]	[09]	[07]	[09]
Denied Loan	17.10% (0.377)	12.10% (0.326)	20.8% (0.406)	14.6% (0.353)
Fear denial of loan	15.50% (0.362)	17.50% (0.38)	17.7% (0.381)	20.1% (0.401)
Home Owner	68.90% (0.463)	70.30% (0.457)	68.2% (0.466)	70.3% (0.457)
Salaried	61.20% (0.487)	55.30% (0.497)	79.6% (0.403)	76.5% (0.424)
Self Employed	10.60% (0.307)	11.10% (0.314)	13.2% (0.339)	15.5% (0.362)
Unemployment Spell	15.10% (0.358)	21.40% (0.41)	18.0% (0.384)	26.7% (0.443)
Poor health in HH	7.40% (0.262)	6.90% (0.254)	3.4% (0.181)	3.2% (0.175)
Married, live together	59.70% (0.491)	53.90% (0.499)	64.6% (0.478)	59.2% (0.491)
Have a DB plan	15.55% (0.362)	12.94% (0.336)	20.0% (0.4)	17.3% (0.378)

Table 3.9: Summary of the Behavior Variables⁵¹

Variable (Std. Dev)	All (N = 3856)		Working (N = 2909)	
	[07]	[09]	[07]	[09]
Not Risk Averse	59.30% (0.491)	53.70% (0.499)	66.6% (0.472)	61.2% (0.487)
Credit Card Transactor	40.00% (0.49)	39.10% (0.488)	37.8% (0.485)	36.7% (0.482)
Regular Saver	42.50% (0.494)	38.40% (0.486)	47.2% (0.499)	42.9% (0.495)
Use the Internet for SI	29.70% (0.457)	31.70% (0.466)	35.6% (0.479)	38.4% (0.487)
Ask friends & Coworkers for SI	43.00% (0.495)	38.40% (0.486)	46.5% (0.499)	40.6% (0.491)
Smoker in HH	26.10% (0.439)	26.50% (0.441)	26.8% (0.443)	27.4% (0.446)
Long term Horizon for SI	14.50% (0.352)	11.20% (0.316)	16.1% (0.367)	12.9% (0.336)
Have Health Insurance	92.20% (0.267)	92.00% (0.272)	90.9% (0.288)	90.1% (0.299)

⁵¹ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis
Note: [07] = first wave of interviews, [09] = second wave of interviews

Table 3.10: Comparison of Regression Results of the Total Sample and the Sample of Working Population⁵², with Time-Variant Adviser Variables using First-Differenced OLS Regression Results with Manually-Adjusted Clustered Robust Standard Errors⁵³

Ln (Retirement Equity)	(1)		(2)	
	All		Working	
	Coef.	SE	Coef.	SE
Planner [0,1]	0.18	0.190	0.19	0.200
Broker [0,1]	0.35	0.220	0.30	0.230
Banker [0,1]	-0.02	0.150	-0.01	0.170
Accountant [0,1]	-0.08	0.240	-0.09	0.250
Ln (Income)	0.20*	0.080	0.27**	0.090
Ln (Non-Financial Assets)	0.01	0.030	0.02	0.040
Ln (Debt)	0.01	0.020	0.01	0.030
Not Risk Averse [0,1]	0.52**	0.160	0.60***	0.180
Credit Card Transactor [0,1]	0.20	0.180	0.30	0.220
Regular Saver [0,1]	0.27	0.170	0.21	0.190
Used Internet [0,1]	0.06	0.160	0.01	0.180
Friends' advice [0,1]	0.11	0.140	0.07	0.160
Denied Loan [0,1]	-0.15	0.210	-0.05	0.230
Feared Denial of Loan [0,1]	-0.06	0.180	-0.03	0.220
Home Owner [0,1]	0.86*	0.350	0.96*	0.400
Smoker in HH [0,1]	0.96	0.660	0.78	0.710
Long term horizon for S&I [0,1]	-0.02	0.180	0.01	0.210
Salaried [0,1]	0.47#	0.240	0.19	0.260
Self Employed [0,1]	0.18	0.320	-0.21	0.360
Unemployment Spell [0,1]	-0.18	0.180	-0.21	0.200
Had Health Insurance [0,1]	0.36	0.220	0.46#	0.250
Poor health in HH [0,1]	-0.52	0.540	-0.36	0.990
Number of children	0.01	0.120	0.07	0.130
Married [0,1]	-0.11	0.290	-0.01	0.330
Wilshire 5000 Index	-0.00004*	0.000	-0.00940***	0.000
Had DB plan [0,1]	-0.19	0.330	-0.40	0.340
	N	3,857	2,909	
	R ²	0.0235	0.0335	
	F-Statistic	2.59	2.61	
	Prob > F	0.0000	0.0000	

#*p* < .1, **p* < .05, ****p* < .01, *****p* < .001

⁵² Suggested by SCF in the macro: labor force participation: 1=working in some way, 0=not working at all based on the variables X4100 and P4100 (current work status of the respondent)

⁵³ See Equation 2.2 for manual adjustment of standard errors.

Table 3.11: Comparison of Regression Results for Different Levels of Initial Equity in Retirement Accounts on the Sample of Working Population, with *Time-Variant* Adviser Variables using First-Differenced OLS Regression Results with Manually-Adjusted Clustered Robust Standard Errors⁵⁴

Ln (Retirement Equity)	(3)		(4)		(5)	
	Zero Initial Equity		Non-Zero Initial Equity		25% or less Initial Equity	
	Coef.	SE	Coef.	SE	Coef.	SE
Planner [0,1]	0.20	0.360	-0.08	0.190	0.10	0.320
Broker [0,1]	0.49	0.450	0.31	0.220	0.57	0.410
Banker [0,1]	-0.07	0.220	0.05	0.210	-0.02	0.210
Accountant [0,1]	-0.13	0.530	0.10	0.290	-0.14	0.470
Ln (Income)	0.09	0.100	0.29**	0.110	0.12	0.100
Ln (Non-Financial Assets)	0.00	0.040	0.13	0.120	-0.01	0.040
Ln (Debt)	0.00	0.040	-0.05	0.050	0.03	0.040
Not Risk Averse [0,1]	0.48*	0.210	0.61*	0.270	0.50*	0.200
Credit Card Transactor [0,1]	0.24	0.320	0.19	0.250	0.10	0.320
Regular Saver [0,1]	0.05	0.220	0.14	0.240	0.09	0.210
Used Internet [0,1]	0.35	0.260	-0.28	0.200	0.16	0.230
Friends' advice [0,1]	-0.19	0.240	0.16	0.200	-0.16	0.210
Denied Loan [0,1]	0.07	0.240	0.05	0.370	0.02	0.240
Feared Denial of Loan [0,1]	0.07	0.280	0.00	0.390	-0.04	0.260
Home Owner [0,1]	1.10*	0.470	0.49	0.620	1.22**	0.450
Smoker in HH [0,1]	0.14	0.710	1.21	1.320	-0.16	0.770
Long term horizon for S&I [0,1]	-0.17	0.410	-0.02	0.190	-0.03	0.370
Salaried [0,1]	0.01	0.310	-0.18	0.530	0.02	0.300
Self Employed [0,1]	-0.27	0.420	-0.77	0.630	-0.37	0.410
Unemployment Spell [0,1]	-0.20	0.250	-0.48	0.310	-0.16	0.230
Had Health Insurance [0,1]	0.51*	0.250	0.54	0.640	0.58*	0.260
Poor health in HH [0,1]	0.55	1.170	-2.75	2.000	0.20	0.990
Number of children	-0.08	0.150	-0.01	0.200	-0.08	0.160
Married [0,1]	-0.33	0.340	-0.71	0.510	-0.12	0.330
Wilshire 5000 Index	-0.0005***	0.000	0.0003***	0.000	-0.0004***	0.000
Had DB plan [0,1]	-0.78	0.630	-0.47	0.340	-0.70	0.510
	N	1134		1775		1382
	R ²	0.2611		0.1643		0.1940
	F-Statistic	11.48		6.98		9.67
	Prob > F	0.0000		0.0000		0.0000

#p < .1, *p < .05, **p < .01, ***p < .001

⁵⁴ Initial equity is determined as a ratio of RETEQ by RETQLIQ are defined by SCF as:

RETEQ = equity in quasi-liquid retirement assets;

RETQLIQ=IRAKH+THRIFT+ALLPENS (total quasi-liquid: sum of IRAs, thrift accounts, and future pensions; this version includes currently received benefits)

Table 3.12: Comparison of Regression Results of the Total Sample and the Sample of Working Population, with *Time-Invariant* Adviser Variables using First-Differenced OLS Regression Results with Manually-Adjusted Clustered Robust Standard Errors⁵⁵

Ln (Retirement Equity)	(6) All		(7) Working	
	Coef.	SE	Coef.	SE
Keep Planner [0,1]	-0.11	0.270	-0.17	0.280
Lost Planner [0,1]	-0.14	0.270	-0.14	0.320
Got Planner [0,1]	0.22	0.330	0.25	0.370
Keep Broker [0,1]	-0.46	0.370	-0.27	0.460
Lost Broker [0,1]	-0.67*	0.330	-0.61#	0.340
Got Broker [0,1]	0.00	0.410	-0.05	0.400
Keep Banker [0,1]	0.22	0.250	0.04	0.290
Lost Banker [0,1]	0.04	0.220	-0.02	0.260
Got Banker [0,1]	-0.01	0.240	-0.04	0.270
Keep Accountant [0,1]	0.38	0.580	0.65	0.590
Lost Accountant [0,1]	-0.32	0.320	-0.32	0.340
Got Accountant [0,1]	-0.71#	0.420	-0.74#	0.440
Ln (Income)	0.19*	0.080	0.27**	0.090
Ln (Non-Financial Assets)	0.01	0.030	0.02	0.040
Ln (Debt)	0.01	0.020	0.01	0.030
Not Risk Averse [0,1]	0.50**	0.160	0.59***	0.180
Credit Card Transactor [0,1]	0.20	0.180	0.32	0.220
Regular Saver [0,1]	0.26	0.170	0.21	0.190
Used Internet [0,1]	0.05	0.160	0.00	0.180
Friends' advice [0,1]	0.12	0.140	0.07	0.160
Denied Loan [0,1]	-0.15	0.210	-0.05	0.230
Feared Denial of Loan [0,1]	-0.07	0.180	-0.03	0.220
Home Owner [0,1]	0.83*	0.350	0.94*	0.400
Smoker in HH [0,1]	0.93	0.670	0.76	0.720
Long term horizon for S&I [0,1]	-0.05	0.180	-0.03	0.200
Salaried [0,1]	0.46#	0.240	0.20	0.260
Self Employed [0,1]	0.17	0.320	-0.22	0.360
Unemployment Spell [0,1]	-0.18	0.180	-0.22	0.200
Had Health Insurance [0,1]	0.36	0.220	0.47#	0.250
Poor health in HH [0,1]	-0.46	0.540	-0.23	0.960
Number of children	0.01	0.120	0.07	0.130
Married [0,1]	-0.13	0.290	-0.04	0.330
Wilshire 5000 Index	-0.00006*	0.000	-0.0001**	0.000
Had DB plan [0,1]	-0.20	0.330	-0.40	0.330
N	3,857		2,909	
R ²	0.0254		0.0326	
F-Statistic	2.31		5.86	
Prob > F	0.0000		0.0000	

#p < .1, *p < .05, ***p < .01, ****p < .001

⁵⁵ The time-invariant variables were interacted with time to include in the within-effects models.

Table 3.13: Comparison of Regression Results for Different Levels of Initial Equity in Retirement Accounts on the Sample of Working Population with *Time-Invariant* Adviser Variables using First-Differenced OLS Regression Results with Manually-Adjusted Clustered Robust Standard Errors⁵⁶

Ln (Retirement Equity)	(8)		(9)		(10)	
	Zero Initial Equity		Non-Zero Initial Equity		25% or less Initial Equity	
	Coef.	SE	Coef.	SE	Coef.	SE
Keep Planner [0,1]	2.26**	0.760	0.50*	0.250	1.22*	0.610
Lost Planner [0,1]	1.25*	0.570	0.30	0.300	1.07*	0.440
Got Planner [0,1]	1.63**	0.550	0.08	0.330	1.32*	0.540
Keep Broker [0,1]	4.11*	1.810	0.33	0.320	1.15	1.500
Lost Broker [0,1]	-0.37	0.560	-0.05	0.340	-0.43	0.500
Got Broker [0,1]	0.97	1.010	0.47	0.370	1.06	0.900
Keep Banker [0,1]	0.23	0.420	-0.27	0.340	0.10	0.380
Lost Banker [0,1]	0.14	0.310	-0.35	0.290	-0.05	0.300
Got Banker [0,1]	-0.05	0.360	-0.44	0.320	-0.12	0.340
Keep Accountant [0,1]	1.14	0.950	0.15	0.500	0.77	1.030
Lost Accountant [0,1]	-0.59	0.510	-0.34	0.360	-0.65	0.530
Got Accountant [0,1]	-0.53	0.990	-0.47	0.410	-0.74	0.840
Ln (Income)	0.08	0.100	0.29**	0.110	0.10	0.100
Ln (Non-Financial Assets)	-0.05	0.040	0.09	0.110	-0.06	0.040
Ln (Debt)	0.01	0.040	-0.03*	0.050	0.04	0.040
Not Risk Averse [0,1]	0.39#	0.200	0.53	0.260	0.41*	0.200
Credit Card Transactor [0,1]	0.39	0.290	0.14	0.240	0.24	0.290
Regular Saver [0,1]	-0.05	0.210	0.10	0.230	-0.02	0.210
Used Internet [0,1]	0.43#	0.240	-0.26	0.190	0.23	0.220
Friends' advice [0,1]	-0.12	0.220	0.15	0.190	-0.08	0.200
Denied Loan [0,1]	0.22	0.230	-0.04	0.360	0.16	0.230
Fearred Denial of Loan [0,1]	-0.03	0.250	-0.02	0.350	-0.17	0.240
Home Owner [0,1]	0.64	0.460	0.44	0.600	0.80*	0.450
Smoker in HH [0,1]	0.19	0.720	1.00	1.240	-0.01	0.780
Long term horizon for S&I [0,1]	-0.38	0.350	-0.03	0.190	-0.20	0.340
Salaried [0,1]	0.01	0.280	-0.62	0.500	-0.16	0.290
Self Employed [0,1]	-0.35	0.390	-0.77	0.620	-0.53	0.370
Unemployment Spell [0,1]	-0.13	0.230	-0.38	0.300	-0.13	0.210
Had Health Insurance [0,1]	0.21	0.250	0.48	0.590	0.24	0.240
Poor health in HH [0,1]	1.05	0.960	-2.23	2.300	0.34	0.960
Number of children	-0.03	0.140	0.01	0.200	-0.04	0.150
Married [0,1]	-0.24	0.330	-0.41	0.460	-0.10	0.310
Wilshire 5000 Index	-0.00032***	0.000	0.00024***	0.000	-0.00029***	0.000
Had DB plan [0,1]	-2.04	0.620	-0.59#	0.320	-1.66**	0.500
N	1134		1775		1382	
R ²	0.3600		0.2285		0.2773	
F-Statistic	12.25		7.08		10.99	
Prob > F	0.0000		0.0000		0.0000	

#*p* < .1, **p* < .05, ****p* < .01, *****p* < .001

⁵⁶ Initial equity is determined as a ratio of RETEQ by RETQLIQ are defined by SCF as:
RETEQ = equity in quasi-liquid retirement assets; RETQLIQ=IRAKH+THRIFT+ALLPENS (total quasi-liquid: sum of IRAs, thrift accounts, and future pensions; this version includes currently received benefits)

Table 3.14: Robustness Check: Comparison of Regression Results of Models with *Time-Variant* (1) and *Time-Invariant* (6) Adviser Variables in the Total Sample

Ln (Retirement Equity)	(1)		(6)	
	Coeff	SE	Coeff	SE
Planner [0,1]	0.18	0.190		
Keep Planner [0,1]			-0.11	0.270
Lost Planner [0,1]			-0.14	0.270
Got Planner [0,1]			0.22	0.330
Broker [0,1]	0.35	0.220		
Keep Broker [0,1]			-0.46	0.370
Lost Broker [0,1]			-0.67*	0.330
Got Broker [0,1]			0.00	0.410
Banker [0,1]	-0.02	0.150		
Keep Banker [0,1]			0.22	0.250
Lost Banker [0,1]			0.04	0.220
Got Banker [0,1]			-0.01	0.240
Accountant [0,1]	-0.08	0.240		
Keep Accountant [0,1]			0.38	0.580
Lost Accountant [0,1]			-0.32	0.320
Got Accountant [0,1]			-0.71#	0.420
Ln (Income)	0.20*	0.080	0.19*	0.080
Ln (Non-Financial Assets)	0.01	0.030	0.01	0.030
Ln (Debt)	0.01	0.020	0.01	0.020
Not Risk Averse [0,1]	0.52**	0.160	0.50**	0.160
Credit Card Transactor [0,1]	0.20	0.180	0.20	0.180
Regular Saver [0,1]	0.27	0.170	0.26	0.170
Used Internet [0,1]	0.06	0.160	0.05	0.160
Friends' advice [0,1]	0.11	0.140	0.12	0.140
Denied Loan [0,1]	-0.15	0.210	-0.15	0.210
Feared Denial of Loan [0,1]	-0.06	0.180	-0.07	0.180
Home Owner [0,1]	0.86*	0.350	0.83*	0.350
Smoker in HH [0,1]	0.96	0.660	0.93	0.670
Long term horizon for S&I [0,1]	-0.02	0.180	-0.05	0.180
Salaried [0,1]	0.47#	0.240	0.46#	0.240
Self Employed [0,1]	0.18	0.320	0.17	0.320
Unemployment Spell [0,1]	-0.18	0.180	-0.18	0.180
Had Health Insurance [0,1]	0.36	0.220	0.36	0.220
Poor health in HH [0,1]	-0.52	0.540	-0.46	0.540
Number of children	0.01	0.120	0.01	0.120
Married [0,1]	-0.11	0.290	-0.13	0.290
Wilshire 5000 Index	-0.00004*	0.000	-0.00006*	0.000
Have Defined Benefit Plan 0,1]	-0.19	0.330	-0.20	0.330
	N	3,857	3,857	
	R ²	0.0235	0.0254	
	F-Statistic	2.59	2.31	
	Prob > F	0.0000	0.0000	

#p < .1, *p < .05, ***p < .01, ****p < .001

Table 3.15: Robustness Check: Comparison of Regression Results of Models with *Time-Variant* (2) And *Time-Invariant* (7) Adviser Variables Among the Sample of Working Population

Ln (Retirement Equity)	(2)		(7)	
	Coeff	SE	Coeff	SE
Planner [0,1]	0.19	0.200		
Keep Planner [0,1]			-0.17	0.280
Lost Planner [0,1]			-0.14	0.320
Got Planner [0,1]			0.25	0.370
Broker [0,1]	0.30	0.230		
Keep Broker [0,1]			-0.27	0.460
Lost Broker [0,1]			-0.61#	0.340
Got Broker [0,1]			-0.05	0.400
Banker [0,1]	-0.01	0.170		
Keep Banker [0,1]			0.04	0.290
Lost Banker [0,1]			-0.02	0.260
Got Banker [0,1]			-0.04	0.270
Accountant [0,1]	-0.09	0.250		
Keep Accountant [0,1]			0.65	0.590
Lost Accountant [0,1]			-0.32	0.340
Got Accountant [0,1]			-0.74#	0.440
Ln (Income)	0.27**	0.090	0.27**	0.090
Ln (Non-Financial Assets)	0.02	0.040	0.02	0.040
Ln (Debt)	0.01	0.030	0.01	0.030
Not Risk Averse [0,1]	0.60***	0.180	0.59***	0.180
Credit Card Transactor [0,1]	0.30	0.220	0.32	0.220
Regular Saver [0,1]	0.21	0.190	0.21	0.190
Used Internet for S&I decisions [0,1]	0.01	0.180	0.00	0.180
Friends & Co-workers' advice [0,1]	0.07	0.160	0.07	0.160
Denied Loan [0,1]	-0.05	0.230	-0.05	0.230
Feared Denial of Loan [0,1]	-0.03	0.220	-0.03	0.220
Home owner [0,1]	0.96*	0.400	0.94*	0.400
Smoker in HH [0,1]	0.78	0.710	0.76	0.720
Long term horizon for S&I [0,1]	0.01	0.210	-0.03	0.200
Salaried Employee [0,1]	0.19	0.260	0.20	0.260
Self-Employed [0,1]	-0.21	0.360	-0.22	0.360
Unemployment Spell [0,1]	-0.21	0.200	-0.22	0.200
Have health insurance [0,1]	0.46#	0.250	0.47#	0.250
Poor health in HH [0,1]	-0.36	0.990	-0.23	0.960
Number of children	0.07	0.130	0.07	0.130
Married [0,1]	-0.01	0.330	-0.04	0.330
Wilshire 5000 Index	-0.00940***	0.000	-0.0001**	0.000
Have Defined Benefit Plan 0,1]	-0.40	0.340	-0.40	0.330
	N	2,909	2,909	
	R ²	0.0335	0.0326	
	F-Statistic	2.61	5.86	
	Prob > F	0.0000	0.0000	

#*p* < .1, **p* < .05, ****p* < .01, *****p* < .001

CHAPTER 4

ESSAY III: RECOVERY OF THE WORKING HOUSEHOLDS FROM THE GREAT RECESSION: DID RELATIVELY COMPREHENSIVE FINANCIAL ADVICE MATTER?

The purpose of this study is to find if a relationship existed between the change in households' financial situation during the recovery from Great Recession, and the dynamics and extent of financial advice that they sought, *ceteris paribus*. The study defined the extent of financial advice as *comprehensive* vs. *modular*, and the dynamics of the relationship as households' decision to either obtain, retain, or reject the services of the various types of financial advisers. Households received advice from many types of financial advisers. The survey respondents in the Survey of Consumer Finances (2009) identified them as *financial planners*, *bankers*, *brokers*, *accountants*, *insurance agents*, and *lawyers*⁵⁷. This study excluded insurance agents and lawyers due to the small number of cases. Households identified the use of these advisers separately for two types of decisions, namely, savings and investments decisions and borrowing decisions. The definition of the extent of financial advice as comprehensive or modular was based on the matching of their responses based on the type of advisers they used for the two

⁵⁷ The 2007 - 2009 panel of the Survey of Consumer Finances asked the following question for saving and investments decisions and a similar question for borrowing decisions:

Questions: What sources of information do you (and your family) use to make decisions about saving and investments? (Do you call around, read newspapers, magazines, the material you get in the mail, use information from television, radio, the Internet or advertisements? Do you get advice from a friend, relative, lawyer, accountant, banker, broker, or financial planner? Or do you do something else?)

Response: Call around, magazines/newspapers; books, material in the mail, television/radio, Internet/online service, advertisements, friend/relative, lawyer, accountant, banker, broker, financial planner, self (not shown on card); spouse/partner, do not save/invest, don't shop around; always use same institution, past experience, material from work/business contacts, investment club, investment seminars, other personal research, shop around, store; dealer, insurance agent, other institutional source (e.g., college, social service, agency, etc.), telemarketer, other. (Survey of Consumer Finances, 2009)

types of decisions. The survey did not indicate if the advisers that were identified for the two decisions or periods were the same person or firm. In the absence of any other indicators for the extent of services or time, this study made the following assumptions⁵⁸:

Assumption 1: If a household reported that they used the same type of adviser for both types of decisions, the study assumed that they used the same person or firm for both decisions. i.e. in such a case, $Accountant_{jt} = Accountant_{[SI]t} = Accountant_{[B]t} = Accountant_t$.

Assumption 2: If a household reported that they used the same type of adviser for both periods, they used the same person or firm for both periods. i.e. in such a case, $Banker_{jt} = Banker_{j[07]} = Banker_{j[09]} = Banker_j$.

Assumption 3: If a household used the same person or firm for both types of decisions, it constituted a more comprehensive advice in comparison to using a person or firm for just one type of decision, a modular advice.

The following example can illustrate the assumptions. If a respondent identified the adviser as a broker, both for borrowing decisions and savings and investments decisions, the study assumed that it was the same broker for both decisions and not two different brokers. Further, because the same broker provided a broader spectrum of financial advice, it was a more comprehensive advice than just savings and investments advice or just borrowing advice alone. Therefore, if a household used a broker's services for borrowing decisions and savings and investment decisions, the study assumes that they used a broker for comprehensive financial advice. This study used the idea of the adviser variable (financial planner) in Hanna (2011) that studied the SCF datasets combined from 1998 to 2007 for financial planning services (for

⁵⁸ $Advisor_{jt}$ = Adviser for decision j in period t.
where, j = [SI] or [B], SI = Savings and investments decisions, B = Borrowing decisions.
t = [07] or [09], [07] = period first wave of interviews, [09] = period of second wave of interviews.

borrowing decisions or savings and investments decisions). Hanna reported that the combined financial planner variable had increased from 21 percent to 25 percent during the period of the study. Hanna also found a relationship between the likelihood of having a financial planner and the respondents' risk tolerance, race, and net worth. This study bifurcated the idea of the adviser in Hanna (2011) into comprehensive vs. modular adviser. The study further extended the idea of only financial planners in Hanna, to other advisers, such as broker, banker, accountant, and lawyer and also re-coded the adviser variables to dynamic-use variables using the idea presented in Cummings and James (2014) for the analysis.

Literature Review

Understanding Comprehensive Advice

Among all advisers who provided financial advice during the period of this study, some could have been in the business of providing advice as their core service while others may not have been. As previously discussed in Chapter 2, many financial advisers were primarily known to sell suitable investments, insurance products, or provide a specific module of financial services, while providing a certain degree of financial advice. These two types of services are fundamentally different. Therefore, comprehensiveness in their advice could be fundamentally different as well. Before trying to understand the meaning and importance of comprehensive advice, a closer look into the differences in the types of advisers is warranted.

The financial professionals and firms that primarily are in the business of sales of suitable financial instruments and services are licensed and regulated by the Financial Industry Regulatory Authority (FINRA) (Lytton et al., 2013). The primary objective of these firms is sales, not advice although advice could be a part of the sales conversations (Lytton et al., 2013). For example, brokers and brokerage firms that provide solutions for brokerage accounts, IRAs, retirement

accounts, margin accounts and handle the sale and purchase of securities for commissions are licensed through FINRA. On the other hand, the firms and professionals who primarily provide financial advice are licensed and regulated by the Securities and Exchange Commission (SEC) (Lytton et al., 2013). Many of these advisers are licensed as Registered Investment Advisers (RIA). Occasionally, the advice-giving RIAs tend to make commissions on sales of products, but that is not the primary objective of their business (Lytton et al., 2013). The Survey of Consumer Finances (2009) panel survey of 2007 – 2009 asked the respondents to identify their primary source of financial advice related to savings and investment decisions and borrowing decisions, separately. The responses pointed toward using financial advisers, such as a lawyer, accountant, banker, broker, financial planner, or an insurance agent for both decisions. The survey did not ask any other follow-up questions about the client-adviser relationship, such as their extent of involvement. The extent of involvement of the advisers is sometimes related to the compensation structure and the standard of care followed by them, which are essential pieces of information that are missing from the survey. There are several modes of compensation, such as commissions on sales, flat-fee based on a formula, hourly charge, or combinations of these based on the underlying factors. All financial advisers have a higher incentive to stretch the underlying factor that will increase their compensation.

The standard of care can also create a divide among the advisers. There are two broad categories of the standard of care among advisers: the *fiduciary* standard and the *suitability* standard (Lytton et al., 2013). The fiduciary standard makes for a trustworthy and responsible code of care because it puts the clients' interest first (Lytton et al., 2013). In contrast, the suitability standard requires the adviser to recommend the products that suit the clients' investment profile, including age, financial situation, time horizon, and investment objectives (Lytton et al., 2013).

The suitability standard does not require the advisers to work in the clients' best interest or be loyal or caring for the client (Lytton et al., 2013). Several financial planners and lawyers were covered under the fiduciary standard, defined by the SEC and the American Bar Association during the study period. Many financial planners were also covered under the standards of care, code of ethics, and the *fiduciary oath* defined by different institutions, such as the CFP Board, the Financial Planning Association (FPA), and the National Association of Personal Financial Advisers (NAPFA) (Lytton et al., 2013). In contrast to this, other financial advisers, including many brokers, bankers, insurance agents, and some financial planners, were covered under the suitability standard defined by FINRA (Lytton et al., 2013). Fiduciary law is now fast expanding, especially since the Great Recession. Now it seems that the fiduciary law might cover almost all advisory services under its purview. However, during the Great Recession, the FINRA registrants, such as the brokers, bankers, and insurance agents, were covered under the fraud protection law, code of ethics, and the suitability standard but not the fiduciary law. One could argue that the governing law, including fiduciary vs. suitability could have a significant impact on the outcomes of the relationship.

This study focused on comparing the impact of comprehensive advice to modular advice for different types of advisers. As discussed in Chapter 2, all advisers could be functioning in the same personal financial advice space with their specific expertise. Among these advisers, the modular advisers would focus on specific services while the comprehensive advisers would tend to cover a larger number of such specific modules. For example, a firm could be in the primary business of comprehensive advice but could also hire accountants to provide several specific modular services, such as tax-management, bookkeeping, payroll, employee benefits, and accounting for small and large businesses. The clients could choose to either obtain comprehensive

advice, which could cover many aspects or only a modular service to cover a specific area of concern. The CFP Board (2015), which is a certificate body in financial planning, states that comprehensive plans cover and review seven broad areas including current financial state, taxes, risk, retirement, investments, estate planning, and education planning, which does not mean that in practice the planners always provide comprehensive plans that cover all areas. As discussed in Chapter 2, many planners could provide single services, and the financial planning firms could use modular experts for these purposes. Many brokers and bankers extend the advisory service to broader areas only because they feel the need to solve their customers' problems, which could lead to a stronger business relationship. This study intends to find whether a more comprehensive service would have had a different impact on the clients than a smaller service.

Impact of the Great Recession

The early signs of the Great Recession were seen in the last quarter of 2007 after which the market dipped to its lowest at the beginning of March 2009 before starting to recover (Bricker et al., 2011). The total output loss of \$6 trillion to \$14 trillion equated to roughly \$50,000 to \$120,000 loss per household (Luttrell et al., 2013). In other words, the United States lost almost a year's worth of output (Luttrell et al., 2013). The mean (median) net worth of households in the United States fell to \$481,000 (\$96,000) in 2009 from \$595,000 (\$125,000) in 2007 (Bricker et al., 2011). The median income reduced from \$76,678 in 2007 to \$71,726 in 2009 (Bricker et al., 2011). Most income and net-worth loss affected the high net-worth category (Bricker et al., 2011). The Great Recession was the time of downturn and panic for households as the unemployment rate increased to 7.4 percent, and housing prices declined 17 percent, and the Wilshire 5000 total market index fell 39 percent during the recession (Bricker et al., 2011). The stocks held directly by the families saw the sharpest decline (Bricker et al., 2011). The median percentage of directly-

held stocks dropped by 31 percent from \$18,500 to \$12,000 (Bricker et al., 2011). The nonfinancial assets fell similarly, but the vehicles and residential and non-residential real estate suffered the largest decline (Bricker et al., 2011). Total household debt (median) rose from \$70,300 to \$75,600, which include the mortgage on primary residences (Bricker et al., 2011). However, with the sharp decline in house values, the share of total debt secured by primary residences dropped by 2.1 percent (Bricker et al., 2011). Business equity decreased by five percentage points (Bricker et al., 2011). Overall, primary residences, stocks and business equity were the hardest hit and were major determinants of change in household wealth (Bricker et al., 2011). The Business Cycle Dating Committee (2010) of the National Bureau of Economic Research (NBER) concluded that the Great Recession began in December 2007 and lasted for 18 months before ending in June 2009, and economic recovery began in that month. The purpose of this study is to find if a relationship existed between the change in households' financial situation during the recovery from Great Recession, and the dynamics and extent of financial advice that they sought, *ceteris paribus*.

Methodology

Survey of Consumer Finances 2007 - 2009 Panel

The Federal Reserve Board (FRB), with the help of the NORC⁵⁹, surveys the United States' households on a triennial cross-sectional basis to understand household financials, attitudes, and demographics (Bricker et al., 2011). The data is called the Survey of Consumer Finances (SCF) and employs a dual-stage sampling design that includes a multistage area probability sample for the general population, and a list sample that is derived from the income-tax returns data of the wealthy (Bricker et al., 2011). Households constituting one or more financially interdependent individuals are the focus of the survey and are called Primary Economic Unit (PEU) (Bricker et

⁵⁹ The non-partisan and objective research organization NORC at the University of Chicago

al., 2011). SCF handled the missing data through a multiple-imputation process and provides five imputations for every observation (Bricker et al., 2011). The 2007 survey occurred in the middle of the Great Recession that officially ended in June 2009 (Bricker et al., 2011). As the market started to recover, the FRB with the help of the NORC conducted a re-interview starting in July 2009 with a smaller number of variables with the intention of understanding the extent of changes that the families experienced during the crisis (Bricker et al., 2011). The 2007 cross-sectional survey had 4,422 respondents (Bricker et al., 2011). The re-interview response rate in second wave of the panel interviews was at 88.7 percent with 3,857 respondent PEUs that also excluded the families with significant compositional change, for both list sample and the area-probability sample (Bricker et al., 2011; Kennickell, 2010, 2017).

Dependent Variable

This study used natural log of total assets and total debts, as the dependent variables in separate subparts of the study. The total assets is a sum of financial assets and non-financial assets. The total debt includes housing debt for principal residence, debt for other residential property, other lines of credit, credit card debt, vehicle loans, education loans, other installment loans, loans against pensions, loans against life insurance, margin loans, and miscellaneous debt.

Recoding the Financial Advisers Variables

This study compared the relationships of households' financial decisions with comprehensive advice vs. modular advice. SCF coded the responses in the survey on two types of household financial decisions separately: 1. Advice on savings and investments decisions and 2. Advice on borrowing decisions. Both decisions contained all types of advisers. For example, a household could have used a banker for either of the savings and investments decisions and borrowing decisions. Based on the assumptions 1, 2, and 3, this study re-coded the advisers as

comprehensive, if a household used a type of adviser for both decisions and modular if a household used a type of adviser for only one decision. All types of advisers were divided into comprehensive vs. modular. For example, a broker could be a comprehensive broker or a modular broker. A comprehensive broker advised households for both types of decision, while a modular broker advised them for just one of the two types of decisions.

As discussed in chapter 1, this study used the idea presented in Cummings and James (2014) and created these time-invariant dynamic-use variables from the *contemporaneous-use* variables for a given year, 0 = No adviser and 1 = Used Adviser. This study divided financial advisers into the following four groups namely *No Adviser* (the reference group), *Got Adviser*, *Lost Adviser* and *Keep Adviser*, as given in Table 1.2. This categorization helped to associate the dynamics of the advisor-related decisions of households to their financial decisions. As the newly created variables were *time-invariant*, so this study interacted them with the year-indicator, to induce time-related variability, and prevented these from getting eliminated from the within-effects regression.

Independent Financial Covariates

This study used natural log of asset and debt as dependent variables for different sub-parts of the study. It controlled for debt if assets were the dependent variables and controlled for assets if the debt were the dependent variable. It also controlled for income other than assets or debt. All financial variables were included in the regression model after natural log transformation. The total assets were a sum of financial assets and non-financial assets (Survey of Consumer Finances, 2009). The total debt includes housing debt for principal residence, debt for other residential property, other lines of credit, credit card debt, vehicle loans, education loans, other installment

loans, loans against pensions, loans against life insurance, margin loans, and miscellaneous (Survey of Consumer Finances, 2009).

Independent Categorical Variables

This study used control-variables for several critical time-variant situations, behaviors, and shocks in households and financial markets based on previous studies. Some necessary controls included changes in family demographics, such as a change in marital status and number of children. Heaton and Lucas (2000) associated background risks, such as risks from labor, business income, and house-price risk to risk aversion in investments. Heaton and Lucas (1997) found an association between shocks to household income and increased risk aversion. Other studies have also linked background risks, such as uninsurable income risk, household health risks, and borrowing constraints to an individual's overall ability to take risks in investments (Guiso et al., 1996; Heaton & Lucas, 1997). This study tried to capture most of these controls by including situational variables, such as indicators for labor-force participation as salaried or self-employed and an indicator for the periods of unemployment during the past year. The study also included an indicator for changes in home-ownership, the ill health of respondent or spouse, and having health insurance, denial of credit, and fear that credit could be denied. This study also included control variables for changes in specific behaviors including risk-aversion (Kahneman & Tversky, 1979)⁶⁰. It also included variables indicating financial literacy and awareness (Van Rooij et al., 2011; Von Gaudecker, 2015), such as actively shopping for investments and savings and

⁶⁰ Not Risk Averse = X3014 and P3014 (response =1, 2 or 3)

Question: Which of the following statements comes closest to describing the amount of financial risk that you (and your [husband/wife/partner]) are willing to take when you save or make investments?

Response: 1. Take substantial financial risks expecting to earn substantial returns. 2. Take above average financial risks expecting to earn above average returns. 3. Take average financial risks expecting to earn average returns. 4. Not willing to take any financial risks.

borrowing advice, and the use of the Internet (Bogan, 2008) for savings and investments and borrowing decisions. Other critical behavioral aspects related to savings, time-horizon, and spending. This study included an indicator for regular savers⁶¹ because several studies have found that regular saving behavior is an optimal financial behavior (Benartzi & Thaler, 2007, 2013). Khwaja, Sloan, and Salm (2006) found some link between smoking with investment time horizon. This study included indicators for the presence of smokers in household (respondent or spouse) and a separate indicator for self-reported long-term horizon⁶² for savings and spending plans for the family. Past studies have also linked credit card debt to sub-optimal behavior and lack of financial sophistication (Norvilitis et al., 2006). Revolving credit card users are individuals who carry the credit card debt month after month (Bird et al., 1997; H. Kim & DeVaney, 2001). Credit card transactors are defined as the individuals who pay the credit cards in full by the end of the month, unlike the credit card revolvers (Yang et al., 2007). This study included credit card transactors⁶³ as one of the controls for optimal financial behavior. Hong, Kubik, and Stein (2004) found that socially interactive households were more likely to make more optimal decisions. This study included an indicator for taking savings and investments advice and borrowing advice from friends and coworkers as a proxy for social interactions. This study also included the Wilshire 5000 index value on the dates of the two interviews to control for shocks from the stock market.

⁶¹ X3020 and P3020 Save regularly by putting money aside each month

⁶² Self-reported Long-Term Horizon = X3008 and P3008 (response = 5)

Question: In planning (your/your family's) saving and spending, which of the following is most important to [you/you and your (husband/wife/partner)]: the next few months, the next year, the next few years, the next 5 to 10 years, or longer than 10 years?

Response: 1. next few months 2. next year 3. next few years 4. next 5-10 years 5. longer than 10 years

⁶³ Credit Card Transactor = X432 and P432 (response =1)

Question: (Do/Thinking about all your cards, do) you almost always, sometimes, or hardly ever pay off the total balance owed on the account(s) each month?

Responses: 1. Always or almost always 3. Sometimes 5. Hardly ever 7. No such cards 0. No credit cards

Summary of Analytical Methodology

This study exploited variations in the following regression model in order to analyze the partial effects of the available independent variables of interest in the second wave (2009) of the SCF panel:

$$\begin{aligned} \ln(Y)_{it} = & [\text{Dyn adv use}]_i \beta_1 + \ln(\text{Fin Vars})_{it} \beta_2 + \text{Sit Vars}_{it} \beta_3 + \text{Behav Vars}_{it} \beta_4 \\ & + z_{it} \beta_5 + \lambda_i + \varepsilon_{it} \end{aligned} \quad (\text{Equation 4.1})$$

Where, Y = Total Assets or Total Debt

$t = 09$ (for the second wave) and i = observation,

$[\text{Dyn Adv Use}]_i$ = Dynamic advisor-use indicator variables (time-invariant)

Fin Vars_{it} = Financial and nonfinancial variables (ln dollar values)

Sit Vars_{it} = Situational indicator variables

Behav Vars_{it} = Behavioral indicator variables

z_{it} = Other covariates

λ_i = Individual-level heterogeneity term (unobservable, time-invariant)

ε_{it} = Stochastic error terms

In Equation 4.1, the individual-level unobservable heterogeneity term λ_i can be systematically correlated with many financial and behavioral variables (Wooldridge, 2010). As discussed in Chapter 1, such individual-effects are time-constant features of the individuals that can lead to a *self-selection* problem resulting in inconsistent and biased coefficients of effects of x_j on y (Wooldridge, 2010). This study used the first-differencing within-effects regression for eliminating individual-level heterogeneity (Wooldridge, 2010). With only two time-periods, the fixed effects and first differencing procedures produced the same inferences and estimates (Allison, 2009; Wooldridge, 2010).

First-differenced OLS regression. The study used the first-differencing method by differencing-out the dependent and independent variables of the two time periods, before running the ordinary least squares (OLS) regression. Therefore, the model became:

$$\Delta \text{Ln}(Y)_{it} = \Delta[\text{Dyn adv use}]_i \beta_1 + \Delta \text{Ln}(\text{Fin Vars})_{it} \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta Z_{it} \beta_5 + \Delta \lambda_i + \Delta \varepsilon_{it} \quad (\text{Equation 4.2})$$

Where, $\Delta y_{it} = \Delta y_{i09} - \Delta y_{i07}$ and $\Delta x_{it} = \Delta x_{i09} - \Delta x_{i07}$ and $t = 07$ and 09

The differencing procedure eliminates the time-invariant variables, including the individual effects λ_i . However, the variables for dynamic use of financial advisers were of interest, therefore, this study included the variables of interest into the regression model after interacting them with time, as shown:

$$\Delta \text{Ln}(Y)_{it} = \Delta[t.\text{Dyn adv use}]_i \beta_1 + \Delta \text{Ln}(\text{Fin Vars})_{it} \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta Z_{it} \beta_5 + \Delta \varepsilon_{it} \quad (\text{Equation 4.3})$$

However, due to the wide format of data, the study could include the time-invariant variables, which have not been differenced, directly into the model without losing mathematical consistency.

$$\Delta \text{Ln}(Y)_{it} = [\text{Dyn adv use}]_i \beta_1 + \Delta \text{Ln}(\text{Fin Vars})_{it} \beta_2 + \Delta \text{Sit Vars}_{it} \beta_3 + \Delta \text{Behav Vars}_{it} \beta_4 + \Delta Z_{it} \beta_5 + \Delta \varepsilon_{it} \quad (\text{Equation 4.4})$$

Adjusting the standard errors. This part of the study employed the manual-adjustment by running the regression (using Kennickell-Woodburn consistent sampling weights and clustered robust standard errors) for each of the five implicates separately. The study obtained the coefficients by simple average, and used the following formula to average the standard errors in the five regression results (Pence, 2001; Shin & Hanna, 2016; Wenzlow et al., 2004):

$$\text{Standard Error} = \sqrt{((6/5) * \text{Imputation Variance} + \text{Sampling Variance})} \quad (\text{Equation 4.5})$$

Results

Table 4.7 used natural log of total assets as the dependent variable and presents the comparison of regressions with time-variant contemporaneous-use adviser variables in the models for (1) comprehensive advice, (2) savings and investments advice, and (3) borrowing advice. Table 4.9 presents the comparison of similar regressions but with time-invariant dynamic-use adviser variables. The non-adviser variables for the results of all three types of decisions have identical coefficients and standard errors. A positive rate of change in total income and total debt was associated with the positive rate of change in total assets. When compared to households that carried the credit card balance to the next month, those who paid off credit card bills in full every month witnesses a 15 percent rate of change in the total assets. As compared to those who were not denied credit, households that were denied of credit witnessed a negative rate of change of 9 percent in the total assets. Being homeowners was associated with a 400 percent rate of change in the total assets when compared to households that did not own a home. Being salaried and self-employed were both associated with more than 20 percent rate of change in the total assets when compared to the retired and unemployed households. When compared to the single households, being married was associated with a negative 25 percent rate of change in the total assets. The growth of the Wilshire 5000 Total Market Index was positively associated with rate of change in the total assets of households.

The adviser variables were notable as well. A switch to an accountant for comprehensive advice was associated with a negative 6 percent rate of change in the total assets. A switch to an accountant for borrowing advice was associated with a 20 percent rate of change in the total assets. Table 4.9 presents the comparison of similar regressions but with time-invariant dynamic-use adviser variables with no change in the non-adviser variable estimates. Obtaining a financial

planner or retaining a broker for comprehensive advice were associated with a more than 10 percent rate of change in the total assets when compared to households that did not use these services. Obtaining an accountant for comprehensive advice was associated with a negative 15 percent rate of change in the total assets when compared to households that did not use accounts for comprehensive advice. Households that retained the financial planner services for savings and investments advice witnessed an 8 percent rate of change in the total assets when compared to those who did not use the planners for savings and investments advice. When compared to those who did not use accountants for savings and investment decisions, retaining an accountant was associated with 23 percent rate of change in the total assets, and obtaining an accountant was associated with 13 percent rate of change in the total assets.

Table 4.8 used natural log of total debt as the dependent variable and presents the comparison of regressions with time-variant contemporaneous-use adviser variables in the models for (1) comprehensive advice, (2) savings and investments advice, and (3) borrowing advice. Table 4.10 presents the comparison of similar regressions but with time-invariant dynamic-use adviser variables. The non-adviser variables for the results of all three types of decisions have identical estimates. The rates of change of the total assets and the total debt were positively associated. When compared to households that carried the credit card balance to the next month, those who paid off credit card bills in full every month witnesses a negative 23 percent rate of change in the total debt. Denial of credit was associated with 49 percent rate of change in the total debt as compared to those who were not denied the loans. Homeownership was associated with 150 percent rate of change in the total debt when compared to households that did not own a home. Having health insurance for the family was associated with a negative 40 percent rate of change in the total debt, as compared to the homes that did not have health insurance. As compared to

healthy households, households that had family members with poor health witnessed a 600 percent rate of change in the total debt.

The adviser variables were interesting as well. A switch to a financial planner for borrowing decisions and a switch to a banker for savings and investment decisions were both associated with a negative 30 percent rate of change in the total debt. Table 4.10 presents the comparison of similar regressions but with time-invariant dynamic-use of advisers. The non-adviser variables have similar results as Table 4.8. Households that rejected the broker services for comprehensive advice witnessed a negative 50 percent rate of change in the total debt, when compared to households that did not have brokers for comprehensive advice. Obtaining or retaining a banker for comprehensive advice was related to 60 percent rate of change in the total debt when compared to households that did not use bankers for comprehensive advice. Obtaining planner services during the second wave was associated with a negative 45 percent rate of change in the total debt when compared to households that did not consult planners for borrowing decisions. Households that used broker services for borrowing decisions in the first wave but lost them in the second wave witnessed a 44 percent rate of change in the total debt when compared to households that did not consult brokers for borrowing decisions. Obtaining a broker service for savings and investment advice in the second wave was associated with a negative 30 percent rate of change in the total debt when compared to households that did not use broker services for savings and investment decisions. Households that consulted a banker for savings and investment decisions in the first wave but lost their services in the second wave witnessed an 80 percent rate of change in the total debt when compared to households that did not use bankers for savings and investments advice.

Conclusions

After controlling for financial, situational, and behavioral aspects, the comparisons of comprehensive advisers with modular advisers showed some interesting results. Total assets contain financial assets and non-financial assets. A rate of change in total assets could be attributed to any of these assets. The study of relationships of advisers to total assets found that obtaining a banker for comprehensive advice was associated with better financial outcomes than if the banker was only retained for modular advice. Accountants working comprehensively were not associated with better financial outcomes. A close relationship existed between the total assets' outcomes for comprehensive advice and savings and investments advice, especially for the financial planners and the brokers. This result is understandable because both planners and brokers can have an investment focus and could advise for financial investments, especially the sale and purchase of financial instruments or even non-financial investments, such as precious metals during the post-recession recovery. The advisers for borrowing decisions did not affect the change in total assets possibly because they could only indirectly affect assets by affecting loans for building assets or investments.

The total debt included housing debt for principal residence, debt for other residential property, other lines of credit, credit card debt, vehicle loans, education loans, other installment loans, loans against pensions, loans against life insurance, margin loans, and miscellaneous. The results showed that retaining or obtaining the bankers for comprehensive advice was associated with a positive rate of change in the total debt. Understandably, bankers deal with debt and are compensated for selling debt-incurring products. Therefore, anyone who was willing to assume higher debt would likely be willing to take advice from bankers. Having a banker for savings and investments during the first wave, but rejecting them during the market recovery, was also

associated with a positive rate of change in the total debt. Obtaining bankers for savings and investments during market recovery improved the related debt situation. Those who obtained financial planners for borrowing decisions during market recovery also realized a negative rate of change in the total debt. Retaining or obtaining brokers for investments was also related to the negative rate of change in total debt. Utilizing accountants did not relate to rate of change of total debt. It is a matter for further research to study advisers and more in-depth details of the investment decisions.

This study has several weaknesses that can be resolved in future research. Most of these weaknesses were rooted in the presumptions about advisers and financial situations. The survey data lacks the details on the advisers' roles, relationships, services, compensations, and competence. Such information could change the results and its meaning, drastically. Further, the study fundamentally assumes that a type of adviser for the two decisions and the two periods was the same person or firm. This fundamental assumption is at the core of the definition of 'dynamic-use' and 'comprehensive-advice', which will become much weaker if it were not the same person or firm. It should also be noted that household could be receiving a more extensive advice in a modular form and possibly a very cursory advice in comprehensive form. Also, bad assets and good strategic debts could exist, which this study fails to identify. Such situations could change the meaning of the results completely. These factors can be taken into account in future research.

Table 4.1: Summary of Wilshire 5000 Total Market Index During the SCF 2007-2009 Panel

Variable	Mean	Std. Dev.	Min	Max
Wilshire 5000 ₍₂₀₀₇₎ (<i>Wave 1: May 07 to Mar 08</i>)	15155.5	442.1	12800	15800
Wilshire 5000 ₍₂₀₀₉₎ (<i>Wave 2: July 09 to Jan 10</i>)	10570.9	377.6	10100	11800
Wilshire (Wave 2 - Wave 1)	-4584.6	617.9	-5700	-1700
Wilshire % diff	-30.2	3.6	-36.076	-12.78

Table 4.2: Summary of Comprehensive Advisers⁶⁴

Adviser Types (N = 3857)	Year 07	Year 09	Dynamic Use		
			Keep-Adviser	Got-Adviser	Lost-Adviser
Planners	9.18% (0.289)	8.02% (0.272)	2.88% (0.167)	5.14% (0.221)	6.30% (0.243)
Brokers	4.33% (0.204)	3.02% (0.171)	0.76% (0.087)	2.26% (0.149)	3.57% (0.185)
Bankers	20.90% (0.407)	17.16% (0.377)	6.33% (0.244)	10.83% (0.311)	14.57% (0.353)
Accountants	5.52% (0.228)	3.84% (0.192)	1.00% (0.1)	2.84% (0.166)	4.52% (0.208)
Lawyers	2.31% (0.15)	1.81% (0.133)	0.26% (0.051)	1.55% (0.124)	2.05% (0.142)
Insurance Agents	0.05% (0.022)	0.01% (0.012)	0.00% (0.000)	0.01% (0.012)	0.05% (0.022)

Table 4.3A: Summary of Advisers for Only Savings and Investment Decisions⁶⁵

Adviser Types (N = 3857)	Year 07	Year 09	Dynamic Use		
			Keep-Adviser	Got-Adviser	Lost-Adviser
Planners	13.03% (0.337)	12.64% (0.332)	3.22% (0.176)	9.42% (0.292)	9.81% (0.297)
Brokers	7.05% (0.256)	6.39% (0.245)	1.43% (0.119)	4.96% (0.217)	5.62% (0.23)
Bankers	10.70% (0.309)	12.87% (0.335)	2.18% (0.146)	10.69% (0.309)	8.53% (0.279)
Accountants	5.02% (0.218)	3.61% (0.187)	0.40% (0.063)	3.20% (0.176)	4.62% (0.21)
Lawyers	2.18% (0.146)	1.89% (0.136)	0.18% (0.043)	1.70% (0.129)	2.00% (0.14)
Insurance Agents	0.06% (0.025)	0.06% (0.023)	0.00% (0.000)	0.06% (0.023)	0.06% (0.025)

⁶⁴ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

⁶⁵ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

Table 4.3B: Summary of Advisers for Only Borrowing Decisions⁶⁶

Adviser Types (N = 3857)	Year 07	Year 09	Dynamic Use		
			Keep-Adviser	Got-Adviser	Lost-Adviser
Planners	3.19% (0.176)	2.53% (0.157)	0.04% (0.02)	2.49% (0.156)	3.15% (0.175)
Brokers	3.44% (0.182)	2.29% (0.15)	0.19% (0.043)	2.10% (0.143)	3.25% (0.177)
Bankers	14.82% (0.355)	12.51% (0.331)	2.86% (0.167)	9.65% (0.295)	11.96% (0.325)
Accountants	3.03% (0.171)	3.06% (0.172)	0.26% (0.051)	2.80% (0.165)	2.77% (0.164)
Lawyers	2.25% (0.148)	1.97% (0.139)	0.11% (0.034)	1.85% (0.135)	2.14% (0.145)
Insurance Agents	0.04% (0.021)	0.10% (0.031)	0.00% (0.000)	0.10% (0.031)	0.04% (0.021)

Table 4.4: Summary of Financial Covariates⁶⁷

Variable [n=3856]	Mean	Std. Dev	Min	Median	Max
Income					
Wave 1 [07]	88971.9	402841.6	0.0	50053.9	1.88E+08
Wave 2 [09]	80660.2	232078.7	0.0	49810.3	6.86E+07
<i>Diff (09 - 07)</i>	-8311.6	361581.7	-1.88E+08	98.3	4.32E+07
Ln (Income)					
Wave 1 [07]	10.8	1.2	0.0	10.8	19.1
Wave 2 [09]	10.8	1.2	0.0	10.8	18.0
<i>Diff (09 - 07)</i>	-0.01	1.1	-19.1	0.0	15.3
Total Assets [New]					
Wave 1 [07]	695809.6	3756184.0	0.0	225035.4	1.20E+09
Wave 2 [09]	621519.2	3143782.0	0.0	225035.4	8.05E+08
<i>Diff (09 - 07)</i>	-74290.4	2061587.0	-6.69E+08	-7799.2	3.65E+08
Ln (Total Assets) [New]					
Wave 1 [07]	11.6	2.7	0.0	12.32	20.9
Wave 2 [09]	11.5	2.7	0.0	12.22	20.5
<i>Diff (09 - 07)</i>	-0.1	1.2	-11.1	-0.1	9.2
Total Debt [New]					
Wave 1 [07]	102150.3	196939.3	0.0	33139.1	1.10E+08
Wave 2 [09]	103971.6	210983.8	0.0	32300.0	4.52E+07
<i>Diff (09 - 07)</i>	1821.3	154786.5	-6.43E+07	0.0	2.80E+07
Ln (Total Debt) [New]					
Wave 1 [07]	8.5	4.6	0.0	10.4	18.5
Wave 2 [09]	8.3	4.8	0.0	10.4	17.6
<i>Diff (09 - 07)</i>	-0.1	3.3	-16.6	0.0	17.2

⁶⁶ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

⁶⁷ New variables for non-financial assets (part of total assets) and debt were created after the negative assets, including negative business assets and negative nonresidential real estate assets (owing to loans), where moved to the debt variable. Comparison of the old and new variables are summarized in Table 2.5

Table 4.5: Summary of the Situational Variables⁶⁸

Variable [n=3856]	[07]	[09]	t(09-07)
Denied Loan	17.10% (0.377)	12.10% (0.326)	-6.30***
Fear denial of loan	15.50% (0.362)	17.50% (0.38)	2.54*
Home Owner	68.90% (0.463)	70.30% (0.457)	2.91*
Salaried	61.20% (0.487)	55.30% (0.497)	-8.03***
Self Employed	10.60% (0.307)	11.10% (0.314)	1.15
Unemployment Spell	15.10% (0.358)	21.40% (0.41)	6.98***
Poor health in HH	7.40% (0.262)	6.90% (0.254)	-3.11**
Married, live together	59.70% (0.491)	53.90% (0.499)	-9.09***

Note: [07] = first wave of interviews, [09] = second wave of interviews

Table 4.6: Summary of the Behavior Variables⁶⁹

Variable [n=3856]	[07]	[09]	t(09-07)
Not Risk Averse	59.30% (0.491)	53.70% (0.499)	-5.63***
Credit Card Transactor	40.00% (0.49)	39.10% (0.488)	-1.07
Regular Saver	42.50% (0.494)	38.40% (0.486)	-3.81***
Use the Internet for SI	29.70% (0.457)	31.70% (0.466)	2.13*
Use the Internet for Borrowing	40.05% (0.490)	40.85% (0.491)	0.80
Friends' advice for SI	43.00% (0.495)	38.40% (0.486)	-3.90***
Friends' advice for Borrowing	46.81% (0.499)	42.03% (0.494)	-4.09***
Smoker in HH	26.10% (0.439)	26.50% (0.441)	1.39
Long term Horizon for SI	14.50% (0.352)	11.20% (0.316)	-4.00***
Have Health Insurance	92.20% (0.267)	92.00% (0.272)	-0.46

Note: [07] = first wave of interviews, [09] = second wave of interviews

⁶⁸ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

⁶⁹ Mean of the indicator variables [0,1] is expressed as a percentage with standard deviation in parenthesis.

Table 4.7: Comparison of the Regression Results of Comprehensive Advice, Savings and Investments Advice, and Borrowing Advice Models with *Time-Variant* Adviser Variables using First-Differenced OLS Regression with RII-Adjusted Standard Errors using *SCFCombo* Procedure. (Dependent Variable = Ln Assets)

Ln (Assets)	(1)		(2)		(3)	
	Comprehensive advice		Savings and Investments advice		Borrowing advice	
	Coef.	SE	Coef.	SE	Coef.	SE
Planner [0,1]	0.05	0.040	0.04	0.040	0.01	0.050
Broker [0,1]	-0.06	0.080	-0.05	0.040	0.01	0.050
Banker [0,1]	0.06	0.040	0.01	0.040	-0.01	0.040
Accountant [0,1]	-0.06#	0.030	0.01	0.040	0.18*	0.090
Ln (Income)	0.04*	0.020	0.04*	0.020	0.04*	0.020
Ln (Debt)	0.04***	0.010	0.04***	0.010	0.04***	0.010
Not Risk Averse [0,1]	0.07	0.050	0.07	0.050	0.07	0.050
Credit Card Transactor [0,1]	0.14**	0.040	0.14**	0.040	0.14**	0.040
Regular Saver [0,1]	-0.01	0.030	-0.01	0.030	-0.01	0.030
Used Internet [0,1]	0.02	0.040	0.02	0.040	0.02	0.040
Friends' advice [0,1]	-0.01	0.030	-0.01	0.030	-0.01	0.030
Denied Loan [0,1]	-0.09#	0.050	-0.09#	0.050	-0.09#	0.050
Feared Denial of Loan [0,1]	-0.02	0.070	-0.02	0.070	-0.03	0.070
Home Owner [0,1]	1.66***	0.120	1.66***	0.120	1.65***	0.120
Smoker in HH [0,1]	-0.12	0.140	-0.13	0.150	-0.12	0.140
Long term horizon [0,1]	-0.04	0.040	-0.04	0.040	-0.04	0.040
Salaried [0,1]	0.22**	0.080	0.22**	0.080	0.22**	0.080
Self Employed [0,1]	0.20*	0.100	0.21*	0.100	0.20*	0.100
Unemployment Spell [0,1]	0.01	0.050	0.01	0.050	0.01	0.050
Had Health Insurance [0,1]	-0.13	0.080	-0.13	0.080	-0.13	0.080
Poor health in HH [0,1]	-0.13	0.140	-0.13	0.140	-0.12	0.140
Number of children	0.05	0.030	0.05	0.030	0.05	0.030
Married [0,1]	-0.29***	0.080	-0.30***	0.080	-0.29***	0.080
Wilshire 5000 Index	0.00002***	0.000	0.00002***	0.000	0.00002***	0.000
	N	3857		3857		3857
	R ²	0.2002		0.1997		0.2007
	F-Statistic	14.95		15.06		15.53
	Prob > F	0.0000		0.0000		0.0000

$p < .1$, * $p < .05$, *** $p < .01$, **** $p < .001$

Table 4.8: Comparison of the Regression Results of Comprehensive Advice, Savings and Investments Advice, and Borrowing Advice Models with *Time-Variant* Adviser Variables using First-Differenced OLS Regression with RII-Adjusted Standard Errors using *SCFCombo*. (Dependent Variable = Ln Debt)

Ln (Debt)	(4)		(5)		(6)	
	Comprehensive advice		Savings and Investments advice		Borrowing advice	
	Coef.	SE	Coef.	SE	Coef.	SE
Planner [0,1]	-0.13	0.160	0.04	0.120	-0.40#	0.220
Broker [0,1]	0.23	0.290	-0.20	0.170	-0.16	0.210
Banker [0,1]	0.17	0.120	-0.40**	0.140	0.00	0.120
Accountant [0,1]	0.13	0.180	0.11	0.210	-0.11	0.270
Ln (Income)	-0.02	0.050	-0.02	0.050	-0.02	0.050
Ln (Assets)	0.37***	0.080	0.37***	0.080	0.37***	0.080
Not Risk Averse [0,1]	0.05	0.120	0.07	0.120	0.06	0.120
Credit Card Transactor [0,1]	-0.26*	0.130	-0.26*	0.130	-0.25*	0.130
Regular Saver [0,1]	-0.02	0.110	-0.01	0.110	-0.02	0.110
Used Internet [0,1]	0.06	0.110	0.06	0.110	0.07	0.110
Friends' advice [0,1]	0.00	0.100	-0.01	0.100	0.01	0.100
Denied Loan [0,1]	0.39**	0.140	0.39**	0.140	0.39**	0.140
Feared Denial of Loan [0,1]	0.13	0.170	0.12	0.170	0.13	0.170
Home Owner [0,1]	2.76***	0.340	2.76***	0.340	2.77***	0.340
Smoker in HH [0,1]	-0.43	0.540	-0.42	0.540	-0.44	0.540
Long term horizon [0,1]	-0.13	0.130	-0.14	0.130	-0.15	0.130
Salaried [0,1]	0.28	0.200	0.28	0.200	0.28	0.200
Self Employed [0,1]	0.26	0.230	0.25	0.220	0.27	0.220
Unemployment Spell [0,1]	0.12	0.130	0.13	0.130	0.12	0.130
Had Health Insurance [0,1]	-0.49*	0.230	-0.49*	0.220	-0.48*	0.230
Poor health in HH [0,1]	2.01*	0.870	2.06*	0.870	2.01*	0.870
Number of children	0.14	0.090	0.14	0.090	0.14	0.090
Married [0,1]	-0.23	0.200	-0.24	0.200	-0.24	0.210
Wilshire 5000 Index	0.00002	0.000	0.00002	0.000	0.00002	0.000
N	3,857		3,857		3,857	
R ²	0.0996		0.1015		0.0995	
F-Statistic	8.07		8.42		8.04	
Prob > F	0.0000		0.0000		0.0000	

$p < .1$, * $p < .05$, *** $p < .01$, **** $p < .001$

Table 4.9: Comparison of the Regression Results of Comprehensive Advice, Savings and Investments Advice, and Borrowing Advice Models with *Time-Invariant* Adviser Variables Using First-Differenced OLS Regression with RII-Adjusted Standard Errors using *SCFCombo* (Dependent Variable = Ln Assets)

Ln (Assets)	(7)		(8)		(9)	
	Comprehensive advice		Savings and Investments advice		Borrowing advice	
	Coef.	SE	Coef.	SE	Coef.	SE
Keep Planner [0,1]	0.07	0.050	0.08#	0.050	-0.18	0.160
Lost Planner [0,1]	0.03	0.050	0.02	0.070	0.04	0.060
Got Planner [0,1]	0.13#	0.070	0.11*	0.050	0.07	0.090
Keep Broker [0,1]	0.12#	0.070	0.08#	0.040	-0.02	0.180
Lost Broker [0,1]	0.09	0.110	0.06	0.050	0.01	0.080
Got Broker [0,1]	0.00	0.140	-0.06	0.060	0.05	0.080
Keep Banker [0,1]	0.04	0.050	0.03	0.110	0.03	0.060
Lost Banker [0,1]	-0.01	0.050	-0.03	0.060	0.01	0.050
Got Banker [0,1]	0.11	0.070	-0.01	0.050	-0.02	0.060
Keep Accountant [0,1]	0.00	0.100	0.21#	0.120	-0.05	0.100
Lost Accountant [0,1]	0.00	0.040	0.06	0.060	-0.15	0.120
Got Accountant [0,1]	-0.16*	0.060	0.12*	0.060	0.21	0.140
Ln (Income)	0.04*	0.020	0.04*	0.020	0.04*	0.020
Ln (Debt)	0.04***	0.010	0.04***	0.010	0.04***	0.010
Not Risk Averse [0,1]	0.07	0.050	0.07	0.050	0.07	0.050
Credit Card Transactor [0,1]	0.13**	0.040	0.14***	0.040	0.14***	0.040
Regular Saver [0,1]	-0.01	0.030	-0.01	0.030	-0.01	0.030
Used Internet [0,1]	0.03	0.040	0.02	0.040	0.02	0.040
Friends' advice [0,1]	-0.01	0.030	-0.01	0.030	-0.01	0.030
Denied Loan [0,1]	-0.09#	0.050	-0.09	0.050	-0.09	0.050
Feared Denial of Loan [0,1]	-0.03	0.070	-0.02	0.070	-0.02	0.070
Home Owner [0,1]	1.66***	0.120	1.66***	0.120	1.65***	0.120
Smoker in HH [0,1]	-0.13	0.150	-0.12	0.150	-0.13	0.150
Long term horizon [0,1]	-0.04	0.040	-0.04	0.040	-0.04	0.040
Salaried [0,1]	0.22**	0.080	0.22**	0.080	0.22**	0.080
Self Employed [0,1]	0.20*	0.100	0.21*	0.100	0.21*	0.100
Unemployment Spell [0,1]	0.01	0.050	0.01	0.050	0.01	0.050
Had Health Insurance [0,1]	-0.13	0.080	-0.13	0.080	-0.13	0.080
Poor health in HH [0,1]	-0.14	0.140	-0.12	0.140	-0.12	0.140
Number of children	0.05	0.030	0.05	0.030	0.05	0.030
Married [0,1]	-0.29***	0.080	-0.29***	0.080	-0.29***	0.080
Wilshire 5000 Index	0.00003***	0.000	0.00003***	0.000	0.00003***	0.000
N	3,857		3,857		3,857	
R ²	0.2013		0.2013		0.2009	
F-Statistic	12.50		12.19		12.41	
Prob > F	0.0000		0.0000		0.0000	

#p < .1, *p < .05, ***p < .01, ****p < .001

Table 4.10: Comparison of the Regression Results of Comprehensive Advice, Savings and Investments Advice, and Borrowing Advice Models with *Time-Invariant* Adviser Variables Using First-Differenced OLS Regression with RII-Adjusted Standard Errors using *SCFCombo* (Dependent Variable = Ln Debt)

Ln (Debt)	(10)		(11)		(12)	
	Comprehensive advice		Savings and Investments advice		Borrowing advice	
	Coef.	SE	Coef.	SE	Coef.	SE
Keep Planner [0,1]	0.04	0.220	-0.07	0.330	-0.02	0.440
Lost Planner [0,1]	0.19	0.240	-0.18	0.170	0.25	0.290
Got Planner [0,1]	-0.04	0.230	-0.08	0.190	-0.61#	0.360
Keep Broker [0,1]	-0.53	0.430	-0.79	0.480	0.27	0.190
Lost Broker [0,1]	-0.70#	0.370	0.02	0.270	0.37#	0.230
Got Broker [0,1]	-0.47	0.460	-0.38#	0.220	0.15	0.410
Keep Banker [0,1]	0.49*	0.250	-0.02	0.460	-0.04	0.300
Lost Banker [0,1]	0.07	0.170	0.59**	0.210	-0.12	0.190
Got Banker [0,1]	0.46*	0.190	-0.25	0.210	-0.16	0.170
Keep Accountant [0,1]	0.64	0.590	0.74	0.790	0.03	0.320
Lost Accountant [0,1]	-0.21	0.260	-0.20	0.320	0.00	0.360
Got Accountant [0,1]	0.01	0.290	-0.05	0.260	-0.24	0.420
Ln (Income)	-0.02	0.050	-0.02	0.050	-0.02	0.050
Ln (Assets)	0.37***	0.080	0.37***	0.080	0.37***	0.080
Not Risk Averse [0,1]	0.04	0.120	0.06	0.120	0.05	0.120
Credit Card Transactor [0,1]	-0.26*	0.130	-0.26*	0.130	-0.24#	0.130
Regular Saver [0,1]	-0.02	0.110	-0.02	0.110	-0.02	0.110
Used Internet [0,1]	0.06	0.110	0.06	0.110	0.07	0.110
Friends' advice [0,1]	0.01	0.100	-0.01	0.100	0.01	0.100
Denied Loan [0,1]	0.40**	0.140	0.40**	0.140	0.39**	0.140
Feared Denial of Loan [0,1]	0.12	0.170	0.12	0.170	0.13	0.170
Home Owner [0,1]	2.74***	0.340	2.76***	0.340	2.76***	0.340
Smoker in HH [0,1]	-0.45	0.530	-0.42	0.540	-0.42	0.540
Long term horizon [0,1]	-0.14	0.130	-0.14	0.130	-0.15	0.130
Salaried [0,1]	0.28	0.200	0.28	0.200	0.27	0.200
Self Employed [0,1]	0.25	0.230	0.24	0.220	0.27	0.220
Unemployment Spell [0,1]	0.11	0.130	0.12	0.130	0.11	0.130
Had Health Insurance [0,1]	-0.50*	0.230	-0.50*	0.220	-0.48*	0.230
Poor health in HH [0,1]	1.99*	0.870	2.05*	0.860	2.01*	0.870
Number of children	0.13	0.090	0.13	0.090	0.14	0.090
Married [0,1]	-0.24	0.210	-0.26	0.210	-0.25	0.210
Wilshire 5000 Index	0.00003#	0.000	0.00001	0.000	0.00001	0.000
N	3,857		3,857		3,857	
R ²	0.1033		0.1036		0.1002	
F-Statistic	6.49		6.68		6.17	
Prob > F	0.0000		0.0000		0.0000	

#p < .1, *p < .05, ***p < .01, ****p < .001

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