Who needs guidance from a financial adviser? Japanese survey evidence

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Abstract

Using individual family household data from Japan, we find that households choosing sources of finance information involving financial experts have better financial knowledge, as measured in terms of knowledge about the Deposit Insurance Corporation of Japan, than those selecting family and friends for the same purpose. These same households are also more willing to purchase high-yielding financial products entailing the possibility of a capital loss within one to two years. We also find that households choosing desirable sources of finance information involving financial experts and neutral institutions also have better financial knowledge. Conditional on the choice of financial institutions as the actual source, households that regard neutral institutions as a more desirable source tend to have better financial knowledge. It is unclear whether households that seek the guidance of a financial expert have higher ratios of stock and investment trusts to financial assets than those selecting family and friends as their source of financial information.

1. Introduction

The prolonged period of low economic growth and interest rates that has accompanied rapid population aging in Japan over the past two decades requires evermore Japanese households to more carefully decide how much to save and where to invest.   For example, many Japanese corporations have begun to implement defined contribution corporate pension plans, such that workers must take much more responsibility for their own saving.   Elsewhere, the Financial Services Agency (FSA) of Japan recommends households should save more to prepare themselves for the "100-Year Life Society," observing that even current average monthly social security benefits for a retiree household (consisting of a 65-year old male and a 60-year old female) falls far short of its average monthly spending (FSA 2019).   Disturbingly, the Japanese flow of funds accounts show that as of December 2018 about 54% of all household financial assets in Japan were "safe" (low-risk/low-yield) assets, such as bank deposits.   Another 29% are merely insurance, pension and standardized guarantees, while riskier (higher yielding) assets, such as stocks or investment trusts, represent just 16% of all household financial assets.

Observing this rapidly changing landscape for retirement savings, the FSA has been actively promoting investment in FSA-selected no-load and simple investment trusts through tax exemptions on dividend and interest earnings on securities, up to 400,000 yen per year for up to 20 years.   However, it remains for households to choose from the products approved by the FSA; therefore, they still need sufficient financial knowledge for this purpose.   To improve financial knowledge quickly, it is common in most of the developed world for households to seek the guidance of financial advisers.   However, in Japan, as noted by the FSA (2019), financial institutions, such as banks, financial instruments business operators (such as security firms), and insurance companies have traditionally played this role.   Moreover, financial institutions employ about half of Japan's certificated financial planners.

This is problematic, in that given the diversity of services provided by financial institutions, it is increasingly difficult for a single financial institution to provide comprehensive financial advice for all available financial products.   In this context, the FSA (2019) suggests that in addition to traditional financial institutions, financial

instruments intermediary service providers, investment advisory and agency services, insurance agents, and financial planners should assist in personal financial planning. Currently, some financial instruments business operators, for example, Internet-based security firms, have contracts with independent financial advisers belonging to financial instruments intermediary service providers to provide financial advice for their customers. The difference is that independent financial advisers provide advice in the interests of their customers, rather than that of the financial instruments business operators. However, independent financial advisers are currently not widespread in Japan.

In addition, even if the guidance of independent financial advisers were available households would still need sufficient knowledge to understand any guidance, as argued by Inderst and Ottaviani (2012). The question is then whether more Japanese households will take advantage of the increased presence of financial advisers in the future to help make better decisions. In this paper, we pose the following questions. First, what are the actual and desirable sources of financial information and knowledge for Japanese households? Second, what types of households prefer to seek guidance from financial experts? Third, do households with better financial knowledge invest more in risky than safe assets? We respond to these questions empirically after developing a simple theoretical model. The major findings are as follows.

We formulate a theoretical model where a household seeks guidance from a financial adviser in making risky investments if the guidance will yield higher than expected utility from the household's investment portfolio net of the costs of obtaining the guidance than the expected utility from undertaking an investment based on the household's own information and information from family and friends. We assume that the level of financial knowledge and the preference for the expected mean and variance of the return from the household portfolio differ across households. We also assume that the cost of obtaining guidance from a financial adviser will be lower for a household with a higher level of financial knowledge, and that the cost of obtaining guidance from a financial adviser will be higher than that of obtaining guidance from family and friends.

The model involves three empirical predictions. First, households with better financial knowledge tend to seek guidance from financial advisers, conditional on their risk tolerance and the expected mean and variance of the household portfolio given the choice of financial adviser. Second, households with higher risk tolerance are more

willing to purchase risky assets, conditional on the expected mean and variance of the household portfolio given the choice of financial adviser and the level of financial knowledge. Third, there is ambiguity in the relationship between risky asset investment and households seeking financial advice. This is because among households investing in risky assets, households with better financial knowledge will seek guidance from financial advisers, whereas households with poorer financial knowledge will make the same decisions based on either their own information or that of their family and friends.

We then move to an empirical analysis using the Survey of Household Finances (SHF) conducted by the Central Council for Financial Services Information (CCFSI) from 2010 to 2017. These data provide unique information on the actual and desirable sources of financial knowledge and information for Japanese households. We find that households choosing actual sources of financial information and knowledge involving financial experts have better financial knowledge, as measured by knowledge of the Deposit Insurance Corporation of Japan (DICJ), and are thus more willing to purchase high-yielding financial products entailing the possibility of a capital loss within one to two years. This is consistent with our first and second theoretical predictions. We also find that it is unclear whether households seeking guidance from financial experts tend to have higher ratios of stock and investment trusts to total financial assets than those selecting family and friends as their source of financial information and knowledge. This is consistent with our third theoretical prediction.

The organization of the remainder of the paper is as follows. Section 2 reviews the related literature and Section 3 details the theoretical and empirical model. Section 4 presents the SHF data used for the regression analysis and Section 5 reports the results. Section 6 concludes with policy implications.

2. Related Literature

Our analysis relates to three areas of the existing literature. These concern (i) guidance from financial advisers, (ii) the measurement of financial knowledge and (iii) the relationship between investment decisions and financial knowledge and financial adviser guidance. In terms of financial adviser guidance, Inderst and Ottaviani (2012) conducted a survey and argued that households should have better financial knowledge

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when seeking guidance from financial advisers because the financial adviser may recommend a product that benefits the seller of that product, rather than the household, if the seller provides fees based on the sale of their product.   This assertion has found support in empirical studies using Italian data by Calcagno and Monticone (2015) and US data by Collins (2012).

In other work, Kim et al. (2016) identified the role of financial advisers in resolving household inertia in investment management over their life cycles.   They assumed that investors must forgo acquiring job-specific skills when they spend time managing their money, and that efficiency in financial decision-making varies with age. Kim et al.'s (2016) model showed how people optimally chose between actively managing their assets versus delegating the task to financial advisors.   Considering the analysis of Japanese data, Yamori (2014) used regional aggregate data from the SHF 2010–2013 and found that households with greater financial assets tended to select financial experts as their source of financial information and knowledge.   In contrast, households living in the Kanto region of Japan tended to choose neutral institutions not reflecting the interests of a particular industry as their source of financial information and knowledge.

Many studies have quantified the financial knowledge of households including, for example, Atkinson and Messy (2012).   Lusardi and Mitchell (2014) surveyed financial literacy around the world using a financial literacy index (FLI) that counts the number of correct answers to three questions encompassing compound interest rates, inflation and the real value of financial assets and diversified investments.   The findings suggested that financial literary varies by country, reflecting the historical experience of financial markets, with older, male and the more educated tending to have better financial knowledge.   We believe the 2009 Japanese Study on Aging and Retirement (JSTAR 2009) by the Research Institute of Economy, Trade and Industry, Hitotsubashi University, and the University of Tokyo; the 2010 Preference Parameters Study by the Osaka University's 21st Century Center of Excellence Program (PPS 2010); the 2010 National Survey on Work and Family (NSWF 2010) by the Nihon University Population Research Institute; and the 2016 Financial Literacy Survey (FLS) by the CCFSI used very similar questions.   The FLI analyzed by Lusardi and Mitchell (2014) was also replicated by Shimizutani and Yamada (2018) using JSTAR 2009, Sekita (2011) using PPS 2010, Clark

et al. (2013) using NSWF 2010, and Yoshino et al. (2017) using FLS 2016.

For the relationships between investment decisions, financial knowledge, and financial adviser guidance, Lusardi et al. (2017) reported that financial knowledge alone accounted for 30–40% of retirement wealth inequality using US data. Elsewhere, Jappelli and Padula (2015) concluded that financial knowledge positively correlated with stock market participation using European data for individuals aged over fifty. Similar positive associations between stock market participation or asset holdings and the level of financial knowledge are evident in Georgarakos and Inderst (2014), Jappelli and Padula (2013), van Rooij et al. (2011, 2012), and Guiso and Jappelli (2008).

Recent studies also investigate the effects of financial knowledge on investment returns. For instance, Bianchi (2018) used French administrative panel data on portfolio choices with survey measures of financial literacy. This showed that the most literate households experienced 0.4% higher annual returns than the least literate households did, and that more literate households held riskier positions when expected returns were higher and were more likely to buy assets that provided higher returns than the assets they sold. Using Dutch data, von Gaudecker (2015) found that households with better financial knowledge usually sought guidance from financial experts, and that these households accordingly achieved a 50 basis point higher investment return.

As for Japanese analyses, for those using the PPS data, Kadoya and Khan (2019) showed that the demographic factors of gender, age and education; the socioeconomic factors of income and occupation; and the psychological factor of perceptions of the future, all significantly affected the level of financial literacy. Kadoya and Khan (2017a) also showed that financial literacy could reduce anxiety in old age by making people more capable of accumulating assets and earning income, while Kadoya et al. (2017) showed that financial literacy significantly improved stock market participation, even after controlling for demographic, socioeconomic and psychological factors. Lastly, Ito et al. (2017) identified the association between risky asset holdings and financial knowledge and Sekita (2013) showed that it increased wealth accumulation even after controlling for the endogeneity of financial literacy.

For the studies using FLS 2016, Yoshino et al. (2017) constructed a FLI and found that high-income households tended to have better financial knowledge. Sekita et al. (2018) identified a positive relationship between financial literacy and wealth

accumulation using instrumental variable methods after decomposing financial literacy into five subcategories.   Kadoya and Khan (2017b) examined the factors affecting financial literacy in terms of financial knowledge, financial attitudes and financial behavior.   They found that age, education, the level of financial assets and the use of financial information positively related to overall financial literacy and its three components, while employment status and the experience of financial trouble were negatively associated.

With studies using NSWF 2010, Clark et al. (2013) found that males, urban households and households with more formal education and higher incomes tended to have better financial literacy based on 2,872 individuals aged 40 to 59 years.   They also found that higher levels of financial literacy were associated with greater demand for additional human capital and for participation in on-the-job training programs.   For studies using JSTAR 2009, Shimizutani and Yamada (2018) used the data of 2,852 individuals aged 50 to 75 years and concluded that financial literacy was generally associated with educational attainment, cognitive skills, economics or finance coursework and income.   They also found that individuals with better financial literacy were more likely to invest in stocks or securities separately from their savings. Elsewhere, using Nikkei Rader data sets, Iwaisako et al. (2015) identified a positive relationship between educational attainment and stock holdings.   Using prefectural aggregate data from the National Survey of Family Income and Expenditure, Mori (2017) concluded that the prefectural stock holding to total asset ratio related to age, educational attainment, and the share of wealthy households in the prefecture, but not the level of financial literacy as measured by FLS 2016.

Regarding Japanese studies on the use of financial adviser guidance, Nogata and Takemura (2017) employed an investor survey and found that conditional on the level of financial knowledge, households that placed an emphasis on the suggestions of security firms, family and friends tended to hold a lower ratio of stock to total financial assets. Gan et al. (2018) used a survey data set and found that people seeking the advice of a financial adviser tended to be more willing to invest in investment trusts, while those seeking advice from family and friends were generally unwilling to invest in risky assets. They also found that risk-averse investors mostly did not choose to hold investment trusts, with both basic (mathematical skills as measured by the traditional index) and applied

(knowledge about financial products) financial literacy affecting asset allocation. Lastly, Fujiki (2018a) used FLS 2016 and Iwaisako et al. (2018) used the 2017 Japan Household Panel Survey (JHPS) to analyze actual sources of financial knowledge and information, including the use of financial adviser guidance.

This paper contributes to the literature, especially in the Japanese context, by employing unique information about the actual and desirable sources of financial knowledge and information from the SHF individual data set. Unlike Yamori (2014), which only used regional aggregate data from SHF 2010–2013, we employ individual data sets over the period 2010–2017. In contrast to Ito et al. (2017) and Iwaisako et al. (2015), we consider the sources of financial information and knowledge. Finally, Fujiki (2018a) and Iwaisako et al. (2018) did not consider the desirable sources of financial knowledge and information. However, one limitation of our analysis is that our data set is from a consumer savings survey and thus does not include information on the supply of financial products and services, such as the cost of using a financial adviser for each household. Accordingly, we are unable to identify the effects of supplier sale strategies on the demand for financial assets, as in Hastings et al.'s (2017) Mexican analysis. Moreover, our dataset does not provide information regarding the investment returns from financial assets as in Gan et al. (2018).

3. Model

In this section, we begin by formulating a model that considers the relationship between the household demand for financial adviser guidance and the holding of risky financial assets. Note that our theoretical model is a simple static model used only to derive our empirical model, and does not consider the life-cycle model of the accumulation of financial knowledge and assets as in Lusardi et al. (2017) or Kim et al. (2016). This is because we believe our main contribution lies in our empirical findings.

3.1. Theoretical Model

Consider an economy with many households and financial advisers. A household i has the following utility function that depends on the expected return and variance of the amount of total financial assets W_i.

$$\text{E}(W_i) - \frac{1}{2}\gamma_i Var(W_i) = \overline{W}_i - \frac{1}{2}\gamma_i(E(W_i^2) - \overline{W}_i^2), where \ \overline{W}_i = E(W_i),$$

where $\gamma_i > 0$ is a parameter for risk tolerance. The household then allocates some initial amount of financial assets, W_{0i}, into a risky asset, say stocks or an investment trust, and a safe asset, like a bank deposit. Let the household's share of investment in the risky asset be v_i. If the returns from the risky asset and the safe asset are $\tilde{r}$ and r_f, respectively, the expected value of the total financial asset will be $W_{0i}E(v_i\tilde{r} + (1 - v_i)r_f)$. Letting the return from the safe asset be zero through normalization, the expected value and variance of the amount of household financial assets will be $W_{0i}v_iE(\tilde{r})$ and $(W_{0i}v_i)^2Var(\tilde{r})$, respectively. Household i will then solve the following optimization problem to identify the optimal investment ratio for the risky asset, v_i^*,

$$\max_v E(W_i) - \frac{1}{2}\gamma_i Var(W_i) = \max_v W_{0i}v_iE(\tilde{r}) - \frac{1}{2}\gamma_i(W_{0i}v_i)^2Var(\tilde{r}).$$

For the optimal investment ratio v_i^* and U_i^*, the level of utility attained at v^*, is then

$$v_i^* = \frac{E(\tilde{r})}{\gamma_i W_0 Var(\tilde{r})} \quad \text{and} \quad U_i^* = \frac{1}{2}\frac{E(\tilde{r})^2}{\gamma_i Var(\tilde{r})}.$$

In obtaining these solutions, we assume that if $\tilde{r} < 0$, $v_i^* = 0$ given households cannot short-sell the risky asset.

To inform this decision, household i can use its own information and/or the information of others, of which there are two kinds: information available from family and friends, and information available from outside experts, possibly by paying a fee. There are then $m = 1, ..., M$ possible combinations of the sources of information, say, financial institutions only, financial institutions and a financial expert, and so forth. Let information source $m = 1$ be from family and friends only and assume that the level of financial knowledge, k_i, varies by household. As such, the higher the value of k_i, the better the level of financial knowledge.

If a household i uses information sourced from family and friends, $m = 1$, the household requires cost of $f_1(k_i)$, including the opportunity cost of time learning about the financial products, and we infer $E(\tilde{r})=E_{1i}$ and $Var(\tilde{r}) = V_{1i}$. We assume that a higher value of k_i is associated with lower value of $f_1(k_i)$. Note that $E(\tilde{r})$ and $Var(\tilde{r})$ differ by household because each household has a different level of financial knowledge; therefore, different expectations on the return and variance of the risky asset, and each household receives different information because its family and friends also vary by household.

Alternatively, household i can seek financial information source j, say, from a financial institution, financial adviser or some "neutral" institution. There is then a cost of making investment decisions using information source j, $f_j(k_i)$, where $j > 1$, and we infer the expected return is $E(\tilde{r})=E_{ji}$ and $\text{Var}(\tilde{r}) = V_{ji}$. Once again, even when using the same information source, households can choose different financial advisers, and may then hold different expectations about the return and variance from the risky asset because they hold different amounts of financial knowledge. Thus, $E(\tilde{r})$ and $\text{Var}(\tilde{r})$ again vary by household.

Household i will then choose information sources l, yielding the maximum expected utility net of the cost of using that information source.

$$\left\{\frac{1}{2}\frac{E_{li}{}^2}{\gamma_i V_{li}} - f_l(k_i)\right\} > \left\{\frac{1}{2}\frac{E_{mi}{}^2}{\gamma_i V_{mi}} - f_m(k_i)\right\} \ \ for \ \ all \ \ m \neq l, \text{ or,} \qquad (1)$$

$$\frac{1}{2\gamma_i}\left\{\frac{E_{li}{}^2}{V_{li}} - \frac{E_{mi}{}^2}{V_{mi}}\right\} > \{f_l(k_i) - f_m(k_i)\}.$$

Equation (1) yields the following predictions. First, suppose that $f_l(k_i) > f_1(k_i)$ because the advice of family and friends is easy to understand and less costly than the advice of outsiders. Suppose further that $d(f_l(k_i) - f_1(k_i))/dk_i$ is negative; therefore, the cost of using outside information sources relative to family and friends falls as financial literary increases. Under these assumptions, given the expected mean and variance of the risky asset return and the value of γ_i, a household with higher financial literacy tends to choose information sources other than family and friends because the right-hand side of equation (1) becomes smaller.

Second, a household with higher risk tolerance in the sense that γ_i has a smaller value tends to choose information sources other than family and friends. This is because the left-hand side of equation (1) becomes larger given the higher expected returns and variance of risky assets, and given the cost of using information sources. Third, for the ratio of risky assets, households with higher risk tolerance in the sense that γ_i takes a smaller value will have a higher investment ratio for the risky asset because $v_i{}^*$ is inversely related to γ_i given the expected returns and variance of the risky asset, and the cost of using information sources. Unfortunately, we cannot obtain a clear prediction for the relation between the risky asset investment ratio and the choice of information sources. For example, among households investing in the risky asset, those with better

financial knowledge will seek the guidance of a financial adviser, whereas households with poor financial knowledge will invest in the risky asset using only their own information. We now test these three theoretical predictions empirically.

3.2. Empirical model

Suppose we can approximate the net benefit of using information source m by household i using the following linear function:

$$\frac{1}{2}\frac{E_{mi}^{2}}{\gamma_i V_{mi}} - f_m(k_i) = X_{mi}\delta_m + v_{mi}, \qquad (2)$$

$$m = 1,2,3,4,\dots M$$

where X_{mi} is a vector of observable household characteristics related to the choice of the m-th information source, δ_m is a vector of parameters and v_{mi} are unobservable preferences for information source m of a household i. For example, X_{mi} could include variables relating to the level of risk aversion, and the level of financial literacy. Unfortunately, we do not have data on the cost of using information source m, so we approximate it using a linear combination of financial literacy and other demographic variables such as the household asset holdings, income and age. If household i chooses information source l instead of m, it means that

$$\{X_{li}\delta_l - X_{mi}\delta_m\} > \{v_{mi} - v_{li}\} \ for \ all \ m \neq l. \qquad (3)$$

Equation (3) states that the difference in the net benefit of using information source l over m predicted by the observable household characteristics should outweigh the difference in the unobservable preference for information source l over m. For example, consider the choice of a financial institution (choice l) and family and friends (choice 1). Even if the observables suggest that household i prefers to use financial institutions, say, it has a large amount of financial assets and an older household head, and $X_{li}\delta_l - X_{1i}\delta_1$ takes a large value, the household chooses family and friends if it very much likes the family and friends and dislikes the financial institution. In this case, v_{li} will be negative and v_{1i} large and positive; therefore, $X_{li}\delta_l - X_{1i}\delta_1 < v_{1i} - v_{li}$.

We should consider this self-selection of information sources in our analysis. Assume that v_{mi} follows an independent extreme value distribution, whose cumulative distribution function is exp(–exp(–v_m)) with each information source m. Then, the choice of information source for household i follows a multinomial logit model,

$$Source_i = X_{mi}\delta_m + v_{mi}, \tag{4}$$

$$m = 2,3,4,\ldots M.$$

where *Source* is an indicator variable of the choice of information sources from *m* = 2, 3, … *M*, by household *i*, X_{mi} and δ_m are defined in equation (2), normalizing the parameter value for choice 1 (family and friends) to zero.

We estimate equation (4) in Section 5 using three $Source_i$ variables. First, we use the top-seven choices of actual sources of information in Section 5.1, normalizing the parameter value for choice 1, family and friends, to zero. Second, we use the top-nine choices of desirable sources of information for variable $Source_i$, where choice 1 is Don't know, in section 5.2. Finally, we use the top-eight choices of desirable sources conditional on the choice of exclusively financial institution as the actual source for variable $Source_i$, where choice 1 is financial institutions, in section 5.3. Note that in Sections 5.2 and 5.3, we interpret $f_j(k_i)$, E_{ji}, and V_{ji} in Equation (2) as a cost of making investment decisions, the expected return from the household financial assets, and the expected variance of the household financial assets using the desirable information source *j*. For variable X_{mi}, we use data from the SHF that related with the choice of the *m*-th information source on such as household age or outstanding amount of financial assets holdings, to be explained in the next section.

4. Data

4.1 Summary statistics

We employ individual household data from the SHF over the period 2010–2017, and only since 2010 because of the availability of the questions concerning the sources of financial information and knowledge. For each survey year, the SHF data comprise single-person and family (two or more persons) household data sets. For the family household data set, the SHF uses a stratified two-stage random sampling method to select 500 survey areas, and then randomly selects 16 households, consisting of two or more people from each area, totaling about 8,000 samples. Of these, in each survey year, about half of the samples respond. We focus on the family household data because the single-person household data obtained from the internet survey has respondent ages between 20 and 69 years only, which is clearly not suitable for examining post-retirement situations.

The SHF family household data provides rich information concerning family household characteristics.   First, it includes demographic variables that help predict the investment decision, the cost of using information sources, and the financial literacy of a family household.   These include disposable income, the outstanding amount of financial products excluding cash held as savings (excluding those held for family businesses or settlement purposes) and the stock of average cash holdings at home, and the age of the household head.   Table 1 provides the means of the dummy variables denoting the categories of annual disposable income in units of 10,000 yen (*Income*)[1], the sum of the amount of financial products excluding cash and the stock of average cash holdings at home in units of 10,000 yen (*Asset*), and the age of the household head (*Age*). For *Assets* and *Income*, we attempt to include about ten categories so that each contains a similar proportion of observations.   For example, *Income_200_260* takes a value of one for a household that responds that its annual disposable income is greater than 2 million yen and less than or equal to 2.6 million yen, and zero otherwise.   *Asset_0* then takes a value of one for households that respond with zero outstanding amount of financial products and cash holdings, and zero otherwise, which suggests that about 10% of households do not hold any financial assets.[2] Note that the SHF does not ask about the total amount of financial products excluding cash for households that responded that they did not have financial products excluding cash.   We classify these households as *Asset_0* = 1. We also dropped the households that refused to respond the total amount of financial assets excluding cash holdings, the outstanding amount of bonds, stocks and investment trusts, and the stock of average cash holdings. The dummy variables for the age of the household head are 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74 and over 74 years.

Second, we use data relating to the level of financial literacy.   We use a dummy variable indicating whether a household has a male household head (*Male*) because Lusardi and Mitchell (2014) show that gender relates to the level of financial literacy.

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[1]   10,000 yen is about 93 US dollars when 1 US dollar = 108 Japanese yen as of July 16, 2019 exchange rate.
[2]   Since 2016, the SHF has also asked households that responded that they did not hold any financial products excluding cash whether they had a financial account and whether the outstanding amount of the account was zero.   In the 2017 data, 51% of households that initially responded that they did not have any financial products excluding cash indeed had a financial account with a positive outstanding amount.

We specify dummy variables for respondents who know or have heard about the role of the DICJ (*Know Deposit Insurance* and *Heard of Deposit Insurance*, respectively). Unfortunately, the SHF does not include questions that would allow us to construct a standard FLI as reviewed by Lusardi and Mitchell (2014).　As an alternative, Fujiki (2018b) imputes the missing FLI for the SHF in 2010 and 2016 by matching the standard FIL constructed from the PPS 2010 and FLS 2016.　Fujiki (2018b) finds that the imputed FLI using four different matching methods generally yield high values for agents with better knowledge about the DICJ (Figure 1).

　　　Figure 1 suggests that the responses to this question on knowledge of the DICJ may be a useful proxy variable for the level of financial literacy where otherwise unavailable. [3]　We also specify dummy variables for households considering the provision of a financial advisory service as one of the conditions for choosing a financial institution (*Choice advi*ce), whether a household is a homeowner (*Homeowner*) and has debt (*Debt*), and where households make mattress deposits, i.e., withdraw deposits from banks to reduce investment risk (*Mattress*).　Lusardi and Mitchell (2014) also show that financial literacy is related to educational attainment, so we include dummy variables indicating the level of educational attainment: *Senior high*, *Vocational college*, *Junior college*, *University*, and graduate school (*Graduate*).　There is an additional classification for junior high school and other in the data, but for ease of analysis, we add these categories together because the number of households with other school is very small.　In the following regressions, this is the base case.　We also specify a dummy variable indicating spouse for the survey respondent's educational attainment, as indicated by an *S_* before the variable names.

　　　Third, we specify variables relating to each household's past and future investment decisions, which should reveal the household's preference for risky assets. The variables are mean percentage shares of bonds (*Sbond*), stocks (*Sstock*), and investment trusts (*Sinv_trust*) to total outstanding financial assets.　Note that we assume

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[3]　Yamori (2014) shows that household knowledge about the DICJ tends to be better in two regions (Kanto and Kinki) that experienced more bank failures in the late 1990s and early 2000s.　For this reason, household knowledge about the DICJ may not be a good proxy for general financial knowledge instead of the region-specific experience of bank failure.　In the SHF from 2010 to 2016, we also found that that household knowledge about the DICJ tended to be better in the Kanto and Kinki regions.　The analysis in Fujiki (2018b) addresses Yamori's (2014) concerns.

the outstanding amount of *Sbond*, *Sstock*, and *Sinv_trust* are zero for the households that responded that they did not have financial products excluding cash. We use *Capitallossyes*, a dummy variable that takes a value of one for households that have experienced capital losses, otherwise zero. The next two variables concern risk taking. The first is *Riskyes*, a dummy variable that takes a value of one for households that respond that they are willing to purchase financial products with a high yield but with the possibility of incurring a capital loss within one to two years, and otherwise zero. The second is *Riskalittle*, a dummy variable that takes a value of one for households that respond that they would purchase financial products with a high yield but with the possibility of incurring a capital loss within one to two years to some extent, and otherwise zero.

Finally, we employ the following data to control for the heterogeneity of households. We specify dummy variables indicating each respondent's job situation, whether the household head is a full- (*Full-time*) or part-time (*Part-time*) worker or self-employed (*Self-employed*) or a student (*Student*). There is an additional classification for no employment and does not attend school, which we employ as the base case in the regressions. We specify a dummy variable indicating spouse for the survey respondent's job situation, as indicated by an *S_* before the variable names. We also use a dummy variable *No_spouse* to indicate a household that does not have spouse. Lastly, we use dummy variables to indicate household size as measured by the number of household members (*H_sizeN*, N = 2,3,4,5,6 and more, where N = 2 is the base case), and dummy variables for nine regions of residence (*Hokkaido*, *Tohoku*, *Kanto*, *Hokuriku*, *Chubu*, *Kinki*, *Chugoku*, *Shikoku*, and *Kyushu*, with *Kanto* as the base or reference category).

Additionally, we include dummy variables for the four size categories of cities based on population: (1) the 20-largest cities (*Top 20cities*), (2) cities with more than 40,000 households (*Cities_40k_*), (3) cities with 20,000–40,000 households (*Cities_20k_40k*) and (4) cities with fewer than 20,000 households and villages, which we employ as the base category. The variables followed by *_NA* are dummy variables identifying a household not reporting these variables. This is because household respondents can refuse to answer questions as they are in paper form.[4] We also specify

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[4] Even if we drop the observations that take value of one for at least one of the variables followed by *_NA*,

dummy variables denoting the survey year (*Yeard*2010–*Yeard*2017) (not shown in the table).

4.2. Risky asset holdings

The upper panel of Table 2 provides summary statistics for the holding of risky financial assets. Note that the SHF questions the surveyed households about the stock of average cash holdings and whether they have financial products excluding cash. We assume that households who responded that they did not have financial products excluding cash and that they had no cash had zero financial assets. The column labeled "Zero financial assets" shows about 10% of households do not have any financial assets. If a household replies in the affirmative, it then provides a breakdown of the financial products excluding cash and the total amount of financial products excluding cash. The columns labeled "With financial assets" and "Yes" provide the proportions of households reporting positive stock, investment trust and bond holdings. The columns labeled "With financial assets" and "No" is the proportion of households replying that they held a zero amount of stocks, investment trusts and bonds. Table 2 shows that the participation rates are 17% for stocks, 11% for investment trusts, and 4% for bonds.

The lower panel of Table 2 reports the means, standard errors (s.e.), minimums, maximums, and the number of observations (N) for the percentage shares of stocks, investment trusts, and bonds to the total amount of financial assets. This is only for those reporting positive financial assets (households "With financial assets" in the upper panel). For the household data, the highest mean percentage is that of stocks (5%), followed by investment trusts (3%) and bonds (1%). Note that the mean percentage shares of stocks, investment trusts, and bonds to total amount of financial assets reported in Table 1 include data from households with zero financial assets. Consequently, the mean percentages in Table 1 are much lower than in Table 2.

4.3. Sources of financial knowledge and information

Table 3 details the frequencies of the actual and desirable sources of financial knowledge

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we still have 20,126 observations. The results shown in the following Tables 3 to 8 remain almost the same if we use these 20,126 observations. The statistical significance of ATEs reported in Table 9 vary, however, the result that the relationship between the investment in risky assets and a household seeking advice from a financial adviser is unclear is unchanged.

and information (actual and desirable sources hereafter), in descending order of frequency. For the actual sources, the SHF asks, "What is your main source of knowledge and information on finance? Choose up to three sources from: financial institutions (e.g., financial service representatives and tellers, brochures and advertisements, websites), financial experts (e.g., books, lectures, seminars, websites, and television programs), a neutral institution that does not reflect the interest of a particular industry (e.g., brochures, lectures, seminars, advertisement, and websites), family and friends (word-of-mouth communications), school (e.g., classes and lectures), other."

The top left panel of Table 3 reports the frequencies of actual choice up to three responses, where the sum of frequencies exceeds 100%. The left column indicates that the sources of information are in descending order financial institution (FI) 69%, family and friends (FF) 34%, financial experts (E) 25%, other (Other) 18%, neutral institution that does not reflect the interest of a particular industry (NI) 8%, do not answer (No answer) 2%, and school (School) 0.3%. The top right panel details the top-ten frequencies of all possible combinations of choices in descending order. Among the 69% of households that chose FI, 31% selected FI exclusively (hereafter Exclusively FI), and 16% chose it in combination with FF, 8% with E, and 4% with E and FF. Among the 34% of households selecting FF, only 7% chose it exclusively (hereafter Exclusively FF), and 16% selected it in combination with FI, and 4% with FI and E.

We note two ambiguities about these choices. First, respondents may not accurately reveal the choice of FI and E because many tellers in Japanese financial institutions could be financial experts. According to the Japan Association for Financial Planners (JAFP), 21,228 individuals have Certified Financial Planner® (CFP®) certification (a global credential) and 155,568 individuals have Affiliated Financial Planner (AFP) certification (a domestic credential) as of July 2017. About 50% of these certified members work for financial institutions. Therefore, even if respondents chose FI because they obtained information from a teller of a financial institution, their response might not be correct. Instead, the respondents should have chosen E if the teller held a CFP or AFP. In this case, we should consider choice FI as a very close substitute for choice E.

Second, the SHF does not explain which sources of knowledge and information correspond to Other. However, a similar question on the sources of knowledge and

information in FLS 2016 suggests that it could encompass mass media (newspaper, television, radio, etc.) and websites.   In FLS 2016, 16% and 24% of respondents selected these two unavailable choices in the SHF, respectively.   While 25% SHF respondents chose E as the source of knowledge and information, Fujiki (2018a) and Iwaisako et al. (2018) reported only 5% and 10% respondents chose E as the source of knowledge and information using FLS 2016 and JHPS 2017 respectively.

Regarding the desirable sources, the SHF asks "Who should provide knowledge and information on finance?   Choose up to three from: financial institutions, financial experts, a neutral institution that does not reflect the interest of a particular industry, family and friends, school, other, do not know."   The second left panel reports the frequency of choice of the desirable sources of financial information and knowledge up to three responses, which are FF (52%), NI (34%), E (33%), do not know (Don't know) (17%), FF (12%), Other (5%), School (2%), and No answer (1%).   We note that the relative popularity of NI and E and that of FI and FF is relatively higher and lower than the relative popularity of the actual sources, respectively.   The second right panel reports the top-ten frequencies of all possible choices of desirable sources of financial information and knowledge.   This shows that among the 52% of households choosing FI, 21% selected Exclusively FI.   The remaining popular choices include Don't know (17%), NI exclusively (hereafter Exclusively NI) (10%), FI and E (8%), and FI, E, and NI (7%).   Overall, these ten choices explain some 87% of all choice sets.

In the following analysis, we assume that respondents reply to this question by considering some existing institutions or persons.   However, respondents may also reply to this question by choosing some institutions or persons from which they only anticipate obtaining knowledge and information on finance in theory.   For example, it would be difficult to conceive a neutral institution that does not reflect the interest of a particular industry.   For instance, the JAFP aims to enlighten and promote financial planning to the public and to foster financial planners as financial planning professionals.   However, about 50% of its certified members work for financial institutions, and many of these financial institutions have joined the JAFP as corporate members to support its activities. In this regard, we may not consider the JAFP as a neutral institution that does not reflect the interest of a particular industry.   During the sample period of our dataset, no industry organization of independent financial advisers existed in Japan.

Note that a household's actual sources typically differ from its desirable sources. In evidence, the third panel of Table 3 details the choice of desirable sources conditional on the three most popular actual sources.   Conditional on the choice of Exclusively FI as the actual source, 43% of households chose Exclusively FI as the desirable source (the shaded figure in the third left panel).   However, the case for Exclusively FI turns out to be an exception.   Conditional on the choice of FI and FF as the actual source, only 14% of households choose FI and FF as the desirable source (the shaded figure in the third middle panel).   Conditional on the choice of Exclusively Other as the actual source, only 11% of households selected Other as a desirable source (the shaded figure in the third right panel).   For the remaining choice of actual sources, as the bottom panel of Table 3 shows, the conditional probability that the choice of actual sources and desirable sources were the same took generally low values, except for the choice of FI, E and NI.

4.4. Descriptive analysis

Before estimating the regressions, we examine which household characteristics are associated with the choice of E and NI.   Table 4 details the percentage deviation of the average frequencies of the choice of actual sources of financial information and knowledge by demographic group from the average frequencies of actual sources reported in the left column of the top panel of Table 3 (choose up to three sources).   The figures with * exceed the value of 3%, and those with ** are below the value of –3%.

The second to the fourth rows indicate the frequency of choices made by households that know about the role of the DICJ (*Know DICJ*), who have heard about the role of the DICJ (*Heard DICJ*), and do not know about the DICJ (*Don't know*).   This is as expressed by the percentage deviation from the average frequencies reported in the left column of the top panel of Table 3.   For example, regarding the second row and the third column, 72.8% of households that know about the role of the DICJ chose FI, and the corresponding average frequency reported in Table 3 is 69.6%, hence it reports the difference of 4.5%.   The second to the fourth rows show that it is more likely that the household that knows about the role of the DICJ chooses FI, E and NI and not FF. In addition, those do not know about the DICJ are less likely to choose FI, E and NI, and more likely to choose FF.   The fifth to seventh rows report the results given the choice of educational attainment for three groups, *Senior High* (junior and senior high school),

College (vocational college and junior college) and *University* (university and graduate school).   As shown, it is more likely that a household whose educational attainment is either university or graduate school chooses E and NI.

The eighth to eleventh rows provide the results for four age groups, <=29, 30–49, 50–65 and >=66 years.   As shown, households with heads younger than 30 years are less likely to choose FI, E and NI and more likely to choose FF, while those over 65 years are more likely to choose FI, E and NI and less likely to choose FF.   The twelfth to twenty-fourth rows detail the results according to disposable income (<=3 million yen, 3 to 4 million yen, 4 to 6 million yen, >=6 million yen), financial assets (0, 0–0.6 million yen, 0.6–5.6 million yen, 5.6–16.1 million yen and >=16.1 million yen) and city size (Top 20cities, >40k, 20k–40k and <20k).   As shown, households with more financial assets are likely to choose FI, E and NI.   Households with more income and living in the largest cities are also more likely to choose E and NI.

The remaining rows detail the results according to the provision of a financial advisory service as one of the conditions for choosing a financial institution (*Choice_advice*), a positive holding of bonds (*Bond*), stocks (*Stock*), and investment trusts (*Inv_trust*), experienced capital losses (*Capitallossyes*).   These rows also include the willingness to purchase high-yielding financial products including the possibility of incurring a capital loss within one to two years (*Riskyes*), and the willingness to purchase such a product to some extent (*Riskalittle*).   As shown, all of these characteristics are associated with the choice of FI, E and NI, and not the choice of FF, with the exceptions that *Riskyes* negatively correlates with the choice of FI and that *Choice_advice* positively correlates with the choice of FF.

Overall, better knowledge of the DICJ, more financial assets, household head with age over 65 years, the provision of a financial advisory service as one of the conditions for choosing a financial institution, positive holdings of bonds, stocks, and investment trusts, experience of capital losses, and the willingness to purchase to some or a greater extent high-yielding financial products including the possibility of incurring a capital loss within one to two years are associated with the choice of FI, E and NI (except for *Riskyes* for the choice of FI).

Table 5 provides the percentage deviation of the demographic group average frequencies of the desirable sources of financial information and knowledge choice for

up to three sources (the left column of the second panel of Table 3).   The household characteristics associated with choices involving FI, E and NI are similar to those reported in Table 4.

Previous papers showed that the level of financial knowledge, age of the household head, and risky asset accumulation are positively correlated, hence we reexamine the relationship between them.   The top left panel of Figure 2 provides binned scatter plots for the age of the household head and total financial assets.   We use the Stata command binsreg developed in Cattaneo, Crump, Farrell and Feng (2019) to provide a flexible way of describing the mean relationship between two variables, after possibly adjusting for other covariates, based on partitioning of the independent variable of interest.   The graph in the top left panel is hump-shaped with the peak around 65 years, the age when many employees would receive their retirement allowance.   To observe the effects of financial literacy, the bottom left panel of Figure 2 provides binned scatter plots for the age of the household head and total financial assets given knowledge about the role of the DICJ.   This shows that a household with better understanding of the DICJ tends to hold more financial assets conditional on age.

To examine the relationship between the source of financial knowledge and risky asset holdings, the right panels of Figure 2 provides binned scatter plots for the age of the household head and *Sstock* and the age of the household head and *Sinv_trust* given the choice of FI, E, NI and FF (up to three choices).   These are all conditional on the level of disposable income and the *Know Deposit Insurance*, *Heard of Deposit Insurance*, *Capitallossyes*, *Riskyes* and *Riskalittle* dummy variables.   The right two panels of Figure 2 suggest that the choices of E and NI appear associated with higher *Sstock* and *Sinv_trust* compared with the choice of FF for a household with an older household head.   Kim et al. (2016) provides an interpretation of the relationship between age, asset accumulation and the demand for financial advice arising from the balance between age, the opportunity cost of time and the amount of financial assets. Here, the young may prefer not to use expert advice because either they do not have sufficient assets, or their time allocation to creating human capital prevents them from spending time acquiring financial knowledge. In contrast, middle-aged to older people wish to seek the advice of financial experts because they are accumulating financial assets for retirement, and they are willing to spend time acquiring financial knowledge because they have already accumulated

sufficient human capital.[5]

5. Regression Results

5.1. Level of financial knowledge and the choice of actual sources

In this subsection, we examine which household characteristics are associated with the top-seven frequencies of all possible combinations of actual sources of information. More specifically, we run the multinomial logit regressions specified as equation (4) using top-seven frequencies of choices reported in the top right panel of Table 3, Exclusively FI, FI and FF, Exclusively Other, FI and E, Exclusively FF, Exclusively E, and FI, E and FF for variable $Source_i$, and use the variables listed in Table 1 for X_{mi}, taking Exclusively FF as the base case. We select 22,204 observations for the top-seven choices of actual sources because the inclusion of additional choices leaves fewer than 1,000 observations for some choices, yielding insufficient degrees of freedom to estimate our multinomial logit model given it includes a hundred explanatory variables. Table 6 reports the estimates of the marginal effects of the explanatory variables on the probability of each choice of actual sources, computed from the estimates of the equation (4) reported in Appendix Table 1. While we do not report the standard errors of the marginal effects robust to heteroskedasticity, we do include superscripts *, **, *** to denote statistical significance at the 10%, 5%, and 1% level, respectively. Note that when the explanatory variables are dummy variables that take values of zero or one, the marginal effects in Table 6 represent the effects of a change in the dummy variable from zero to one on the probability of choosing a particular information source. The estimations employ the margins command with dydx(*) option in Stata 15. In the first column, we report the demographic variables, the number of observations (N), the pseudo R-squared values (PseudoRsq) and the log-likelihood (LLR). To conserve space, we do not report the estimates for the dummy variables identifying households not reporting some variables, job situation, household size, area of residence and survey year because they do not yield interesting results.

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[5] Note that very old people who have already sold their risky assets may not need the advice of a financial expert because they are likely to hold time deposits only. While they have a lot of time to acquire financial knowledge and a large amount of financial assets, they lack the incentive to seek the advice of a financial expert to purchase risky assets.

We first examine whether households seeking guidance from a financial adviser have better financial knowledge, assuming the household selects E.   Table 6 shows that a household has a greater probability of choosing sources including E if it knows the role of the DICJ, and considers the provision of a financial advisory service as one of the conditions for selecting a financial institution (hereafter, considers the provision of a financial advisory service) excluding the choice of Exclusively E.   The probability will also be higher if it is willing to purchase financial products with a high yield but with the possibility of incurring a capital loss within one to two years (hereafter, willing to purchase high-yield financial products) or to some extent (hereafter, purchases high-yield financial products to some extent).   It also shows that a household has a higher probability of selecting sources including both FI and FF, and Exclusively FF, if the household does not know about the role of the DICJ and has no experience incurring capital losses.   Furthermore, we can observe age effects for some of the choices: that is, households with older household heads tend to choose Exclusively FI, and FI and E, while those with younger household heads tend to choose FI and FF, and Exclusively FF.

The results in Table 6 show that households selecting actual sources involving E have better financial knowledge, as measured by knowledge of the DICJ, and are willing to purchase high-yield financial products.   This supports the first and second theoretical predictions of our model.   The evidence is also consistent with the finding by von Gaudecker (2015) that Dutch households with better financial knowledge typically seek the guidance of financial experts.   The results are also consistent with Gan et al. (2018) in that Japanese using informal information sources (FF and FI in this analysis) tend to hold less risky assets, while those seeking the advice of a financial expert tend to hold more risky assets (FI and E, and Exclusively E here), given the degree of risk aversion. Note that a greater probability of choosing the choice of FI and E in Table 6 is associated with more financial assets, better knowledge about the role of the DICJ, considerations on the provision of a financial advisory service and the willingness to purchase financial products with a high yield to some extent.   Those results are consistent with the findings for the choice of FI and E in Table 4.

5.2. Level of financial knowledge and the choice of desirable sources
In this subsection, we examine which household characteristics are associated with the

top-nine frequencies of all possible combinations of desirable sources of information. Table 7 reports the marginal effects obtained from the estimates of the multinomial logit model specified as equation (4) for the choice of the top-nine desirable sources reported in the second right panel of Table 3 (See details of parameter estimates of the multinomial logit model in Appendix Table 2). We use choices of Exclusively FI, Don't know, Exclusively NI, FI and E, FI, E and NI, E and NI, FI and NI, Exclusively E, and FI and FF for variable $Source_i$, and use the variables listed in Table 1 for X_{mi}, taking Don't know as the base case. We have 23,263 observations and each choice has more than 1,000 observations. Table 7 shows the following results.

First, households that know about the role of the DICJ and have a household head whose educational attainment is university or graduate school have a greater likelihood of choosing desirable sources involving E and NI, except for the marginal effects of choosing the desirable source of Exclusively E and those of FI and E. Second, households that have experience incurring capital losses tend to have a greater probability of selecting desirable sources involving E. Third, households that are unwilling to purchase high-yield financial products and that do not regard the provision of a financial advisory service as one of the conditions for choosing a financial institution tend to have a greater probability of choosing Exclusively NI. Finally, households that purchase high-yield financial products to some extent also tend to have a greater probability of selecting desirable information sources involving E. These results again support our theoretical prediction that households seeking guidance from financial advisers tend to have better financial knowledge.

5.3. Discrepancy between actual and desirable sources
The third and fourth panels of Table 3 show that a household's actual sources typically differ from its desirable sources. In this subsection, we examine the demographic background of households whose actual and desirable sources do not correspond, focusing households that chose Exclusively FI as the actual choices. The third left panel of Table 3 shows that conditional on the choice of Exclusively FI as the actual source, 43% of households chose Exclusively FI as the desirable source, but the remaining 57% of the households chose other sources as the desirable sources. We focus those households because Exclusively FI is the most popular choice of actual source as shown

in the top right panel of Table 3. The fifth column in Table 6 shows the following demographic background of households who have a higher probability of selecting Exclusively FI as the actual source: A household with more financial assets, with older household head, does not know about the role of the DICJ, and is not willing to purchase high-yield financial products or to some extent.

Table 8 reports the estimated coefficients and marginal effects obtained from the multinomial logit model specified as equation (4) for the choice of the top-eight desirable sources conditional on the choice of Exclusively FI as the actual source reported in the third left panel of Table 3 (See details of parameter estimates of the multinomial logit model in Appendix Table 3). We use the desirable choices of Exclusively FI, Don't know, Exclusively NI, FI and E, FI and NI, Exclusively E, FI, E and NI, E and NI for variable $Source_i$, and use the variables listed in Table 1 for X_{mi}, taking Exclusively FI as the base case conditional on the choice of Exclusively FI as the actual source. We have only 8,012 observations since our estimates are conditional on the choice of Exclusively FI as the actual source. The top nine conditional choice include at least 300 observations, or about 4% of 8,012 observations per each choice. Table 8 provides the following results.

First, households that know about the role of the DICJ tend to have a greater probability of choosing FI and NI as desirable sources, and Exclusively NI (columns 7 and 8). Also, households that hear about the DICJ tend to have a greater probability of choosing the choice involving NI as desirable sources (columns 5 to 8). Once again, this is consistent with our first theoretical prediction that households intending to seek guidance from a neutral institution tend to have better financial knowledge, conditional on the choice of financial institutions as the actual source. It is especially interesting that we do not obtain clear results for the choice of E, but do obtain results for the choice of NI. Second, households that purchase high-yield financial products to some extent tend to have a greater probability of selecting desirable information sources of E and NI, and FI, E and NI. Finally, households that do not know about the role of the DICJ, do not hear about the DICJ, do not have experience incurring capital losses, and who are willing to purchase high-yield financial products tend to have a higher probability of selecting Exclusively FI for both actual and desirable sources. Remember that the fifth column in Table 6 shows households that do not know about the role of the DICJ but are not willing to purchase high-yield financial products tend to choose Exclusively FI as the

actual source. Among those households, those who are willing to purchase high-yield financial products have higher probability of choosing Exclusively FI for the desirable source as well.[6]

5.4. Risky asset holdings and actual sources

In this subsection, we examine which actual information sources are associated with higher investment ratios to two risky assets, stocks and investment trusts.   Note that in our model, households make their decision about investing in the risky asset and actual information sources simultaneously.   Therefore, to answer this question, we should estimate a risky asset demand function conditional on the choice of actual information sources that considers the sample selection bias arising from equation (4).   However, as our model includes two risky assets and ten choices of actual sources, it is difficult to consider all possible combinations of risky assets and actual sources.   The other difficulty in estimating a conditional risky asset demand function is that the level of financial knowledge is an endogenous variable that correlates with the demographic variables that we use to help predict asset holdings.   To address this problem, Sekita (2011) used regional data on the score of national examinations.   Unfortunately, our model already includes regional dummies.

To avoid these difficulties, instead of estimating a structural model, we conduct propensity score (PS) matching to examine the relationship between investment decisions governing financial assets and the actual source of information given the sample selection bias arising from equation (4).   To this end, we compute the average treatment effects (ATEs) of the choice of information sources on the ratio of stocks and investment trusts to total financial assets by PS matching and inverse probability weighing (IPW) using the psmatch and ipw commands in STATA15.

We first estimate logit treatment models (5) to compute the propensity scores.

$$D_{mi} = X_{mi}\delta_m + \varepsilon_{mi}, \tag{5}$$

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[6] Note that among the choice of top-eight desirable sources, choices of Exclusively E, FI, E and NI, E and NI have only 405, 326 and 308 observations.   One might doubt the robustness of the results using these choices.   If we drop those observations and use remaining 6,697 observations for top-five desirable sources, which has at least more than 560 observations (or more than 8% of the remaining 6,697 observations) for the remaining five choices, we still have the same results that households that know about the role of the DICJ and hear about the DICJ tend to have a greater probability of choosing FI and NI and Exclusively NI as desirable sources, conditional on the choice of financial institutions as the actual source. These results are available upon request.

where D_{mi} is a dummy variable that takes a value of one for the choice of information source *m* and zero for choice 1, and ε is a random variable. We chose top-seven frequencies of choices reported in the top right panel of Table 3 for the choices of *m*; Exclusively FI, FI and FF, Exclusively Other, FI and E, Exclusively FF, Exclusively E, and FI, E and FF. We use the variables listed in Table 1 for X_{mi} except for *Sbond*, *Sstock*, *Sinv_trust*, and *Sbond_NA* taking Exclusively FF for choice 1. Details of the estimates of equation (5) are in Appendix Table 4.

Table 9 reports the ATEs of choosing these six actual sources on the ratio of stocks and investment trusts to total financial assets, designating the households that selected Exclusively FF as the control group. We also report the number of observations, pseudo R-squared values, LLRs, the percentage correctly classified and the area under the receiver-operating characteristic curve (Area under ROC) for the estimates of equation (5), which suggest these logit treatment models reasonably fit the data. Table 9 provides the following results.

First, the ATEs for the ratios of stocks and investment trusts (IPW) to total financial assets for choosing FI and E are significantly positive. Second, the ATEs for the ratio of stocks (IPW) are significantly positive, but those for the ratio of investment trust are not statistically significant for choosing Exclusively E. Finally, the ATE for the ratio of stocks (PS) is negative and statistically significant, while the remaining three ATEs are negative and not statistically significant for choosing FI, E and FF. Consequently, it is unclear whether a household seeking guidance from a financial adviser has greater shares of stocks and investment trusts among its total financial assets. These results are consistent with our third theoretical prediction that the relationship between the investment in risky assets and a household seeking advice from a financial adviser is unclear.

We make the following observations concerning the choices unrelated to E. First, the ATEs for the ratio of investment trusts to total financial assets for choosing Exclusively FI are significantly positive. Second, the choice of Exclusively other leads to significantly positive ATEs for the ratio of stocks.

6. Concluding Remarks and Policy Implications

In this paper, we used the SHF data from 2010 to 2017 for the actual and desirable sources of financial information and knowledge for Japanese households, to examine what types of households prefer to seek guidance from financial experts and whether households with better financial knowledge invest more in risky than safe assets.

To undertake this investigation, we began with by a theoretical model that makes three empirical predictions. First, households with better financial knowledge tend to seek guidance from financial advisers, conditional on their risk tolerance and their level of expected mean and variance from the household portfolio given the choice of financial advisers. Second, households with higher risk tolerance are more willing to purchase risky assets, conditional on the level of expected mean and variance from the household portfolio given the choice of financial advisers and the amount of financial knowledge. Third, the relationship between risky asset investment and a household seeking advice from a financial adviser is unclear.

We then obtained the following empirical results from the SHF consistent with our model. First, households choosing actual sources of information involving financial experts have better financial knowledge, as measured by knowledge of the DICJ, and are willing to purchase high-yield financial products. Second, households choosing desirable sources involving financial experts and neutral institutions also have better financial knowledge. These results are consistent with the finding by Bianchi (2018) using French data, von Gaudecker (2015) using Dutch data and Gan et al. (2018) using Japanese data, and consistent with our first and second theoretical predictions. Third, conditional on the choice of financial institutions as the actual source, among households whose actual sources differ from their desirable sources, households that regard neutral institutions as a more desirable source tend to have better financial knowledge, which is also consistent with our first theoretical prediction. Finally, it is unclear whether households that seek the guidance of a financial expert have higher ratios of stock and investment trusts to financial assets than those selecting family and friends as their source of financial information and knowledge. This result is consistent with the third prediction of the model.

The results in Fujiki (2018b) allowed us to assume that knowledge about the DICJ is a useful proxy measure of general financial knowledge. Thus, an increase in the net benefit of seeking guidance from a financial adviser, say, because of an increase

in financial knowledge, may induce more Japanese households to seek financial adviser guidance.   Note that we do not provide any causal evidence here and so we should not overstate this claim.   However, our evidence suggests that we need to match the various types of financial advisers and households if we wish more Japanese households to seek financial adviser guidance.

Table 7 shows that some households choosing desirable sources involving E and NI tends to have better financial knowledge, except for the choice of E and FI and Exclusively E.   However, if a household is willing to purchase high-yield financial products, the household is more likely to choose Exclusively E, E and FI, and FI, E and NI, and less likely to choose Exclusively NI.   If we take these results at face value, households willing to purchase risky assets would certainly benefit from the guidance of a financial expert.   However, a household who is not willing to purchase risky assets, and does not regard the provision of a financial advisory service as one of the conditions for choosing a financial institution would benefit most from a neutral institution independent of industry benefit. In Japan, this could be the CCFSI, but only if we were to assume that the JAFP does not reflect the interests of a particular industry. [7] Unfortunately, one of the SHF questions highlighted that about 90% of respondents from 2010 to 2017 only came to know about the CCFSI when invited to complete its survey. Consequently, the CCFSI should consider a targeted financial education program for those needing information from a neutral institution independent of industry benefit.   An industry organization of independent financial advisers in Japan might be also useful for those households.

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[7] The National Consumer Affairs Center of Japan (NCAC) provides information and conducts research on consumer affairs from a comprehensive perspective including financial issues.   While the NCAC is good at resolving consumer conflicts, it might not be as helpful in assisting households in making investment decisions.

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Figure 1 Average imputed value of financial literacy index (FLI) by knowledge of deposit insurance

Imputed FLI PPS 2010 to 2010 SHF Family household

Legend:
- ■ Know about deposit insurance
- ■ Heard about deposit insurance
- ■ Do not know about deposit insurance

Imputed FLI from 2016 FLS to 2016 SHF Family household

Legend:
- ■ Know about deposit insurance
- ■ Heard about deposit insurance
- ■ Do not know about deposit insurance
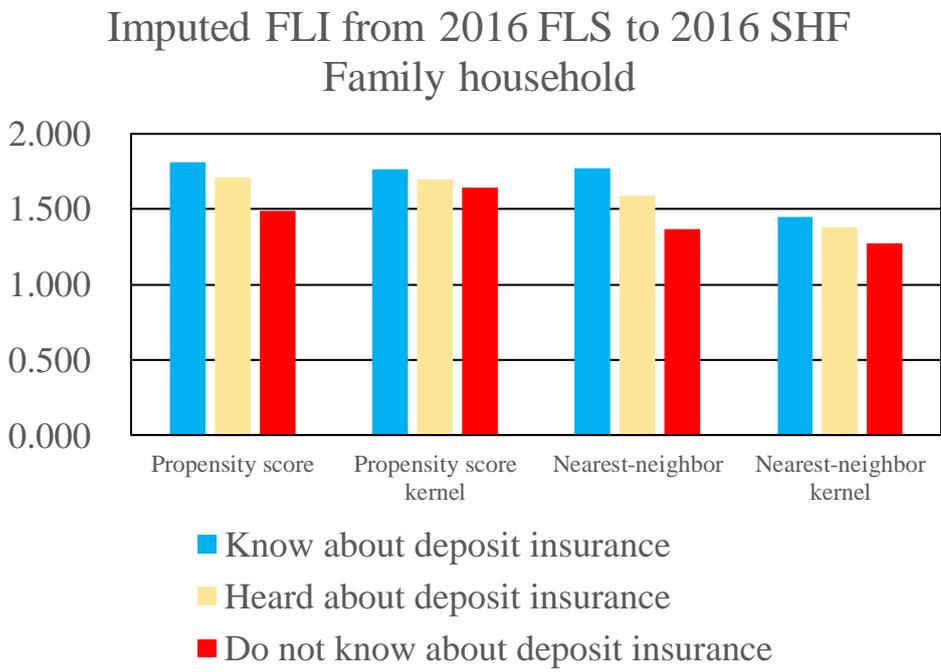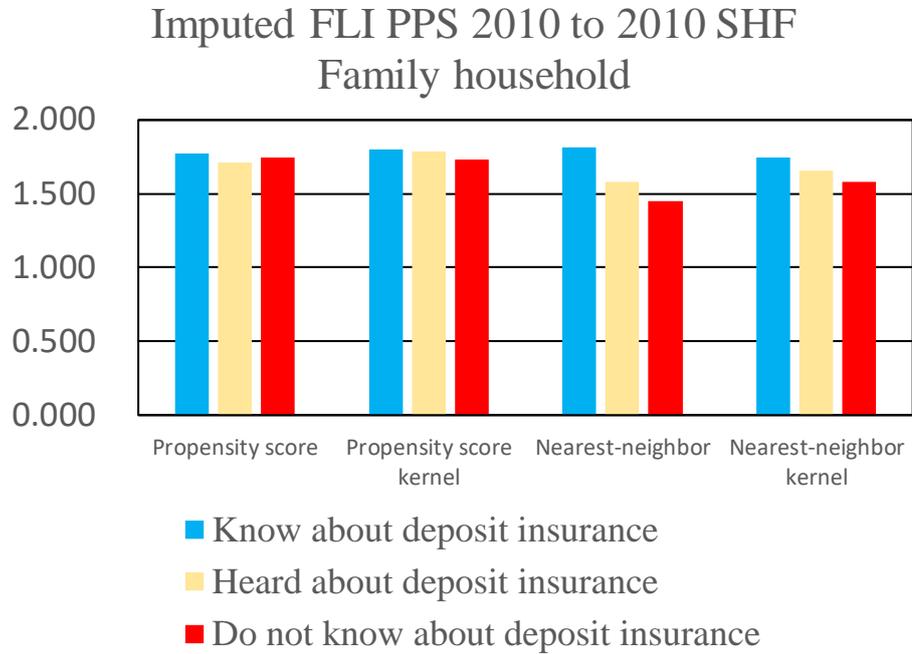
Source: Fujiki (2018b).　Each panel plots the average imputed value of FLI according to the value of Deposit Insurance using four imputation methods: propensity-score matching, propensity-score matching with the Epanechnikov kernel, nearest-neighbor matching and Mahalanobis matching with the Epanechnikov kernel.

Figure 2 Binned scatter plot of age and asset, Sstock, Sinv_trust
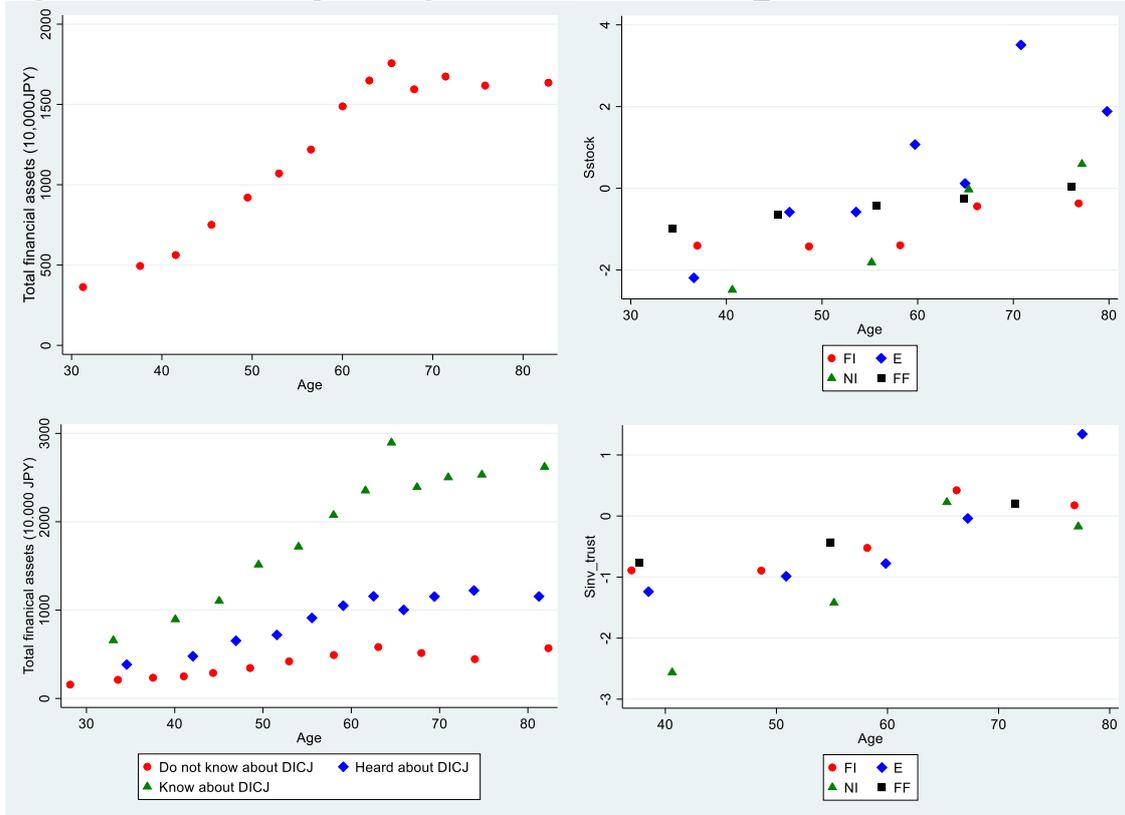
Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends.   We use Stata code for binsreg by Cattaneo, Crump, Farrell and Feng (2019).

Sstock and *Sinv_trust* on the age of household head (*Age*) are conditional on the level of disposable income and the dummy variables for *Know Deposit Insurance*, *Heard of Deposit Insurance*, *Choice_advice*, *Capitallossyes*, *Riskyes*, and *Riskalittle*.

Table 1 Summary statistics

Income_200	0.120	Full-time	0.517
Income_200_260	0.066	Part-time	0.069
Income_260_300	0.110	Self-employed	0.121
Income_300_360	0.071	Student	0.003
Income_360_400	0.094	S_Full-time	0.148
Income_400_500	0.143	S_Part-time	0.247
Income_500_580	0.032	S_Self-employed	0.044
Income_580_700	0.120	S_Student	0.002
Income_700_855	0.061	No_spouse	0.116
Income_855_	0.091	H_size3	0.251
Asset_0	0.098	H_size4	0.231
Asset_0_5	0.127	H_size5	0.095
Asset_5_15	0.056	H_size6_	0.053
Asset_15_133	0.088	Hokkaido	0.053
Asset_133_320	0.090	Tohoku	0.085
Asset_320_560	0.091	Hokuriku	0.054
Asset_560_905	0.091	Chubu	0.147
Asset_905_1310	0.091	Kinki	0.152
Asset_1310_2010	0.089	Chugoku	0.065
Asset_2010_3410	0.089	Shikoku	0.033
Asset_3410_	0.090	Kyushu	0.126
Age30_34	0.048	Top20cities	0.239
Age35_39	0.074	Cities_40k_	0.404
Age40_44	0.094	Cities_20k_40k	0.254
Age45_49	0.092	Income_NA	0.092
Age50_54	0.101	Age_NA	0.007
Age55_59	0.107	Education_NA	0.108
Age60_64	0.126	S_Education_NA	0.091
Age65_69	0.118	Male_NA	0.003
Age70_74	0.094	Dep_Ins_NA_	0.005
Age75_	0.118	Choice_advice_NA	0.006
Male	0.916	Homeowner_NA	0.009
Know Deposit Insurance	0.397	Debt_NA	0.006
Heard of Deposit Insurance	0.379	Mattress_NA	0.009
Choice_advice	0.034	Capitallossyes_NA	0.047
Homeowner	0.724	Risk_NA	0.012
Debt	0.404	job_NA	0.057
Mattress	0.016	S_job_NA	0.057
Senior high	0.385	H_size_NA	0.010
Vocational college	0.075		
Junior college	0.038		
University	0.263		
Graduate	0.027		
S_Senior high	0.381		
S_Vocational college	0.089		
S_Junior college	0.131		
S_University	0.110		
S_Graduate	0.006		
Sbond	0.782		
Sstock	3.373		
Sinv_trust	2.129		
Capitallossyes	0.256		
Riskyes	0.018		
Riskalittle	0.150	N	27417

Note: Income and Assets are in units of 10,000 yen.

Table 2 Risky asset holdings: Participation and conditional percentage shares

Participation in risky assets (% of household)

Risky assets holdings	With financial assets		Zero financial assets
	Yes	No	No
Stock	16.81	73.44	9.76
Investment trust	10.8	79.44	9.76
Bond	4.42	85.83	9.76
Sample size	19,224		8,193

Percentage share of risky assets to total financial assets conditional on positive holdings of financial assets (%)

	Stock	Investment trust	Bond
mean	4.810	3.036	1.115
s.e.	13.450	10.759	6.270
minimum	0	0	0
maximum	100	100	100
N	19,224	19,224	19,224

Table 3 Actual and desirable sources of financial information and knowledge

Actual sources

Up to three choices		Top 10 choices	
Choice	Frequency	Choice	Frequency
FI	0.696	Exclusively FI	0.311
FF	0.340	FI and FF	0.160
E	0.248	Exclusively Other	0.095
Other	0.176	FI and E	0.080
NI	0.076	Exclusively FF	0.074
No answer	0.015	Exclusively E	0.049
School	0.003	FI, E and FF	0.041
		FI and Other	0.030
		E and FF	0.022
		FI, E and NI	0.022

Desirable sources

Up to three choices		Top 10 choices	
Choice	Frequency	Choice	Frequency
FI	0.515	Exclusively FI	0.207
NI	0.344	Don't know	0.173
E	0.327	Exclusively NI	0.099
Don't know	0.173	FI and E	0.082
FF	0.116	FI, E and NI	0.074
Other	0.054	E and NI	0.064
School	0.022	FI and NI	0.058
No answer	0.007	Exclusively E	0.053
		FI and FF	0.038
		Exclusively FF	0.018

Actual and desirable sources: Top 3 actual choices

Actual choice	Exclusively FI	Actual choice	FI and FF	Actual choice	Exclusively Other
Desirable choice	Conditonal Frequency	Desirable choice	Conditonal Frequency	Desirable choice	Conditonal Frequency
Exclusively FI	0.429	Exclusively FI	0.181	Don't know	0.502
Don't know	0.153	FI and FF	0.141	Exclusively Other	0.114
Exclusively NI	0.100	Don't know	0.113	Exclusively NI	0.113
FI and E	0.074	FI and E	0.094	ExclusivelyFI	0.086
FI and NI	0.066	FI and NI	0.081	Exclusively E	0.024
Exclusively E	0.038	Exclusively NI	0.071	E and NI	0.018
FI, E and NI	0.035	E and NI	0.064	FI and E	0.013
E and NI	0.017	FI, E and NI	0.062	FI, E and NI	0.013
FI and FF	0.005	Exclusively E	0.031	NI and Other	0.012
Exclusively FF	0.005	FI, E, and FF	0.020	FI and NI	0.010

Conditional probability of actual and desirable choices are the same

Actual choice	Probability	Matched
Exclusively FI	0.429	3,657
FI and FF	0.141	618
Exclusively Other	0.114	296
FI and E	0.282	620
Exclusively FF	0.150	302
Exclusively E	0.216	290
FI, E and FF	0.177	201
FI and Other	0.105	87
E and FF	0.075	46
FI, E and NI	0.594	362

Note: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends.

Table 4 Actual sources of financial information and knowledge by demographic variables

		FI		E		NI		FF		School		Other	
Knowledge of DICJ	Know DICJ	4.5	*	41.2	*	47.5	*	-20.1	**	-18.8	**	5.3	*
	Heard DICJ	1.8		-16.8	**	-21.2	**	10.1	*	-9.2	**	-10.1	**
	Don't know	-10.5	**	-44.9	**	-49.4	**	19.0	*	47.1	*	8.2	*
Education	Senior High	-0.2		-10.8	**	-20.3	**	3.1	*	-27.5	**	0.5	
	College	1.9		-5.9	**	0.8		13.9	*	-11.1	**	-8.6	**
	University	2.1		25.2	*	34.0	*	-7.9	**	34.2	*	-1.0	
Age	-29	-15.0	**	-29.5	**	-14.2	**	47.4	*	53.3	*	-5.4	**
	30-49	-1.1		7.9	*	12.9	*	-12.1	**	-42.3	**	5.7	*
	50-65	-3.2	**	-10.3	**	-18.1	**	15.6	*	48.1	*	-2.7	
	66-	4.5	*	3.7	*	5.2	*	-5.8	**	-8.0	**	-2.2	
Income	-300	-4.9	**	-11.8	**	-17.9	**	-0.8		1.6		12.3	*
	300-400	2.9		-3.3	**	-6.3	**	4.1	*	-39.5	**	-7.8	**
	400-600	4.4	*	7.4	*	13.6	*	3.0		5.6	*	-11.1	**
	600-	-0.2		7.5	*	10.3	*	-3.7	**	15.5	*	0.8	
Asset	0	-20.4	**	-32.8	**	-40.2	**	-3.2	**	-20.3	**	53.7	*
	-60	-8.7	**	-28.1	**	-24.8	**	8.9	*	76.7	*	11.6	*
	60-560	13.2	*	47.4	*	50.7	*	-19.4	**	-30.7	**	-15.2	**
	560-1610	-2.1		-13.0	**	-15.1	**	10.0	*	-1.7		-6.4	**
	1610 -	6.5	*	8.3	*	7.0	*	1.7		-36.0	**	-13.4	**
City size	Top20	-1.8		6.4	*	11.6	*	-2.8		6.9	*	7.8	*
	40k -	-0.5		4.9	*	1.2		0.5		-3.8	**	-1.6	
	20k - 40k	2.0		-7.8	**	-10.5	**	1.8		-8.0	**	-5.1	**
	-20k	1.1		-15.0	**	-5.8	**	0.3		18.7	*	0.6	
Choice_advise		24.2	*	62.2	*	63.2	*	2.0		31.9	*	-38.4	**
Bond		14.5	*	93.5	*	91.6	*	-38.2	**	-49.7	**	-19.6	**
Stock		3.9	*	67.4	*	69.0	*	-22.3	**	-40.5	**	3.0	*
Inv trust		16.5	*	64.4	*	62.5	*	-32.2	**	-38.3	**	-17.1	**
Capitallossyes		6.1	*	52.6	*	56.5	*	-22.5	**	-13.1	**	-1.9	
Riskyes		-4.9	**	92.3	*	115.0	*	-34.8	**	143.7	*	38.9	*
Riskalittle		8.8	*	71.8	*	79.6	*	-15.9	**	-3.5	**	-13.4	**

Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends. * shows the deviations are larger than 3%, ** shows the deviations are smaller than –3%. Income and Assets are in units of 10,000 yen.

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Table 5 Desirable sources of financial information and knowledge by demographic variables

		FI		E		NI		FF		School		Other		Do not know	
Knowledge of DICJ	Know DICJ	3.2	*	22.7	*	32.6	*	-18.0	**	32.6	*	31.9	*	-41.960	**
	Heard DICJ	0.4		-7.0	**	-4.4	**	2.0		-28.5	**	-12.4	**	7.190	*
	Don't know	-5.7	**	-27.7	**	-50.4	**	29.1	*	-8.1	**	-36.5	**	62.570	*
Education	Senior High	1.5		-11.7	**	-14.2	**	6.1	*	-41.0	**	-6.4	**	14.920	*
	College	0.0		5.1	*	3.8	*	-1.1		2.1		-12.3	**	-7.860	**
	University	-2.1		25.0	*	31.5	*	-14.3	**	74.0	*	11.5	*	-29.640	**
Age	-29	-4.5	**	-1.9		-18.0	**	70.5	*	129.6	*	-25.4	**	11.630	*
	30-49	3.6	*	-11.1	**	-2.4		10.6	*	-61.1	**	20.6	*	1.240	
	50-65	-3.9	**	5.6	*	-5.2	**	8.5	*	73.1	*	-18.5	**	3.190	*
	66-	0.5		4.8	*	7.6	*	-20.4	**	-17.8	**	-0.3		-4.460	**
Income	-300	-3.3	**	-18.9	**	-15.0	**	7.7	*	-36.4	**	4.8	*	24.150	*
	300-400	2.1		5.2	*	1.6		7.0	*	-17.5	**	-8.5	**	-6.580	**
	400-600	3.9	*	9.7	*	10.5	*	-1.6		25.0	*	-8.1	**	-17.700	**
	600-	-0.9		8.1	*	5.6	*	-10.0	**	25.4	*	6.1	*	-6.330	**
Asset	0	-20.3	**	-34.0	**	-46.5	**	-3.1	**	-16.4	**	10.1	*	93.130	*
	-60	-6.5	**	-23.7	**	-23.3	**	14.8	*	-22.8	**	2.7		35.170	*
	60-560	10.2	*	33.6	*	40.2	*	-24.5	**	16.5	*	7.5	*	-52.590	**
	560-1610	1.1		-6.0	**	-8.6	**	12.1	*	1.6		-13.0	**	-1.100	
	1610 -	4.1	*	11.0	*	12.1	*	-1.2		12.0	*	-1.6		-22.160	**
City size	Top20	-4.8	**	3.8	*	9.8	*	-1.7		32.2	*	5.1	*	-4.000	**
	40k -	-0.3		3.2	*	1.1		2.4		-0.8		-1.4		-1.850	
	20k - 40k	4.5	*	-3.7	**	-5.7	**	-3.7	**	-17.4	**	0.4		0.900	
	-20k	1.1		-12.2	**	-12.8	**	3.7	*	-28.9	**	-7.5	**	14.310	*
Choice_advise		37.1	*	61.6	*	9.3	*	32.4	*	-1.3		-3.8	**	-71.820	**
Bond		7.9	*	52.2	*	64.6	*	-41.7	**	118.5	*	4.0	*	-59.390	**
Stock		0.6		41.2	*	46.5	*	-23.6	**	64.3	*	36.3	*	-52.920	**
Inv trust		11.3	*	50.3	*	42.0	*	-38.3	**	81.8	*	11.4	*	-58.380	**
Capitallossyes		3.2	*	35.1	*	34.3	*	-22.1	**	43.1	*	36.8	*	-44.980	**
Riskyes		8.1	*	61.6	*	9.4	*	-13.9	**	201.1	*	111.2	*	-69.920	**
Riskalittle		6.4	*	51.1	*	41.6	*	-6.0	**	96.8	*	28.2	*	-59.390	**

Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends. * shows the deviations are larger than 3%, ** shows the deviations are smaller than –3%. Income and Assets are in units of 10,000 yen.

Table 6 Choice of actual sources (marginal effects)

	Marinal effects from a multinomial logit model (Base = Exclusively FF as the actual source)						
	Exclusively E	FI and E	FI, E and FF	Exclusively FI	Exclusively Other	FI and FF	Exclusively FF
Income_200_260	0.001	-0.004	0.015 *	-0.012	-0.034 ***	0.034 **	0.000
Income_260_300	0.001	0.017 *	0.015 **	-0.006	-0.027 ***	0.010	-0.010
Income_300_360	0.002	0.004	0.009	-0.011	-0.045 ***	0.045 ***	-0.004
Income_360_400	-0.007	0.023 **	0.010	-0.011	-0.037 ***	0.020	0.002
Income_400_500	-0.002	0.015 *	0.014 **	-0.012	-0.044 ***	0.027 **	0.002
Income_500_580	-0.006	0.036 ***	0.020 **	-0.049 **	-0.028 *	0.036 **	-0.009
Income_580_700	-0.005	0.014	0.004	-0.008	-0.018 **	0.033 ***	-0.020 **
Income_700_855	-0.004	0.002	0.022 ***	-0.034 *	-0.023 *	0.040 ***	-0.003
Income_855_	0.005	0.012	0.012	-0.067 ***	-0.007	0.033 **	0.012
Asset_0	0.008	0.010	-0.006	-0.020	0.047 ***	-0.038 ***	-0.002
Asset_5_15	0.002	-0.012	-0.003	0.015	0.005	0.005	-0.011
Asset_15_133	-0.003	-0.001	0.008	0.008	-0.004	0.002	-0.011
Asset_133_320	-0.004	0.005	0.008	0.007	-0.020 **	0.009	-0.005
Asset_320_560	-0.003	0.002	0.008	0.017	-0.043 ***	0.023 **	-0.005
Asset_560_905	-0.024 ***	0.006	0.023 ***	0.011	-0.048 ***	0.040 ***	-0.008
Asset_905_1310	-0.010	0.021 **	0.018 **	0.039 ***	-0.066 ***	0.033 ***	-0.033 ***
Asset_1310_2010	-0.017 **	0.026 ***	0.021 ***	0.030 ***	-0.067 ***	0.044 ***	-0.038 ***
Asset_2010_3410	-0.022 ***	0.040 ***	0.027 ***	0.036 **	-0.078 ***	0.042 ***	-0.045 ***
Asset_3410_	-0.026 ***	0.055 ***	0.016 **	0.052 ***	-0.069 ***	0.041 ***	-0.070 ***
Age30_34	-0.011	0.039	0.000	-0.019	0.014	-0.014	-0.009
Age35_39	-0.004	0.032	-0.009	0.019	0.002	-0.030	-0.010
Age40_44	0.007	0.049 **	-0.010	0.035	0.016	-0.054 ***	-0.042 ***
Age45_49	-0.001	0.059 **	-0.007	0.059 **	0.017	-0.072 ***	-0.054 ***
Age50_54	0.006	0.074 ***	-0.008	0.064 **	0.000	-0.070 ***	-0.066 ***
Age55_59	0.004	0.052 **	-0.002	0.070 **	0.018	-0.080 ***	-0.063 ***
Age60_64	-0.012	0.069 ***	-0.007	0.055 **	0.007	-0.063 ***	-0.049 ***
Age65_69	-0.005	0.061 ***	-0.008	0.054 *	0.022	-0.065 ***	-0.059 ***
Age70_74	-0.005	0.059 **	-0.004	0.060 **	0.007	-0.060 ***	-0.057 ***
Age75_	-0.004	0.067 ***	0.010	0.064 **	0.017	-0.099 ***	-0.056 ***
Male	0.003	0.011	-0.019 **	0.025	0.035 ***	-0.040 ***	-0.014
Know Deposit Insurance	0.043 ***	0.071 ***	0.014 ***	-0.021 **	-0.005	-0.036 ***	-0.066 ***
Heard of Deposit Insurance	0.020 ***	0.027 ***	0.007	-0.015	-0.030 ***	0.013 *	-0.022 ***
Choice_advice	-0.024 **	0.057 ***	0.046 ***	0.034	-0.136 ***	0.059 ***	-0.036 **
Homeowner	-0.009 **	0.006	0.000	0.020 **	-0.018 ***	0.003	-0.003
Debt	0.005	0.006	0.005	0.001	-0.002	-0.001	-0.013 ***
Mattress	-0.005	0.040 ***	0.021 **	-0.028	-0.055 **	0.074 ***	-0.048 **
Senior high	0.005	0.001	0.000	0.025 *	0.002	-0.008	-0.024 ***
Vocational college	0.010	-0.008	0.000	0.012	-0.002	0.019	-0.031 ***
Junior college	0.005	0.003	0.009	0.030	-0.021	-0.004	-0.022 *
University	0.006	0.013	0.005	0.007	0.020 **	-0.022 *	-0.029 ***
Graduate	0.026 **	0.022	0.007	0.006	-0.010	-0.027	-0.024
S_Senior high	-0.009	0.021 **	-0.004	0.012	-0.017 *	0.017	-0.021 ***
S_Vocational college	-0.003	0.012	0.005	0.012	-0.026 **	0.028 *	-0.028 ***
S_Junior college	-0.017 *	0.018	-0.007	0.017	-0.017	0.019	-0.014
S_University	-0.004	0.002	-0.011	0.010	0.000	0.023	-0.020 **
S_Graduate	-0.001	0.021	-0.008	-0.077	0.035	0.013	0.018
Sbond	0.000 *	0.001 ***	0.000	0.000	0.000	-0.001 *	-0.001
Sstock	0.001 ***	0.001 ***	0.000	-0.001 ***	0.001 ***	-0.001 ***	0.000
Sinv_trust	0.000	0.001 ***	0.000 **	0.002 ***	0.000	-0.001 ***	-0.001
Capitallossyes	0.012 ***	0.013 ***	0.005	0.012	0.006	-0.030 ***	-0.018 ***
Riskyes	0.051 ***	0.046 ***	0.037 ***	-0.057 *	0.001	-0.057 *	-0.021
Riskalittle	0.020 ***	0.053 ***	0.021 ***	-0.041 ***	-0.039 ***	0.016 *	-0.030 ***
N							22,204
pseudoRsq							0.057
LLR							-39654.097

Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends. Parameter estimates for households not reporting some variables, job situation, household size, area of residence and survey year not reported.

Table 7 Choice of desirable sources (marginal effects)

	Marginal effects from multinomial logit model (Base = Do not know as the desirable source)								
	Exclusively E	FI and E	E and NI	FI, E and NI	FI and NI	Exclusively NI	Exclusively FI	FI and FF	Don't know
Income_200_260	-0.011	0.011	0.019 **	0.003	0.015 *	0.001	-0.016	0.003	-0.024 **
Income_260_300	-0.004	-0.005	0.013	0.011	0.015 *	0.005	-0.017	0.002	-0.020 **
Income_300_360	-0.001	-0.001	0.015 *	0.031 ***	0.021 **	0.002	-0.034 **	0.005	-0.037 ***
Income_360_400	0.001	0.021 **	0.011	0.018 *	0.013	-0.009	-0.033 ***	0.008	-0.030 ***
Income_400_500	-0.007	0.010	0.018 **	0.021 **	0.025 ***	-0.018 *	-0.018	0.002	-0.035 ***
Income_500_580	-0.009	0.008	0.007	0.018	0.042 ***	0.001	-0.033 *	0.017 **	-0.052 ***
Income_580_700	-0.002	0.010	0.004	0.019 **	0.024 ***	0.003	-0.033 ***	0.006	-0.030 ***
Income_700_855	-0.004	-0.006	0.014	0.022 **	0.024 ***	0.006	-0.034 **	0.010	-0.031 **
Income_855_	0.010	0.008	0.011	0.028 ***	0.015 *	-0.015	-0.040 ***	0.009	-0.025 *
Asset_0	-0.001	0.008	-0.016 *	-0.001	-0.025 ***	-0.006	-0.008	-0.006	0.056 ***
Asset_5_15	-0.018 **	0.006	-0.007	-0.003	0.003	0.031 ***	-0.001	0.011 *	-0.022 *
Asset_15_133	-0.015 **	0.000	-0.007	-0.007	0.000	0.013	0.033 ***	0.005	-0.022 **
Asset_133_320	-0.008	0.013	-0.004	0.002	-0.005	0.011	0.016	0.006	-0.032 ***
Asset_320_560	-0.003	0.016 *	0.011	0.002	-0.002	0.006	0.021 *	0.008	-0.059 ***
Asset_560_905	-0.008	0.017 *	0.007	0.017 *	-0.004	0.007	0.008	0.005	-0.050 ***
Asset_905_1310	-0.008	0.021 **	0.013	0.011	0.002	0.016 *	0.007	0.010	-0.072 ***
Asset_1310_2010	-0.006	0.030 ***	0.011	0.014	0.005	0.015	0.009	0.007	-0.086 ***
Asset_2010_3410	-0.001	0.030 ***	0.024 ***	0.031 ***	0.018 **	0.012	0.012	-0.007	-0.118 ***
Asset_3410_	-0.012	0.040 ***	0.023 ***	0.038 ***	0.014 *	0.013	-0.007	-0.007	-0.103 ***
Age30_34	0.015	0.005	-0.016	0.006	-0.011	0.017	-0.004	-0.010	-0.001
Age35_39	0.012	0.006	-0.019	-0.008	-0.006	0.020	-0.013	-0.013	0.021
Age40_44	0.008	-0.002	-0.027 *	-0.008	0.000	0.026	-0.008	-0.016 *	0.027
Age45_49	-0.001	-0.009	-0.018	0.002	0.007	0.020	-0.016	-0.019 **	0.033 *
Age50_54	-0.007	-0.011	-0.007	0.009	0.000	0.020	0.001	-0.031 ***	0.028
Age55_59	-0.003	-0.013	-0.015	-0.003	0.014	0.032 *	-0.005	-0.029 ***	0.022
Age60_64	-0.004	-0.017	-0.014	-0.004	0.012	0.040 **	-0.019	-0.017 *	0.023
Age65_69	0.001	-0.025	-0.014	-0.013	0.020	0.033 *	-0.006	-0.009	0.014
Age70_74	-0.014	-0.021	-0.024	-0.014	0.021	0.027	0.008	-0.003	0.020
Age75_	-0.012	-0.008	-0.033 **	0.009	0.015	0.003	0.006	0.002	0.018
Male	-0.008	-0.019 *	0.001	0.014	0.015	0.008	0.010	-0.018 **	-0.002
Know Deposit Insurance	-0.001	0.000	0.043 ***	0.045 ***	0.038 ***	0.074 ***	-0.058 ***	-0.023 ***	-0.119 ***
Heard of Deposit Insurance	-0.007	-0.010 *	0.032 ***	0.025 ***	0.027 ***	0.050 ***	-0.044 ***	-0.010 ***	-0.063 ***
Choice_advice	0.007	0.082 ***	0.020 **	0.049 ***	0.020 **	-0.069 ***	0.038 ***	0.024 ***	-0.170 ***
Homeowner	-0.011 ***	0.000	-0.001	0.002	0.000	-0.009 *	0.026 ***	0.004	-0.011 *
Debt	0.005	0.006	0.008 *	0.000	0.009 **	0.004	-0.010	-0.006 *	-0.015 **
Mattress	0.025 **	0.040 ***	0.015	0.024 *	0.031 ***	0.023	-0.069 ***	0.025 ***	-0.113 ***
Senior high	-0.002	-0.001	0.010	0.022 **	0.006	0.018 **	-0.012	-0.006	-0.035 ***
Vocational college	0.005	-0.003	0.012	0.039 ***	0.022 **	0.019	-0.036 **	-0.014 **	-0.045 ***
Junior college	0.000	-0.012	0.010	0.031 **	0.029 ***	0.054 ***	-0.016	-0.021 **	-0.075 ***
University	0.000	-0.004	0.020 **	0.037 ***	0.017 **	0.027 ***	-0.043 ***	-0.009	-0.045 ***
Graduate	0.002	-0.021	0.026 ***	0.060 ***	0.025 **	0.036 **	-0.062 **	-0.023 *	-0.043 *
S_Senior high	0.011	0.022 **	0.001	0.002	0.002	-0.012	0.005	-0.003	-0.026 **
S_Vocational college	0.012	0.027 **	0.005	0.002	-0.013	0.012	-0.021	0.001	-0.024 *
S_Junior college	0.008	0.020 *	0.017	0.012	-0.005	0.009	-0.027 *	-0.006	-0.028 **
S_University	0.006	-0.004	0.021 *	0.020 *	0.005	0.024 *	-0.038 **	-0.020 **	-0.014
S_Graduate	0.010	0.011	-0.003	0.010	0.012	0.047 *	-0.087	-0.033	0.033
Sbond	0.000	0.000	0.000	0.001 ***	0.000	0.001 ***	-0.002 ***	0.000	0.000
Sstock	0.000 ***	0.000	0.000	0.000 *	0.000	0.001 ***	-0.001 ***	0.000 **	0.000
Sinv_trust	0.000	0.001 ***	0.000	0.000	0.000 *	0.000	0.000	-0.001 ***	0.000
Capitallossyes	0.012 ***	0.012 **	0.009 **	0.015 ***	-0.005	0.008	-0.030 ***	-0.007	-0.014 *
Riskyes	0.028 **	0.072 ***	0.024 **	0.024 *	-0.026	-0.075 ***	0.052 **	0.015	-0.114 ***
Riskalittle	0.015 ***	0.024 ***	0.024 ***	0.031 ***	0.012 **	-0.010	-0.023 **	0.007	-0.080 ***
N									23,263
pseudoRsq									0.056
LLR									-49715.719

Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends. Parameter estimates for households not reporting some variables, job situation, household size, area of residence and survey year not reported.

Table 8 Discrepancy between actual and desirable sources (marginal effects)

	Marginal effects from multinomial logit model for choice of desirable sources Exclusively FI as the actual source							
	Exclusively FI	Exclusively E	FI and E	E and NI	FI, E and NI	FI and NI	Exclusively NI	Don't know
Income_200_260	0.001	-0.017	0.005	0.006	0.005	0.018	0.004	-0.022
Income_260_300	-0.014	-0.009	-0.002	-0.012	0.008	0.016	0.028 *	-0.015
Income_300_360	-0.056 **	0.007	0.000	0.008	0.023 **	0.022	0.018	-0.022
Income_360_400	-0.069 ***	-0.002	0.016	0.008	0.006	0.024 *	0.021	-0.004
Income_400_500	-0.025	-0.012	0.016	0.002	0.020 **	0.015	0.011	-0.028 *
Income_500_580	-0.008	-0.027	-0.004	0.005	-0.016	0.032 *	0.010	0.008
Income_580_700	-0.051 **	0.000	0.011	0.000	0.017	0.018	0.026	-0.021
Income_700_855	-0.074 **	-0.008	-0.005	0.004	0.003	0.033 **	0.043 **	0.004
Income_855_	-0.032	0.005	0.005	-0.005	0.020 *	0.017	0.009	-0.020
Asset_0	0.025	0.006	0.019	-0.012	-0.020	-0.041 **	0.003	0.021
Asset_5_15	0.017	-0.004	0.008	-0.010	-0.012	-0.009	0.019	-0.010
Asset_15_133	0.055 **	-0.010	0.005	-0.020 *	-0.014	0.003	0.005	-0.023
Asset_133_320	0.034	-0.008	0.027 **	-0.010	-0.017	-0.024 *	0.015	-0.015
Asset_320_560	0.025	-0.004	0.020	0.006	0.000	-0.001	-0.003	-0.043 **
Asset_560_905	0.002	-0.008	0.031 **	-0.001	0.002	-0.005	0.016	-0.038 **
Asset_905_1310	-0.003	0.006	0.022	0.005	0.002	0.007	0.019	-0.058 ***
Asset_1310_2010	0.003	-0.006	0.046 ***	0.000	0.004	0.011	0.016	-0.074 ***
Asset_2010_3410	-0.004	-0.019	0.042 ***	0.013	0.008	0.024 *	0.003	-0.067 ***
Asset_3410_	-0.022	-0.011	0.036 **	0.005	0.011	0.021	0.011	-0.052 **
Age30_34	-0.086	0.044	-0.015	0.012	0.006	0.024	0.056	-0.041
Age35_39	-0.068	0.044	-0.040 *	0.020	0.003	0.022	0.035	-0.017
Age40_44	-0.078	0.047 *	-0.032	0.007	0.008	0.021	0.053	-0.026
Age45_49	-0.069	0.040	-0.018	0.011	-0.006	0.013	0.043	-0.013
Age50_54	-0.055	0.037	-0.037	0.018	0.004	0.021	0.042	-0.028
Age55_59	-0.047	0.030	-0.034	0.001	-0.009	0.013	0.052	-0.006
Age60_64	-0.077	0.043	-0.044 *	0.009	-0.008	0.027	0.051	-0.001
Age65_69	-0.067	0.047	-0.051 **	0.002	-0.008	0.033	0.036	0.007
Age70_74	-0.044	0.025	-0.037	0.005	-0.016	0.036	0.043	-0.012
Age75_	-0.036	0.040	-0.029	0.001	0.002	0.033	0.000	-0.011
Male	0.033	-0.004	-0.021	-0.010	-0.016	0.023	0.019	-0.023
Know Deposit Insurance	-0.056 ***	-0.002	-0.007	0.012	0.012	0.040 ***	0.070 ***	-0.069 ***
Heard of Deposit Insurance	-0.085 ***	-0.001	-0.005	0.014 **	0.013 *	0.028 ***	0.053 ***	-0.016
Choice_advice	0.079 **	0.015	0.059 ***	0.017	0.003	0.026 *	-0.110 ***	-0.088 ***
Homeowner	0.042 ***	-0.010 *	-0.008	-0.003	-0.005	0.002	-0.005	-0.013
Debt	-0.012	0.003	0.008	-0.003	0.000	0.020 ***	-0.003	-0.013
Mattress	-0.067	0.038 **	0.046 **	0.020	-0.008	0.031	0.021	-0.080
Senior high	-0.028	-0.001	0.004	0.008	0.035 **	-0.008	0.025	-0.034 **
Vocational college	-0.051 *	0.012	0.003	-0.009	0.046 ***	0.022	0.017	-0.040 *
Junior college	-0.062 *	0.012	0.011	-0.005	0.035 **	-0.010	0.065 ***	-0.047 *
University	-0.074 ***	0.007	0.011	0.006	0.037 **	0.003	0.041 **	-0.032 *
Graduate	-0.088 *	-0.004	-0.015	-0.014	0.060 ***	0.035 *	0.062 **	-0.034
S_Senior high	0.003	0.007	0.002	-0.009	-0.003	0.011	-0.023	0.013
S_Vocational college	-0.061 *	0.008	0.024	-0.005	0.007	0.009	-0.006	0.024
S_Junior college	-0.045	0.019	0.021	0.007	-0.002	0.013	-0.002	-0.011
S_University	-0.050	-0.001	-0.015	0.002	0.019	0.019	0.012	0.014
S_Graduate	0.153	-0.773 ***	0.063	0.026	0.030	0.160 ***	0.058	0.282 ***
Sbond	-0.004 **	0.000	0.001	0.000	0.000	0.001	0.002 ***	0.000
Sstock	-0.001 **	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sinv_trust	-0.001	0.000	0.000	0.000	0.000	0.000	0.001 **	0.000
Capitallossyes	-0.036 **	0.011 *	0.020 **	0.009	0.013 **	0.002	-0.013	-0.006
Riskyes	0.153 ***	-0.009	0.038 *	-0.010	-0.004	-0.050	-0.043	-0.074
Riskalittle	-0.004	0.011	0.007	0.015 **	0.024 ***	0.004	0.001	-0.056 ***
N								8,012
pseudoRsq								0.057
LLR								-14069.229

Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends. Parameter estimates households not reporting some variables, for job situation, household size, area of residence and survey year not reported.

Table 9 Average treatment effects: Information sources and risky asset holdings

Base Exclusively FF (actual)	Exclusively E	FI and E	FI, E and FF	Exclusively FI	FI and FF	Exclusively Other
ATE on Sstock(PS)	0.56	0.482	-0.707*	-0.344	-0.129	0.891***
ATE on Sstock (IPW)	0.813**	1.024**	-0.24	-0.071	-0.378	1.100***
ATE on Sinv_trust (PS)	0.19	1.07	-0.221	0.857**	0.098	-0.037
ATE on Sinv_trust (IPW)	0.293	1.448***	-0.036	0.748***	0.143	-0.02
N	3357	4213	3153	10541	6405	4615
pseudoRsq	0.173	0.28	0.203	0.081	0.076	0.072
LLR	-1867.353	-2099.883	-1643.709	-4727.101	-3687.664	-2934.352
% ccorrectly classified	71.64%	75.88%	73.96%	80.87%	69.85%	63.27%
Area under ROC	0.7674	0.8365	0.7889	0.7007	0.6836	0.6756

Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends. Goodness of fit statistics are results from PS for the choices of FI ad E, FI, E and FF.   See Appendix Table 4 for the goodness of fit statistics from IPW.

Appendix

This appendix explains the parameter estimates for the multinomial logit models used to derive the marginal effects in Tables 6 through 8 and the parameter estimates for the logit treatment model, equation (5), to derive the treatment effects in Table 9.   In the following tables, *, **, *** denote statistical significance at the 10%, 5%, and 1% level evaluated by the standard errors robust to misspecifications, respectively.

Appendix Table 1 reports the results of the multinomial logit model of the choice of actual sources used to compute the marginal effects in Table 6.   We take the households that chose Exclusively FF as the base case and regress an indicator variable for the top second- to seventh-most preferred choices listed in the third column of the top right panel of Table 3 on the independent variables listed in Table 1, as per equation (4). The results in columns 2–4 suggest that households are more likely to choose sources including E if the household knows the role of the DICJ, considers the provision of a financial advisory service, excluding the choice of Exclusively E, is willing to purchase financial products with a high yield, and purchases high-yield financial products to some extent.

Appendix Table 2 reports the estimated coefficients obtained from the multinomial logit model of choice of desirable sources, used to compute the marginal effects in Table 7.   We designate the households choosing Do not know as the base case, and regress an indicator variable for the second- to ninth-most preferred desirable sources listed in the third column of the second right panel of Table 3.   We obtain the following results.   First, households that know about the role of the DICJ and that have a household head whose educational attainment is university or graduate school are more likely to select desirable sources involving E and NI.   Second, households that have experience incurring capital losses tend to select desirable sources involving E. Third, households that purchase high-yield financial products are also more likely to select desirable information sources involving E.

Appendix Table 3 reports the estimated coefficients obtained from the multinomial logit model of the choice of desirable sources conditional on the choice of Exclusively FI as the actual source which is used to compute the marginal effects in Table 8.   We designate households that chose Exclusively FI as the desirable source as the base

case, and regress an indicator variable that takes a value of one to seven for the top-eight preferred choices of desirable sources listed in the first column of the left third panel of Table 3. We obtain the following results. First, households that knows about the role of the DICJ are more likely to choose desirable sources involving NI (columns 4–7). Second, households that purchase high-yield financial products to some extent are more likely to choose desirable information sources of E and NI, and FI, E and NI. Lastly, households that are unwilling to purchase high-yield financial products tends to choose FI and NI and Exclusively NI.

Appendix Table 4 reports the parameter estimates and the goodness of fit statistics of logit treatment models, equation (5), used to compute propensity scores in Table 9. We employ the same demographic variables as in Table 8 except for *Sstock*, *Sinv trust Sbond* and *Sbond_NA*, and confirm that all the standardized differences after matching have absolute values less than 0.1. For the choice of FI and E and the choice of FI, E and FF, some variables had an absolute value of standardized difference after matching of more than 0.1. We drop the variable with the largest absolute value of the standardized difference and match again using the remaining common covariates as explanatory variables. We continue until all absolute values of the standardized differences after matching are less than 0.1. We end up in different covariates for the estimation of PS and IPW for the choices of FI and E and FI, E and FF.

Appendix Table 1 Multinomial logit model for the choice of actual sources

	Multinomial logit model (base = Exclusively FF, actual source)					
	Exclusively E	FI and E	FI, E and FF	Exclusively FI	Exclusively Other	FI and FF
Income_200_260	0.026	-0.032	0.302	-0.024	-0.297**	0.184
Income_260_300	0.154	0.328**	0.434**	0.115	-0.114	0.184
Income_300_360	0.086	0.11	0.237	0.028	-0.348**	0.288**
Income_360_400	-0.127	0.249*	0.199	-0.037	-0.345***	0.096
Income_400_500	-0.035	0.167	0.288*	-0.035	-0.403***	0.138
Income_500_580	0.039	0.534**	0.543**	0	-0.137	0.313
Income_580_700	0.161	0.409***	0.327*	0.223*	0.07	0.413***
Income_700_855	-0.04	0.065	0.489***	-0.053	-0.177	0.242
Income_855_	-0.043	-0.002	0.112	-0.303**	-0.19	0.043
Asset_0	0.164	0.13	-0.094	-0.03	0.448***	-0.176*
Asset_5_15	0.163	-0.004	0.058	0.166	0.169	0.15
Asset_15_133	0.087	0.128	0.293*	0.15	0.087	0.14
Asset_133_320	0.009	0.128	0.237	0.088	-0.113	0.117
Asset_320_560	0.016	0.096	0.232	0.108	-0.323***	0.186*
Asset_560_905	-0.297*	0.183	0.571***	0.133	-0.334***	0.314***
Asset_905_1310	0.237	0.661***	0.789***	0.510***	-0.197	0.577***
Asset_1310_2010	0.188	0.783***	0.911***	0.549***	-0.147	0.697***
Asset_2010_3410	0.189	1.017***	1.131***	0.647***	-0.169	0.767***
Asset_3410_	0.420*	1.482***	1.199***	0.981***	0.196	1.052***
Age30_34	-0.059	0.550*	0.127	0.07	0.232	0.044
Age35_39	0.073	0.487	-0.03	0.182	0.14	-0.028
Age40_44	0.638**	1.062***	0.32	0.596***	0.635***	0.215
Age45_49	0.666**	1.320***	0.537*	0.808***	0.787***	0.273
Age50_54	0.933***	1.638***	0.660**	0.962***	0.770***	0.422**
Age55_59	0.853***	1.359***	0.740**	0.940***	0.899***	0.333*
Age60_64	0.432	1.375***	0.488*	0.745***	0.643***	0.265
Age65_69	0.643**	1.391***	0.575*	0.847***	0.881***	0.356*
Age70_74	0.626**	1.353***	0.628**	0.843***	0.723***	0.366*
Age75_	0.636**	1.443***	0.906***	0.843***	0.802***	0.155
Male	0.211	0.279	-0.228	0.227*	0.474***	-0.053
Know Deposit Insurance	1.570***	1.633***	1.125***	0.753***	0.734***	0.607***
Heard of Deposit Insurance	0.614***	0.590***	0.429***	0.235***	-0.009	0.338***
Choice_advice	0.06	1.135***	1.419***	0.556***	-0.776***	0.770***
Homeowner	-0.113	0.101	0.046	0.089	-0.131*	0.052
Debt	0.237***	0.224***	0.262***	0.157***	0.128*	0.150***
Mattress	0.502	1.046***	1.034***	0.505*	0.063	0.955***
Senior high	0.365***	0.304**	0.279*	0.348***	0.292***	0.241**
Vocational college	0.530***	0.281	0.366*	0.384***	0.326***	0.447***
Junior college	0.349	0.319	0.450*	0.343**	0.073	0.243
University	0.444***	0.489***	0.452***	0.356***	0.507***	0.219*
Graduate	0.752***	0.557**	0.458	0.312	0.204	0.151
S_Senior high	0.115	0.488***	0.194	0.287***	0.098	0.343***
S_Vocational college	0.293	0.477**	0.442**	0.367***	0.087	0.478***
S_Junior college	-0.126	0.364**	0.032	0.208*	0.007	0.263*
S_University	0.173	0.258	0.011	0.261*	0.225	0.353**
S_Graduate	-0.226	0.002	-0.372	-0.415	0.098	-0.149
Sbond	0.017	0.017*	0.013	0.009	0.013	0.002
sstock	0.011***	0.006*	-0.001	-0.003	0.011***	-0.006*
Sinv_trust	0.006	0.014**	-0.001	0.012**	0.004	0
Capitallossyes	0.416***	0.366***	0.314***	0.245***	0.261**	0.057
Riskyes	1.160***	0.817**	1.025***	0.121	0.264	-0.034
Riskalittle	0.737***	0.991***	0.828***	0.273**	0.014	0.457***
Top20cities	-0.173	-0.078	0.144	-0.128	-0.163	-0.242**
Cities_40k_	-0.1	0.022	0.241*	-0.145	-0.145	-0.182*
Cities_20k_40k	-0.109	-0.015	0.139	-0.068	-0.260**	-0.122
Full_time	-0.285**	-0.017	0.062	0.063	-0.148	0.122
Part_time	-0.2	0.056	0.22	0.149	0.061	0.256*
Self-employed	0.183	0.06	0.281*	0.091	-0.047	0.068
Student	-0.971	-1.069*	-0.289	-0.427	-0.366	-0.095
S_Full_time	-0.015	-0.093	-0.077	0.042	0.056	-0.095
S_Part_time	0.096	-0.011	0.058	0.08	0.123	0.130*
S_Self-employed	-0.075	-0.011	-0.312	0.165	0.194	-0.025
S_Student	0.505	1.143	0.615	-0.134	0.805	0.242
No_spouse	0.066	0.314	-0.049	0.235	0.301*	0.123
h_size3	-0.025	0.031	0.230**	0.047	-0.082	0.074
h_size4	-0.235**	-0.076	0.346***	-0.029	-0.127	-0.004
h_size5	-0.325**	-0.337***	0.071	-0.168*	-0.322***	-0.079
h_size_6_	-0.284	0.075	0.596***	0.151	-0.175	0.186
Hokkaido	-0.086	-0.209	-0.064	-0.097	0.092	-0.023
Tohoku	0.267*	0.206	0.129	0.285***	0.004	0.244**
Hokuriku	-0.181	-0.089	-0.041	0.089	-0.185	0.133
Chubu	-0.074	0.044	0.08	0.183**	0	0.136
Kinki	-0.155	-0.363***	-0.137	-0.084	-0.084	0.028
Chugoku	-0.124	-0.157	-0.06	0.032	0.124	0.087
Shikoku	-0.281	0.022	0.195	0.294**	0.125	0.535***
Kyushu	-0.112	-0.432***	0.158	-0.082	-0.166	0.131
yeard2010	0.14	-0.058	0.564***	0.07	-0.07	0.053
yeard2011	0.085	0.12	0.577***	0.064	-0.262**	0.069
yeard2012	-0.059	0.244**	0.588***	0.075	-0.048	0.129
yeard2013	0.07	0.226*	0.505***	0.229**	0.114	0.200*
yeard2014	0.143	0.034	0.393**	0.133	0.065	0.081
yeard2015	-0.021	-0.029	0.309*	0.149	0.1	0.044
yeard2016	0.098	0.097	0.320*	0.132	0.103	-0.035
Mattress_NA	-0.514	-0.36	-0.266	0.304	-0.672*	-0.251
h_size_NA	0.386	-0.199	0.269	0.201	0.560*	0.22
Income_NA	-0.184	-0.265*	0.063	-0.154	-0.183	-0.105
Dep_Ins_NA	0.929	0.705	0.984*	-0.049	-0.041	0.4
Choice_advice_NA	0.06	-1.062*	-1.235*	-0.691**	-0.552	-0.981**
Debt_NA	0.183	0.996**	-13.424***	0.511	1.092***	0.445
Homeowner_NA	0.955**	0.627	1.115**	0.945**	1.198***	1.105***
Age_NA	0.719	1.075**	0.231	0.784***	0.424	0.213
Male_NA	-0.092	0.929	-0.223	0.206	0.23	0.286
job_NA	-0.032	0.379	0.482*	0.197	0.062	0.273
S_job_NA	-0.014	-0.491**	-0.344	-0.15	0.011	-0.04
Education_NA	0.216	0.323	0.063	0.256	0.25	0.266
S_Education_NA	0.003	0.231	0.144	0.179	-0.021	-0.005
capitallossyes_NA	0.135	-0.163	-0.570**	-0.009	0.112	-0.14
risk_NA	-0.488	0.065	-0.399	-0.219	-0.630**	-0.415
constant	-2.364***	-3.897***	-3.720***	-0.839***	-0.957***	-0.873***
N						22204
pseudoRsq						0.057
LLR						-39654.097

Note: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends.

Appendix Table 2 Multinomial logit model for the choice of desirable sources

	Multinomial logit model (base Do not know as the desirable source)							
	Exclusively E	FI and E	E and NI	FI, E and NI	FI and NI	Exclusively NI	FI and FF	Exclusively FI
Income_200_260	-0.031	0.263**	0.411***	0.205	0.371**	0.156	0.189	0.066
Income_260_300	0.062	0.075	0.312**	0.268**	0.357***	0.177*	0.144	0.044
Income_300_360	0.218	0.222*	0.452***	0.616***	0.554***	0.254**	0.301*	0.067
Income_360_400	0.205	0.417***	0.352**	0.414***	0.391***	0.113	0.336**	0.034
Income_400_500	0.093	0.323***	0.475***	0.482***	0.594***	0.064	0.233	0.119
Income_500_580	0.16	0.395**	0.429**	0.549***	0.946***	0.328**	0.670***	0.15
Income_580_700	0.154	0.293**	0.254*	0.428***	0.557***	0.223**	0.303*	0.031
Income_700_855	0.13	0.139	0.403**	0.473***	0.564***	0.253*	0.382*	0.034
Income_855_	0.322**	0.245*	0.324**	0.509***	0.388**	0.032	0.330*	-0.027
Asset_0	-0.335***	-0.239*	-0.552***	-0.346**	-0.707***	-0.377***	-0.440***	-0.332***
Asset_5_15	-0.171	0.186	0.027	0.086	0.173	0.390***	0.369**	0.111
Asset_15_133	-0.13	0.113	0.022	0.025	0.104	0.220**	0.215	0.251***
Asset_133_320	0.045	0.309***	0.122	0.205	0.098	0.269**	0.298**	0.233***
Asset_320_560	0.269**	0.496***	0.480***	0.368***	0.298**	0.376***	0.494***	0.395***
Asset_560_905	0.149	0.461***	0.389***	0.495***	0.230*	0.348***	0.375**	0.297***
Asset_905_1310	0.271*	0.629***	0.594***	0.562***	0.452***	0.552***	0.592***	0.414***
Asset_1310_2010	0.383***	0.807***	0.657***	0.682***	0.578***	0.621***	0.598***	0.494***
Asset_2010_3410	0.657***	1.003***	1.031***	1.089***	0.965***	0.796***	0.466***	0.683***
Asset_3410_	0.398**	1.029***	0.947***	1.098***	0.835***	0.722***	0.393**	0.526***
Age30_34	0.245	0.059	-0.202	0.077	-0.149	0.154	-0.211	-0.01
Age35_39	0.085	-0.052	-0.365	-0.214	-0.205	0.058	-0.407*	-0.161
Age40_44	-0.022	-0.174	-0.516**	-0.26	-0.164	0.074	-0.499**	-0.18
Age45_49	-0.19	-0.276	-0.419*	-0.153	-0.074	-0.005	-0.586**	-0.239
Age50_54	-0.263	-0.266	-0.241	-0.04	-0.144	0.031	-0.840***	-0.142
Age55_59	-0.169	-0.258	-0.309	-0.144	0.096	0.168	-0.761***	-0.133
Age60_64	-0.191	-0.298	-0.299	-0.168	0.068	0.232	-0.505**	-0.197
Age65_69	-0.056	-0.347	-0.271	-0.238	0.212	0.213	-0.283	-0.102
Age70_74	-0.352	-0.341	-0.446*	-0.287	0.193	0.112	-0.168	-0.077
Age75_	-0.3	-0.192	-0.546**	-0.003	0.118	-0.078	-0.053	-0.068
Male	-0.114	-0.182	0.042	0.193	0.258	0.101	-0.385**	0.057
Know Deposit Insurance	0.688***	0.730***	1.357***	1.321***	1.324***	1.391***	0.127	0.411***
Heard of Deposit Insurance	0.269***	0.289***	0.854***	0.734***	0.807***	0.836***	0.112	0.164***
Choice_advice	1.051***	1.833***	1.256***	1.577***	1.273***	0.354	1.434***	1.061***
Homeowner	-0.122	0.051	0.035	0.076	0.051	-0.027	0.148	0.165***
Debt	0.168***	0.160**	0.207**	0.101	0.226***	0.128**	-0.052	0.043
Mattress	1.060***	1.090***	0.902***	0.997***	1.147***	0.868***	1.167***	0.327
Senior high	0.186	0.208**	0.361***	0.496***	0.317**	0.374***	0.066	0.143**
Vocational college	0.360**	0.257*	0.481***	0.781***	0.636***	0.456***	-0.067	0.099
Junior college	0.435**	0.321*	0.614***	0.852***	0.901***	0.931***	-0.067	0.341**
University	0.286**	0.249**	0.590***	0.751***	0.561***	0.531***	0.033	0.072
Graduate	0.327	0.085	0.694***	1.053***	0.692***	0.623***	-0.274	-0.008
S_Senior high	0.322**	0.377***	0.168	0.183	0.172	0.039	0.064	0.158*
S_Vocational college	0.328*	0.421***	0.214	0.169	-0.048	0.243**	0.153	0.039
S_Junior college	0.305*	0.390***	0.409**	0.331**	0.109	0.253**	0.026	0.042
S_University	0.202	0.071	0.408**	0.365**	0.189	0.320**	-0.360*	-0.074
S_Graduate	0.018	-0.026	-0.154	-0.008	0.046	0.279	-0.891	-0.514
Sbond	-0.001	-0.001	-0.002	0.012**	-0.001	0.009*	-0.01	-0.012**
sstock	0.005*	-0.001	0.002	0.003	0.001	0.005**	-0.012***	-0.007***
Sinv_trust	0.005	0.007**	0.002	0	-0.004	0.003	-0.021***	0.002
Capitallossyes	0.290***	0.228***	0.230***	0.285***	0.036	0.166**	-0.073	-0.043
Riskyes	1.066***	1.392***	0.963***	0.931***	0.252	-0.033	0.935***	0.814***
Riskalittle	0.698***	0.733***	0.817***	0.872***	0.660***	0.388***	0.579***	0.337***
Top20cities	0.16	0.024	0.241**	0.249**	0.113	0.146	-0.055	0.07
Cities_40k_	0.264**	0.132	0.243**	0.249**	0.178*	0.032	0.044	0.052
Cities_20k_40k	0.195*	0.168*	0.192*	0.327***	0.245**	0.106	0.056	0.102
Full_time	0.183	0.233**	0.044	-0.012	0.055	0.069	0.396***	0.216***
Part_time	-0.15	0.146	0.084	0.082	0.009	0.078	0.314**	0.073
Self-employed	0.258*	0.163	0.088	-0.05	0.03	0.223**	0.198	0.237***
Student	-0.114	0.263	-0.466	-0.054	0.049	-0.419	0.745	0.3
S_Full_time	-0.035	0.139	0.081	-0.083	-0.114	-0.018	-0.063	0.025
S_Part_time	0.026	0.075	-0.038	-0.113	-0.062	-0.098	-0.112	-0.005
S_Self-employed	-0.051	0.027	-0.196	-0.074	-0.394**	-0.368**	0.053	0.06
S_Student	0.528	0.982**	0.066	0.519	-0.632	0.395	-13.059***	-0.379
No_spouse	0.146	0.004	0.163	0.106	-0.336**	0.021	-0.447**	0.029
h_size3	0.036	-0.034	-0.004	0.002	-0.119	-0.125*	-0.035	-0.027
h_size4	0.017	-0.013	-0.042	-0.05	-0.155**	-0.113	-0.014	0.027
h_size5	0.115	-0.126	-0.116	-0.139	-0.153	-0.141	-0.221	-0.067
h_size_6_	0.098	0.156	0.042	0.305**	0.061	0.039	0.04	0.255***
Hokkaido	0.253*	0.102	-0.105	-0.061	-0.228	-0.139	0.188	-0.052
Tohoku	0.143	0.098	-0.238*	0.210*	0.104	-0.148	-0.054	0.279***
Hokuriku	0.188	0.259**	-0.08	0.127	0.074	0.15	0.304*	0.269***
Chubu	-0.025	0.024	-0.095	-0.159*	-0.197**	-0.097	-0.115	0.128*
Kinki	-0.067	-0.198**	-0.347***	-0.365***	-0.203**	-0.290***	-0.152	-0.096
Chugoku	-0.266*	-0.113	-0.437***	-0.226*	-0.302**	-0.172	-0.186	-0.006
Shikoku	0.064	-0.22	-0.215	-0.239	0.154	-0.302**	-0.016	-0.039
Kyushu	0.267**	0.063	-0.183*	-0.009	-0.107	-0.149*	0.228**	0.06
yeard2010	-0.174	0.078	0.175	0.232**	0.316***	0.210**	0.115	0.128
yeard2011	0.061	0.116	0.258**	0.248**	0.241**	0.216**	0.104	0.066
yeard2012	-0.065	0.043	0.319***	0.213*	0.189	0.304***	0.147	0.153*
yeard2013	-0.179	0.024	0.106	0.168	0.300**	0.121	0.212	0.091
yeard2014	-0.211*	-0.07	0.099	-0.003	0.132	0.037	0.096	0
yeard2015	-0.116	-0.164	-0.02	0.082	0.097	0.082	0.116	-0.003
yeard2016	0.056	0.012	0.178	0.145	0.083	0.081	0.211	0.161**
Mattress_NA	0.21	-0.198	0.305	-0.067	-0.03	0.578**	-0.439	0.284
h_size_NA	0.184	0.131	-0.243	-0.297	0.171	0.028	-0.133	-0.151
income_NA	-0.079	-0.021	-0.076	-0.047	-0.058	-0.198*	-0.03	-0.064
Dep_Ins_NA	-0.562	-0.02	0.253	0.57	-0.288	0.519	0.638	0.036
Choice_advice_NA	-0.506	-1.986***	-1.276*	-1.281**	-0.48	-0.485	-0.839***	-0.819***
Debt_NA	-0.143	0.158	0.04	-0.285	-0.293	-0.366	-0.222	-0.263
Homeowner_NA	0.065	0.203	-1.027*	0.134	-0.327	-0.116	0.299	0.337
age_NA	-0.04	-0.249	-0.16	0.01	0.31	0.23	-0.281	0.113
Male_NA	0.208	0.245	0.274	0.85	0.009	0.23	0.031	-0.269
job_NA	-0.048	0.438***	-0.054	-0.048	0.077	-0.062	0.305	0.181
S_job_NA	0.22	-0.247	-0.144	-0.234	-0.079	-0.087	0.013	0.084
Education_NA	-0.01	0.416**	0.115	0.257	0.422*	-0.154	0.560***	0.076
S_Education_NA	0.309	0.042	0.162	0.221	-0.018	0.464**	-0.434*	0.133
capitallossyes_NA	-0.025	-0.108	-0.099	-0.277	0.098	0.171	-0.086	-0.219**
risk_NA	0.053	-0.092	-0.096	-0.194	-0.475	0.075	-0.341	0.043
constant	-2.425***	-2.377***	-3.255***	-3.743***	-3.685***	-2.706***	-1.742***	-0.849***
N								23263
pseudoRsq								0.056
LLR								-49715.719

Note: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends.

Appendix Table 3 Multinomial logit model for the discrepancy between actual and desirable sources

	Choice of desirable sources given the choice of exclusively FI as the actual source						
	Exclusively E	FI and E	E and NI	FI, E and NI	FI and NI	Exclusively NI	Don't know
Income_200_260	-0.361	0.07	0.162	0.14	0.275	0.049	-0.146
Income_260_300	-0.147	0.017	-0.285	0.259	0.287	0.311*	-0.066
Income_300_360	0.291	0.14	0.381	0.752**	0.485**	0.323	-0.022
Income_360_400	0.133	0.372*	0.392	0.348	0.528**	0.374**	0.126
Income_400_500	-0.174	0.285	0.135	0.609**	0.304	0.182	-0.127
Income_500_580	-0.554	-0.037	0.165	-0.383	0.491	0.115	0.066
Income_580_700	0.13	0.272	0.139	0.576**	0.406*	0.383**	-0.025
Income_700_855	0.015	0.113	0.307	0.288	0.679***	0.600***	0.184
Income_855_	0.191	0.144	-0.032	0.614*	0.343	0.173	-0.059
Asset_0	0.054	0.179	-0.41	-0.604*	-0.681**	-0.049	0.08
Asset_5_15	-0.131	0.07	-0.317	-0.339	-0.169	0.143	-0.096
Asset_15_133	-0.344	-0.066	-0.678**	-0.497	-0.09	-0.085	-0.262*
Asset_133_320	-0.245	0.27	-0.369	-0.528*	-0.439*	0.055	-0.169
Asset_320_560	-0.143	0.215	0.118	-0.056	-0.06	-0.077	-0.333**
Asset_560_905	-0.156	0.415**	-0.004	0.066	-0.07	0.164	-0.247*
Asset_905_1310	0.147	0.31	0.157	0.08	0.136	0.209	-0.364**
Asset_1310_2010	-0.122	0.604***	0.025	0.123	0.175	0.169	-0.478***
Asset_2010_3410	-0.378	0.573***	0.381	0.252	0.392*	0.065	-0.420***
Asset_3410_	-0.163	0.540**	0.213	0.359	0.385*	0.181	-0.284
Age30_34	1.125*	0.016	0.552	0.409	0.58	0.762*	-0.071
Age35_39	1.089*	-0.347	0.734	0.277	0.504	0.52	0.039
Age40_44	1.166*	-0.224	0.388	0.419	0.511	0.714*	0.006
Age45_49	0.989	-0.071	0.484	0.025	0.363	0.586	0.067
Age50_54	0.895	-0.341	0.63	0.277	0.454	0.551	-0.057
Age55_59	0.737	-0.336	0.155	-0.104	0.303	0.62	0.064
Age60_64	1.080*	-0.393	0.436	0.009	0.588	0.685*	0.161
Age65_69	1.138*	-0.511	0.22	-0.032	0.651	0.517	0.193
Age70_74	0.625	-0.381	0.243	-0.279	0.638	0.535	0.022
Age75_	0.908	-0.285	0.116	0.149	0.582	0.099	0.011
Male	-0.156	-0.35	-0.346	-0.492	0.254	0.106	-0.221
Know Deposit Insurance	0.106	0.061	0.488**	0.502**	0.758***	0.845***	-0.318***
Heard of Deposit Insurance	0.189	0.145	0.602***	0.570***	0.631***	0.731***	0.08
Choice_advice	0.139	0.602***	0.286	-0.096	0.199	-1.235***	-0.734***
Homeowner	-0.310**	-0.203*	-0.187	-0.226	-0.064	-0.147	-0.170**
Debt	0.097	0.131	-0.042	0.039	0.318***	0.004	-0.057
Mattress	0.958**	0.775**	0.734	-0.007	0.639**	0.382	-0.363
Senior high	0.062	0.128	0.304	1.003**	-0.028	0.328*	-0.157
Vocational college	0.378	0.173	-0.083	1.337***	0.467*	0.308	-0.144
Junior college	0.398	0.301	0.053	1.092**	0.035	0.801***	-0.163
University	0.337	0.328	0.38	1.173***	0.246	0.595***	-0.042
Graduate	0.135	0.023	-0.136	1.787***	0.758***	0.838***	-0.027
S_Senior high	0.129	0.012	-0.26	-0.101	0.139	-0.231	0.075
S_Vocational college	0.309	0.456*	0.008	0.324	0.27	0.081	0.282
S_Junior college	0.507	0.387	0.307	0.057	0.307	0.088	0.025
S_University	0.096	-0.08	0.184	0.622	0.406	0.238	0.199
S_Graduate	-16.444***	0.398	0.3	0.354	1.980***	0.198	1.426**
Sbond	0.001	0.017*	0.017*	0.019*	0.018**	0.027***	0.008
sstock	0.007	0.003	0.006	0.007	0.008*	0.006	0.005
Sinv_trust	0.001	0.007*	-0.002	-0.005	0.002	0.010**	0.001
Capitallossyes	0.319**	0.350***	0.333**	0.427**	0.123	-0.033	0.038
Riskyes	-0.544	0.15	-0.648	-0.472	-1.099*	-0.784*	-0.805*
Riskalittle	0.244	0.118	0.441**	0.652***	0.093	0.039	-0.350**
Top20cities	-0.033	-0.186	0.121	0.938***	0.059	-0.143	-0.071
Cities_40k_	-0.027	-0.145	0.288	0.924***	0.348*	-0.05	-0.016
Cities_20k_40k	0.193	-0.025	0.214	0.940***	0.326*	-0.029	-0.097
Full_time	0.034	0.114	0.024	-0.109	0.051	-0.151	0.087
Part_time	-0.325	0.077	0.113	0.063	-0.018	0.001	0.19
Self-employed	0.163	-0.2	-0.301	0.072	-0.009	-0.082	0.143
Student	-0.296	-0.808	-0.101	-15.578***	-0.506	-0.932	-1.904**
S_Full_time	-0.069	0.067	0.025	0.133	-0.208	0.006	-0.197*
S_Part_time	0.145	-0.012	0.198	0.017	-0.225*	-0.045	-0.063
S_Self-employed	-0.345	0.156	-0.008	-0.142	-0.556**	-0.431*	-0.245
S_Student	-17.109***	-16.880***	-16.755***	-16.381***	-16.979***	1.503*	0.13
No_spouse	0.335	-0.395	-0.123	0.034	-0.038	-0.159	0.051
h_size3	0.203	0.149	-0.054	0.093	0.028	-0.018	0.074
h_size4	-0.001	0.138	0.007	-0.069	-0.034	-0.220**	-0.012
h_size5	0.087	0.172	0.178	0.05	-0.067	-0.092	0.013
h_size_6_	-0.357	-0.219	0.009	-0.016	-0.192	-0.403**	-0.129
Hokkaido	-0.053	0.33	-0.599	0.291	-0.096	-0.028	0.028
Tohoku	-0.071	-0.116	-0.606**	0.04	-0.108	-0.597***	-0.244*
Hokuriku	-0.228	0.215	-0.261	-0.26	0.037	-0.096	-0.135
Chubu	-0.386**	-0.227	-0.286	-0.221	-0.338**	-0.105	0.053
Kinki	-0.031	0.008	-0.201	-0.34	-0.19	-0.224*	0.244**
Chugoku	-0.389	0.201	-0.773**	0.192	-0.245	-0.218	0.057
Shikoku	-0.1	-0.636**	0.042	0.242	0.234	-0.453*	0.224
Kyushu	0.167	0.041	-0.404*	0.171	-0.078	-0.067	0.001
yeard2010	-0.400*	0.1	0.139	-0.273	-0.07	0.012	-0.033
yeard2011	0.058	0.318*	0.367	0.107	0.14	0.118	-0.009
yeard2012	-0.518**	-0.056	0.586**	-0.188	-0.02	0.047	-0.098
yeard2013	-0.469**	0.026	-0.083	-0.144	0.162	-0.048	0.076
yeard2014	-0.350*	-0.082	0.387	-0.051	0.243	0.067	0.107
yeard2015	-0.279	0.056	0.254	-0.034	0.207	0.065	0.064
yeard2016	-0.253	0.101	0.194	-0.486*	-0.021	-0.184	-0.085
Mattress_NA	0.282	-0.072	-14.723***	0.621	0.366	1.333***	-0.625
h_size_NA	0.686	-0.142	-0.207	-0.972	-0.302	0.029	0.175
income_NA	-0.187	0.327	-0.193	-0.019	-0.195	-0.142	-0.051
Dep_Ins_NA	-16.176***	-0.229	-13.389***	0.372	-14.865***	0.237	0.427
Choice_advice_NA	0.578	-15.773***	-14.771***	-0.589	-0.208	0.008	0.189
Debt_NA	-0.667	-0.482	-0.008	0.426	-0.507	-1.008	0.457
Homeowner_NA	-0.097	-0.065	-15.529***	-0.969	-0.405	-0.176	-0.547
age_NA	0.711	-0.876	0.561	0.506	1.08	-0.146	-0.121
Male_NA	0.756	1.064	0.84	-15.920***	-15.686***	0.873	-1.384
job_NA	-0.227	0.627**	-0.093	-0.616	-0.117	-0.122	0.178
S_job_NA	0.307	-0.588**	0.177	0.22	-0.186	-0.263	-0.422**
Education_NA	-0.503	0.47	-0.739	0.838	0.254	0.126	-0.129
S_Education_NA	0.629	-0.393	0.296	0.064	-0.118	-0.03	0.279
capitallossyes_NA	0.095	0.423*	0.13	0.249	0.209	0.209	-0.052
risk_NA	0.219	-0.042	0.139	-0.28	-15.283***	-0.017	-0.242
constant	-3.115***	-2.102***	-3.485***	-4.738***	-4.083***	-2.880***	-0.414
N							8012
pseudoRsq							0.057
LLR							-14069.229

Note: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends.

Appendix Table 4 Logit treatment models for equation (5)

Estimation methods	PS, IPW	PS, IPW	PS, IPW	PS	IPW	PS, IPW	PS	IPW
Base Exclusively FF (actual)	Exclusively FI	FI and FF	Other	FI and E		Exclusively E	FI, E and FF	
Income_200_260	-0.011	0.156	-0.320**	0.029	-0.064	-0.022	0.225	0.225
Income_260_300	0.125	0.148	-0.071	0.351**	0.281*	0.081	0.320*	0.322*
Income_300_370	0.04	0.235*	-0.294*	0.298	0.196	0.007	0.216	0.218
Income_370_407	-0.032	0.109	-0.338**	0.416**	0.362**	-0.179	0.194	0.197
Income_407_500	-0.012	0.127	-0.439***	0.396**	0.315*	-0.091	0.282	0.284
Income_500_600	0.013	0.311	-0.143	0.769***	0.644***	-0.044	0.481**	0.481*
Income_600_700	0.255**	0.353***	0.055	0.609***	0.510***	0.084	0.213	0.215
Income_700_900	-0.04	0.192	-0.239	0.396*	0.251	-0.086	0.422*	0.419*
Income_900_	-0.23	-0.028	-0.252	0.161	0.032	-0.081	0.017	0.017
Asset_0	-0.033	-0.204*	0.426***	-0.273*	0.01	0.137	-0.069	-0.072
Asset_100_253	0.185	0.126	0.138	-0.355*	-0.071	0.161	0.106	0.105
Asset_253_420	0.138	0.122	0.125	-0.148	0.166	0.118	0.355*	0.356*
Asset_420_600	0.082	0.105	-0.063	-0.187	0.129	0.041	0.226	0.227
Asset_600_900	0.133	0.172	-0.348***	-0.267*	0.077	0.038	0.238	0.24
Asset_900_1200	0.115	0.317***	-0.325***	-0.111	0.194	-0.282	0.708***	0.706***
Asset_1200_1670	0.505***	0.576***	-0.145		0.777***	0.342*	0.909***	0.911***
Asset_1670_2400	0.590***	0.697***	-0.129	0.465***	0.777***	0.191	0.942***	0.944***
Asset_2400_3886	0.703***	0.741***	-0.105	0.776***	1.098***	0.283	1.101***	1.104***
Asset_3886_	1.001***	1.043***	0.276	1.381***	1.690***	0.652***	1.338***	1.339***
Age30_34	0.084	0.025	0.203	0.677**	0.643**	-0.065	0.101	0.099
Age35_39	0.206	-0.063	0.132	0.573*	0.574*	0.157	-0.044	-0.047
Age40_44	0.573***	0.208	0.625***	1.049***	1.013***	0.661**	0.363	0.362
Age45_49	0.796***	0.279	0.778***	1.446***	1.395***	0.841***	0.578*	0.575*
Age50_54	0.949***	0.447**	0.791***	1.689***	1.656***	1.022***	0.740**	0.741**
Age55_59	0.913***	0.303*	0.880***	1.441***	1.409***	1.011***	0.704**	0.702**
Age60_64	0.747***	0.274	0.585***	1.383***	1.352***	0.335	0.508	0.504
Age65_69	0.863***	0.368*	0.781***	1.307***	1.297***	0.562*	0.638*	0.638*
Age70_74	0.898***	0.422**	0.704***	1.189***	1.222***	0.537*	0.712**	0.708**
Age75_	0.883***	0.161	0.731***	1.201***	1.278***	0.537*	1.016***	1.014***
Male	0.212*	-0.021	0.510***	0.456**	0.377*	0.344	-0.212	-0.208
Know Deposit Insurance	0.757***	0.616***	0.777***	1.765***	1.697***	1.626***	1.180***	1.180***
Heard of Deposit Insurance	0.241**	0.335***	0.013	0.682***	0.630***	0.682***	0.464**	0.465***
Choice_advice	0.524**	0.811***	-0.842***		1.376***	-0.042	1.524***	1.529***
Homeowner	0.086	0.059	-0.146*	0.212**	0.15	-0.036	0.078	0.077
Debt	0.165***	0.147**	0.101	0.203**	0.254***	0.177*	0.282***	0.283***
Mattress	0.461	1.018***	-0.113	1.142***	1.203***	0.451	0.857**	0.857**
Senior high	0.363***	0.272**	0.313***		0.331**	0.368**	0.259	0.253
Vocational college	0.365***	0.500***	0.256	0.071	0.301	0.473**	0.148	0.141
Junior college	0.426***	0.345**	0.098	0.381*	0.647***	0.517**	0.466**	0.464**
University	0.373***	0.278**	0.508***	0.375***	0.605***	0.498***	0.374**	0.367*
Graduate	0.185	0.224	0.096	0.486*	0.765***	0.743**	0.707**	0.703**
S_Senior high	0.290***	0.315***	0.111		0.588***	0.16	0.319	0.318
S_Vocational college	0.364***	0.405***	0.01	0.084	0.619***	0.254	0.604***	0.601**
S_Junior college	0.215	0.204	0.044	-0.099	0.403*	-0.1	0.154	0.154
S_University	0.249*	0.304*	0.176	-0.265	0.274	0.149	-0.009	-0.011
S_Graduate	-0.544	-0.123	0.374	-0.113	0.334	-0.087	-0.207	-0.211
Capitallossyes	0.288***	0.024	0.365***	0.807***	0.719***	0.515***	0.310**	0.310**
Riskyes	0.123	-0.12	0.24			1.181***	0.862***	0.861***
Riskalittle	0.285***	0.494***	0.118			0.958***	1.049***	1.050***
Top20cities	-0.148	-0.230**	-0.124	-0.038	-0.043	-0.193	0.253	0.249
Cities_40k_	-0.127	-0.176*	-0.14	-0.062	-0.051	-0.19	0.285*	0.284*
Cities_20k_40k	-0.064	-0.154	-0.244**	-0.089	-0.084	-0.171	0.231	0.235
Full_time	0.089	0.141	-0.231*		-0.098	-0.485***	0.128	0.127
Part_time	0.181	0.233*	-0.028	0.191	0.178	-0.281	0.441**	0.444**
Self_employed	0.114	0.089	-0.092	0.048	0.029	0.065	0.397**	0.395**
Student	-0.309	-0.194	-0.353	-1.305	-1.302	-1.419*	-0.822	-0.835
S_Full_time	0.026	-0.075	0.076	-0.048	-0.046	-0.081	-0.132	-0.13
S_Part_time	0.085	0.13	0.113	-0.073	-0.079	0.119	0.024	0.025
S_Self_employed	0.144	-0.079	0.119	0.027	0.037	-0.257	-0.424*	-0.424*
S_Student	0.18	0.534	0.929	0.846	0.88	1.319	1.119	1.14
No_spouse	0.187	0.066	0.311*	-0.048	0.35	0.12	-0.227	-0.228
H_size3	0.054	0.086	-0.076		-0.002	0.018	0.298**	0.297**
H_size4	-0.021	-0.036	-0.122	-0.272***	-0.260**	-0.250**	0.421**	0.422**
H_size5	-0.182*	-0.067	-0.331***	-0.509***	-0.492***	-0.340**	0.033	0.035
H_size_6_	0.142	0.148	-0.22	-0.257	-0.263	-0.448**	0.540**	0.545***
Hokkaido	-0.122	-0.026	0.107	-0.247	-0.24	0.005	-0.146	-0.171
Tohoku	0.278***	0.231**	0.099	0.155	0.16	0.381***	0.002	-0.026
Hokuriku	0.077	0.122	-0.168	-0.139	-0.138	-0.128	-0.176	-0.205
Chubu	0.159*	0.093	0.018	0.057	0.049	-0.127		-0.076
Kinki	-0.106	-0.017	-0.074	-0.347***	-0.336***	-0.18	-0.196	-0.222
Chugoku	0.01	0.098	0.137	-0.201	-0.23	-0.192	-0.282	-0.309*
Shikoku	0.281*	0.496***	0.113	-0.004	-0.098	-0.313	0.152	0.124
Kyushu	-0.073	0.142	-0.172	-0.384***	-0.396***	-0.091	0.177	0.15
Yeard_2010	0.091	0.058	-0.091	-0.121	-0.056	0.301*	0.670***	0.670***
Yeard_2011	0.098	0.114	-0.303**	-0.068	0.035	0.039	0.637***	0.637***
Yeard_2012	0.056	0.159	-0.049	0.127	0.205	-0.046	0.713***	0.714***
Yeard_2013	0.233**	0.196*	0.101	0.155	0.242	0.138	0.561***	0.564***
Yeard_2014	0.138	0.134	0.098		0.122	0.283*	0.535***	0.536***
Yeard_2015	0.153	0.065	0.108	0.046	0.071	0.045	0.460**	0.459**
Yeard_2016	0.127	0	0.092	-0.013	0.042	0.109	0.407**	0.408**
Mattress_NA	0.247	-0.249	-0.623	-0.206	-0.365	-0.333	-0.239	-0.243
H_size_NA	0.272	0.118	0.532*	0.082	0.177	0.501	0.458	0.451
Income_NA	-0.155	-0.166	-0.186	-0.346**	-0.366**	-0.226	-0.123	-0.124
Dep_Ins_NA	-0.082	0.386	-0.027	0.67	0.679	1.201	0.553	0.555
Choice_advice_NA	-0.709**	-0.991**	-0.542	-0.518	-0.565	-0.195	-1.081*	-1.094*
Debt_NA	0.599	0.339	1.016**	0.745	0.921	-0.065		
Homeowner_NA	0.951**	1.124***	1.255***	0.721	0.646	1.121***	1.170***	1.170***
Age_NA	0.889**	0.214	0.405	0.837	0.911	0.973**	0.221	0.216
Male_NA	0.084	0.526	0.328	1.637**	1.577**	0.107	0.739	0.739
Job_NA	0.185	0.297	0.033	0.365	0.331	0.047	0.603**	0.603**
S_job_NA	-0.111	-0.087	0.027	-0.519**	-0.563**	-0.106	-0.413	-0.414
Education_NA	0.265	0.312	0.255	0.187	0.403	0.075	-0.104	-0.112
S_Education_NA	0.182	-0.047	0.019	-0.169	0.329	0.049	0.243	0.245
Capitallossyes_NA	-0.048	-0.137	0.136	-0.124	-0.06	0.181	-0.576**	-0.575**
Risk_NA	-0.197	-0.399	-0.726**	-0.171	-0.267	-0.541	-0.678	-0.684
Constant	-0.868***	-0.886***	-0.923***	-3.115***	-3.969***	-2.442***	-4.034***	-4.005***
N	10541	6405	4615	4213	4213	3357	3153	3153
pseudoRsq	0.081	0.076	0.072	0.28	0.295	0.173	0.203	0.203
LLR	-4727.101	-3687.664	-2934.352	-2099.883	-2055.481	-1867.353	-1643.709	-1643.568
% ccorrectly classified	0.8087	0.6985	0.6327	0.7588	0.7615	0.7164	0.7396	0.7383
Area under ROC	0.7007	0.6836	0.6756	0.8365	0.8441	0.7674	0.7889	0.789

Note: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends.