Who Needs Guidance from a Financial Adviser? Evidence from Japan

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Abstract Using individual family household data from Japan, we find that households prefer financial institutions, family and friends, and financial experts as actual sources of financial information, and financial institutions, neutral institutions not reflecting the interests of a particular industry, and financial experts as desirable sources of financial information. We find that households choosing actual sources of financial 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 financial 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. However, 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.

Keywords financial guidance, financial advisers, demand for risky assets, financial literacy

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 ever more Japanese households to decide more carefully 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. However, the Japanese flow of funds accounts show that riskier (higher yielding) assets, such as stocks or investment trusts, represent just 16% of all household financial assets as of December 2018. Observing this rapidly changing landscape for retirement savings, the Financial Services Agency (FSA) of Japan has been actively promoting investment in FSA-selected no-load and simple investment trusts, through tax exemptions on dividend and interest earnings on securities. However, it remains for households to choose from the products approved by the FSA, and 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 addition, even if the guidance of independent financial advisers were available, households would still require 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 using the Survey of Household Finances (SHF) conducted by the Central Council for Financial Services Information (CCFSI) from 2010 to 2017, which provides unique information on the actual and desirable sources of financial knowledge and information for Japanese households. We find that households choose financial institutions, family, friends, and financial experts as actual sources, and financial institutions, a neutral institution that does not reflect the interests of a particular industry, and financial experts as desirable sources.

We also find households that choose financial experts as the actual source have better financial knowledge, as measured by knowledge of the Deposit Insurance Corporation of Japan (DICJ), and are more willing to purchase high-yielding financial products entailing the possibility of a capital loss within one to two years. However, 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.

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

2. Related literature

Our analysis relates to extant studies on the relationship between investment decisions, financial knowledge, and financial adviser guidance abroad and in Japan. As for the measure of financial knowledge, we focus on a financial literacy index (FLI) that counts the number of correct answers to a few questions encompassing compound interest rates, inflation, and the real value of financial assets and diversified investments. For a study of the relationships between financial knowledge, financial adviser guidance, and investment decisions abroad, Lusardi and Mitchell (2014) found that financial literary as approximated by the FLI varies by country, reflecting the historical experience of financial markets, with older males and the more educated tending to have better financial knowledge. Inderst and Ottaviani (2012) argued that households should have better financial knowledge when seeking guidance from financial advisers because financial advisers 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) 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, and showed how people choose between actively managing their assets versus delegating the task to financial advisers. Lusardi et al. (2017) reported that financial knowledge alone accounted for 30–40% of retirement wealth inequality using US data. Bianchi (2018) used French data and showed that the most literate households experienced a 40 basis point higher annual return than did the least literate households. 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. Positive associations between stock market participation or asset holdings and the level of financial knowledge are evident in many studies (Georgarakos and Inderst 2014; Guiso and Jappelli 2008; Jappelli and Padula 2015 and 2013; van Rooij et al. 2012 and 2011).

For the relationships between financial knowledge, financial adviser guidance, and investment decisions in Japan, 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. 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. Similarly, Gan et al. (2018) used a survey data set and concluded 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 a traditional index) and applied (knowledge about financial products) financial literacy affecting asset allocation. Lastly, Fujiki (2018a) used the 2016 Financial Literacy Survey (FLS) by the CCFSI and Iwaisako et al. (2018) used the 2017 Japan Household Panel Survey to analyze actual sources of financial knowledge and information, including the use of financial adviser guidance.

This paper contributes to this 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. There are many Japanese studies on the relationships between investment decisions and financial knowledge approximated by the FLI. Many past studies used the 2010 Preference Parameters Study (PPS 2010) by Osaka University's 21st Century Center of Excellence Program (Ito et al. 2017; Kadoya and Khan 2017a; Kadoya and Khan 2019; Kadoya et al. 2017; Sekita 2011; Sekita 2013) and the FLS (Kadoya and Khan 2017b; Sekita et al. 2018; Yoshino et al. 2017). Elsewhere, Clark et al. (2013) used the 2010 National Survey on Work and Family, and Shimizutani and Yamada (2018) the 2009 Japanese Study on Aging and Retirement. In contrast to these studies, we also consider the sources of financial information and knowledge. Unlike Yamori (2014), which only used regional aggregate data from SHF 2010–2013, we employ individual data sets over the period 2010–2017. Finally, Nogata and Takemura (2017), Gan et al. (2018), 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 does not include information on the costs and benefits of financial services, such as the cost of using a financial adviser or the investment returns from financial assets as in Gan et al. (2018).

3. Data

3.1 Summary statistics

We employ family (two or more persons) household data from the SHF over the period 2010–2017 and only since 2010 given the availability of the questions concerning the sources of financial information and knowledge. For each survey year, 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 responded.

The SHF data provide 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 (except 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 10 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 9.8% of households do not hold any financial assets. 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 from the sample those households that refused to respond to the question on 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 *Age* 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. Unfortunately, the SHF does not include questions to construct a standard FLI. Instead, we first use a dummy variable indicating whether a household has a male household head (*Male*) as Lusardi and Mitchell (2014) show that gender relates to the level of financial literacy. We also specify dummy variables for respondents that know, have heard about, or do not know the role of the DICJ (*Know Deposit Insurance*, *Heard of Deposit Insurance*, and *Don't Know Deposit Insurance*, respectively). We believe these to be a good proxy for financial literacy given the following observations. To start, the top panel of Fig. 1 depicts the binned scatter plots for *Asset* and *Age*, and those for *Asset* and *Age* given *Know Deposit Insurance* = 1, *Heard of Deposit Insurance* = 1, or *Don't Know Deposit Insurance* = 1. 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. The top panel of Fig. 1 shows that a household tends to hold more financial assets conditional on age, and better knowledge about the DICJ is associated with a higher amount of financial assets given age. Further, 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, and as the bottom panel of Fig. 1 shows, the imputed FLI using four different matching methods generally yield high values for agents with better knowledge about the DICJ.

We also include dummy variables for households considering the provision of a financial advisory service as one of the conditions for choosing a financial institution (*Choice advice*), 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

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[1]   10,000 yen is about 93 US dollars where 1 US dollar = 108 Japanese yen as of the exchange rate on July 16, 2019.

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 schools 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 preferences for risky assets. The variables are the mean percentage shares of bonds (*Sbond*), stocks (*Sstock*), and investment trusts (*Sinv_trust*) to total outstanding financial assets, which take values of 0.782%, 3.373%, and 2.129% respectively. Note that we assume the outstanding amount of *Sbond*, *Sstock*, and *Sinv_trust* are zero for households that responded that they did not have financial products excluding cash and classified as *Asset_0* = 1. For households with *Asset_0* = 0, the conditional mean percentage shares of *Sbond*, *Sstock*, and *Sinv_trust* are 1.115%, 4.810%, and 3.036%, respectively. We also 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 a spouse. We use dummy variables to indicate household size as measured by the number of household members (*H_sizeN*, N = 2, 3, 4, 5, and 6 and more, where N = 2 is the base case). Lastly, we employ dummy variables to denote the nine regions of residence (*Hokkaido*, *Tohoku*, *Kanto*, *Hokuriku*, *Chubu*, *Kinki*, *Chugoku*, *Shikoku*, and *Kyushu*, with *Kanto* as the base or reference category).

In addition, 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 because they are in paper form. We also specify dummy

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

3.2. Sources of financial knowledge and information

For the actual sources of financial knowledge and information (actual sources hereafter), the SHF asks, "What is your main source of knowledge and information on finance? Choose up to three sources from: financial institutions, hereafter FI, (e.g., financial service representatives and tellers, brochures and advertisements, websites), financial experts, hereafter E, (e.g., books, lectures, seminars, websites, and television programs), a neutral institution that does not reflect the interest of a particular industry, hereafter NI, (e.g., brochures, lectures, seminars, advertisement, and websites), family and friends, hereafter FF, (word-of-mouth communications), school (e.g., classes and lectures), other." The top left panel of Table 2 reports the top-ten frequencies of all possible combinations of choices in descending order. It shows that 31% selected FI exclusively (hereafter Exclusively FI), 16% chose FI and FF, 10% chose Other exclusively (hereafter Exclusively Other), 8% chose FI and E, 7% chose FF exclusively (hereafter Exclusively FF), 5% chose E exclusively (hereafter Exclusively E), 4% chose FI, E, and FF, 3% chose FI and Other, 2% chose E and FF, and 2% chose FI, E, and NI. Adding these figures shows that households prefer choices involving FI (65% in total), FF (30% in total), E (22% in total), and Other (13% in total). In the following analysis, we focus on the top-seven choice frequencies, namely Exclusively FI, FI and FF, Exclusively Other, FI and E, Exclusively FF, Exclusively E, and FI, E, and FF, to include at least 1,000 observations for each choice.

We note three 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, they 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. Third, we may not be able to think up an example of NI given 2% of respondents chose FI, E, and NI. We assume that respondents reply to this question by considering some existing institutions or persons. However, respondents may also reply by choosing some institutions or persons from which they only anticipate obtaining knowledge and information on finance in theory.

Regarding the desirable sources of financial knowledge and information (desirable sources hereafter), 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 top right panel of Table 2 reports the top-ten frequencies of all possible choices of desirable sources of financial information and knowledge. This shows that 21% selected Exclusively FI. The remaining popular choices comprise Don't know (17%), NI exclusively (hereafter Exclusively NI) (10%), FI and E (8%), and FI, E, and NI (7%), E and NI (6%), FI and NI (6%), Exclusively E (5%), FI and FF (4%), and Exclusively FF (2%). Adding these figures suggests that households prefer choices involving FI (46% in total), NI (30% in total), E (27% in total), and Don't know (17%), but not FF (6% in total). Compared with the choice of actual sources, households prefer NI and E to FI and FF. In the following analysis, we focus on the top-nine choice frequencies, namely, 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 so that each choice contains at least 1,000 observations.

Note that a household's actual sources typically differ from its desirable sources. In evidence, the second panel of Table 2 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 second 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 second 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 second right panel). For the remaining choices of actual sources, as the bottom panel of Table 2 shows, the conditional probability that the choice of actual sources and desirable sources were the same took low values, except for the choice of FI, E, and NI.

3.3. Descriptive analysis

Which household characteristics are associated with the choice of E and NI? Table 4 details the pairwise correlation coefficients between key demographic variables and top-seven choices of actual sources (in the upper panel) and the top-nine choices of desirable sources (in the lower panel) that are statistically significant at the 5% level at least. Figures with an asterisk (*) identify correlation coefficients significant at the 1% level.

Regarding the actual sources, the second through fourth columns of the top panel of Table 3 report the results for choices involving E, and the remaining columns report the results for choices not involving E. Choices involving E are positively correlated with financial literacy (*Know Deposit Insurance*), higher educational attainments (*University* or *Graduate*), the experience of capital losses (*Capitallossyes*), the willingness to purchase high-yielding financial products including the possibility of incurring a capital loss within one to two years (hereafter, willing to purchase high-yield financial products, *Riskyes*), and the willingness to purchase such a product to some extent (hereafter, purchases high-yield financial products to some extent, *Riskalittle*). The percentage shares of bonds (*Sbond*), stocks (*Stock*),

and investment trusts (*Sinv_trust*) to total outstanding financial assets are positively associated with the choice of FI and E and Exclusively E (*Sstock* only).

We might expect a nonlinear relationship between the choices involving E and actual sources and *Asset*, *Income*, and *Age*, and thus the first three rows of Fig. 2 provide binned scatter plots. As expected, we identify nonlinear relationships between the choices involving E and actual sources and *Asset* (the first column), *Income* (the second column), and *Age* (the third column). This suggests that the choice of dummy variable by category, rather than the level of *Asset*, *Income*, and *Age* in Table 1, is appropriate. Regarding the desirable sources, the second and third columns, the fourth and fifth columns, and the sixth and seventh columns in the top panel of Table 3 report the results for the choices involving E, those involving E and NI, and those involving NI. As shown, *Asset*, *Income*, *Know Deposit Insurance*, and *Capitallossyes* are positively associated with desirable choices involving E and/or NI.

Riskyes is positively associated with desirable choices involving E, and negatively associated with the choices of FI and NI and Exclusively NI. *Riskalittle* is positively associated with the choices involving E and NI except for Exclusively NI. It is interesting to note that consideration of the provision of a financial advisory service as one of the conditions for choosing a financial institution (hereafter, considers the provision of a financial advisory service, *Choice advice*) is negatively related to Exclusively NI. Regarding the relationship between the desirable choices involving E and NI and *Asset*, *Income*, and *Age*, the fourth to ninth rows of Fig. 2 provide binned scatter plots. These suggest nonlinear relationships between desirable choices involving E and NI and *Asset*, *Income*, and *Age*. However, the figures in the first column suggest that *Asset* tends to correlate positively with desirable choices involving E and NI (except for Exclusively E).

4. Model

In this section, we present 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) and Kim et al. (2016). This is because we believe our main contribution lies in our unique empirical findings.

Suppose household i has a utility function that depends on the expected return and variance of the amount of total financial assets W_i, $E(W_i) - \frac{1}{2}\gamma_i Var(W_i)$, 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, whose return is zero through normalization. Let the household's share of investment in the risky asset be v_i. If the return from the risky asset is $\tilde{r}$, the expected value of the total financial asset will be $W_{0i}E(v_i\tilde{r})$, and v_i^*, the optimal investment ratio for the risky asset is $v_i^* = E(\tilde{r})/\gamma_i W_0 Var(\tilde{r}) v_i^*$, and U_i^*, the level of utility attained at v^*, $U_i^* = E(\tilde{r})^2/2\gamma_i W_0 Var(\tilde{r})$. Note we assume that if $\tilde{r} < 0$, $v_i^* = 0$ because households cannot

short-sell the risky asset.

To inform this decision, household i can use information sources $m = 1, \ldots, M$, which include its own information (FF) and/or the information of others (FI, E, NI, and Other). If a household i uses information source j, it requires a cost of $f_j(k_i)$. This includes the opportunity cost of time learning about financial products and infers expected return $\mathrm{E}(\tilde{r}) = E_{ji}$, expected variance $\mathrm{Var}(\tilde{r}) = V_{ji}$, and the net benefit of using information source j, $(E_{ji}^2/2\gamma_i W_0 V_{ji}) - f_j(k_i)$. We assume that a higher value of k_i is associated with a lower value of $f_j(k_i)$ and $f_j(k_i) > f_{FF}(k_i)$ because the advice of family and friends is easier to understand. Household i will then choose information sources l, yielding the maximum expected utility net of the cost of using that information source, as shown in equation (1).

$$\frac{1}{2\gamma_i W_0 V_{ji}} \left\{ \frac{E_{li}^2}{V_{li}} - \frac{E_{mi}^2}{V_{mi}} \right\} > \{f_l(k_i) - f_m(k_i)\} \text{ for all } m \neq l. \tag{1}$$

Equation (1) yields the following predictions. First, suppose that $\mathrm{d}(f_j(k_i) - f_{FF}(k_i))/\mathrm{d}k_i$ is negative and the cost of using the information of others relative to FF falls as financial literacy increases. Then, 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 FF. Second, a household with higher risk tolerance, in the sense that γ_i has a smaller value, and a larger amount of financial assets, tends to choose information sources other than FF 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. However, the relation between the risky asset investment ratio and the choice of information sources is unclear. For example, among households investing in the risky asset, those with better financial knowledge will seek the guidance of E or NI, whereas households with poor financial knowledge but a lower γ_i will also invest in the risky asset based on information from FF or Other.

For the purpose of the empirical analysis, suppose the net benefit of using information source m by household i, $(E_{mi}^2/2\gamma_i W_0 V_{mi}) - f_m(k_i)$, is approximated by a linear function $X_{mi}\delta_m + v_{mi}$, $m = 1,2,3,4,\ldots M$. Here, X_{mi} is a vector of observable household characteristics related to the choice of the m-th information source explained in Section 3.1, δ_m is a vector of parameters and v_{mi} are unobservable preferences for information source m of a household i.

If household i chooses information source l instead of m,

$$\{X_{li}\delta_l - X_{mi}\delta_m\} > \{v_{mi} - v_{li}\} \text{ for all } m \neq l. \tag{2}$$

Equation (2) states that the difference in the net benefit of using information source l over m predicted by the observable household characteristics should outweigh the negative effect of the difference in the unobservable preference for information source l over m. For example, consider the choice of FI and E (choice l) and Exclusively FF (choice m). Even if the observable variables suggest that household i should choose FI and E over Exclusively FF (say, it has a large amount of financial assets and an older university graduate household head), and $X_{FIandEi}\delta_{FIandE} - X_{\text{ExclusivelyFF}i}\delta_{\text{ExclusivelyFF}}$ takes a large positive value, the household chooses Exclusively FF if it very much likes Exclusively FF and dislikes FI and E (say, it dislikes financial institutions and experts given its experience). In this case, $v_{FIandEi}$ will be negative

and $v_{\text{Exclusively}FFi}$ large and positive, and thus it is possible $X_{FIandEi}\delta_{lFIandE} - X_{\text{Exclusively}FFi}\delta_{\text{Exclusively}FF} < v_{\text{Exclusively}FFi} - v_{FIi}$. 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,

$$Source_i = X_{mi}\delta_m + v_{mi}, \ m = 2,3,4,\dots M, \tag{3}$$

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

We estimate equation (3) in Section 5 using three $Source_i$ variables: actual sources in Section 5.1, desirable sources in Section 5.2, and desirable sources conditional on the choice of Exclusively FI as the actual source 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 the cost of making investment decisions, the expected return from household financial assets, and the expected variance of the returns of household financial assets using the desirable information source j.

5. Regression results

5.1. Actual sources

In this subsection, we examine which household characteristics are associated with the top-seven actual sources. We run the multinomial logit regressions specified as equation (3) using the top-seven actual choices for variable $Source_i$, and the variables listed in Table 1 for X_{mi}, taking Exclusively FF as the base case. We have 22,204 observations and each choice involves more than 1,000 observations, yielding sufficient degrees of freedom to estimate our multinomial logit model given it includes some hundred explanatory variables. Table 4 reports the estimates of the marginal effects of the explanatory variables on the probability of each choice of actual sources, computed from the parameter estimates of equation (3), reported in the Appendix. While we do not report the standard errors of the marginal effects robust to heteroscedasticity, we do include superscripts *, **, *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively. Note that when the explanatory variables are dummy variables that take values of zero or one, the marginal effects in Table 4 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.

Table 4 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 excluding the choice of Exclusively E.   The probability will also be higher if it is willing to purchase financial products or 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 4 show that households selecting actual sources involving E have better financial knowledge and are willing to purchase high-yield financial products.   This supports the predictions of our model and is consistent with the finding by von Gaudecker (2015) that 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 making the choice of FI and E in Table 4 is associated with greater financial assets, an older household head, 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 or to some extent.   These results are also consistent with the findings for the choice of FI and E in Table 3.

5.2. Desirable sources

In this subsection, we examine which household characteristics are associated with the top-nine desirable sources.   Table 5 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 for variable $Source_i$, taking Don't know as the base case.   The parameter estimates of equation (3) are in the Appendix.   We have 23,263 observations and each choice has more than 1,000 observations.   Table 5 details 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 choices of Exclusively E and 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 consider the provision of a financial advisory service 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 are consistent with the results in the lower panel of Table 3 and 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

In this subsection, we examine the demographic background of households whose actual and desirable sources do not correspond. We focus on households that choose Exclusively FI as the actual choices because Exclusively FI is the most popular choice of actual source. Table 4 shows that households that choose Exclusively FI are likely to have greater financial assets, with an older household head, do not know about the role of the DICJ, and are not willing to purchase high-yield financial products even to some extent. The middle left panel of Table 2 shows that among the households that choose Exclusively FI as the actual source, 57% do not choose Exclusively FI as the desirable source.

Table 6 reports the estimated coefficients and marginal effects obtained from the multinomial logit model specified as equation (3) for the choice of the top-eight desirable sources using the 8,012 observations that chose Exclusively FI as the actual source. We use the desirable choices of Exclusively FI, Don't know, Exclusively NI, F, I, and E, FI and NI, Exclusively E, FI, E, and NI, E and NI for variable $Source_i$, taking Exclusively FI as the base case, shown in the second left panel of Table 2. The top-eight conditional desirable choices include at least 300 observations for each choice. The parameter estimates of equation (3) are in the Appendix. Table 6 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). In addition, 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 theoretical prediction that households intending to seek guidance from experts tend to have better financial knowledge. It is especially interesting that conditional on the choice of financial institutions as the actual source, we do not obtain clear results for the choice of E but do for the choice of NI. Second, households that purchase high-yield financial products or 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 that are willing to purchase high-yield financial products tend to have a greater probability of selecting Exclusively FI for both actual and desirable sources. Recall Table 4 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 willing to purchase high-yield financial products or to some extent also have a higher probability of choosing Exclusively FI for the desirable source.

5.4. Risky asset holdings and the choice involving E as actual sources

How do households with better financial knowledge, that are likely to choose E, and invest more in risky assets, stocks, and investment trusts compare with households that choose the actual sources of FF? To respond, we conduct propensity score (PS) matching to examine the relationship between investments

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decisions governing financial assets and the actual source to deal with the sample selection bias arising from equation (2).   We compute the average treatment effects (ATEs) and the average treatment effects of the treated (ATETs) of the choice of information sources on the ratio of stocks and investment trusts to total financial assets by PS matching and inverse probability weighting (IPW) using the psmatch and ipw commands in Stata 15.   We first estimate logit treatment models (4) to compute the PSs,

$$D_{mi} = X_{mi}\delta_m + \varepsilon_{mi}, \tag{4}$$

where D_{mi} is a dummy variable that takes a value of one for the choice of information source m and zero for other choices, and ε is a random variable.   We select the top-seven frequencies of actual choices for the choices of m; Exclusively FI, FI and FF, Exclusively Other, FI and E, Exclusively FF, Exclusively E, and FI, E, and FF, taking Exclusively FF for the base case.   We use the variables listed in Table 1 for X_{mi} except for *Sbond*, *Sstock*, *Sinv_trust*, and *Sbond_NA*.

Table 7 reports the ATEs and ATETs 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 estimated by PS or IPW.   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 (4), which suggest these logit treatment models reasonably fit the data.   The parameter estimates of equation (4) are in the Appendix.   Table 7 provides the following results.

First, both the ATEs and ATETs for the ratios of stocks and investment trusts (IPW) to total financial assets for choosing FI and E are significantly positive.   Second, both the ATE and ATET 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 and four ATETs are not statistically significant for choosing FI, E, and FF.   Consequently, it is unclear whether a household choosing E has a greater share of stocks and investment trusts among its total financial assets than a household choosing Exclusively FF.

We make the following observations concerning the choices unrelated to E.   First, both the ATEs and ATETs for the ratio of investment trusts to total financial assets for choosing Exclusively FI are significantly positive.   This may be surprising because in Table 4 we noted that households choosing Exclusively FI were unwilling to purchase high-yield financial products or to some extent and do not know about the role of the DICJ, but the results are in comparison with households choosing Exclusively FF. Second, the choice of Exclusively Other leads to significantly positive ATEs and ATETs for the ratio of stocks compared with households choosing Exclusively FF.   This is consistent with the finding in Table 3 that households with higher values of *Sstock* tend to choose Exclusively Other.   Note that Table 4 shows that households choosing Exclusively Other tend to be male, not willing to purchase high-yield financial products to some extent, do not consider the provision of a financial advisory service as one of the conditions for choosing a financial institution, and have not heard about the role of the DICJ.

6. Concluding remarks and policy implications

Using the SHF data from 2010 to 2017, we found the following.   First, households prefer FI, FF, and E as actual sources of financial information, and FI, E, and NI as desirable sources of financial information. Second, households choosing actual sources of E have better financial knowledge, as measured by knowledge of the DICJ, and are willing to purchase high-yield financial products.   Third, households choosing desirable sources involving E and NI also have better financial knowledge.   Fourth, conditional on the choice of financial institutions as the actual source, among households whose actual sources differ from their desirable sources, households that regard NI as a more desirable source tend to have better financial knowledge.   Finally, it is unclear whether households that chose the actual source of E have higher ratios of stock and investment trusts to financial assets than those selecting the actual source of FF.

Note that we do not provide any causal evidence here.   However, our results suggest that an increase in financial knowledge may induce more Japanese households to seek financial adviser guidance. Our results also suggest that we need to match E and/or NI depending on household characteristics.   Table 5 shows that if a household is willing to purchase high-yield financial products, it 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 E.

However, a household that 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 NI.   In Japan, NI could be the CCFSI because, during the sample period of our data set, no industry organization of independent financial advisers existed in Japan.   We may not consider the JAFP as a neutral institution that does not reflect the interest of a particular industry because many financial institutions have joined the JAFP as corporate members to support its activities.   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 NI.

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Fig. 1 Binned scatter plot of age and asset and average imputed value of financial literacy index (FLI) by knowledge of deposit insurance
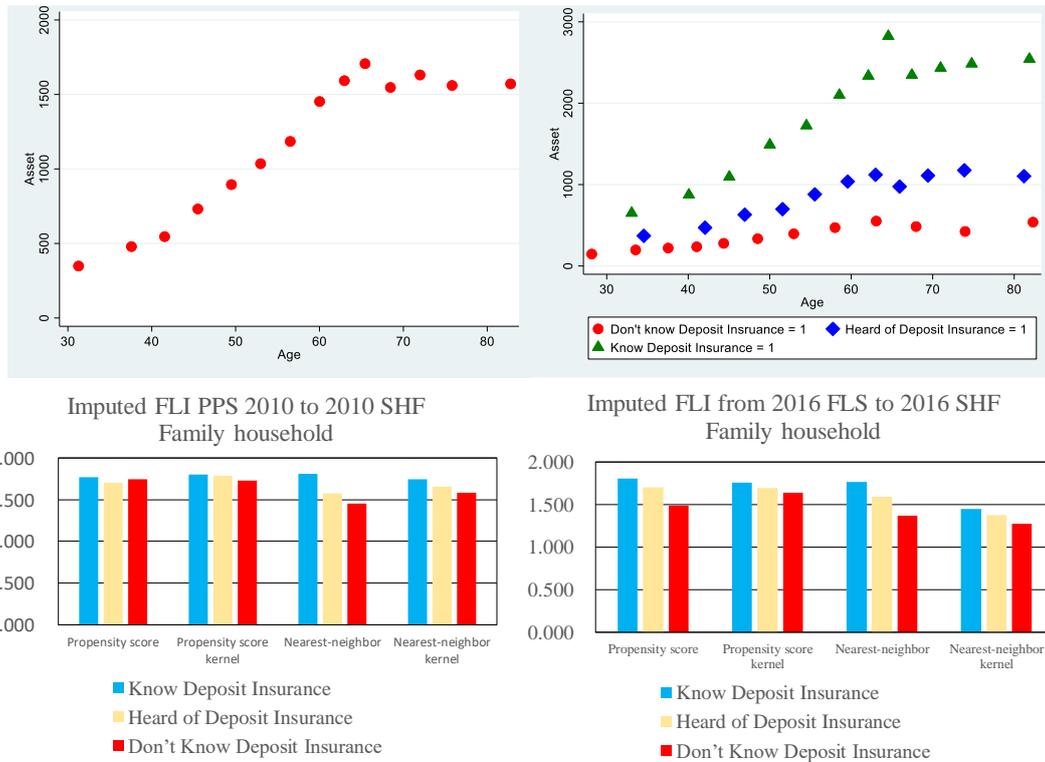
Notes: We use the Stata code for binsreg by Cattaneo, Crump, Farrell, and Feng (2019) for the two graphs in the top panel. Assets are in units of 10,000 yen. The two bottom panels plot the average imputed value of FLI according to the value of Deposit Insurance using four imputation methods: propensity-score matching, propensity-score matching with the Epanechnikov kernel, nearest-neighbor matching, and Mahalanobis matching with the Epanechnikov kernel from Fujiki (2018b).

Fig. 2 Binned scatter plot of choice of actual and desirable sources of information involving E and NI with Asset, Income, and Age
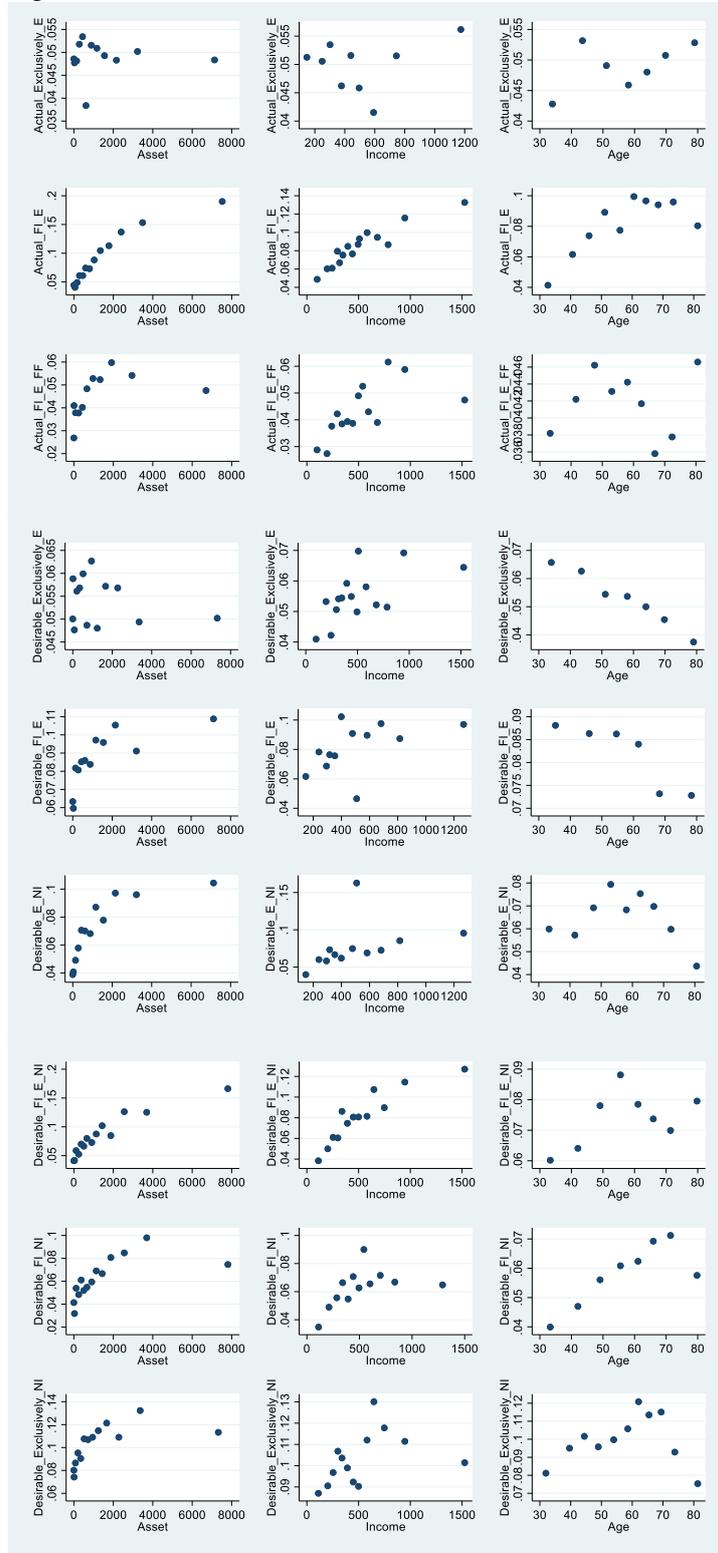
Notes: We use the Stata code for binsreg by Cattaneo, Crump, Farrell, and Feng (2019). Income and Assets are in units of 10,000 yen.

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 Actual and desirable sources of financial information and knowledge

Actual sources		Desirable sources	
Choice	Frequency	Choice	Frequency
Exclusively FI	0.311	Exclusively FI	0.207
FI and FF	0.160	Don't know	0.173
Exclusively Other	0.095	Exclusively NI	0.099
FI and E	0.080	FI and E	0.082
Exclusively FF	0.074	FI, E and NI	0.074
Exclusively E	0.049	E and NI	0.064
FI, E and FF	0.041	FI and NI	0.058
FI and Other	0.030	Exclusively E	0.053
E and FF	0.022	FI and FF	0.038
FI, E and NI	0.022	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 3 Correlation coefficients of actual and desirable sources of financial information and knowledge and demographic variables statistically significant at 5% level

Panel 1: Actual sources

	Exclusively E	FI and E	FI, E and FF	Exclusively FI	Exclusively Other	FI and FF	Exclusively FF
Income		0.0605*	0.0227*	-0.0240*	-0.0352*		-0.0444*
Asset		0.1249*	0.0213*	-0.0162*	-0.0609*	-0.0344*	-0.0846*
Age		0.0516*		0.0168*		-0.0664*	-0.0622*
Male		0.0224*			-0.0122		-0.0322*
Know Deposit Insurance	0.0508*	0.1292*	0.0299*	-0.0457*	-0.0369*	-0.0756*	-0.1213*
Heard of Deposit Insurance	-0.0152	-0.0519*		0.0362*	-0.0208*	0.0574*	0.0199*
Choice_advice	-0.0189*	0.0580*	0.0443*	-0.0128	-0.0480*		-0.0309*
Homeowner		0.0535*	0.0121	0.0293*	-0.0502*	-0.0139	-0.0585*
Debt		-0.0300*				0.0205*	
Mattress		0.0227*		-0.0208*	-0.0219*		-0.0218*
Senior high		-0.0167*		0.0366*		0.0176*	
Vocational college		-0.0262*				0.0352*	
Junior college					-0.0190*		
University		0.0553*	0.0183*	-0.0279*		-0.0197*	-0.0439*
Graduate	0.0190*	0.0252*		-0.0210*	-0.0166*		-0.0138
S_Senior high				0.0228*	-0.0137		-0.0208*
S_Vocational college			0.0121		-0.0127	0.0219*	
S_Junior college		0.0239*			-0.0172*		
S_University	0.0136	0.0160*		-0.0220*			-0.0223*
S_Graduate				-0.0181*			
Sbond		0.0586*		-0.0165*	-0.0156*	-0.0276*	-0.0305*
Sstock	0.0414*	0.0713*		-0.0537*		-0.0520*	-0.0475*
Sinv_trust		0.0921*			-0.0377*	-0.0410*	-0.0470*
Capitallossyes	0.0333*	0.1265*	0.0311*	-0.0348*	-0.0522*	-0.0681*	-0.0934*
Riskyes	0.0310*	0.0280*	0.014	-0.0350*	-0.0125	-0.0342*	-0.0238*
Riskalittle	0.0267*	0.1262*	0.0368*	-0.0605*	-0.0618*	-0.0317*	-0.0688*

Panel 2: Desirable sources

	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	0.0182*	0.0296*	0.0478*	0.0634*	0.0232*	0.0141	-0.0398*	-0.0174*	-0.0894*
Asset		0.0382*	0.0669*	0.1048*	0.0398*	0.0337*	-0.0534*	-0.0282*	-0.1156*
Age	-0.0378*	-0.0188*		0.0176*	0.0344*		0.0132	0.0137	
Male			0.0135	0.0235*	0.0331*	0.0123		-0.0134	-0.0535*
Know Deposit Insurance		0.0270*	0.0734*	0.0980*	0.0580*	0.0717*	-0.0752*	-0.0517*	-0.1555*
Heard of Deposit Insurance				-0.0274*			0.0277*	0.0171*	0.0257*
Choice_advice		0.0622*	0.0127	0.0423*		-0.0329*			-0.0613*
Homeowner	-0.0166*	0.0151	0.0271*	0.0370*	0.0379*	0.0168*	0.0155		-0.0608*
Debt	0.0201*	0.0149		-0.0162*					
Mattress		0.0154			0.0128		-0.0244*		-0.0343*
Senior high			-0.0214*	-0.0270*		-0.012	0.0470*	0.0119	0.0183*
Vocational college	0.0145								
Junior college						0.0253*			-0.0221*
University			0.0638*	0.0664*	0.0277*	0.0398*	-0.0681*	-0.0303*	-0.0767*
Graduate			0.0255*	0.0448*		0.0154	-0.0373*	-0.0190*	-0.0339*
S_Senior high		0.0143	-0.0168*		0.0222*	-0.0182*	0.0421*		
S_Vocational college		0.0143			-0.0125				
S_Junior college		0.0174*	0.0358*	0.0304*		0.0213*	-0.0314*	-0.0131	-0.0415*
S_University		-0.0123	0.0510*	0.0559*	0.0179*	0.0357*	-0.0563*	-0.0319*	-0.0510*
S_Graduate				0.014		0.0157*	-0.0206*		
Sbond			0.0164*	0.0660*		0.0267*	-0.0391*	-0.0165*	-0.0360*
Sstock	0.0209*	0.0146	0.0400*	0.0589*	0.0195*	0.0293*	-0.0618*	-0.0316*	-0.0644*
Sinv_trust	0.0138	0.0478*	0.0354*	0.0485*			-0.0280*	-0.0303*	-0.0610*
Capitallossyes	0.0200*	0.0434*	0.0693*	0.1029*	0.0288*	0.0333*	-0.0804*	-0.0421*	-0.1206*
Riskyes	0.014	0.0369*	0.0142	0.0188*	-0.0139	-0.0206*	-0.0186*		-0.0436*
Riskalittle	0.0204*	0.0378*	0.0647*	0.0930*	0.0255*		-0.0735*	-0.0244*	-0.1139*

Notes: FI–financial institutions, E–experts, NI–neutral institutions, FF–family and friends.   * denotes statistically significant at 1% level.

Table 4 Marginal effects of the choice of actual sources

	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	0.001	-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 shown.

Table 5 Marginal effects of the choice of desirable sources

	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 shown.

Table 6 Marginal effects of a discrepancy between actual and desirable sources

	Marginal effects from multinomial logit model for choice of desirable sources given 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 for households not reporting some variables, for job situation, household size, area of residence, and survey year not shown.

Table 7 Average treatment effects and average treatment effects of treated: 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
ATET on Sstock(PS)	0.176	0.582	-1.026	-0.359	-0.068	1.328***
ATET on Sstock (IPW)	1.325*	1.431*	-0.419	-0.061	-0.433	1.373***
ATET on Sinv_trust (PS)	0.24	1.278	-0.346	0.978**	0.116	0.08
ATET on Sinv_trust (IPW)	-0.06	2.238**	0.211	0.835***	0.209	-0.05
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.
The goodness of fit statistics are results from PS for the choices of FI and E, FI, E, and FF.

Appendix

This appendix explains the parameter estimates for the multinomial logit models used to derive the marginal effects in Tables 4 through 6 and the parameter estimates for the logit treatment model, equation (4), to derive the treatment effects in Table 7. 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 4. 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 top left panel of Table 2 on the independent variables listed in Table 1, as per equation (3). 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 5. 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 top right panel of Table 2. 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 6. 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 second panel of Table 2. 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 (4), used to compute propensity scores in Table 7. 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*	-0.12	-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	-0.023	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**	0.177*	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***	0.807***	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	-0.28	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	0.075		-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 (4)

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	0.065	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–famil

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