

Source of Information and Selection of Financial Instruments

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Introduction

Do financial professionals affect how a household allocates money between financial instruments? If so, in what ways? While there is evidence of a correlation between the use of financial advice and improved financial outcomes, it is difficult to establish direction of influence or causality (Kramer, 2012). This study investigates how source of financial information effects household portfolio allocation decisions using methods that explicitly allow for the endogeneity of seeking financial information and investment decisions. Sources of information investigated include financial planner, broker, reading magazine/newspapers/books, internet/online services and family and friends.

The main contributions of this study are two-fold. First, this study analyzes the value of various source of information on portfolio decision addressing the potential problems of self-selection and endogeneity. Second, a more comprehensive measurement of allocation of resources between financial instruments is used. Results of Survey of Consumer Finances (SCF) will provide the empirical evidence of value of information source on portfolio decisions.

Method

Dataset and sample selection

This study used a pooled dataset from the 2010 and 2013 SCF sponsored by the Federal Reserve Board. The SCF dataset has been collected triennially since 1983, and collects a reliable and detailed information on various aspects of a household's financial status including assets and liabilities. In addition, the SCF provides various household demographic and attitudinal characteristics. All of the households included in the 2010 and 2013 SCF (N = 12,497) were used for this study.

Matching on the propensity score

Causal effects of information on households' financial decisions may not be easily identified, as there may be observable variables that influence both households' financial decisions or outcomes and the usage of information source (Greene, 2012). This potential endogeneity problem can be reduced if researchers estimate the counterfactual outcomes of subjects by using the outcomes from a subsample of "similar" subjects from subjects in the "treatment" group (Roberts & Whited, 2012). Rosenbaum and Rubin (1983) suggest the use of the propensity score method to identify the appropriate subgroup that can serve as the matched control group for the treatment sample.

To address this potential endogeneity concern, propensity scores are estimated using a series of probit models where the dependent variables are whether or not households use different sources of financial information. As covariates, a rich set of variables that potentially affect treatment assignment and households' financial outcomes are included. These factors include age and age-squared of the household's head, race/ethnicity (Whites, Black, Hispanic, Other), education (less than high school, high school, some college, bachelor's degree, graduate degree), health status (poor, fair, good, excellent), logarithm of income, inverse hyperbolic sine of net worth, household type (married, partnered, single female, single male), employment status (employed, self-employed, retired, not working), willingness to take risk (no risk, average, above average, substantial), planning horizon (next few months, next year, next few years, next 5-10 years, longer than 10 years), presence of child aged less than 18 in the household, an indicator measuring whether or not household make any donation or engage in any volunteering activity, and a survey year dummy.

Based on the propensity scores and covariates, a different (independent) set of control-treatment groups are created depending upon the source of information. A one-to-one matching method is utilized, which generates a control group that is matched to the specific treatment sample. Restricting the analysis to the treated and matched sample only, it is expected that households' investment outcomes are no longer related to the probability of being assigned to the treatment group (those who are exposed to information). Table 1 presents the number of households categorized as the treatment group for each source of information. After weighting, almost equivalent numbers of households are matched to each treatment group in order to obtain the control group.

Measurement of Variables

Our main explanatory variables (treatments) are exposure to different source of information for decisions to save or invest. The SCF asks what sources of information the respondents (and their spouses) use to make decisions about saving and investments. Respondents are allowed to give multiple answers to the question (i.e., not mutually exclusive). Among different sources of information, we are interested in information acquired from five different sources; from consulting financial planners and brokers, from reading magazine/newspapers/books, internet/online services and family and friends (friends, relatives, self, spouses or partners). Our empirical model is estimated separately for each sources of information used.

The measure of asset allocation for each household is calculated by using the following equation:

$$1 - \sum_i^{10} \left(\frac{\text{Dollars in financial instrument}_i}{\text{Total dollars in financial asset}} \right)^2$$

where i denotes financial instruments. The financial instruments as include ten different financial assets, specifically liquid assets, CDs, mutual funds, stocks, bonds, retirement accounts, savings bonds, cash value of whole life insurance, other managed assets, and other financial assets. If households invest all entire portfolios in stocks (a financial instrument), the value of the measure for allocation is equal to zero. Households that do not hold any financial asset are also coded as zero. The advantage of using this measure is that it takes into account two main dimensions of allocation, that is, the number of different financial instruments and the degree of concentration of the investments in each instrument.

Results

Descriptive results

Table 2 presents descriptive statistics of portfolio allocation by information source. The unmatched sample includes everyone in the survey. The matched sample consists of the control and treatment groups selected using the propensity score approach.

With both the matched and unmatched sample, statistically significant differences in portfolio allocation between households that use each source of information and those who do not. Specifically, households that consult a financial planner, a broker, print media, and the internet have more diversified portfolios. Differences in portfolio allocation are detected in the unmatched sample based on consulting family and friends, but no difference is noted if the control sample is restricted to the households matched based on the propensity scores.

The mean differences in the measure of allocation between households that use each source of information and household that do not are presented in Figure 1. Controlling for households' probability to seek information for their financial decisions, the effect size becomes smaller. These results indicate that if researchers fail to take into account endogeneity between exposure to information and financial outcomes, the effect of information on investment performances may be overestimated or even incorrectly estimated.

Multivariate results

Table 3 presents evidence on whether households respond systematically differently to information when they invest in financial assets using propensity score matching. Results indicate that receiving information from financial planners, brokers, print media, and the internet increases household allocation controlling for other household characteristics.

The magnitude of the coefficients reported in Table 3 can best be interpreted by comparing them with the standard deviation of the diversification measure, which is roughly 0.235 in all subsamples. Receiving information from financial planners, brokers, the print media and the internet lead to statistically significant increases in allocation equal to about 10%, 16%, 10% and 5% of a standard deviation, respectively. Similarly, consider a household holding a portfolio with an allocation measure equal to the mean value in the financial planner's matched control group, i.e., 0.2817. This portfolio will typically contain 3 assets and will be relatively under-diversified, with approximately 84% in one main investment and the remaining 16% split between the other two assets (in order to yield the mean of the diversification measure of 0.2817). The estimated coefficient of the use of financial planners in Table 3 is 0.0231. For the portfolio described above, this effect could be interpreted as moving about 1.6% of the household's financial wealth from the largest investment to the smaller ones. Alternatively, this effect could indicate adding a fourth asset to the portfolio and allocating 1.4% of the total financial wealth to it.

Discussion

Using propensity score matching, this study provides significant evidence of the effect of financial information, as well as the use of financial planners, on improved household allocation decisions. Notably, this study uses an allocation measure that combines two important dimensions of diversification; the number of financial instruments held and the concentration of the household's portfolio in each financial instrument. Equally important, results demonstrate the importance of using methodology that implicitly accounts for potential endogeneity between exposure to information and financial outcomes, as the effect of information on investment performances may otherwise be incorrectly estimated.

References

- Greene, W. H. (2012). *Econometric analysis, 7th edition*. Upper Saddle River, NJ: Pearson Education.
- Kramer, M. (2012). Investment advice and individual investor portfolio performance. *Financial Management, 41*(2), 395-428
- Marsden, M., Zick, C. D., & Mayer, R. N. (2011). The value of seeking financial advice. *Journal of Family and Economic Issues, 32*(4), 624-643.
- Roberts, M. R., & Whited, T. M. (2012, October 5). *Endogeneity in empirical corporate finance*. Retrieved from Simon School Working Paper No. FR 11-29 : <http://ssrn.com/abstract=1748604> or <http://dx.doi.org/10.2139/ssrn.1748604>
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41-55.

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Table 1. Descriptive results of information source

Information source ^a	N ^b	% in total sample ^c
Financial planner	3,634	24.89
Broker	1,600	8.61
Print media	1,916	12.74
Internet	4,592	34.67
Personal contacts	5,581	44.97
Total N	12,497	

^a Information sources are not mutually exclusive. ^b The number of households in each category is sample weighted. ^c A percentage of households that use each source of information in the recent two SCF waves for savings and investing is population weighted.

Table 2. Diversification by information source (unmatched vs. matched)

	Unmatched			Matched		
	Controls	Treated	p-value	Controls	Treated	p-value
Financial planner	0.1997	0.3065	0.000	0.2817	0.3065	0.000
Broker	0.2147	0.3489	0.000	0.3142	0.3489	0.000
Print media	0.2177	0.2852	0.000	0.2656	0.2849	0.019
Internet	0.2020	0.2720	0.000	0.2392	0.2718	0.000
Family & friend	0.2182	0.2362	0.034	0.2285	0.2361	0.942

Note. All means are population weighted. Significance tests are based on the RII procedure.

Table 3. Effects of information on diversification of financial assets

	Financial planner	Broker	Print media	Internet	Family/friends
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Diversification	0.0231 (0.0053)***	0.0386 (0.0092)***	0.0249 (0.0082)**	0.0123 (0.0044)**	0.0014 (0.0040)
No financial assets ^a	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes
N	7,269	3,200	3,833	9,185	11,163

Note. Control variables are age and age-squared of head, race/ethnicity, education, health status, employment status, household type, household income, subjective current income, expected future income, risk tolerance, presence of child<18, planning horizon, homeownership, availability of emergency funds, and a year dummy. The results are based on OSL regression analyses using the RII procedure. ^aA dummy variable indicating that households do not own any financial asset is included.

Figure 1. Mean differences in the measure of diversification between the control and treatment groups

