Does it Help to be Concerned? Exploring the Association Between Worry About Investment Fraud and Investing Behavior

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Objective

Investment fraud, which is a specific type of financial fraud, is a problem in the United States and throughout the world. While estimates vary due to the difficulty in assessing prevalence and incidence rates, a conservative estimate is that about 10% of investors will be victimized by investment fraud at some point in their lives (Kieffer & Mottola, 2017). Losing money in a financial fraud, more generally, can impact the victims' economic, psychological, and physical wellbeing. For example, using information on thousands of Ponzi scheme participants combined with register data on the Finnish population, researchers found that victims earned 5% less income after the scheme collapsed (Knüpfer et al., 2021). Further, a study by researchers at Rush University Medical Center found that victims of fraud had higher blood pressure levels after the fraud than before the fraud (Lamar et al., 2022), and a 2015 study found that fraud victimization was associated with several non-financial outcomes, including stress, anxiety, sleep problems, and depression (FINRA Foundation, 2015). Despite the prevalence and negative outcomes associated with fraud, few studies have examined whether worrying about losing money in an investment fraud is associated with positive or negative financial behaviors. Using data from the FINRA Foundation's 2021 National Financial Capability Study Investor Survey, we explore if worrying about investment fraud varies by investor characteristics, and if worrying about investment fraud is associated with certain investing behaviors. Findings from this study can provide helpful information for policy makers, financial advisors, and financial educators seeking to protect investors from investment fraud, improve investment decision making, and increase consumer wellbeing.

Significance

Research on investment fraud has explored the demographic, socioeconomic, psychological, and behavioral factors associated with investment fraud victimization. Shadel and Pak (2017) found that being older, male, and married was often linked to losing money in an investment fraud. Using data from the 2016 Health and Retirement Study (HRS), DeLiema et al. (2020a) found greater non-housing wealth was associated with investment fraud victimization. Further, using data from a telephone survey, DeLiema et al. (2020b) found that victims tended to be older, male, and materialistic. They also found that victims tended to trade frequently and were likely to purchase investments sold through unsolicited calls, emails, television advertisements, or "free lunch" seminars. Lokanan (2014), using data from Canada's Investment Dealers Association's tribunal cases decided between 1984 and 2008, showed victims often borrowed money and opened margin accounts to invest. Lokanan and Liu (2020) found that investors aged 60 and older were more likely to lose money in various types of financial crimes. Also, being retired and having limited investment knowledge increased investors' vulnerability to investment fraud. However, data from an online survey, Mueller et al. (2020) found a different relationship between age and fraud susceptibility—that is, younger respondents were more susceptible to investment fraud than older respondents. Lee et al. (2019), with data from HRS, found that respondents who were male, better educated, single, younger, and possessing greater net worth disproportionately reported being defrauded in the past five years.

The research to date on investment fraud has helped researchers and policy makers better understand the groups that are more vulnerable to losing money in an investment fraud; however, few studies have examined whether worrying about losing money in an investment fraud is related to investment behavior. Yet, understanding this relationship is important because excessive worry about

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investment fraud could deter people from taking reasonable investment risks and benefiting from the capital markets. Conversely, a lack of worry about investing fraud could lead to overly risky investment behaviors. This proposed study builds on the limited research that explored this topic. For example, Lin et al. (2016) found the percentage of respondents who reported that they worried about losing money in an investment fraud decreased from 40% in 2015 to 34% in 2018. It decreased further to 31% in 2021 (Lin et al., 2022). Lin et al. (2016) found that younger investors were more likely to be concerned about investment fraud than older investors. Further, investors who were willing to take above average or higher levels of investment risk worried about investment fraud more than those willing to take average or lower levels of risk (49% vs. 34%). Brenner and Meyll (2020) showed that investors worried about investment fraud were more likely to choose robo-advisors instead of human advisors. However, a thorough examination of the relationship between worrying about investment fraud and financial behavior has yet to be conducted.

In this exploratory study, we examine two research questions. First, does the extent to which investors worry about investment fraud vary by investor characteristics? Second, is worrying about investment fraud associated with investing behaviors?

Methodology

Data

The data for this study is from the Investor Survey, a portion of the FINRA Foundation's National Financial Capability Study (NFCS) (Mottola & Kieffer, 2017; Mottola & Valdes, 2022). The respondents in the Investor Survey of the NFCS are adults in the U.S. who own taxable investment accounts. The FINRA Foundation started to conduct the Investor Survey in 2015 (Lin et al., 2016), and conducted follow-up studies in 2018 (Lin et al., 2019) and 2021 (Lin et al., 2022). The 2021 Investor data was used in this study and the original dataset had 2,824 observations. After removing observations with "Don't know" or "Refuse to answer" responses in key variables focused in this study, the final sample size was 2,473.

Variables

Focal Variable

Worry about investment fraud (WAIF) was measured by asking respondents "How strongly do you agree or disagree with the following statement? I am worried about losing money due to investment fraud: 1-strongly disagree, 7-strongly agree." Respondents who answered "don't know" or "refuse to say" were excluded in the analyses.

Investing Behavior (IB)

Nine binary variables were used to measure investing behavior. They include the following: Trading on margin, trading frequently (11 or more times per year), investing in options, investing in meme stocks, investing in cryptocurrencies, authorizing a trusted contact to the investment account, checking the background of a financial advisor, using professional investment advice, and using a financial advisor to execute trades.

Investor Characteristics

Investor characteristic variables include gender, age, race, education, income, year of investment experience, investment size (in dollars), risk tolerance, confidence that the markets are effectively regulated to protect investors, objective (measured) investment knowledge (the sum of correct answers of 11 investment questions), subjective (self-reported) investment knowledge, and comfort making investment decisions. Note that comfort making investment decisions is a variable similar to perceived financial capability in the research literature. Objective investing knowledge, subjective investing knowledge, and comfort making investment decisions can be considered indicators of financial capability in the context of investment (Xiao et al., 2022). More details about variable specifications are available upon request.

Analytic Approach

An OLS regression was used to answer Question 1:

WAIF=f(investor characteristics)

Where, WAIF=worry about investment fraud. See the above "Variables" section for the list of investor characteristic variables.

A set of binary logistic regressions was used to answer Question 2:

IB=f(WAIF, investor characteristics)

Where IB=investing behavior. See the above "Variables" section for the list of Investing behavior variables.

Results

Descriptive Statistics of the Sample

The average score of worry about investment fraud was 3.8 out of 7. Among the respondents, 67% used professional investment advice, 45% used a financial advisor, 39% authorized a trusted contact for one of their investment accounts, and 20% checked an advisor's background. In addition, 17% traded frequently (11 times or more last year) and 12% traded on margin. In terms of high-risk investment products, 29% invested in cryptocurrency, 21% bought or sold options, and 20% invested in meme type stocks. Average scores for comfort making investment decisions, objective investment knowledge, subjective investment knowledge, and confidence in investor protection were 7.0 (out of 10), 5.0 (out of 11), 4.9 (out of 7), and 6.5 (out of 10), respectively. Descriptive statistics of other variables are available upon requests.

OLS Regression Results on Worry about Investment Fraud

Table 1 presents results of the OLS regression on worry about investment frauds (WAIF). Younger consumers (aged 54 or younger) were more likely to worry about frauds than the older consumers. Whites were less likely than nonwhites to worry about investment fraud. Consumers who were willing to take substantial investment risk were more likely to worry about investment fraud than those who were willing to take no risks. Compared to experienced investors (more than 10 years of investing experience), investors with less experience were more likely to worry about investment fraud, though this may be somewhat confounded with age. Consumers investing smaller sums of money (i.e., $100k-$500k) were more likely than those investing larger sums of money (i.e., $500k or more) to worry about investment fraud, though, again, this may be confounded with age, as well. Consumers who were confident that the U.S. markets are effectively regulated to protect investors were less likely to worry about investment fraud. Subjective investment knowledge was positively associated with worry about investment fraud, while objective financial knowledge and comfort making investment decisions were negatively associated with worry about investment fraud.

Comparing the standardized coefficient estimates, the four variables that show the strongest associations with worry about investment fraud were subjective investment knowledge, objective investment knowledge, willingness to take substantial investment risk, and comfort making investment decisions.

Logistic Regression Results on Investing Behaviors

Table 2 presents results of binary logistic regressions on investing behaviors. Worry about investment fraud (WAIF) is positively associated with all investing behaviors except for trading frequently, in which worry was negatively associated with frequent trading behavior.

Beyond the relationship between worry about investment fraud and investing behaviors, there were several other interesting associations. Among four advisor related variables (checking background, having a trusted contact, using professional advice, using a financial professional to execute trades), WAIF's potential effects show similar patterns as subjective investment knowledge, in which the two variables were positively linked to these behaviors. However, objective investment knowledge and comfort making investment decisions were negatively linked to these behaviors (with one exception where comfort making investment decisions was positively associated with checking advisor's background). For the four high risk product investing behaviors (trading on margin, investing in options, cryptocurrency, meme stocks), WAIF, comfort making investment decisions, and subjective investment knowledge showed positive associations with them, while objective investment knowledge did not show associations with these behaviors. For trading frequently, only WAIF and subjective investment knowledge showed positive associations with this behavior. These findings suggest that WAIF may play a role similar to subjective investment knowledge in shaping investing behavior.

Confidence in investor protection was related to six out of nine investing behaviors. Consumers with a higher level of confidence in government investor protection were more likely to authorize a trusted contact, use a financial professional for investment advice, and use a financial professional to execute trades. They were also more likely to trade on margin, but less likely to trade frequently or invest in cryptocurrency.

Conclusions/Relevance

Using data from the 2021 NFCS Investor Survey, the findings showed a number of demographic and psychographic variables related to worry about investment fraud. Investors who were younger, nonwhite, less experienced in investing, willing to take substantial financial risk, and with the medium investment size were more likely to worry about investment fraud. In addition, subjective investment knowledge was positively associated with worry about investment fraud, while objective investment knowledge and comfort making investment decisions were negatively associated with it.

Worry about investment fraud was positively associated with all investing behaviors except for trading frequently where a significant negative relationship exists. Subjective investment knowledge was positively associated with seven investing behaviors, except for trading frequently and investing in cryptocurrencies. Objective investment knowledge was associated with only four behaviors, positively one (trading frequently) and negatively three (authorizing a trusted contact, using professional advice and using a financial professional to execute trades). Comfort making investment decisions was positively associated with five investing behaviors and negatively associated with two behaviors.

The findings have implications for consumer financial policymakers, advisors, and educators. Worry about investment frauds shows consumer vigilance about financial markets and could result in healthy cautionary behaviors, such as checking the background of a financial professional and authorizing a trusted contact on an investment account. This could demonstrate support for the licensing and regulation of investment professionals. On the other hand, worry about investment fraud might be correlated to lower financial capability in the context of investment indicated with its negative associations with objective financial knowledge and comfort making investment decisions, which could call for government interventions in fraud prevention and redress when consumers are victimized by investment scams. Governments can also mobilize resources from diverse sources to create and implement programs for certain vulnerable consumer populations, focusing on fraud prevention. Research shows that short, online educational interventions can meaningfully reduce fraud susceptibility (Burke et al. 2022).

For financial advisors, the findings provide insight into their client’s behaviors. If clients worry extensively about investment fraud, advisors could provide full credentials and licenses to show their registration status as a qualified advisor. This in turn helps their clients build trust in them and could encourage the use of their services. Advisors should also know that clients who worry about investment fraud may have lower levels of objective investment knowledge and be less comfortable making investment decisions, which may require more help and guidance when making investment decisions.

Educators can also use the information to better serve the needs of current and future investors. For those who worry a lot about investment fraud, educators may need to introduce information and strategies to help identify and avoid fraud, while also providing tools to teach their students on how to respond in the event they are targeted and victimized by investment frauds. The reach of these lessons could be further compounded if students are encouraged to share the fraud prevention and recovery strategies learned with their peers.

References

Brenner, L., & Meyll, T. (2020). Robo-advisors: A substitute for human financial advice?. *Journal of Behavioral and Experimental Finance*, *25*, 100275.

Burke, J., Kieffer, C., Mottola, G., & Perez-Arce, F. (2022). Can educational interventions reduce susceptibility to financial fraud? *Journal of Economic and Social Behavior*, volume 198, 250-266.

DeLiema, M., Deevy, M., Lusardi, A., & Mitchell, O. S. (2020a). Financial fraud among older Americans: Evidence and implications. *The Journals of Gerontology: Series B*, *75*(4), 861-868.

Deliema, M., Shadel, D., & Pak, K. (2020b). Profiling victims of investment fraud: Mindsets and risky behaviors. *Journal of Consumer Research*, *46*(5), 904-914.

FINRA Investor Education Foundation. (2015). The non-traditional costs of investment fraud. FINRA Investor Education Foundation.

Kieffer, C., & Mottola, G. (2017). Understanding and combating investment fraud. *Financial decision making and retirement security in an aging world*, *185*.

Knüpfer, S., Rantala, V., & Vokata, P. (2021). Scammed and scarred: Effects of investment fraud on its victims. *Fisher College of Business Working Paper*, (2021-03), 008.

Lamar, M., Yu, L., Leurgans, S., Aggarwal, N., Wilson, R. Han, S, Bennett, D., & Boyle, P. (2022), Self-reported fraud victimization and objectively measured blood pressure: Sex differences in post-fraud cardiovascular health. *Journal of the American Geriatrics Society.*

Lee, S. J., Cummings, B. F., & Martin, J. (2019). Victim characteristics of investment fraud. In *2019 Academic Research Colloquium for Financial Planning and Related Disciplines*.

Lin, J. T., Bumcrot, C., Mottola, G., & Walsh, G. (2019). *Investors in the United States: A report of the National Financial Capability Study.* FINRA Investor Education Foundation. https://www.usfinancialcapability.org/downloads/NFCS_2018_Inv_Survey_Full_Report.pdf

Lin, J. T., Bumcrot, C., Ulicny, T., Mottola, G., & Walsh, G. (2016). *Investors in the United States 2016.* FINRA Investor Education Foundation. https://finrafoundation.org/sites/finrafoundation/files/NFCS-2015-Inv-Survey-Full-Report.pdf

Lin, J., Bumcrot, C., Mottola, G., Valdes, O., & Walsh, G. (2022). Investors in the United States: The changing landscape. FINRA Investor Education Foundation.

Lokanan, M. E. (2014). The demographic profile of victims of investment fraud: A Canadian perspective. *Journal of Financial Crime*.

Lokanan, M. E., & Liu, S. (2020). The demographic profile of victims of investment fraud: An update. *Journal of Financial Crime*.

Mottola, G. R. & Kieffer, C. N. (2017). Understanding and Using Data From the National Financial Capability Study, *Family and Consumer Sciences Research* Journal, 46(1), 31-39.

Mottola, G. R., & Valdes, O. M. (2022). Trends in consumer finance: Guest editors' introduction. *Journal of Financial Counseling and Planning*, *33*(2), 158-159.

Mueller, E. A., Wood, S. A., Hanoch, Y., Huang, Y., & Reed, C. L. (2020). Older and wiser: age differences in susceptibility to investment fraud: the protective role of emotional intelligence. *Journal of Elder Abuse & Neglect*, *32*(2), 152-172.

Shadel, D., & Pak, C. (2017). AARP Investment Fraud Victimization Study. AARP. https://www.aarp.org/content/dam/aarp/research/surveys_statistics/econ/2017/investment-fraud-vulnerability.doi.10.26419%252Fres.00150.001.pdf

Xiao, J. J., Huang, J., Goyal, K., & Kumar, S. (2022). Financial capability: A systematic conceptual review, extension and synthesis. *International Journal of Bank Marketing*, (ahead-of-print). https://doi.org/10.1108/IJBM-05-2022-0185

Table 1

OLS Regression Results on Worry about Investment Frauds (N=2,473, Weighted)

Variable	B	Beta	p
Constant	3.964		<.001
Comfort making investment decisions	-.138	-.159	<.001
Subjective investment knowledge	.363	.284	<.001
Objective investment knowledge	-.133	-.184	<.001
Confidence in investor protection	-.061	-.074	<.001
Male (vs female)	-.128	-.035	.071
Age=18-34	.368	.093	<.001
Age=35-54 (vs age=55 or older)	.355	.090	<.001
White non-Hispanic (vs other)	-.487	-.116	<.001
Some college or less (vs college degree or higher)	.117	.033	.097
Income=<$50K	.035	.009	.713
Income=$50-$100K (vs income=>$100K)	.054	.015	.498
Investment year: less than a year	.077	.011	.614
Investment year: 1-2 years	.313	.061	.010
Investment year: 2-5 years	.348	.067	.003
Investment year5-10 years (vs invest year: 10 years or more)	.288	.054	.009
Risk taking: substantial risks	.851	.161	<.001
Risk taking: above average risks	-.116	-.030	.385
Risk taking: average risks (vs no risks)	-.167	-.047	.176
Investment size: less than $100K	.091	.025	.387
Investment size: $100K-500K (vs investment size: 500K or more)	.209	.053	.038
R^2	.175		
F	27.320		
p	<.001		

Table 2

Binary Logistic Regression Results on Investing Behaviors: Odds Ratios (N=2,473, Weighted)

Variable	Checking advisor's background	Authorizing a trusted contact	Using a financial advisor	Using professional advice	Trading frequently	Trading on margin	Investing in options	Investing in crypto-currency	Investing in meme stocks
Worry about investment fraud	1.290***	1.166***	1.200***	1.245***	.916*	1.365***	1.239***	1.097**	1.122**
Comfort making investment decisions	1.112*	.986	.895***	.810***	1.306***	1.078	1.205***	1.341***	1.206***
Subjective financial knowledge	1.520***	1.186***	1.495***	1.219***	1.089	1.898***	1.711***	1.074	1.417***
Objective financial knowledge	.955	.915***	.826***	.881***	1.175***	1.035	1.003	1.009	.974
Confidence in investor protection	1.059	1.182***	1.146***	1.206***	.868***	1.102*	1.007	.922**	.955
Other control variables included	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: author calculations based on the 2021 FINRA IEF's Investor Survey. Other control variables are the same as those in Table 1.

* p<.05. ** p<.01. *** p<.001.