

Studying the diffusion of responsibility in relation to stock market non-participation

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ABSTRACT

In the light of the equity premium, stock market non-participation remains a puzzling phenomenon. Policy makers seeking to address non-participation, by providing investment advice, might however crowd out informal financial advisors due to the bystander effect; the inverse relation between the number of actors able to provide aid and the actual readiness of any individual to provide aid. A between subject survey was used to test willingness to give financial advice based on the presence of bystanders. Employing Mann-Whitney tests and a logit regression model, I find that the presence of bystanders does lower individual tendency to give financial advice.

Keywords

Behavioural Finance, Bystander effect, equity premium, stock market non-participation

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INTRODUCTION

Modern finance has widely accepted the existence of the equity premium; holding a broadly diversified portfolio of stocks yields a positive return over the long-term that is substantially higher than risk-free rate of return, namely government bonds (Mehra & Prescott, 1985). Several researchers have debated the size of this equity premium (Claus & Thomas, 2001; Fama & French, 2002) and whether it might be shrinking over time (Blanchard, 1993; Beirne & Bondt, 2008; Jagannathan, McGrattan & Scherbina, 2000; Siegel, 1999) but have generally departed from the axiom that the equity premium exists. Should the equity premium indeed hold, then any investor that is not unreasonably averse to losses ought to invest part of her available wealth into a diversified stock portfolio, to optimally benefit from it. This however scarcely happens since stock market participation rates are low in most European countries (Georgarakos & Pasini, 2011). Such non-participation can lead to preventable losses in welfare over the fully lifecycle (Cocco, Gomes & Maenhout, 2005). The puzzling outcome is thus that it is rational to invest in stocks over the long term yet scarcely anyone actually does so.

BYSTANDER EFFECT

I aim to address the aforementioned stock market non-participation puzzle through the bystander effect. First documented by Darley and Latané (1968), the bystander

effect is a social dynamic stating that the individual tendency to help in an emergency situation is inversely related to the number of bystanders present in the situation. This apparent apathy is explained by the diffusion of individual responsibility towards the emergency and the idea that someone else will provide the necessary help. The bystander effect was first discovered in an experimental setting in 1968 and has since been replicated in different settings by subsequent researchers (Latané & Rodin, 1969; Rutkowski, Gruder & Romer, 1983; Schwartz & Clausen, 1970). A useful meta-analysis on the bystander effect is provided by Fischer et al. (2011).

FINANCIAL ADVICE

The bystander effect might prevent a flow of financial advice from financially literate persons, who likely have an intuitive understanding of the equity premium, to less financially literate persons. Such financial advice might allow the latter to rationally invest in a well-diversified stock portfolio. Yet currently financial advice is scarcely obtained due to an inherent agent-principal problem. There could be a misalignment of interest between the financial advisor and the person that seeks the advice, which would result in the former giving advice that is not in the best interest of the latter. The person seeking advice can however never check the validity of the advice, since it is exactly the latter's superior knowledge in financial decision-making that led her to be employed by the less financially literate person in the first place (Finke, 2013). As such, useful advice is almost never obtained in the marketplace.

A solution to this problem might be to turn to informal financial advisors, such as financially literate family, friends or acquaintances. Their advice generally comes free of costs, and is less likely to be skewed in such a way as to exploit the advice seeking person and benefit the advisor. Informal financial advisors may thus fill an important void, since obtaining financial advice in the marketplace is generally fraught with difficulties. Naturally, it is generally to be expected that only persons with a high financial literacy will provide financial advice to others. As such, I develop hypothesis 1 (H1): *Persons with a high degree of financial literacy will more readily act as informal financial advisors.*

The bystander effect may however prevent informal financial advisors from providing their advice if there are many active organizations already that seem to provide financial advice. In such a situation diffusion of responsibility may lead an informal financial adviser to withhold her advice. Thus, these advisers might be crowded out by institutions already providing financial

advice. As such I develop hypothesis 2 (H2): *The presence of relevant institutions or actors will prevent informal financial advisors from providing investment advice.*

METHODOLOGY

To test these hypotheses, I have made use of a between subject experimental survey. Within the survey, participants were told that they were privy to the information that a good friend had come into the possession of €10,000 and that she wished to save that money for a period of 20 years. The friend could either invest the money in a mutual fund, with an average annual return of 6% and a standard deviation of 20%, or invest the money in a risk-free deposit with a fixed annual return of 1.5%. To illustrate the possible choice all participants were shown the same graph denoting 50 hypothetical outcomes of both investments. Subsequently, participants were asked to recommend the mutual fund or the risk-free deposit. Moreover, they were provided with the possibility to refrain from providing any advice at all.

Crucially, the participants were randomly assigned to one of three groups. Participants of two groups were manipulated by being shown additional information regarding the presence of institutional bystanders that were already dispensing cheap and readily available financial advice. One group was only provided with this information while the other was given even more elaboration which further reiterated that the friend could at any moment easily ask and receive financial advice from the institutional advisers. Thus, one group was presented with a moderate manipulation, while another was presented with a severe manipulation. Naturally, the third group was not shown any manipulation at all, so that it functions as a control group.

In addition to the investment decision all participants were asked to evaluate 15 questions designed to measure financial literacy. These questions were directly adapted from earlier research on financial literacy by Rooij, Lusardi and Alessie (2010, pp. 452-454). Finally, participants were asked three demographic characteristics, namely gender, age, and education level. The online survey was designed and distributed through Qualtrics

Two different statistical tests were employed to analyse the data gathered from the survey. Firstly, I made use of the Mann-Whitney U test for comparing distributions between two independent groups. This non-parametric test is not dependent on the normal distribution of the two groups used and is moreover suited for research with a relatively small number of respondents (Nachar, 2008). The three formal requirements of the Mann-Whitney U test, being random assignment to any group, independence of observations, and the use of an ordinal dependent variable and two categorical groups as independent variable, were satisfied through the set-up of the research design. Since the Mann-Whitney U test only compares two groups, it is necessary to run three separate tests for comparing the willingness to lend financial advice across the three manipulated groups. An additional test was run to compare between financially literate and financially less literate

participants.

Moreover, I have made use of a binary logistic regression model as a robustness check and a way of incorporating the demographic control variables. The binary logistic regression is used to assess whether the independent variables can predict in which categorical outcome a respondent is (Field, 2015, p. 761). As such it is possible to assess whether someone would or would not provide financial advice, based on the treatment group in which they were in, their degree of financial literacy, and their age, gender and education level. The three requirements of the binary logistic regression, being independence of observations, mutually exclusive categories for the dependent variables and “a linear relationship between any continuous predictors and the logit of the outcome variable” (Field, 2015, p. 769) were satisfied.

RESULTS

In total, 86 valid and complete responses to the survey were recorded in Qualtrics. To run the analysis, it was necessary to create a variable denoting the treatment group a participant was in (1 for no manipulation, 2 for moderate manipulation and 3 for severe manipulation) and a variable categorising either giving advice (0) or refraining from giving advice (1). Finally, a composite variable capturing the number of correct answers for the 15 financial literacy questions was created.

The first Mann-Whitney U test was conducted to compare the tendency to give financial advice between the financially literate and less literate participants. To obtain two exclusive groups the variable was split around the median, with 44 participants in the lower literacy group and 42 participants in the higher literacy group. By doing so, the test can be used to evaluate the first hypothesis, which states that persons with a high degree of financial literacy will more readily act as informal financial advisors. The null hypothesis, that there is no difference between the two groups, could not be rejected since the asymptotic significance of the Mann Whitney U test was 0.262, which is higher than the α of 0.05.

Subsequently, three different Mann Whitney U tests, comparing groups 1 and 2, 1 and 3, and 2 and 3 were run, to test the second hypothesis, namely that the presence of relevant institutions or actors will prevent informal financial advisors from providing investment advice. The null hypothesis of second hypothesis could be rejected since both cases in which relevant institutions or actors were present (groups 2 and 3), as compared to the control treatment, display asymptotic significances of 0.000 and 0.016 respectively, which are both lower than the α of 0.05. Since the mean ranks of both the treatment groups were higher vis à vis the control group, it can be concluded that being manipulated does indeed lower the tendency to give financial advice. However, the comparison between the treatment groups that were moderately and severely manipulated showed that the degree of manipulation does not lead to a significant difference in the mean ranks observed (since the asymptotic significance of 0.237 is higher than the α of 0.05).

Subsequently, a logistic binary regression model was employed to further check the second hypothesis. This model consists of three different parts. Firstly, a naive classification model that simply classifies all respondents as giving advice is estimated. Obviously, this results in a high error rate since only 58.1% of the classifications are estimated correctly in this fashion. Subsequently, a classification model is run in which the dummies for belonging to either treatment 2 or 3, financial literacy, gender, age, and education are included. By including these variables in the model, the classifications are more efficient, compared to the naive model, and the model markedly improves by 15.2% to 73.3% correctly classified cases. Finally, the results per variable can be computed. Due to the logistic transformation that occurs in the model, the beta coefficients in this model do not lend themselves for easy interpretation. However, they can be used to compute the odds ratio (by calculating e^B), which does allow for relatively easy and intuitive interpretation. The odds ratio indicates how much more likely a respondent is to not give advice, if there is a change of one unit in the independent variable, *ceteris paribus* (Field, 2015, p. 767).

The dummy for belonging to treatment 2 was significant at the α of 0.05 level (0.007), while the dummy for treatment 3 was marginally significant at the α of 0.1 level (0.082). As such, both lend themselves for interpretation. The dummy for treatment 2 has an odds ratio off 6.207, which being higher than 1, indicates that being in treatment 2 would, on average, make a respondent 6.207 times more likely to refrain from providing financial advice. Likewise, the odds ratio of the dummy for treatment 3 is 3.266. These findings thus corroborate those obtained by the Mann-Whitney U tests above, and therefore support the second hypothesis as well.

While an R-square statistic is not available for logistic regression analysis, an alternative pseudo R-square measure is available; the Nagelkerke R-square. The Nagelkerke R-square of 0.404 indicates that the model is a reasonably good fit.

CONCLUSION

Based on the results it is possible to conclude that there is evidence that diffusion of responsibility could lead informal financial advisors to refrain from providing financial advice when institutional bystanders that already provide advice are present in society. Thus, counterintuitively, the diffusion of information, into society at large, regarding the equity premium might be hindered if institutional actors decide to provide information and, in the process, crowd out informal financial advisors. These findings carry implications for the design of future public policies. It is of paramount concern to ensure that everyone is able to save enough to maintain reasonable consumption levels at the age of pensioning, and the end of the lifecycle. As such, the government has a legitimate interest in determining whether its citizens save enough, especially since providence for pensioning is increasingly done through individual risk management as opposed to collective risk sharing. Indeed, the government could gently nudge or

provide advice to its citizens with regard to optimal saving plans, including well diversified stock portfolios, to ensure that everyone can be relatively carefree with regard to financial constraints after pensioning. However, this research indicates that such an approach could induce a contradictory outcome by crowding out informal financial advisors, who suddenly feel that their advice is not strictly necessary anymore. Naturally, the conclusions reached in this paper are still tentative, primarily due to the small sample size of respondents, and might not hold up in subsequent research. It would therefore be commendable to seek to replicate the findings in this paper in further research, so that any results can be made more robust.

ROLE OF THE STUDENT

Sylvain Thöni was a bachelor student writing his bachelor thesis under the supervision of Charlotte Borsboom, Msc. The topic was confined to the expertise area of the supervisor. The refinement of the topic, design of the research, design and distribution of the questionnaire, data analysis, formulation of conclusions, and the writing were all done by Sylvain Thöni.

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