Analyzing Factors Affecting Financial Literacy and its Impact on Investment Behavior among Adults in India

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4 October 2018

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Abstract

Financial literacy is essential for making key financial decisions related to saving, borrowing and investment. Although numerable studies have been conducted to find elements of financial literacy, most of them focus on developed countries. This study aims to determine characteristics that affect levels of financial literacy in India and the impact of financial literacy on investment behavior. Primary data from 309 respondents across India was collected for the purpose of the study and was analyzed using empirical methods such as ordinary least square (OLS) regression and t-test. It was found that financial literacy among respondents was low and significant differences existed based on sociodemographic and economic factors. Unexpectedly, financial literacy was found to have no effect on investment behavior. To the best of the authors' knowledge, this study is among the first, if not the first, of its kind to be conducted in India. The findings have significant implications for financial education and public policy programs.

JEL Classification: D14; D19; G11
Keywords: Financial Literacy; Investment Behavior; Household Finance; Socioeconomic Characteristics

1. Introduction

In today's rapidly advancing world- as numerous complex financial products become available and a greater need to save for retirement arises- the ability to make sound financial decisions is getting increasingly important. Various national and international initiatives and programs funded by organizations like the World Bank, OECD, Deutsche Bank among others have been started recognizing this growing need. Consequently, there has been a proportional increase in the amount of research related to financial literacy and education. However, most studies focus on developed countries and knowledge about levels of financial literacy and its determinants in developing and under-developed countries still remains sparse. Through the use of surveys, regression analysis, and other empirical methods, this paper aims to investigate how demographic and socioeconomic factors affect financial literacy levels and investment behavior among people in India.

But first, the question arises- "What is financial literacy?" As noted by Xu and Zia (2012), "The term [financial literacy] can encompass concepts ranging from financial awareness and knowledge, including of financial products, institutions, and concepts; financial skills, such as the ability to calculate compound interest payments; and financial capability more generally, in terms of money management and financial planning."

Past literature indicates that low levels of financial literacy can have adverse implications for individuals and on their investment behavior. People with low levels of financial literacy have a greater likelihood of facing complications in repaying debt (Lusardi & Mitchell, 2009), have a lower probability of engaging in formal financial institutions like the stock market (van Rooji, Lusardi, & Alessie, 2007), are less inclined to prepare for retirement (Lusardi & Mitchell, 2006; 2007a; 2009), demonstrate lower proficiency in managing and gathering wealth efficiently (Stango

& Zinman, 2007; Hilgert, Hogarth, & Beverly, 2003), are more likely to borrow credit at high interest (Lusardi & Tufano, 2008; Stango & Zinman, 2009), and hold less diversified portfolios (Abreu & Mendes, 2009; Guiso & Tullio, 2008).

The widespread lack of adept financial management is highlighted in a 2018 survey by the Harris Poll on behalf of the NFFC (National Foundation for Credit Counselling). Out of all the 2,017 US adults surveyed, 59% do not have a budget or keep track of their spending, 25% do not pay their bills in time, 28% do not save any part of their income for retirement, 49% are not confident if they have sufficient retirement savings, and 73% have some financial worries. Moreover, although 82% give themselves a B or below on their knowledge of personal finance, 79% still feel that they would gain from advice from a finance professional (Harris Poll, 2018).

Levels of financial literacy also vary widely among different countries. Various studies have consistently demonstrated that high-income nations have low financial literacy levels in their population. Although less data is accessible for middle and low-income nations, literacy levels seem to be even lower there (Xu & Zia, 2012). As previously mentioned, low levels of financial literacy can have detrimental effects on people. Therefore, accurately measuring financial literacy and identifying its determinants is of utmost significance to policymakers who seek to design appropriate financial education programs.

2. Methodology

Due to the unavailability of prior data on financial literacy in India, the researcher fielded a survey designed to analyze the financial literacy and investment behavior of working age in India. The survey was made available online and was open to responses for 30 days. Only people above the age of 18 were permitted to participate in the survey. 309 people responded within the period making up the sample studied. Respondents were asked several questions about their

sociodemographic and economic circumstances before being asked a few questions to judge the level of their financial literacy and sophistication.

The measurement of financial literacy is in itself is a complicated matter. As noted by Lusardi and Mitchell (2011a), "While it is important to assess how financially literate people are, in practice it is difficult to explore how people process economic information and make informed decisions about household finances." In accordance with the definition of financial literacy given by Xu and Zia (2012), financial literacy consists of numerous components, including financial awareness and knowledge, financial skills and capability, all of which are difficult to measure in a survey of decent length. However, for the purpose of this study, a set of three questions formulated by Lusardi and Mitchell- commonly used in literature to measure financial literacy- are used.

These questions test respondents' knowledge of three essential financial concepts- interest rates, inflation, and risk diversification. Each correctly answered question is awarded one point, while an aggregate score is calculated by taking the average of the results of the three questions. A key advantage that the use of these questions provides is that they form an effective basis for comparison among countries.

3. Literature Review

Careful consideration was given to the selection of variables used in the empirical analysis. First, usual demographic characteristics like gender and age were included as it was observed in previous studies that women have significantly lower financial literacy levels than men (Atkinson & Messy, 2012; OECD, 2013; Agarwal, Driscoll, Gabaix, & Laibson, 2009; Chen & Volpe, 1998; Scheresberg, 2013) and that financial literacy is low among young and elderly individuals (Agarwal, Driscoll, Gabaix, & Laibson, 2009; Atkinson & Messy, 2012; OECD, 2013;

Scheresberg, 2013; Lusardi & Mitchell, 2011). Studies also revealed that financial literacy follows an inverted-U shape in relation to age (Xu & Zia, 2012).

Second, the researcher was interested in analyzing the impact of socioeconomic traits like education level and measures of prosperity like income and wealth on financial literacy. It has been previously found that individuals having greater education levels have higher access to financial knowledge and are, consequently, more financially literate (Chen & Volpe, 1998; Lusardi & Mitchell, 2011). Regarding income, lower levels of income are related to lower levels of financial literacy (Atkinson & Messy, 2012). One possible reason for this is that individuals from low-income families have a greater likelihood of dropping out of school- a factor that contributes to their low financial literacy over the long-run (Calamato, 2010). In light of research by Monticone (2010) and Hastings and Mitchell (2011) demonstrating that wealth has a positive influence on financial literacy, data on whether the respondent owned a house, had retirement savings and held investments was also collected to verify this claim. Here, owning a house, retirement savings and/or investments served as proxies for wealth.

Third, we added variables to measure exposure to financial knowledge through interactions with others to the regression analysis. Respondents were asked to report on their marital status as several studies have found that singles are considerably more likely to have lower financial literacy levels than their married counterparts (Calamato, 2010; Brown & Graf, 2013). This happens as consumer debt is a big threat to the well-being of married relationships and, therefore, married individuals face a greater incentive to acquire higher levels of financial literacy (Dew, 2008).

To examine the effect of social interaction on financial literacy further, the study studied the influence of peers as well. As various studies related to financial decision-making have shown, peers are among the main sources of financial information and advice (Brown, Ivkovich, Smith,

& Weisbenner, 2008; Hong , Kubik, & Stein, 2004; van Rooji, Lusardi, & Alessie, 2007). Peers are also significant in decisions regarding pension participation and contribution (Duflo & Saez, 2003). Furthermore, it was observed that unemployed workers displayed lower familiarity with economic and financial subjects resulting in lower levels of financial literacy (Chen & Volpe, 1998; Calamato, 2010; Kim & Garman, 2004). This led to the inclusion of the occupational status of the respondents in the regressions.

In light of research by Amadeu (2009) that greater contact with courses related to economics and finance in undergraduate studies has a positive impact on one's financial practices and that students of Economics, Business Administration, and Accounting have a greater financial literacy level, the study also looked at whether the respondent's occupation and/or education was related to finance. Also, considering research by Hong, Kubik and Stein (2004) exhibiting that churchgoers had a greater probability of investing in stocks, the study also looked at whether the respondent was a part of any social club and if he/she was a regular attendee.

Fourth, the study was interested in including a variable that could serve as a proxy for time preferences of respondents. It has been hypothesized by researchers that "[people] who discount the future more heavily may be less willing to invest resources in acquiring financial knowledge, since such an investment has a delayed payoff" (Lusardi, Mitchell, & Curto, 2010). Therefore, as a proxy for time preferences, this study considered if the respondent smoked. Prior studies have indicated that higher frequencies of smoking tend to be linked to impatience (Fuchs, 1982), and that present smokers discount the value of a future monetary outcome more than a control group (Bickel, Odum, & Madden, 1999). Numerous other studies have also used smoking as a proxy for time preferences.

4. Descriptive Findings

Table 1 presents results from the Lusardi and Mitchell questions which evaluated levels of financial literacy in respondents. While 66% of the people surveyed answered the interest rate question accurately, just 53% indicated the correct response to the inflation question. Approximately 9% of the respondents indicated that they did not know the answer to the interest rate question, while the corresponding figure for the inflation question was 11%. Only 45% answered the risk diversification question correctly and 13% responded that they did not know the answer. Moreover, only 14% of the respondents got all three question right, while only 45% got two questions correct. This demonstrates the general dearth of financial literacy among the Indian public.

[Insert Table 1 here]

Contrary to expectations, financial literacy levels in the sample appear to be largely comparable to those in high-income, developed countries. This can, however, be attributed to the large share of high-income and highly-educated individuals in the sample. More specifically, as shown in Table 2, 16.5% of the respondents had an undergraduate degree while 70.9% had completed their post-graduate. Furthermore, 22% of all respondents had an annual income between ₹500k and ₹1000k, 24.6% had an income between ₹1000k and ₹2000k and 19.7% made more than ₹2000k on a yearly basis. This is significantly higher than India's per capita GDP of ₹1,27,456 in the fiscal year 2017-18 (Central Statistics Office (CSO), Government of India, 2018). Therefore, levels of financial literacy can be reasonably expected to be even lower in a sample that is more nationally representative and consequently in the Indian population at large.

[Insert Table 2 here]

While financial literacy levels were low in the sample as a whole, notable differences existed based on sociodemographic, economic and social attributes. Table 3 displays in a table the difference in the means of various subgroups of the sample. The significance of these differences is displayed alongside them. Some of the more prominent results are also discussed below.

[Insert Table 3 here]

Sociodemographic characteristics

Noteworthy differences existed in financial literacy between men and women. It was found that women were less likely to answer all three of the financial literacy questions accurately and there was a 12% gap for the interest rate and inflation questions, a 11% gap for the risk diversification question. These differences were found to be statistically significant. As indicated by previous studies, this difference arises because women face greater hardships in doing financial calculation and tend to have a lower financial knowledge level which acts as a barrier while making sensible financial decisions (Chen & Volpe, 1998).

Table 3 also indicates that there are differences in financial literacy according to the age of the respondents. The study's findings corroborate past findings that financial literacy follows an inverted-U shape with respect to age and is least in young and elderly people. More specifically, people of age between 35 to 44 years are 18% more likely to answer the interest rate question correctly, 20% more probable to answer the inflation question and 13% more likely to answer the risk diversification question than those between age of 18 to 34 years. Elderly people- those older than 65 years- were also 25% less likely to answer the interest rate question correctly, 14% less likely to answer the inflation question accurately and 16% less probable to correctly respond to the risk diversification question. According to Lusardi and Mitchell (2011a), this inverted U-shape

can be explained by the accumulation of financial knowledge over the lifespan of people which declines as they age. This decline in financial knowledge can be attributed to a general drop in cognitive abilities linked to old age (Finke, Howe, & Huston, 2011).

Table 3 also indicated difference in financial literacy among respondents as per their educational attainment. Higher levels of educational were related to higher means in the subgroups. Those with a post-graduate degree were 4% more likely to respond to the interest rate question correctly, 11% more likely to respond to the inflation question correctly and 12% more likely to respond to the risk diversification question accurately. These figures were statistically significant. These findings are supported by previous findings (Lusardi & Mitchell, 2011; Chen & Volpe, 1998).

Economic Characteristics

Occupational status of respondents was a strong determinant of financial literacy in the sample- those currently employed or self-employed were much likely to give the correct answers to the three financial literacy questions. Compared to those currently unemployed, people engaged in some form of employment were 20%, 24% and 19% more likely to give the correct answers to the interest rate, inflation and risk diversification questions respectively. Differences in financial literacy between those employed and self-employed were negligible and not statistically significant.

Family wealth was also found to be associated to financial literacy levels among respondents. As a proxy for measuring wealth, respondents were asked whether they owned investments, owned at least one house and held retirement savings. As shown in Table 3, those

having some investments were 22%, 20% and 15%, those owning a house were 11%, 16% and 13% and those owning retirement savings were 4%, 16% and 8% more likely to respond correctly to the interest rate, inflation and risk diversification questions respectively. These figures were statistically significant. This relation could also be caused by reverse causation- individuals with higher financial literacy are more likely to gather wealth efficiently by making better informed financial decisions (Stango & Zinman, 2007; Hilgert, Hogarth, & Beverly, 2003).

Social characteristics

Social interaction with non-family members was also seen to be a significant factor affecting financial literacy among respondents. People who were members of a social club were 13.7%, 11.5% and 14.3% more likely to answer the interest rate, inflation and risk diversification questions correctly. These figures were found to be statistically significant. This corresponds with prior studies that find a positive relationship between financial literacy, participation and social interaction.

5. Findings from Multivariate Analysis

Using a multivariate analysis allowed the evaluation of which factors were linked to financial literacy among respondents after controlling for all attributes. An aggregate Lusardi and Mitchell score out of 1 was calculated by taking the mean of a respondent's responses- each of the three correct answers were awarded 1 point and their arithmetic mean was calculated. This had a two-fold benefit- the aggregate formed a measure of total financial literacy among respondents and helped reduce the statistical errors associated with having a relatively small sample size.

[Insert Table 4 here]

Several essential findings arose from the regression analysis. Even after taking many sociodemographic, economic, family and personal characteristics into account, women still displayed lower financial literacy compared to men. Women had a 12% lower likelihood of answering the interest rate question correctly, 12% lower likelihood of responding to the inflation question correctly and 11% lower likelihood of giving the right response to the risk diversification question. This shows that the gender of an individual is a robust predictor of financial literacy even after taking other factors into account.

Another statistically significant predictor of financial literacy was the age of the respondents. People between the age of 45 to 54 years were 5% more likely to answer the inflation question correctly and 11% more likely to answer the risk diversification question correctly compared to those between 18 and 34 years in age. They also had an aggregate score 8% more than the control. The corresponding figures were 9%, 23% and 13% for people between 55 and 64 years in age. Age was, therefore, an important indicator of financial literacy.

Financial literacy was also strongly correlated to educational attainment, especially for those having attended college. Higher levels of educational attainment such as having an undergraduate or post-graduate degree was found to correspond to higher financial literacy scores. However, after accounting for the large number of variables in the model, effects of an undergraduate degree were not found to be statistically significant. Having a post-graduate degree, though, increased the probability of answering the questions correctly by 9%, 20% and 10% respectively.

There was also a clear association between the marital status and financial literacy. Married individuals were more likely to give correct answer to the three financial literacy questions- 11%

and 12% more likely to answer the interest rate and risk diversification questions correctly. Also, married individuals displayed a 9% higher aggregate score than their unmarried counterparts. This difference could arise as making sound financial decisions is vital to the success of the married relationship (Calamato, 2010).

Income was another crucial determinant of financial literacy. This finding is corroborated by previous studies that indicate that higher income levels are associated with higher levels of financial literacy (Monticone, 2010; Hastings & Mitchell, 2011; Atkinson & Messy, 2012). In this study, people who made between ₹1000k to ₹2000k had a 5% higher aggregate score while those making than ₹2000k on an annual basis, had an aggregate score 12% higher than the control. Income was evidently an ardent determinant of financial literacy.

Finally, social interaction with non-family members in form of being a part of a social club had a small but significant impact on financial literacy. While the differences between not being a part of any club and being a non-active member were minute and not statistically significant, regularly attending a social club had a considerable effect on the financial literacy of respondents. Regular attendees of clubs performed 7% better on the aggregate score than those not part of any club. This backs prior research that regular social interaction has a positive impact on financial literacy (Hong , Kubik, & Stein, 2004).

6. Effect of Financial Literacy on Investment Behavior

Several studies have suggested that an higher levels of financial literacy result in more sophisticated investment behavior among individuals. Prior studies have found that financial literacy has a direct effect on the amassment of wealth (Van Rooji, Annamaria, & Rob, 2012; Behrman, Mitchell, Soo , & Bravo, 2010), retirement planning (Lusardi & Mitchell, 2006; Van Rooji, Annamaria, & Rob, 2012), participation in the stock market (van Rooji, Lusardi, & Alessie,

2007) and saving behavior (Klapper, Annamaria, & Panos, 2013). However, Grohmann (2018) finds that levels of financial literacy do not have much effect on investment behavior among the middle class in Thailand. This led the researcher to conduct a multivariate analysis to check if financial literacy has an impact on investment behavior among people in India. The results of the analysis are presented in Table 5.

[Insert Table 5 here]

As evident in the table, in the sample the Lusardi and Mitchell financial literacy score does not have a statistically significant effect on the likelihood of whether a respondent will own stocks, mutual funds or fixed income securities. This is contrary to the expected positive association between financial literacy and participation in stock market in developed countries.

7. Conclusion

Even though several financial education programs have been started all across the world and numerous studies to determine determinants of financial literacy have been conducted, most of them focus on developed countries and information about developing economies remains scarce.

This paper introduces new evidence about levels of financial literacy and its determinants in India. It was found that financial literacy levels were low and that key financial concepts like calculation of interest, the effect of inflation, and risk diversification due to multiple investments were not completely understood by the respondents. Only 14% of all respondents got all three financial literacy questions correct. Furthermore, substantial differences were found to exist in

various sub-groups within the sample- differences existed based on gender, age, income, educational attainment, and wealth among others.

In this study's sample, no evidence was found for the anticipated positive association between financial literacy and stock market participation- often found in studies in developed nations. However, it was observed that sociodemographic, economic and family characteristics were important predictors of whether a respondent would own stocks, mutual funds and/or fixed income securities.

These findings have important implications for policy makers and financial education programs. As the onus for making saving and investment decisions is being shifted onto workers by the government and employers, it is getting increasingly important to arm workers with basic financial knowledge to make these key decisions. To achieve this objective effectively, it is vital to acknowledge that the adult population displays large differences in financial literacy- adults should not be thought of as a homogenous group. Rather differences such as gender, age, educational attainment, income, wealth among others as showcased in this study should be considered while designing public initiatives aimed at improving financial literacy. Programs to foster financial knowledge should be targeted at disadvantaged groups like women, the elderly and those with low incomes and educational attainment.

References

Abreu, M., & Mendes, V. (2009). Financial literacy and portfolio diversification . Quantitative Finance, 515-528.

Agarwal, S., Driscoll, J. C., Gabaix, X., & Laibson, D. (2009). The age of reason: financial decisions over the lifecycle with implications for regulation. Brookings Papers on Economic Activity 2, 51-117.

Amadeu, J. (2009). A educação financeira e sua influência nas decisões de consumo e investimento: proposta de inserção da disciplina na matriz curricular. Dissertação de mestrado, Universidade do Oeste Paulista, São Paulo, SP, Brasil. .

Atkinson, A., & Messy, F.-A. (2012). Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study. OECD Publishing [Working Paper n. 15].

Behrman, J., Mitchell, O., Soo , C., & Bravo, D. (2010). Financial Literacy, Schooling, and Wealth Accumulation . NBER Working Paper No. 16452 .

Bickel, W., Odum, A., & Madden, G. (1999). Impulsivity and Cigarette Smoking: Delay Discounting in Current, Never, and Ex-Smokers. Psychopharmacology, 447–454.

Brown, J., Ivkovich, Z., Smith, P., & Weisbenner, S. (2008). Neighbors Matter: Causal Community Effects and Stock Market Participation. Journal of Finance.

Brown, M., & Graf, R. (2013). Financial literacy and retirement planning in Switzerland. Numeracy.

Calamato, M. P. (2010). Learning Financial Literacy in the Family. The Faculty of the Department of Sociology, San José State University.

Central Statistics Office (CSO), Government of India. (2018, September 15). Cadenza Document .Retrieved from Reserve Bank of India: https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/TABLE103EBE23AD5EE4D6A9A62A9D939677B34.PDF

Chen, H., & Volpe, R. P. (1998). An Analysis of Personal Financial Literacy Among College Students . Financial Services Review.

Dew, J. (2008). Debt change and marital satisfaction change in recently married couples. Family Relations.

Duflo, E., & Saez, E. (2003). The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence from a Randomized Experiment. Quarterly Journal of Economics, 118 (August): 815–842.

Finke, M. S., Howe, J. S., & Huston, S. J. (2011). Old Age and the Decline in Financial Literacy.

Fuchs, V. R. (1982). Time Preference and Health: An Exploratory Study. In Economic Aspects of Health. Chicago: The University of Chicago Press, 93–120.

Grohmann, A. (2018). Financial literacy and financial behavior: Evidence from the emerging Asian middle class. Pacific-Basin Finance Journal, 130-143.

Guiso, L., & Tullio, J. (2008). Financial literacy and portfolio choice. EUI Working Papers, ECO2008/31.

Harris Poll. (2018, March 13). 2018 Consumer Financial Literacy Survey. Retrieved from National Foundation for Credit Counselling: https://nfcc.org/wp-content/uploads/2018/04/NFCC_BECU_2018-FLS_datasheet-with-key-findings_031318-002.pdf

Hastings, J., & Mitchell, O. S. (2011). Financial literacy: implications for retirement security and the financial marketplace. Oxford, UK: Oxford University Press.

Hilgert, M., Hogarth, J., & Beverly, S. (2003). Household Financial Management: The Connection Between Knowledge and Behavior. Federal Reserve Bulletin, 309–322.

Hong , H., Kubik, J., & Stein, J. (2004). Social Interaction and Stock Market Participation. Journal of Finance.

Kim, J., & Garman, T. (2004). Financial stress, pay satisfaction and workplace performance. Compensation Benefits Review.

Klapper, L., Annamaria, L., & Panos, G. (2013). Financial literacy and its consequences: Evidence from Russia during the financial crisis. Journal of Banking and Finance, 3904-3923.

Lusardi , A., & Mitchell, O. (2011a). Financial Literacy and Retirement Planning in the United States. Center for Research on Pensions and Welfare Policies (CeRP) Working Papers .

Lusardi, A., & Mitchell, O. (2006). Financial Literacy and Planning: Implications for Retirement Wellbeing. Working Paper, Pension Research Council, Wharton School, University of Pennsylvania.

Lusardi, A., & Mitchell, O. (2009). How Ordinary People Make Complex Economics Decisions: Financial Literacy and Retirement Readiness. NBER Working Paper 15350.

Lusardi, A., & Mitchell, O. S. (2007a). Baby Boomer Retirement Security: The Role of Planning, Financial Literacy, and Housing Wealth. Journal of Monetary Economics, 205-224.

Lusardi, A., & Mitchell, O. S. (2009). How Ordinary People Make Complex Economics Decisions: Financial Literacy and Retirement Readiness. NBER Working Paper 15350.

Lusardi, A., & Mitchell, O. S. (2011). Financial literacy and retirement planning in the United States. Journal of Pension Economics and Finance.

Lusardi, A., & Tufano, P. (2008). Debt Literacy, Financial Experience and Over- indebtedness. Working Paper.

Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial literacy among the young: Evidence and implications for consumer policy. CFS Working Paper, No. 2010/09, Goethe University, Center for Financial Studies (CFS).

Monticone, C. (2010). How Much Does Wealth Matter in the Acquisition of Financial Literacy? . The Journal of Consumer Affairs.

OECD, O. f.-O. (2013). Financial literacy and inclusion: Results of OECD/INFE survey across countries and by gender.

Scheresberg, C. B. (2013). Financial Literacy and Financial Behavior among Young Adults: Evidence and Implications. Numeracy.

Stango, V., & Zinman, J. (2007). Fuzzy Math and Red Ink: When the Opportunity Cost of Consumption Is Not What It Seems. Mimeo, Dartmouth College.

Stango, V., & Zinman, J. (2009). Exponential Growth Bias and Household Finance. Journal of Finance.

Van Rooji, M., Annamaria, L., & Rob, A. (2012). Financial Literacy, Retirement Planning and Household Wealth. Econ J. , 449-472.

van Rooji, M., Lusardi, A., & Alessie, R. (2007). Financial Literacy and Stock Market Participation. NBER Working Paper n. 13565.

Xu, L., & Zia, B. (2012, June 1). Financial Literacy Around the World: An Overview of the Evidence with Practical Suggestions for the Way Forward. World Bank Policy Research Working Paper No. 6107.

TABLE 1

Distribution of Responses to Financial Literacy Questions (%)

	Correct	Incorrect	Don't know
Interest Rate	66.3	24.9	8.8
Inflation	53.1	35.6	11.3
Risk Diversification	45.3	42.13	12.6

TABLE 2

Profile of respondents

	Percent	N
Male	63.1	195
Female	36.9	114
18-34 years	20.4	63
35-44 years	27.2	84
45-54 years	34.3	106
55-64 years	11.7	36
More than 65 years	6.5	20
Not completed high school	7.1	22
Completed high school	5.5	17
Undergraduate	16.5	51
Post-graduate	70.9	219
Income < ₹250k	17.8	55
Income ₹250k- ₹500k	15.9	49
Income ₹500k- ₹1000k	22.0	68
Income ₹1000k- ₹2000k	24.6	76
Income > ₹2000k	19.7	61
Finance Education	9.1	28
Finance Occupation	18.8	58
Own investments	64.7	200
Own house	78.6	243
Own retirement savings	59.9	185
Married	84.5	261
Smoke	8.4	26
Unemployed	11.0	34
Employed	65.4	202
Self-employed	17.2	53
Retired	6.5	20
Not member of social club	67.0	207
Member, not regular attendee	19.4	60
Member, regular attendee	13.6	42

TABLE 3

Differences in Means (%)

	Interest Rate	Inflation	Risk Diversification
Gender			
Male v. Female	12**	11.8**	10.6**
Age			
35-44 years v. 18-34 years	17.9***	20.2***	13.1**
45-54 years v. 35-44 years	3.3*	6.8*	4.5
55-64 years v. 45-54 years	1.4	9.1*	4.6*
> 65 years v. 55-64 years	-25***	-14.4**	-15.5**
Income			
₹250k- ₹500k v. < ₹250k	18.3**	16.3**	15.8**
₹ 500k- ₹ 1000k v. ₹250k- ₹500k	-4.1	5.4*	-3.7
₹1000k- ₹2000k v. ₹500k- ₹1000k	11.8**	3.5	8.8*
> ₹2000k v. ₹1000k- ₹2000k	-1.2	9.3*	9*
Education			
High School v. No/some High School	6.1*	8	11.2**
Undergraduate v. High School	19.6**	11.8*	9.8
Post-graduate v. Undergraduate	3.7*	11.3**	11.7**
Finance Edu v. Not	5.6	8.4*	16.9**
Occupation			
Employed v. Not employed	20.3***	24.1***	19.1**
Self-employed v. Employed	1.4	0	-1.3
Retired v. Self-employed	-31.7***	-11.6*	-12.2**
Finance Occu v. Not	7.5*	6.8*	12.1**
Family Characteristics			
Own Investments v. Not	21.7***	19.6***	14.6***
Own House v. Not	11.1**	15.5***	13.3**
Have Retirement Savings v. Not	4.4*	15.9**	8.3**
Married v. Not	19.3***	25.8***	14.2**
Social Interaction			
Member of social club v. Not member	13.7***	11.5**	14.3***
Smoking			
Smoke v. Do Not Smoke	-17.8**	-11.8*	-11.7

N= 309

* p<0.1; ** p<0.05; *** p<0.01

TABLE 4
Multivariate Analysis of Financial Literacy

	(1) Interest Rate	(2) Inflation	(3) Risk Diversification	(4) Aggregate
Female	-0.078***	-0.041*	-0.071***	-0.064***
	[0.050]	[0.044]	[0.033]	[0.027]
35-44 years	0.072	0.037	0.083	0.064
	[0.078]	[0.083]	[0.073]	[0.031]
45-54 years	0.091*	0.046**	0.113**	0.083***
	[0.082]	[0.058]	[0.052]	[0.033]
55-64 years	0.070	0.092**	0.229**	0.130**
	[0.096]	[0.053]	[0.092]	[0.051]
More than 65 years	-0.075	-0.039	0.051	-0.021
	[0.124]	[0.112]	[0.096]	[0.065]
Completed high school	0.030	0.039	0.000	0.023
	[0.102]	[0.110]	[0.119]	[0.064]
Undergraduate	0.081*	0.095	0.020	0.065
	[0.052]	[0.087]	[0.104]	[0.047]
Post-graduate	0.086*	0.197**	0.102**	0.128***
	[0.072]	[0.069]	[0.053]	[0.038]
Income ₹250k- ₹500k	0.071	0.025*	0.069	0.055*
	[0.092]	[0.021]	[0.075]	[0.035]
Income ₹500k- ₹1000k	0.037	-0.014	0.102**	0.041
	[0.085]	[0.055]	[0.071]	[0.049]
Income ₹1000k- ₹2000k	0.057	0.024	0.060	0.047**
	[0.078]	[0.081]	[0.093]	[0.028]
Income > ₹2000k	0.053	0.129**	0.175**	0.119***
	[0.057]	[0.043]	[0.065]	[0.032]
Finance Education	-0.025	0.078**	0.010	0.021
	[0.069]	[0.023]	[0.074]	[0.042]
Finance Occupation	0.037	0.074*	0.011	0.041*
	[0.052]	[0.042]	[0.060]	[0.025]
Own investments	0.101**	-0.026	0.014	0.030
	[0.048]	[0.50]	[0.049]	[0.030]
Own house	0.011	0.030	0.017	0.019
	[0.058]	[0.063]	[0.063]	[0.031]
Own retirement savings	-0.047**	0.006	0.056	0.005
	[0.030]	[0.038]	[0.045]	[0.017]
Married	0.109**	0.058	0.115**	0.094**
	[0.035]	[0.083]	[0.052]	[0.029]
Smoke	-0.074	-0.045	-0.033	-0.051**
	[0.045]	[0.68]	[0.076]	[0.019]
Employed	0.040	0.039	0.024	0.034
	[0.067]	[0.073]	[0.070]	[0.045]

Self-employed	0.038	0.058	0.088**	0.061
	[0.071]	[0.100]	[0.030]	[0.048]
Retired	-0.121	0.008	-0.021	-0.045
	[0.108]	[0.086]	[0.118]	[0.059]
Member of social club (not regular attendee)	0.054	0.067*	0.022	0.048
	[0.046]	[0.048]	[0.037]	[0.031]
Member of social club (regular attendee)	0.065*	0.117*	0.035	0.072**
	[0.037]	[0.052]	[0.058]	[0.023]
R-Squared	0.113	0.087	0.111	0.283

N= 309

* p<0.1; ** p<0.05; *** p<0.01

TABLE 5

Multivariate Analysis of Investment Behavior

	(1) Stocks	(2) Mutual Funds	(3) Fixed income securities
Financial Literacy Score	-0.030	-0.025	-0.010
	[0.073]	[0.076]	[0.061]
Female	-0.046*	-0.127***	-0.064*
	[0.042]	[0.044]	[0.035]
35-44 years	0.011	-0.005	0.028
	[0.065]	[0.069]	[0.055]
45-54 years	0.048	-0.050	0.049
	[0.068]	[0.072]	[0.057]
55-64 years	-0.123*	-0.044	0.206***
	[0.081]	[0.086]	[0.068]
More than 65 years	-0.150	-0.185*	0.051
	[0.104]	[0.109]	[0.087]
Completed high school	0.065	0.108	-0.048
	[0.103]	[0.108]	[0.086]
Undergraduate	0.075	0.215**	-0.066
	[0.091]	[0.095]	[0.076]
Post-graduate	0.117*	0.294***	0.028
	[0.086]	[0.090]	[0.062]
Income ₹250k- ₹500k	0.100*	0.031	0.039
	[0.075]	[0.069]	[0.053]
Income ₹500k- ₹1000k	0.112*	0.050	0.050
	[0.076]	[0.060]	[0.059]
Income ₹1000k- ₹2000k	0.197**	0.106*	0.143**
	[0.068]	[0.077]	[0.059]
Income > ₹2000k	0.273***	0.141*	0.184***
	[0.080]	[0.069]	[0.057]
Finance Education	0.092*	-0.006	0.133**
	[0.067]	[0.070]	[0.056]
Finance Occupation	0.052	0.127**	0.043
	[0.048]	[0.051]	[0.040]
Own house	-0.005	0.043	0.114**
	[0.050]	[0.053]	[0.042]
Own retirement savings	0.071*	0.107**	-0.004
	[0.042]	[0.044]	[0.035]
Married	0.008	0.096*	0.034
	[0.065]	[0.068]	[0.047]
Smoke	-0.075*	-0.113*	-0.008

	[0.071]	[0.073]	[0.048]
Employed	-0.001	0.049	-0.130**
	[0.069]	[0.058]	[0.060]
Self-employed	0.087*	0.070	-0.106*
	[0.069]	[0.073]	[0.056]
Retired	-0.118*	-0.003	-0.049
	[0.110]	[0.115]	[0.092]
Member of social club (not regular attendee)	0.076*	0.012	0.082*
	[0.048]	[0.050]	[0.040]
Member of social club (regular attendee)	0.119*	0.055	0.151**
	[0.056]	[0.059]	[0.047]
R-Squared	0.151	0.173	0.175

N= 309
* p<0.1; ** p<0.05; *** p<0.01