

Financial Literacy, Trust and Stock Market Participation in Ghana

SOLOMON ANTWIAGYEI KUFFOUR ¹ GEORGE ADU ²

Received: 12.10.2019; Revised: 12.12.2019; Accepted: 20.12.2019

Financial markets and products have increasingly become complicated as a result of the influx of financial products hence consumers are now required to make complex financial decisions about their day to day investment decisions, portfolio choice and future financial planning. To make an informed decision, a considerable level of financial literacy and trust is required. Globally, households are encouraged to take a more active approach to personal finance. However, the success depends largely on the level of financial literacy of the individual. Again, global evidence of stock market non-participation puzzle has warranted several studies to ascertain what explains the phenomenon. For this reason, this paper examines the impact of financial literacy and trust on stock market participation and also ascertains if there exists any gender gap in financial literacy and share ownership. Using survey data on a sample of 398 respondents, there was an evidence of low financial literacy levels. The probit regression results show that less financially literate investors are significantly less likely to invest in stocks if socio-demographic characteristics and risk attitudes are accounted for. However, the individual's subjective level of trust in the stock market has no explanatory effect on the individual's decision to invest in stocks. Hence, financial literacy partly explains the non-participation puzzle in financial literacy and stock market participation. It is also found that financial literacy is affected by one's level of education and access to financial information, hence financial literacy programs should be given much attention especially through the use of the electronic media.

JEL codes: D14, D80, D83, G02

Keywords: Financial literacy, trust, direct share ownership, stock market participation

1 Introduction

The ever-changing and costly financial environment coupled with the increased financial products (as a result of the increased competition from increased number of financial institutions) have generally increased the complexities of households' (investors') financial decision making hence making them more conscious of their financial management. But as to whether

¹ Kwame Nkrumah University of Science and Technology, Kumasi, Ghana (e-mail: solomon_kuffour@yahoo.com).

² Kwame Nkrumah University of Science and Technology, Kumasi, Ghana (e-mail: gyadu2011@gmail.com³).

³ The second author passed on on 9th February 2018 but contributed immensely to the success of the study and his efforts cannot be annulled. I wish to state that we had no conflicts of interest to disclose and for this reason I wish to dedicate this study to his memory.

households have the knowledge and skills to navigate the financial environment to make the right financial decisions and to be able to maximize their returns remains uncertain. In addition, the rising cost of living, the quest to financially plan for any unforeseen circumstances, the permanent income hypothesis as well as life cycle hypothesis emphasize the need to save or invest in diverse financial assets to augment current income in order to smoothen the path of consumption. Prominent among such sources or financial investment opportunities is an investment in stocks. As a catalyst for economic growth, rising participation and rising share prices in the stock market often tends to be linked with increased business investment, household wealth and consumption and economic growth in the long run. The stock market can then be considered as the primary indicator of the economic strength (or growth) and development of any country. Put differently, a well performing stock market is characterized by increasing participation and returns and that increasing returns imply increasing participation (Levine & Zervos, 1998; Mun et al., 2008; Nazir et al., 2010; Nowbutsing & Odit, 2009).

Despite the welfare enhancing effects of participating on the stock market, many studies have documented that few households/individuals hold stocks, a feature that is also described as the Non-Participation Puzzle. For instance, Guiso and Jappelli (2005) in line with the findings of Cocco, Gomes, and Maenhout (2005) argue that, limited participation in the stock market have important implications for individual welfare. Continuing, Cocco et al. (2005) goes further to estimate that, there is about a 1.5% to 2% cut in consumption and hence welfare loss as result from non-participation in the stock market relative to consumers who own shares and if consumption is considered in calibrated life-cycle models. To explain the stock market non-participation puzzle and why individuals decide to hold

shares, there is a growing but divergent literature identifying several factors that influence one's decision to stock ownership. Stock market participation here involves direct or indirect ownership of shares on the market and also trading shares to optimize gains. Among the identified factors include the ability to save (Benjamin et al., 2013; Hudomiet et al., 2011), lack of financial or stock market awareness (Hong et al., 2004; Guiso & Jappelli, 2005) and attitude towards risk, since the stocks are relatively riskier compared to Treasury bills and bonds, and other money market instruments. Most recent literature reveals that factors like investor's optimism (Puri & Robinson, 2007), stock market experience (Malmendier & Nagel, 2011) and sociability (Balloch et al., 2014; Hong et al., 2004). Two factors that have gained greater attention in the Stock Market Non-Participation Puzzle is the level of financial literacy (Balloch et al., 2014), and trust in the financial markets (Guiso & Jappelli, 2005; Guiso et al., 2008). Notwithstanding the growing literature on the influence of financial literacy and trust on stock market participation globally (specifically on direct investment in shares relative to other financial assets), a relatively lower attention seems to be given to the subject matter in Sub Saharan Africa and Ghana to be precise, despite the increased participation on the stock market since its inception in 1990.

Financial literacy and trust have implications on the non-participation puzzle and hence a study to provide some insight into the subject is necessary. It is worth noting that the issue of financial literacy will not only be of interest to researchers and financial institutions but also to investors as it will offer them some reasons to conduct a self-check of how they fare in financial literacy and hence strive to better their knowledge. The issue of trust will also assist financial institutions to know how well they are trusted with regards to managing investors' funds while making efforts to

boost trust. Findings will also be relevant to the Securities and Exchange Commission of Ghana in knowing the financial literacy profile of its individual investors and also in maintaining and renewing its base of financially maturing investors in the country. It is undeniably argued that financial literacy, as well as, trust remain key elements in an investor's decision to directly invest in stocks other than in other financial assets with considerably lower risk or higher return.

It must be noted that some studies to evaluate or assess financial literacy levels of different groups have been conducted in Ghana (see [Baidoo et al., 2018](#); [Banyen & Nkuah, 2015](#)ⁱ). In lieu of the above, the study seeks to examine the impact of financial literacy and trust on stock ownership while explicitly testing the gender bias hypothesis to falsify or validate the evidence of the gender gap in financial literacy and stock market participation in Ghana. Results of the study also contribute to informing investors, financial institutions as well as all other stakeholders of what really matters in decisions to invest in shares in Ghana; is it financial literacy or trust, *ceteris paribus*? The research is intended to expand the knowledge gap in the area of financial literacy and direct stock participation as well as give insight on the financial behaviour of investors in Ghana; Passive or active investors and its implication on investment in Ghana. Information about the dominantly used source of financial information or news in order to effectively improve financial literacy in the country will also be identified in the study.

The study contributes to existing literature in Ghana in four major aspects. First, following [Balloch et al. \(2014\)](#), the study proposes a theoretical framework to understand the distinct effects of financial literacy

and trust on direct ownership of stocks. The testable implications of the proposed model constructed from the proposed theoretical framework are supported by available data. Second, instead of using general financial literacy questions to measure financial literacy as employed in most studies, the study will construct a Stock Market Specific Literacy index. This will be related to the understanding of the stock market and will help to measure households' level of participation in the stock market given their level of Stock Market literacy.

Notwithstanding this, stock market literacy and financial literacy will be used interchangeably. Third, the increased sample size and the rich data set on households' characteristics like behavioural and psychological factors helps to examine the importance of the various factors identified on stock market participation. Fourth, the study will significantly add to literature in Ghana by its introduction of behavioural and psychological factors like risk attitude and investment behaviours of the investor. These were not included in the study by [Banyen and Nkuah \(2015\)](#).

The results of the study will inform effective policies to target the major determinants of stock market participation in Ghana in order to increase capital accumulation, investment and economic growth in Ghana. The remainder of the paper is organized as follows: Section 2 presents the review of related literature while Section 3 describes our data and variable measurements; Section 4 reports the empirical analysis and provides results from the robustness analysis; and Section 5 concludes.

2 Review of Related Literature

Across literature, a number of factors have been identified to influence one's decision to hold stocks and hence explain the equity premium as to why few hold stocks. Dominant among these factors include Stock Market Awareness ([Almenberg & Widmark,](#)

ⁱ To the best of the researchers' knowledge, this remains the only literature that has studied the role financial literacy plays in explaining the non-participation rate in Ghana as of the time of the study, hence a further study is in the right direction.

2011; Guiso & Jappelli, 2005; Guiso et al., 2008; Manjula, 2013), Sociability (Balloch et al., 2014; Hong et al., 2004), Cognitive ability (Aren & Aydemir, 2015a; Benjamin et al., 2013; Grinblatt et al., 2011; Paiella, 2016), level of risk in the stock market (Halko et al., 2012), level of financial literacy and trust (Van Rooij et al., 2011; Von Gaudecker, 2015; Xia et al., 2014). Of these, financial literacy and trust have received considerably greater attention in recent literature since they account, to a large extent, why few invest in stocks (see Balloch et al., 2014). In most of the studies, the joint impact of sociability, trust and financial literacy have been accessed (see Georgarakos & Pasini, 2011) with some studies not controlling for sociability. In explaining the non-participation puzzle, the ability to save as well as the income levels of participants are not accounted for in most of the studies since the result is obvious as argued by Almenberg and Dreber (2015).

2.1 Theoretical Review

To be able to understand the distinct effects of financial literacy and trust on stock market participation, most studies adopted the Tobin's standard two-asset portfolio theory model also known as the "Separation Theorem" (Tobin, 1958). The theory postulates that the investor attempts to maximize returns by choosing between investing funds in risk free assets or in risky assets in a single portfolio. The theory also suggests that the composition of the optimal portfolio should be independent of the optimal level of wealth (Tobin, 1958). Given these two assets, financial literacy and trust as determinants of stock market participation (herein referred to as participation) employ the ideas of income and substitution effects of a price change (where price is the risk-free rate of return or the expected return, see also Balloch et al., 2014). Motivated by Campbell (2006), Jappelli and Padula (2013) argue that

stock market awareness (knowledge of stock market) leads to reduced pecuniary and non-pecuniary costs of participation. Balloch et al. (2014) opines that, financially literate households, increase their expected returns from participation by the significant reduction in their cost of participation. This offers them relatively higher disposable income to invest and accrue higher returns. This forms the income effect. In simpler terms, an increase in the potential investor's level of financial literacy lowers the cost of participation; inferred from the reduction in the amount that would have been spent to acquire financial advice. This leads to an increase in the disposable income available to the investor to invest with. *Ceteris Paribus*, the higher disposable income if invested, offsets a higher expected return and hence, relative to a non-risky asset (T-bills) which pays relatively lower returns, the investor chooses to invest in the risky asset (shares) in order to maximize his returns.

As explained by Tobin (1958), the substitution effects occur when the households' knowledge of the differences in share prices, rate of returns, market efficiency and liquidity as well as associated risk causes one asset to be chosen over the other. Similarly, the level of trust (the probability of being cheated by participating in the stock market) reduces investors' expected returns hence the preference for risk free assets to the risky assets. This forms the substitution effect. (See also modern Portfolio theory).

2.2 Empirical Review

2.2.1 Financial Literacy as a determinant

There is no universally accepted definition of financial literacy across literature since different researchers have defined financial literacy in diverse ways to suit their studies (Hung et al., 2009). For example, whiles Hilgert, Hogarth, and Beverly (2003) defines financial literacy as "financial knowledge", Lusardi and Mitchell (2011) defines financial literacy as "familiarity with most

basic economic concepts needed to make sensible savings and investment decisions". Like most studies, this study adopts the core definition of [Hung et al. \(2009\)](#) who refer to financial literacy as knowledge of basic economic and financial concepts, as well as the ability to use that knowledge and other financial skills to manage financial resources effectively for a lifetime of financial well-being.

The diversity in conceptual definitions has resulted in equal diversity in the measurement strategies of financial literacy. Despite the diversity, performance tests have generally been employed to measure financial literacy across studies. These performance tests are primarily knowledge based and reflect the conceptual definitions adopted by [Hung et al. \(2009\)](#). For instance, while [Agnew and Szykman \(2005\)](#) measures one's level of financial literacy by the number of correct responses to 10 multiple-choice and True/ False questions while [Lusardi and Mitchell \(2007, 2011\)](#) proxies the level of financial literacy by the number of correct responses to only 3 multiple-choice questions as well as True/ False questions. [Van Rooij et al. \(2011\)](#) measures financial literacy by Two weighted averages of correct/incorrect responses (based on factor analyses) for (a) 5 multiple-choice basic financial literacy items and (b) 11 multiple-choice sophisticated financial literacy items.

Notwithstanding the heterogeneity in conceptual definitions and measurement strategies, there seems to be a consistent finding that financial literacy positively and significantly affects one's decision to hold stocks. This implies that, the more financial knowledge one processes, the greater the likelihood to hold stocks or hold more shares. Put differently, it also implies that many households shy away from the stock market because they have little or no knowledge of stocks and the stock market in general ([Almenberg & Widmark, 2011](#)). The mechanism through which financial literacy influences participation remains

unclear across literature but [Balloch et al. \(2014\)](#) asserts that financial literacy helps stock market holders to reduce their cost of participation through reduced cost of information and hence their ability to maximize their returns. [Stango and Zinman \(2007\)](#) also show that, low financial literates are unable to calculate interests rates out of given streams of payments and consequently end up borrowing more, accumulate lower amounts of wealth and consequently unable to hold stocks.

The level of financial literacy varies across demographic factors most especially educational levels and gender as noted by [Almenberg and Widmark \(2011\)](#). [Van Rooij et al. \(2011\)](#) and [Balloch et al. \(2014\)](#) both found that financial literacy increases strongly with the level of education but affirms that the level of education does not account for higher levels of financial literacy. [Khorunzhina \(2013\)](#) using a dynamic model of stock market participation, argues that participation costs are lower for more educated investors (investors with higher degrees of financial literacy) and hence their ownership of more shares relative to less educated investors.

Across gender, women display much lower basic financial knowledge than men and hence accounts for why few women hold stocks or hold relatively fewer stocks than men in the equity premium puzzle ([Almenberg & Dreber, 2015; Almenberg & Widmark, 2011](#)). Some sources of information for the financial literates include financial newspapers, magazines, guides and books, financial information on the internet and professional financial advisors.

2.2.2 Trust as A Determinant in The Existing Literature

Trust as defined by [Guiso et al. \(2008\)](#) refers to the firm reliance on the characteristics of the financial system sound as sound management, quality of investor protection, effective regulation and supervision among

others. It is asserted that, trust in financial institutions influences individuals' decision making (see for example, [Baidoo & Akoto, 2019](#)). On studying trust's impact on stock market participation, one's level of trust influences participation in the stock market in tandem with the substitution effect of the [Tobin \(1958\)](#) Separation Theorem. Thus, mistrust in the stock market reduces the expected returns of investors ([Balloch et al., 2014](#)). Questions about trust have generally resorted to questions about the households' level of trust in the stock market, trust in stockbrokers and investment advisors. Different scales of measurements have been used across studies ([Gambetta, 1988, 2000](#)). Empirically, investors with lower levels of trust (less trusting households) are less likely to hold stocks or hold few stocks ([Balloch et al., 2014](#); [Giannetti & Wang, 2016](#)). Some identified factors that reduce the effects of trust or enhance the effect trust include sociability, level of education, past stock returns experience, risk attitude and the level of financial literacy. [Balloch et al. \(2014\)](#) assert that a household's level of trust in the stock market cannot necessarily be linked with the level of stock market literacy and that, having knowledge about the market do not make it trustworthy and profitable to invest in. Contrarily, [Guiso et al. \(2008\)](#) had argued that better education about the stock market could help reduce the negative effects of trust on stock market participation. In corroboration with [Guiso et al. \(2008\)](#), [Georgarakos and Pasini \(2011\)](#) report that personalized trust (trust in one's own financial institution or financial advisors) play a positive role in stockholding. The rationale for this is that, individuals who think that most people can be trusted are more likely to buy stocks (see [Monticone, 2010](#)). In comparing stockholdings in high stock participation countries (developed countries) relative to low stock holding participation countries (developing and less developed countries), [Georgarakos and Pasini \(2011\)](#) argues that the level of trust

plays an insignificant role in explaining the differences in stock holdings in both countries, regardless of households' wealth holdings. In the presence of other demographic variables like gender and educational levels, the level of trust varies across certain groups of individuals hence explaining the non-participation puzzle among such individuals. For instance, women are less likely to hold stocks because women on the average display higher levels of mistrust in the stock market than men and this is also because women are naturally risk averse.

2.2.3 Financial Literacy Programs / Interventions in Ghana

Despite the importance of financial literacy, programs and or interventions to enhance financial literacy seem to be receiving a considerably lower attention in the sight of state institutions and financial institutions as well, notwithstanding the proliferation of business newspapers, articles, media reports on business in the economy, financial literacy programs; either in the formal education curricula or otherwise. The 6-4-7-3 educational structure abolished in 1987 required students studied all compulsory courses including economics for the first 3 years of the 7-year secondary school. It could be said of that to a large extent that, this system helped to improve financial literacy relative to the new 6-3-3-4 educational system where students right from education beyond the 3-year JHS through to the university level education specializes in a particular discipline with little or no inter disciplinary learning. This compared to the previous system do not promote financial literacy education in the formal educational system as the former focused on students studying finance related courses like economics and business.

In 1987, the 6-3-3-4 curricula was implemented to replace the old structure. This was made up of 6 years of primary education, 3 years of Junior Secondary School education,

3 years of senior secondary school education and 4 years of university education. With this implementation, students right from education beyond junior secondary school through to the university education only study courses related to their areas of studies and hence the system does not promote financial education within the formal education curricula as interdisciplinary learning which was the key component of the previous 6-4-7-3 system. By this, it is more likely that a student studying a course or programme other than a finance related programme even up to the highest education level, would have no or little financial knowledge, all things being equal. Outside the school curricula, state institutions and private institutions have equally organized financial literacy programs or interventions to help promote financial literacy among the public. The specific motivations for such interventions differ and hence the target audience. For instance, in September 2014, a National Financial Literacy Strategy (NFLS) was organized by the Ministry of Finance and Economic Planning spanning through to December 2014. This intervention per the ministry had become necessary because a lot of Ghanaians did not access to financial services hence the lower rate of financial inclusion. In addition, the intervention sought to provide more education to the few banked population on the need cultivate the habit of savings and proper financial management to ensure their future financial security and that of the country- Ghana, given that, citizens contribute immensely to the health of the economy.

Players in the private financial sector have also introduced similar interventions as part of their corporate social responsibility or otherwise. For example, Fidelity Bank in partnership with Deutsche Gesellschaft Internationale Zusammenarbeit (GIZ) GmbH rolled out a joint financial literacy campaign to impact over 400,000 residents of the Greater Accra, Western, Ashanti, Eastern

and Central regions for a period of the 2 years; from 2014 to 2016. Jointly financed by the bank's financial inclusion department of the bank and GIZ under its development partnership with the private sector development, the aim of the programme was to provide the public most especially the unbanked and the underbanked persons with information and advice on the benefits and appropriate use of financial services and products, particularly savings, investments, loans and micro insurance. The organizers of the campaign emphasized their attempt to bridge the gap between the banked and unbanked to step up financial inclusion.

To end this section, the National Trust Holding Company equally targeting the youth (teenagers in the 2nd Cycle and young adults in the tertiary institutions) embarked on a financial literacy programme in July 2016 as part of their 40th anniversary celebrations. This was to encourage them to cultivate the habit of good financial planning and judgement especially in an era of market volatilities and an upsurge in get-rich-quick schemes. Though the impact of these interventions has not been measured and documented, it is believed that the success of such interventions to enhance financial literacy and influence positively the financial behaviour of the beneficiaries cannot be downplayed. It is also worth noting that, attitude towards organizing financial literacy programs is receiving some attention in the private sector of late.

3 Data and Variables

3.1 Data Type and Sources

Data for this empirical study was sourced from a survey conducted by the researcher that gathered information from 398 respondents who had a regular source of income and owns a bank account in the Kumasi Metropolis at the time of the survey. There were 68% (267 respondents) males and 28% (130 respondents) females.

Even though the sample was highly male dominated, it does not have any significant effects on the estimations. The average aged respondent was 31 years with the youngest and the oldest respondents aged 18 and 63 respectively and hence reflects the youthful nature of the respondents that the study targeted. 61% (256 respondents) had 1st degree University education while 25% (99 respondents) had higher education degrees (to include Masters and PhD). The remainder 14% (45 respondents) of the respondents comprised of respondents who had no formal education or at least some education up to complete senior secondary school.

Across professions, 41% were employed in a finance related job (like banking, insurance companies, accountants and cashiers at companies) while 40% were working in a non-finance related job and they included teachers, security personnel, traders among others. To add, at least, about 60% of the respondents had read either a finance, business or economics related programme at their education beyond senior secondary school.

A combination of purposive, convenience and snowball sampling methods were used to identify and recruit the respondents. The respondents for the study were purposefully selected because they are already actors in the financial system and hence could help provide answers to the research questions relative to the un-banked population since most of the issues will not be applicable to them. The survey instrument used was a questionnaire consisting of hybrid of structured and unstructured questions divided into four sections. The first section contains some demographic information of the respondents while the second and third sections aim to assess the financial literacy and level of trust levels of the respondents respectively. The last sections seek to find out the respondent's direct participation on the stock market, thus, respondents' direct ownership of shares in the last two months,

thus not later than August 2017. The direct ownership rules out all possibility of owning shares through mutual funds or pension funds for these do not confer on the holders the primary rights and privileges of direct shareholders, do not require any form of financial literacy and the primary decision of the respondent.

3.2 Measuring Financial Literacy

In accord with the common practice across literature, financial literacy was measured based on the respondents' responses to a set of questions used to measure financial literacy. The financial literacy questions were adopted from [Balloch et al. \(2014\)](#), [Hung et al. \(2009\)](#), and [Lusardi and Mitchell \(2007, 2011\)](#) but also, following [Almenberg and Dreber \(2015\)](#); [Balloch et al. \(2014\)](#); [Hung et al. \(2009\)](#), the researcher divided the questions into a the two-module set of questions; Basic Financial Literacy and Advanced Financial Literacy aimed at evaluating and measuring financial literacy. The Basic Financial Literacy Module comprised of nine questions that sought to access respondent's knowledge of basic financial literacy. It covered essentially cover basic cognitive ability, thus the ability to perform basic calculations ranging from the working of interest rates and interest compounding to knowledge of basic financial products, time value of money and lastly, knowledge and effects of inflation on wealth and purchasing power. This Basic Literacy Module is more necessary given that concepts underpinning the questions forms the basics of all financial transactions, financial planning, and day-to-day financial decision-making. Contrary to [Balloch et al. \(2014\)](#), the respondent was allowed to use a calculator and also allowed to seek clarification when the need arose. The advanced financial literacy module herein referred to as the Stock Market Literacy was made up of twelve stock market related questions which sought to test the respondent's knowledge of the risk, maturity

and return differences between shares and bonds (T. Bills), knowledge of how often share prices fluctuate depicting the risk of uncertainties in predicting prices (returns), privileges or rights of shareholders, functions of the stock market and the relationship between share prices and interest rates on T. Bills, given that T. Bills and stocks are substitutes.

Two major indexes were constructed for use as financial literacy index. The first index was constructed by using the total number of correct responses to the questions asked. This method has been widely used in the Financial Literacy as a determinant of investors' overall knowledge in financial literacy which impacts of investment behaviour (Adetunji & David-West, 2019; Agnew & Szykman, 2005; Baidoo et al., 2018; Hilgert et al., 2003; Lusardi & Mitchell, 2007; Van Rooij et al., 2011).

For the second index, since the responses included both nominal and ordinal data, the Principal Component Analysis (PCA) was used to construct the alternative Stock Market Literacy or financial literacy index. The index was thus computed as the weighted sum of the significant dimensions, using the proportion of total variation in all the components explained by the significant dimensions or components as the weights and where dimensions referred to components with Eigen values greater than 0.9. The index was then scaled to lie between 0 and 5 inclusive. As the index approaches 5, the more financially literate the household or respondent is in tandem with Balloch et al. (2014). To ensure that the respondent is not forced to choose any answer when the answer is not known, an option labelled don't know was included in the alternative options provided for each question but was considered as a wrong answer in the analysis.

From the survey, it was found out that, for the basic financial literacy section, the average score (number of correct responses), was 7 out of 9 questions, implying a greater

number of the respondents had more than average knowledge in simple interest calculation, interest compounding, effects of inflation on purchasing power, time value of money and basic numeracy skills, similar to the findings of Van Rooij et al. (2011) while for the advanced financial literacy, the average advanced financial literacy score was 6 correct responses out of 12 questions. Using econometric techniques, it was found that gender, education, access to financial information (financial news/advice) do have significant explanatory power on one's level of financial literacy. With respect to gender, the study showed that females tend to have lower levels of financial literacy relative to males. This can be inferred from the statistically significant difference in the mean financial literacy scores across gender. It could thus be concluded that there exists a gender gap in financial literacy in Ghana (as opined by Almenberg & Dreber, 2015; Balloch et al., 2014; Monticone, 2010 to exist globally).

What strongly accounted for higher financial literacy scores was access to financial news or advice. Access to financial information were received by respondents through listening to or reading financial news on or from media sources (TV, radio or newspapers), advice from family and friends working in a finance related job or otherwise (which Balloch et al. (2014) refers to as sociability) among others. The top 10% of the respondents with the highest level of financial knowledge acquired their financial information from electronic and print media. These findings of the level of financial literacy echo the findings of Aren and Aydemir (2015b) and Lusardi and Mitchell (2007).

3.3 Measuring the Level of Trust

To measure the households' level of trust, the Trust in Financial Institutions Sub Module of the Department of Labour Survey Pilot was adopted as adopted by Balloch et al. (2014) and an index computed

out of the responses. Questions about the household's general level of trust in people (closer to them or not) in their daily interaction with people, in stockbrokers and financial advisors, trust in obtaining higher returns from stocks relative to the risk-free bonds (treasury bills) as well as trust in financial institutions. The choices of the responses range from 0 (I do not trust at all) to 5 (I completely trust). To compute the trust index, the average of the respondent's numerical response to the aforementioned questions was taken and scaled between 0 and 1. 0 corresponds to households with no or lowest level of trust while 1 corresponds to households with the highest level of trust. Concerning the trust levels of the respondents, more than half of the respondents averagely trusted financial institutions and bank/ investment advisors. On the same scale of 0 to 5 with 0 meaning no trust and 5, perfect trust, the average trust level of the participants of the study was 2.48 which is halfway through the scale. To be able to compute the proportion of the respondents with similar trust levels, the respondents were grouped into 3 major categories of trust namely; Lower Trust Level, Average Trust Level and Higher Trust Level as presented in Figure 1. From the graph, it can be seen that 146 respondents (37%), 127 respondents (32%) and the least, 124 respondents (31%) had lower, average and higher levels of trust respectively. There was also a direct but weak correlation between trust and direct shareholdings as envisaged. See Figure 1.

3.4 Measuring Actual Participation

The direct ownership of shares was used as the measure for actual participation. This rule out ownership of shares by individuals through mutual funds and pension schemes or any form of ownership on behalf of the individual. It is a binary variable with 1 corresponding to the respondent's direct ownership of shares, and 0, otherwise. Not far from expected, the level of direct

shareholdings or number of respondents who had invested in shares was considerably low. Approximately 17% of the respondents (thus only 69 out of the 398 respondents) had held shares as at the survey period. The remainder 83% had either not held shares before, no longer holding any share of any kind and or owns some shares but through a mutual fund. This finding is in consonant with the limited or low stock market participation puzzle in Ghana as put forward by Banyen and Nkuah (2015) as well as other studies on direct stock market participation in other countries.

Of the shareholders, majority, thus 48 respondents were males while 21 were females. Similarly, more males (219 males) as against 105 females were not direct shareholders. It was found that majority of the shareholders had had some formal education up to 1st Degree University Education (33 respondents followed by those with education beyond 1st Degree University education (25 respondents)). The data reveals that more males participate directly on the stock market than females and at 5% significance level, it was concluded that there was no statistical difference in shareholdings across gender or there is no gender gap in share ownership in the case of Ghana.

4 Empirical Analysis

4.1 Impact of Financial Literacy and Trust on Direct Share Holding

To investigate the impact of financial literacy and trust while controlling for behavioral (risk attitude), and the specified households' demographic characteristics on the direct ownership of shares, the following estimable binary choice model was estimated and after some model specification tests, we settled on probit choice. The estimable regression equation adopted is specified as;

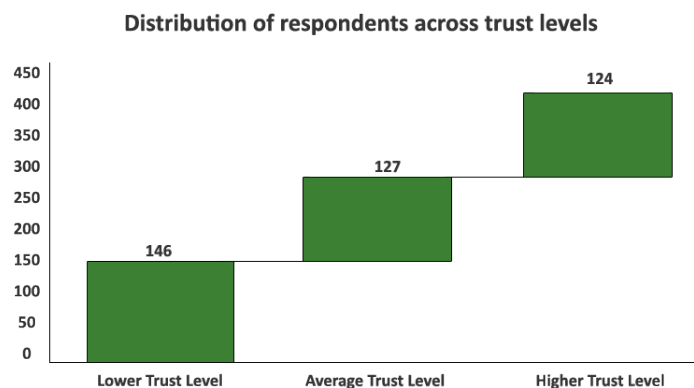


Figure 1: Graphing respondents across the three quintiles of trust

Source: Authors' computation using survey data, 2017

$$Shareholder_i = \alpha FinLit_i + \beta Trust_i + \gamma RiskAttitude_i + \delta Z_{ij} + \epsilon_i \quad (1)$$

where; $Shareholder_i$ is a dummy variable indicating direct ownership of shares; $FinLit_i$ is the index for the respondent i 's level of financial literacy; $Trust_i$ captures the weighted index of respondent i 's level of trust; $RiskAttitude_i$ is a binary response that measures whether the respondent is risk averse or not, thus $RiskAttitude_i = 1$ if respondent is risk averse and 0 if otherwise; Z_{ij} captures the i th respondent's demographic characteristic Z_j and $\epsilon_i \sim N(0, 1)$. Seven different regression models were considered; the baseline model and other alternative specifications to check the robustness of the estimates. The baseline models (first 4) utilizes total financial literacy scores, thus the total number of correct responses in the basic and advanced financial literacy sections as the proxies for financial literacy contrary to the mostly used one dimensional measure of financial literacy used in previous studies- number of correct responses. On the other hand, the after-baseline models differ in terms of the mode of measuring financial literacy indices. Given the strong correlation between the financial literacy questions due to the fact that some questions were intentionally asked

in a different way to ascertain the validity of initial responses, an iterated Principal Component Analysis (PCA) was conducted to compute a single index for Basic financial literacy, Advanced financial literacy and the total financial literacy using all the 21 questions (hence 21 dimensions) for the correct answers of these questions.

Using the Kaiser-Meyer-Olkin measure of sampling adequacy tests for Basic Financial Literacy, Advanced Financial Literacy and Total Financial literacy scores, it was established that the PCA can thus be used to create the intended indexes. The indexes were then computed as the weighted sum of significant dimensions while using the proportions of the total variation explained by the significant components as weights. Significant dimensions or components were restricted to components with a minimum value of 0.9 rather than using the usual threshold of 1. Using a minimum Eigen value of 1 would have implied most components will be skipped in computing the indices and may not be a clear representation of the number of components used. Since the index measures one's level of financial literacy and that knowledge cannot be negative, the values of the PCA were transformed and further scaled to lie between 0 and 3 inclusive. As the index approached 3, the more financially literate the respondent was. To estimate the impact of financial literacy

on direct shareholdings, a probit regression was estimatedⁱⁱ and the results are shown in Table 1. To begin, it can be seen that finance related job proved to be statistically significant with a positive effect on direct share ownership. From Table 1, it can be seen that the likelihood of investing in shares increases by approximately 40% across all models. This is theoretically true since those working in the finance related jobs tends to have access to more financial information and hence more financially literate than those who are not working in a finance related job. This reduces their cost of participation as there is a considerable reduction in their information and transaction costs hence, making them more likely to invest in shares relative to those not working in a finance related job, *ceteris paribus*.

Advanced financial literacy score was consistently significant when used alone or together with the basic financial literacy. It had positive and significant effect on the probability of investing in shares. Thus, for every one unit increase in one's level of financial literacy, the likelihood of investing in shares relative to treasury bills increases by approximately 7 percent (0.0721 and 0.0735). Even though the estimated marginal effects are of low magnitude, this result is also not far-fetched and corroborates with findings of Balloch et al. (2014). This is because, contrary to the advanced financial literacy section which clearly related to the risk, maturity and return differences between treasury bills and shares and hence why an investor would still prefer risk bearing shares to the risk free Treasury Bills, the basic financial literacy section centered generally on basic numeracy, simple interest calculation, interest compounding

and time value of money but did not reflect any information on shares.

In accord with the findings of Balloch et al. (2014), Banyen and Nkuah (2015) and Monticone (2010), total financial literacy had a significant direct effect on the probability of buying to own some shares or stocks. Similarly, the PCA computed indexes for Advanced and Total Financial Literacy assumed the same results hence emphasizing the importance of the two factors. Risk aversion and trust were not statistically significant. The other controls were age, gender, marital status and level of education but were not reported because they do not have any explanatory effect on share ownership though they meet expected signs. While the insignificant explanatory power of risk aversion corroborates the findings of Guiso et al. (2008), the insignificant effect of level of trust on direct shareholdings opposes the findings of Guiso et al. (2008). When considered as a distinct variable, trust has a statistically positive and significant effect on direct shareholdings but losses its marginal significance once financial literacy, risk aversion and the other control variables are accounted for.

This goes further to confirm that, what matters most in decision to hold shares is financial literacy rather than trust as argued by Balloch et al. (2014), Georgarakos and Pasini (2011), Monticone (2010). As put forward by Balloch et al. (2014), age is the only demographic factor that influences shareholding and that following Bjørn (1980) suggests that share ownership follows the lime profile of consumption and savings as opined by the Life Cycle Hypothesis (LCH) of consumption implying that share ownership assumes an inverted U shape as age increases. For this reason, a squared term of age was introduced but was not statistically significant at the 5% allowable margin of error though it met the expected sign. Marital status, gender, level of education had no significant explanatory power on direct shareholdings.

ⁱⁱ Using post estimation diagnostic tests like the Good-ness of Fit tests, Classification Statistics tests, Receiver Operation Characteristic (ROC) curves tests and the sensitivity or specificity plots tests on the baseline models, the Probit model was found to better fit with the data over the logit regression model. For this reason, the Probit model was chosen over the logit estimation.

Table 1: The results of the different Probit regressions with varying financial literacy indices

	Basic Score	Advanced Score	Basic and Advanced Score	Total Score	PCA Basic and Advanced Scores	PCA Total Score
Finance related Job	0.415** (0.160)	0.413** (0.160)	0.406* (0.161)	0.418** (0.160)	0.407* (0.160)	0.424** (0.161)
Basic Fin. Lit. Score	0.0310 (0.050)		-0.0109 (0.052)			
Advanced Fin. Lit. Score		0.0721* (0.033)	0.0735* (0.035)			
Total Fin. Lit. Score				0.0475* (0.024)		
Basic Score Index					0.0338 (0.021)	
Advanced Score Index					0.398* (0.191)	
Total Score Index						0.3977 (0.224)
Risk Aversion Index	-0.1145 (0.209)	-0.1192 (0.206)	-0.1105 (0.207)	-0.1358 (0.208)	-0.1292 (0.205)	-0.1583 (0.209)
Trust Index	0.952 (0.516)	0.7667 (0.515)	0.7615 (0.51)	0.8273 (0.523)	0.8045 (0.509)	0.8916 (0.521)
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Source: Authors' computation using survey data, 2017.

Note: Marginal Effects; robust standard errors in parentheses, ** $p < 0.01$, * $p < 0.05$.

Investigating factors that influence the level of financial literacy, level of education, access to financial news and gender played significant roles. It could possibly be that, the effect of education on direct ownership have been captured already in the financial literacy effects hence it is not surprising that education loses its marginal significance on shareholdings when financial literacy is taken into account.

5 Conclusion

The study sort to investigate the role financial literacy and trust play in the decision to directly invest in shares and as aids to understand better the non-participation puzzle in Ghana while controlling for sociodemographic factors and risk attitude. Using a survey data from 398 respondents in Kumasi-Ghana, the major findings of the study are: First, direct stock market participation was very low, thus 69 respondents out of the 398 respondents were shareholders of which more were males and that share-holdings varied across

the various levels of education; investors' likelihood of owning shares tends to increase as education increased. Second, the level of financial literacy was generally low, thus majority of the respondents displayed low levels of financial literacy as the quintile distribution showed. But financial literacy levels varied across gender with males being more financially literate than females and also varied as education levels changed. It is thus recommended that consonant with the low levels of financial literacy identified in the study, it is recommended that financial institutions as well as the central bank (Bank of Ghana) should give some more attention to financial literacy programs or interventions in order to provide citizens (not only the banked but the unbanked as well) with more financial information, knowledge and skills for effective financial management.

Also, some basic financial concepts should be taught at all levels of education beyond the junior secondary school. This is because education beyond senior high significantly influenced higher levels of financial literacy.

This will not only improve the financial literacy levels but also augment the efforts of financial inclusion interventions in Ghana. Again, the level of trust did not matter in the decision to invest in shares but financial literacy mattered. Given the high non-participation rate, it can strongly be argued that financial literacy thus provides more insight to explain the non-participation in Ghana. Last but not least, TV/ Radio formed the major source of financial news or information in the country and thus access to financial news and level of education enhances Financial literacy and that should be widely used in the attempt to provide financial education to the public.

In spite of the success of the study, one delimiting factor of the study was the time and budgetary constraints. This accounted for the lower sample size of 400 respondents and hence results couldn't be generalized for the country as a whole as compared to other studies abroad. Also, it was realized that literature or studies on financial literacy and share ownership in Ghana is considerably low. This implies that the Ghanaian context on the issue of financial and share ownership (financial behaviour) was not clearly established. In this regard, a replicated study with a similar interest but a relatively larger sample size and other socio-demographic factors, particularly income and the behavioural factors (optimism- how optimistic the investor is about positive returns).

In sum, research on financial literacy and financial behaviour must be given some considerable attention given that financial literacy does have significant effects on sound financial management of investors. In this regard, future research should consider the influence of financial literacy on other financial behaviours like retirement planning and risk taking.

References

- Adetunji, O. M., & David-West, O. (2019). The relative impact of income and financial literacy on financial inclusion in nigeria. *Journal of International Development*, 31(4), 312–335. doi:10.1002/jid.3407
- Agnew, J. R., & Szykman, L. R. (2005). Asset allocation and information overload: The influence of information display, asset choice, and investor experience. *Journal of Behavioral Finance*, 6(2), 57–70. doi:10.1207/s15427579jpfm0602.2
- Almenberg, J., & Dreber, A. (2015). Gender, stock market participation and financial literacy. *Economics Letters*, 137, 140–142. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165176515004115> doi:10.1016/j.econlet.2015.10.009
- Almenberg, J., & Widmark, O. (2011). Numeracy, financial literacy and participation in asset markets. *SSRN Electronic Journal*. doi:10.2139/ssrn.1756674
- Aren, S., & Aydemir, S. (2015b). The moderation of financial literacy on the relationship between individual factors and risky investment intention. *International Business Research*, 8(6), 17–28. doi:10.5539/ibr.v8n6p17
- Aren, S., & Aydemir, S. D. (2015a). The factors influencing given investment choices of individuals. *Procedia - Social and Behavioral Sciences*, 210, 126–135. (Proceedings of the 4th International Conference on Leadership, Technology, Innovation and Business Management (ICLTIBM-2014)) doi:10.1016/j.sbspro.2015.11.351
- Baidoo, S. T., & Akoto, L. (2019). Does trust in financial institutions drive formal saving? empirical evidence from ghana. *International Social Science Journal*, 69(231), 63–78. doi:10.1111/issj.12200
- Baidoo, S. T., Boateng, E., & Amponsah, M. (2018). Understanding the determinants of saving in ghana: Does financial literacy matter? *Journal of International Development*, 30(5), 886–903. doi:10.1002/jid.3377
- Balloch, A., Nicolae, A., & Philip, D. (2014). Stock market literacy, trust, and participation. *Review of Finance*, 19(5), 1925–1963. doi:10.1093/rof/rfu040
- Banyen, K., & Nkuah, J. (2015). Limited stock market participation in Ghana: A behavioral explanation. *International Journal of Economics and Empirical Research*, 3(6), 286–305. doi:10.2139/ssrn.2795036
- Benjamin, D. J., Brown, S. A., & Shapiro, J. M. (2013). Who is 'behavioral'? cognitive ability and anomalous preferences. *Journal of the European Economic Association*, 11(6), 1231–1255. doi:10.1111/jeea.12055
- Biørn, E. (1980). The consumption function and the life-cycle hypothesis: An analysis of norwegian household data. *The Scandinavian Journal of Economics*, 82(4), 464–480. doi:10.2307/3439678
- Campbell, J. Y. (2006). *Household finance* (Working Paper No. 12149). National Bureau of Economic Research. doi:10.3386/w12149



- Cocco, J. F., Gomes, F. J., & Maenhout, P. J. (2005). Consumption and portfolio choice over the life cycle. *The Review of Financial Studies*, 18(2), 491–533. doi:10.1093/rfs/hhi017
- Gambetta, D. (1988). *Trust: Making and breaking cooperative relations*. New York: B. Blackwell. <https://www.researchgate.net/publication/242591079.Trust.Making.and.Breaking.Cooperative.Relations>.
- Gambetta, D. (2000). Can we trust trust? In D. Gambetta (Ed.), *Trust: Making and breaking cooperative relations* (pp. 213–237). electronic edition, Department of Sociology, University of Oxford. <https://www.csee.umbc.edu/~msmith27/readings/public/gambetta-1988a.pdf>.
- Georgarakos, D., & Pasini, G. (2011). Trust, sociability, and stock market participation. *Review of Finance*, 15(4), 693–725. doi:10.1093/rof/rfr028
- Giannetti, M., & Wang, T. Y. (2016). Corporate scandals and household stock market participation. *The Journal of Finance*, 71(6), 2591–2636. doi:10.1111/jofi.12399
- Grinblatt, M., Keloharju, M., & Linnainmaa, J. (2011). IQ and stock market participation. *The Journal of Finance*, 66(6), 2121–2164. doi:10.1111/j.1540-6261.2011.01701.x
- Guiso, L., & Jappelli, T. (2005). Awareness and stock market participation. *Review of Finance*, 9(4), 537–567. doi:10.1007/s10679-005-5000-8
- Guiso, L., Sapienza, P., & Zingales, L. (2008). Trusting the stock market. *the Journal of Finance*, 63(6), 2557–2600. doi:10.1111/j.1540-6261.2008.01408.x
- Halko, M.-L., Kaustia, M., & Alanko, E. (2012). The gender effect in risky asset holdings. *Journal of Economic Behavior & Organization*, 83(1), 66–81. doi:10.1016/j.jebo.2011.06.011
- Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household financial management: The connection between knowledge and behavior. *Federal Reserve Bulletin*, 89, 309–322. <https://www.federalreserve.gov/pubs/bulletin/2003/0703lead.pdf>.
- Hong, H., Kubik, J. D., & Stein, J. C. (2004). Social interaction and stock-market participation. *The journal of finance*, 59(1), 137–163. doi:10.1111/j.1540-6261.2004.00629.x
- Hudomiet, P., Kézdi, G., & Willis, R. J. (2011). Stock market crash and expectations of American households. *Journal of Applied Econometrics*, 26(3), 393–415. doi:10.1002/jae.1226
- Hung, A., Parker, A. M., & Yoong, J. (2009). *Defining and measuring financial literacy* (Working Paper No. WR-708). RAND Working Paper Series. doi:10.2139/ssrn.1498674
- Jappelli, T., & Padula, M. (2013). Investment in financial literacy and saving decisions. *Journal of Banking & Finance*, 37(8), 2779–2792. doi:10.1016/j.jbankfin.2013.03.019r
- Khorunzhina, N. (2013). Structural estimation of stock market participation costs. *Journal of Economic Dynamics and Control*, 37(12), 2928–2942. doi:10.1016/j.jedc.2013.08.011
- Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American economic review*, 537–558. <https://www.jstor.org/stable/116848>.
- Lusardi, A., & Mitchell, O. S. (2007). *Financial literacy and retirement planning: New evidence from the Rand American Life Panel* (Research Paper No. WP 2007-157). Michigan Retirement Research Center. doi:10.2139/ssrn.1095869
- Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: an overview. *Journal of pension economics & finance*, 10(4), 497–508. doi:10.1017/S1474747211000448
- Malmendier, U., & Nagel, S. (2011). Depression babies: do macroeconomic experiences affect risk taking? *The Quarterly Journal of Economics*, 126(1), 373–416. doi:10.1093/qje/qjq004
- Manjula, V. (2013). Social dynamics of gender and risk in stock markets. *International Journal of Humanities and Social Science Invention*, 2(4), 36–41. [http://www.ijhssi.org/papers/v2\(4\)/version-1/H243641.pdf](http://www.ijhssi.org/papers/v2(4)/version-1/H243641.pdf).
- Monticone, C. (2010). Financial literacy, trust and financial advice. In *51th annual scientific meeting of the italian society of economists (sie)*, catania, sicily.
- Mun, H. W., Siong, E. C., & Thing, T. C. (2008). Stock market and economic growth in Malaysia: Causality test. *Asian Social Science*, 4(4), 86–92. <https://ssrn.com/abstract=1398266>.
- Nazir, M. S., Nawaz, M. M., & Gilani, U. J. (2010). Relationship between economic growth and stock market development. *African Journal of Business Management*, 4(16), 3473–3479. <https://academicjournals.org/journal/AJBM/article-abstract/229B23621149>.
- Nowbutsing, B. M., & Odit, M. (2009). Stock market development and economic growth: The case of Mauritius. *International Business & Economics Research Journal*, 8(2), 77–88. doi:10.19030/iber.v8i2.3104
- Paiella, M. (2016). Financial literacy and subjective expectations questions: A validation exercise. *Research in Economics*, 70(2), 360–374. doi:10.1016/j.rie.2015.11.004
- Puri, M., & Robinson, D. T. (2007). Optimism and economic choice. *Journal of Financial Economics*, 86(1), 71–99. doi:10.1016/j.jfineco.2006.09.003
- Stango, V., & Zinman, J. (2007). Fuzzy math and red ink: When the opportunity cost of consumption is not what it seems. *Dartmouth College. 42 Viscusi, W. Kip*. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.457.4758>.
- Tobin, J. (1958). Liquidity preference as behavior towards risk. *The review of economic studies*, 25(2), 65–86. doi:10.2307/2296205
- Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2), 449–472. doi:10.1016/j.jfineco.2011.03.006

- Von Gaudecker, H.-M. (2015). How does household portfolio diversification vary with financial literacy and financial advice? *The Journal of Finance*, 489–507. <https://www.jstor.org/stable/43611039>.
- Xia, T., Wang, Z., & Li, K. (2014). Financial literacy overconfidence and stock market participation. *Social indicators research*, 119(3), 1233–1245. doi:10.1007/s11205-013-0555-9