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Financial literacy, financial distress and socioeconomic characteristics of individuals in Ghana

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Abstract

Purpose of study: Personal financial stress-free living is desired by many, which dwells on sound financial literacy (including financial behaviour, financial knowledge, and financial attitude). Many individuals do not make optimal savings and investment decisions. The realisation that these choices may well lead to low living standards has also increased economic anxiety, especially in Sub-Sahara African countries, including Ghana. Thus, this study underscores the link between financial literacy and financial distress in Ghana. It establishes whether persons that are financially literate escape financial distress in their life.

Design/methodology/approach: The paper engages nationally representative survey data and adopts a positivist research approach with logistic regression analysis to establish the likelihood of financial literate persons experiencing financial distress.

Findings: This study establishes that financially literate individuals are 2.4% less likely to experience financial distress. Socioeconomic characteristics greatly influence the probability of one experiencing financial hardship. It submits that policy can be directed towards improving financial habits (financial literacy) to enhance individuals' financial behaviour to lessen personal financial distress.

Originality: Not much attention has been paid to whether financial literacy has a nexus with financial distress. Few studies (not on sub-Saharan Africa) that have looked at this are done, neglecting a sensitivity analysis of socioeconomic characteristics in establishing the relations. However, this current study dwells on econometric analysis to establish the margin or extend to which a financially literate person may or may not escape financial distress given his/her socioeconomic characteristics.

Keywords: Financial literacy, financial distress, Ghana, socioeconomic characteristics

JEL classification: D03, D14

Introduction

Living a comfortable and stress-free life is desired by many, if not all. Financial decisions such as buying a house, clothing, shelter, and food, maintaining economic well-being, and saving for future expenses are decisions people or households go through in their lifetime (Karakara *et al.*, 2021forthcoming). An individual's ability to make an informed, aware and efficient financial decision seems to be particularly important (Bongini, *et al.*, 2018). Chijwani (2014) indicated that an uninformed, unaware and lack of financial knowledge behaviour leads to personal (finance) decisions that adversely affect personal financial conditions. The ability to make decisions would be restricted if one has a low level of financial literacy (Lusardi, 2012) and hence financial literacy leads to an improved financial decision. Dewi *et al.*, (2020a) said that the more financially literate an individual is, the more rational they are in financial decision-making. It is established that a low level of financial knowledge and financial anxiety, and a lack of interest in financial issues show a negative correlation (Linciano, Gentile, and Soccorso, 2017). Research in human, financial behaviour suggests that many people do not make optimal savings and investment decisions. These choices may well lead to low levels of living standards and can increase economic anxiety (Hung, Parker, and Yoong, 2009). An unanticipated rise in expenses, coupled with financially unplanned behaviour, can increase the likelihood that a household will experience unpaid bills, utility disconnections, eviction threats (Dorsey-Palmateer, 2020), food unavailability in the house, and other forms of financial distress/hardship (Idris *et al.*, 2013). However, several studies show that an individual's ability to understand and use basic financial and economic concepts plays a vital role in achieving an appropriate economic well-being level (Lusardi and Mitchell, 2011, 2014). Financially literate individuals are often found to have more access to finance than non-financially literate ones (Asongu and Odhiambo, 2018). Adequate financial skills enable individuals to take advantage of a developed financial system's opportunities and take calculated risks into account properly. Financially illiterate societies can substantially constrain access to finance in the banking industry (Asongu and Nnanna, 2018). In such societies, individuals may not know the availability and cheap credit around them and cannot quickly determine the benefit of particular savings and investment.

Financial literacy has been variably defined as having good financial behaviour (Moore, 2003), a form of financial knowledge (Hilgert, Hogarth, and Beverley, 2003), and the ability to apply that

knowledge to financial matters (Mandell, 2007). Thus, a comprehensive definition of financial literacy is a combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being (OECD-INFE, 2011). Hence, “financial literacy is a combination of knowledge, attitude and behaviour, and so it makes sense to explore these three components in combination by adding the scores together” (Atkinson and Messy, 2012, p. 39). Gjertson (2016) focused on savings behaviour and found that making efforts to save money for emergencies reduces the likelihood of future hardships such as skipped utility or housing payments and food insecurity. Also, Grable and Joo (1998) noted that the more financially literate one is, the lesser financial hardships he/she may have to face in life.

In Ghana, most people, especially women and unemployed persons (who sometimes are considered vulnerable to poverty), face financial distress partly because of low financial literacy (Osabuohien and Karakara, 2018). Kunateh (2009) reports that financial literacy is generally low in Ghana, with 38, 44 and 51 percentages in the northern, middle and southern belts, respectively. InterMedia and Consultative Group to Assist the Poor-CGAP (2015) estimated that almost 6 out of every 10 Ghanaians are financially illiterate. Also, Atia (2012) indicated that financial literacy is generally low among Ghanaians, with most adults not having the basic knowledge needed for good financial choices. The consequences of not knowing the basics about household financial matters can prove to be costly for people as they make financial decisions for the short-term or the long-term. To help achieve SDGs 1 and 3, which seek to end poverty in all its forms everywhere, ensure healthy lives, and promote well-being for all ages, individuals and households need to live a financially distress-free life (Osabohien *et al.*, 2020).

Financial distress in a mild form has been said by Worthington (2006) to be the inability to engage in basic social activities such as meals with family and friends, nights out and holidays. In another study, Anderloni *et al.* (2011) comprehensively regard financial distress as financial fragility (over-commitment due to excess indebtedness) and financial instability (such as inability to face monthly expenses and balance the budget, arrears in paying utility bills, difficulties in shopping for food or paying rent). Financial distress is caused by many factors, including demographic and socioeconomic characteristics (Worthington, 2006) and unsound or unstable borrowing choices, which could build up debt (Anderloni *et al.*, 2012). A financially

distress-free life can partly be achieved by financial literacy education. Earlier literature has explored factors contributing to various types of households financial hardship and distress (Bricker and Thompson, 2016; McCarthy, 2011) with little attention on the role of financial literacy. Some studies explore this link between financial literacy and financial distress (Daudet *al.*, 2018; Idris *et al.*, 2013; Anderloni *et al.*, 2012; Delafrooz and Paim, 2011) however, to the best of our knowledge, these are done on non-Sub-Saharan countries. Again, there are mixed findings on the role financial literacy plays in financial distress. While some scholars (e.g. Daudet *al.*, 2018) found positive relations, others (e.g. Sabri and MacDonald, 2010) maintained that there is a negative relationship between the two variables. These conflicting findings could be due to the method and trend of analysis adopted as well as the geographical area studied. Also, these studies that have looked at financial literacy and financial distress neglect the issue of at what point does an individual become financially distressed or escape financial distress. Again, how the socioeconomic characteristics of an individual could influence his/her financial distress is seldom tackled in the literature. Thus, earlier studies looked at the relationship between financial literacy and financial distress.

This current study differs as it focuses on the point at which a financially literate person escapes financial distress. To this end, this study examines the likelihood of a financial literate individual escaping financial distress by using a logit model and does some sensitivity analysis on crucial socioeconomic variables and financial literacy and financial distress. Thus, we asked the following research questions; a) Do financial literate individuals escape financial distress? and b) Do socioeconomic characteristics determine the likelihood of individuals experiencing financial distress? Correspondingly, the study explored the following null hypotheses: a) H_0 : financial literate persons do not escape financial distress; and b) H_0 : socioeconomic characteristics are not related to whether a person will experience financial distress or not.

The rest of the paper is written as follows: the next section looks at brief insights from empirical literature, followed by data and method of analysis section and then results and discussion section. The last section concludes and provides some recommendations from the study.

Brief insights from theoretical and empirical literature and conceptual framework

Theoretical literature

Within the purview of microeconomic theory, an individual's consumption decisions and savings culture are in tandem. The individual is assumed to be rational and well-informed and thus, will consume less and save for future consumption when incomes fall. Earlier studies (Friedman, 1957; Modigliani and Brumberg, 1954) indicated that rational consumers arrange their optimal savings and bundle their consumption patterns to smooth the marginal utility they enjoy over time. This analogy was later referred to as the standard consumption model by Browning and Lusardi (1996) that a rational forward-looking individual will not want his/her expenditure in one period to be worth more than the expenditure in another period. This consumer behaviour is shaped by many factors, including those of individual risk behaviour (Campbell and Viceira, 2002), economic situation, among others (Lusardi, Michaud and Mitchell, 2013).

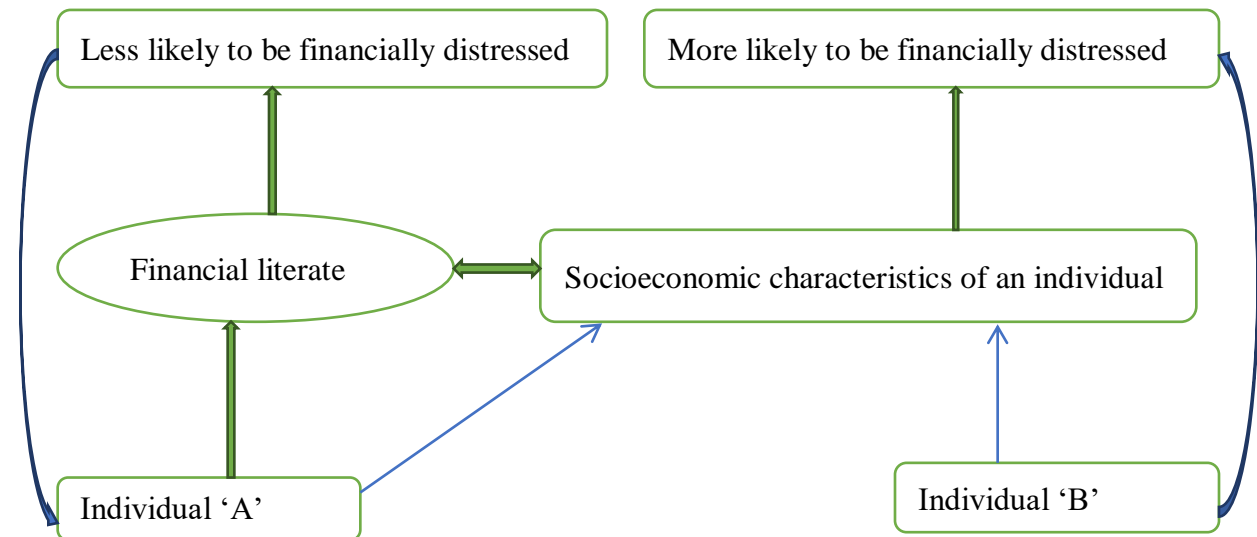
Lusardi and Mitchell (2014) noted that microeconomic models generally assume that individuals can formulate and execute savings and spend-down plans, which requires them to have the capacity to understand complex economic calculations and to have expertise in dealing with financial markets. Thus, individuals could become financial literate, which could enhance their welfare, as they might gain more in the financial market. In another related study, Jappelli and Padula (2013) consider a two-period model in a multi-period life cycle model with financial literacy being endogenously determined. They predicted financial literacy and wealth to be strongly correlated over the lifecycle, rising until retirement and falling thereafter.

Again, Jappelli, Pagano and Maggio (2008) indicated that household insolvencies tend to be associated with greater households' indebtedness (financial distress). They further indicated that European countries that experienced relatively fast debt growth also featured larger increases in insolvency rates. They concluded that institutions are potent determinants of households' debt and defaults (financial distress). Thus, the size of the household credit market is associated with better enforcement of credit rights and information-sharing arrangements. In another study focusing on financial literacy, Lusardi and Tufano (2009) found that low literacy individuals are more likely to carry high-cost debt and have debt problems. More financial literate persons tend to include stocks in their portfolios, and they understand the principle of diversification (van Rooij *et al.*, 2011).

Conceptual framework

Based on the theoretical and empirical literature and the objective of this paper, we conceptualised our study as captured in figure 1. We hypothesised that a financially literate person is less likely to experience any form of financial distress. In the figure, individual ‘A’ has the same socioeconomic characteristics as individual ‘B’. They are both being affected by the same economic and political conditions. However, individual ‘A’ is financially literate, and this literacy reinforces his/her socioeconomic characteristics. This interaction will help him/her reduce the likelihood of experiencing any form of financial distress. Comparatively, individual ‘B’ who is not financially literate is more likely to experience financial distress. The socioeconomic characteristics in our study; are gender, age, marital status, education, employment status and residence (rural/urban).

Figure 1: Conceptual framework (financial literacy and financial distress interactions)



Source: Authors’

Empirical literature

There is a growing body of literature on financial distress, on the one hand, and financial literacy, on the other hand. However, little attention is paid to the nexus between financial literacy and financial distress. On financial distress, some researchers (Asongu, 2019; Jaafar, Muhamat, Alwi, Karim and Rahman, 2018; Thim, Choong and Nee, 2018) concentrated on the financial distress of firms, while others looked at the factors that determine household or individual financial distress (Bricker and Thompson, 2016; Dobkin, Finkelstein, Kluender and Notowidigdo, 2018;

Babajideet al., 2021). On financial literacy, there are also studies on factors that determine individual financial literacy (Thapa, 2015) across the globe. However, little attention has been given to the nexus between individual financial literacy and financial distress; though some research effort has been made, it is still scanty. This is one of the areas that this current paper contributes.

Earlier research has examined factors contributing to various types of household financial hardship and distress across the globe. Cost increases (i.e., increases in prices of goods and services) have been seen to play a vital role in increasing the likelihood of individuals or households experiencing financial distress (Dorsey-Palmateer, 2020). Bricker and Thompson (2016) concluded that increased students loan debt leads to students experiencing over two months' late payments of bills and limited access to credit. A study by Mills and Amick (2010) summarised that a low amount of funds by low-income persons/households had reduced the probability of experiencing missed rent or utility payments, insecurity, and utility cut-off. Also, Gjertson (2016) focused on savings behaviour and found that making efforts to save money for emergencies reduces the likelihood of future hardships such as skipped utility or housing payments and food insecurity.

An emergency expense has also been found to affect the probability of an individual experiencing financial distress. For instance, hospital admissions have been found to increase unpaid medical bills, risk of bankruptcy, and reduced access to credit, among other financial consequences, for insured, non-elderly adults (Dobkin *et al.*, 2018). On the other hand, having an emergency plan (e.g., health insurance) was found to reduce past debt struggles and bankruptcies (Mazumder and Miller, 2016). Behaviours such as planning, financial discipline, and self-control have been found to be associated with the probability of struggling with personal finances relating to bills payment and credit commitments (McCarthy, 2011).

Taylor (2011) studied financial ability and capacity using survey data in the USA and found that financial capacity is determined by health, financial ability, and knowledge. An individual's demographic characteristics are related to the level of financial literacy (Yildirim *et al.*, 2020; Ansong and Gyensare, 2012; Cole, Thomas and Bila, 2008; Guiso and Jappelli, 2008).

Almenberg and Save-Soderberg (2011) indicated that the highest levels of financial literacy are demonstrated by those between the ages of 35-50, and those older than 65 were found to perform the worst. Also, Cole *et al.* (2008) found age to be a significant factor that explains financial literacy in India and Indonesia. On gender, Goldsmith and Goldsmith (1997) pointed out that women score worse than men on financial literacy. This is because, in general, they are less interested in investment and personal finance and, consequently, use financial services more seldom.

Delafrooz and Paim (2011) indicated that financial literacy and financial management practice significantly influenced saving behaviour. Again, financial problem is predicted by financial stress and financial management practice. Specifically, better financial management practices were related to lower levels of financial problems and higher levels of savings behaviour. However, they found no significant relationship between financial literacy and financial problem and no significant relationship between financial literacy and savings behaviour.

McCarthy (2011) focused on whether individuals' behavioural traits, such as their capacities for self-control, planning, and patience, affect their ability to escape financial distress. Using a nationally representative survey data of financial capability and experience in the UK and Ireland, the author found that financially literate individuals in the sample were less likely than financially illiterate individuals to experience financial distress. Again, the probability of getting into financial difficulties is about 8 per cent lower for people who get five of the six questions on financial literacy correct, relative to people answering three or fewer questions correct, and this result was statistically significant. McCarthy (2011) further indicated that behavioural traits have a more substantial impact on the incidence of financial distress than education or financial literacy.

Also, Idris *et al.* (2013) examined the relationship between the levels of financial literacy and financial distress among a sample of 430 Malaysian youths. The authors did a descriptive analysis and found that the levels of respondents' financial distress and financial literacy were moderate, which shows a positive but weak relationship between financial literacy and the level

of financial distress. They further did an inferential analysis using a Pearson correlation test. They found a significant relationship between financial literacy and level of financial distress at the significance level of $p = 0.000$. From the literature, though many scholars (Idris *et al.*, 2013; McCarthy, 2011; Delafrooz and Paim, 2011) have generally established a positive relationship between financial literacy and financial distress. Others (e.g., Sabri and MacDonald, 2010) have found the reverse.

Data and methodology

Data

The study used the Mobile Financial Services Survey (MFSS) data¹ collected in 2014. The household sample survey was based on a two-stage stratified cluster design. The frame was stratified into urban and rural localities of residence and by the then 10 administrative regions in the country. A nationally representative sample of 3,000 adults aged 15 years and above was randomly selected to participate in the study. The target sample of 3,000 respondents was first allocated to the 10 regions² of the country proportionally to their estimated population of 15 years old and over. Within each region, the resulting sample allocation was proportionally distributed to urban and rural areas. Out of the total sample in the data (3,000), there were missing observations for some of our variables of interest, reducing the sample to 1,715 observations that captured full responses of the variables in the analysis. The data captured respondents' demographic characteristics, livelihood, access to and ownership of mobile technology, access to and ownership of formal financial instruments and the level of financial and digital literacy.

Methodological procedure

The study used a binary variable of financial distress, where 0 represents not financially distressed, and 1 represents financially distressed. Not financially distressed is a situation where the individual/household pays all typical family/personal expenses, including food, clothing, housing, bills, and other living expenses and still has some money or no money left. A financially distressed person/household borrows to pay all or some of these typical

¹The data is a public data and is available online

² Currently, Ghana has 16 regions, as 6 new regions were created by referendum in February 2019.

expenses. Drawing on the International Network for Financial Education's (INFE) (OECD-INFE, 2011) measure of financial literacy, this study developed indexes for three areas of financial literacy³: knowledge, behaviour, and attitude. The knowledge component aims at assessing the understanding of basic concepts, which are prerequisites for making sound financial decisions. The second component measures the diffusion of behaviour that often indicates the ability to manage money properly. In particular, the behaviour index is based on questions that assess whether people plan to spend their income, can keep their plan, and acquire information before making investments. The attitude component tries to evaluate, aside from actual knowledge and behaviours, personal traits, such as preferences, beliefs, and non-cognitive skills, which have been shown to affect personal well-being. In the INFE methodology, this component is meant to capture attitudes towards precautionary saving and towards the long-term, in general.

Thus, our financial distressed equation is captured as:

$$FinancialDistressed = \alpha + \beta_1 FLI + \beta_2 ControlVariables + \varepsilon(1)$$

where control variables are the socioeconomic characteristics, FLI is the financial literacy index (includes the total score on financial knowledge, financial behaviour, and financial attitude), and ε is the unobserved effect.

Thus, let P_i represent the probability of an individual experiencing financial distress, such that the probability of not experiencing financial distress is given as $1 - P_i$. We do not observe P_i , as Y is a latent variable, but we observe the outcome $Y=1$ if the person is financially distressed and $Y=0$ if he/she is not; then, we have the following model specification.

$$P_r(Y_i = 1) = P_i \quad (2)$$

$$P_r(Y_i = 0) = 1 - P_i \quad (3)$$

Simplifying and reformulating the equations in the binary logistic function in terms of the odds ratio of the probability of experiencing financial distress to the probability of not experiencing financial distress gives as follows:

$$\left[\frac{P_i}{1 - P_i} \right] = \frac{1 + e^{(\beta_0 + \beta' X_i)}}{1 + e^{-(\beta_0 + \beta' X_i)}} \quad (4)$$

³ Our estimation of the financial literacy and financial distress is captured in the appendix.

$$\left[\frac{P_i}{1 - P_i} \right] = e^{(\beta_0 + \beta' X_i)} \quad (5)$$

Taking natural logarithms of the equation (5) to get our logit model and observe that the log of the odds ratio, L, is not only linear in X, but also in the parameters; L is called the logit, and thus it is a logit model as like (6).

$$\ln \left[\frac{P_i}{1 - P_i} \right] = L_i = \beta_0 + \beta' X_i \quad (6)$$

Other control variables in the study include the gender of respondent, education of respondent, the residence where the respondent stays, employment status, marital status, ever save, ever invest, total household members of the respondent, number of household members with regular income, and respondent household has an emergency fund. Variables that are discrete choice are gender (0=male 1=female), ever save (0=yes 1=no), ever invest (0=yes 1=no), residence (0=urban 1=rural), employment status (0=working 1=not working 2=other), marital status (0=Single/never married 1=married 2=other), education (0=no formal education 1=primary 2=secondary 3=tertiary), emergency recovery (0=yes 1=no) age (0=over 75years 1=55 to 74 years 2=35 to 54 years 3=14 to 34 years) and financial literacy (0=no 1=yes), and continuous variables are the total number of household members, minimum amount a household needs to survive and household members with regular income. Table 1 captures the variables used in estimation and their *á priori* expectations.

We used binary logistic regression model for some reasons; (a) the logit model is a very attractive model to other probability models like the linear probability model that assumes that the probability of an event increases linearly with independent variables, that is, the incremental effect of independent variable remain constant; (b) binary logistic regression gives the marginal (thresholds) at which if there is a change in the independent variables (socioeconomic factors) at just a margin, the probability of the dependent variable (financial distress) alters, thus, we can estimate the point where individual experience financial distress; (c) logit gives parameter estimates which are asymptotically consistent, efficient and normal, so that the analogue of the regression t-test can be applied.

Table 1 about here

Results and discussion

Descriptive statistics and distribution of variables

The descriptive statistics and distribution of the variables are shown in Table 2. It is revealed that 56% are females, as against 44% who are males. The majority have attended formal schooling as against below 10% who have no formal education. 75.6% are either primary or secondary school leavers, and 15% are tertiary educated persons. This shows that a high proportion of the respondents are literate. This is confirmed by the high number (74%) of respondents being financially literate. Also, most of the respondents (64%) are in the labour force and working, as against 36% who are not currently working as at the time of the survey. The fact that most of the respondents are working means more people are earning some form of income, which could be a cover against them experiencing financial distress. This might be why as low as 8% are financially distressed, as indicated in the table.

Table 2 about here

Further, in Table 2, the proportion of respondents who dwell in rural settings, as against urban dwellers, 12 percentage points lower (44% as against 56%). Thus, since most of the respondents are urban-based, experiencing financial distress could be minimal to them, as against the rural dwellers. This is so because most urban settings have greater job opportunities, investment and savings options, and high welfare than rural areas. Half of the respondents are single or have never married, 39% are married or cohabiting/living together. The rest have ever been married but have currently experienced some divorce or separation or widowed.

Also, on the issue of whether the respondent has ever made any savings, a majority (69%) indicated that they had never made any savings. Again, 82% of the respondents have never owned any form of investment. Savings and investment could be a cover against one experiencing financial distress, as one can fall on his/her savings or investment to relieve him/her from financial burden or distress. Thus, Gjertson (2016) concluded that savings behaviour and

making efforts to save money for emergencies reduce the likelihood of future hardships such as skipped utility or housing payments and food insecurity.

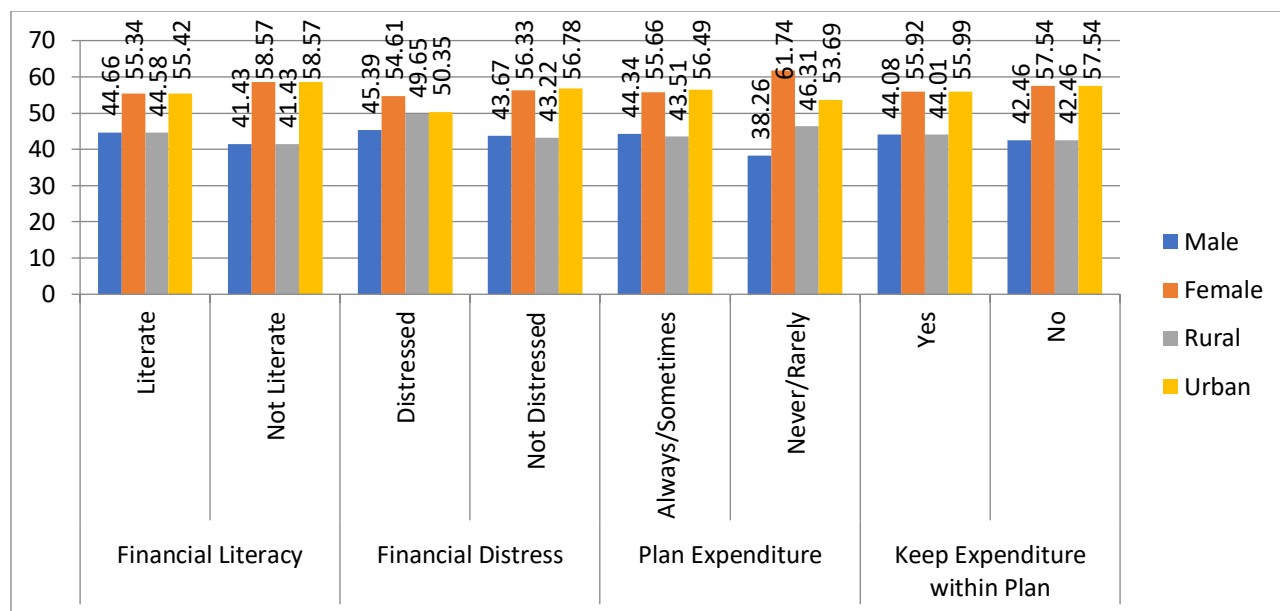
Some sensitivity analysis

We did a sensitivity analysis based on gender and residential status (rural/urban) differentials. This is captured in Figure 2. It is shown that among the financially literate individuals, 44.66% are males and 55.34% are females. A similar high number of females (58.57%) than males (41.43%) make up the financially illiterate group. More females (54.61%) are financially distressed than their male (45.61%) counterparts within the financially distressed class sample.

Similarly, more females (56.33%) dominate in the class of not financially distressed as against 43.67% who are males in the not financial distressed category. Similarly, high proportions of females (55.66% and 55.92%) plan their expenditure and spend within their plan than their male counterparts (44.34% and 44.08%). Females⁴ dominate across the indicators of the sensitivity analysis. This finding could be partly because, as indicated elsewhere (Osabuohien and Karakara, 2018), women in Ghana usually form savings groups to enable them to have access to credit, and such groups gain access to financial education.

Figure 2: sensitivity analysis of gender and residence (rural/urban) over some variables

⁴The results are insignificant once gender difference are accounted for in the sensitivity analysis



Source: Authors' computation

Still, in Figure 2, the rural-urban divide shows that more (55.42%) of financially literate individuals live in urban areas than in rural areas. Despite the higher financial literacy in the urban areas, they seem to be more financially distressed (50.35%). Individuals who plan their expenditure and keep to the plan are mainly from urban areas (56.49% and 55.99%). Thus, the analysis shows an urban dominated trend. This means that in each class (financially literate or not literate, distressed or not distressed, plan expenditure or not), the urban populace dominates. This finding is partly because urban areas are more gifted (in terms of access to education, credit, etc.) than their rural counterparts, giving urban dwellers the advantage.

We conducted a Chi-squared (χ^2) analysis by cross tabulating financial literacy, financial distress and other variables as shown in panel 'A' of Table 3. The chi-squared statistics are used to test the independence of variables or responses from data in a cross-tabulation analysis (known as a bivariate table). The test of independence helps to indicate whether there is a relationship between two categorical responses by comparing the pattern of response observed as against the expected pattern if the variable were truly independent of each other. The table shows that 75.2% are financially literate among males, while 72.66% of females are financially literate. The Pearson χ^2 value of 1.404 with a probability value of 0.236 indicates that the gender of the respondents and their financial literacy is independent of each other. This means that the gender type of respondent does not necessarily mean the person would be financially literate or not.

Lusardi and Mitchell (2011) similarly stated that in Russia and East Germany, there are no gender differences in financial knowledge, and both women and men are equally financially illiterate (or literate).

Table 3 about here

Table 3 further shows that, within the age brackets of the respondents, majorities are financially literate. A Pearson χ^2 value of 4.76 with a probability value of insignificant (0.190) shows that individuals' age and financial literacy are independent of each other. Again, the educational level of the individual is found to be independent of financial literacy. A Pearson χ^2 value of 1.533 with a probability value of 0.675 indicates that education and financial literacy are independent. This corroborates Lusardi and Mitchell's (2011) conclusion that education is not a good proxy for financial literacy as financial literacy has an effect above and beyond education. An educated person might also be financially illiterate.

On financial distress and other variables, panel 'B' of Table 3 shows similar findings as financial distress is independent of gender, age, residence and educational level. However, the financial distress and employment status of the respondent are not independent of each other. A Pearson χ^2 value of 13.0208 with a probability value of 0.001 indicates a statistically significant association between the respondent's employment status and financial distress. Thus, employed persons are less financially distressed than the unemployed person.

Econometric results

The econometric results are captured in Table 4. It shows that male individuals are 1.3% less likely to experience financial distress than their female counterparts. Though this finding is statistically insignificant, the reason most probably could be that males are financially better than females, and most females are primarily engaged in small scale businesses (Karakara and Osabuohien, 2020; Osabuohien and Karakara, 2018) which usually go with a meagre income. This is similar to Robson and Peetz (2020) and Lusardi and Mitchell (2008; 2011), who both indicated that there are international gender differences in financial literacy and in most cases, women are less likely to be financially knowledgeable than men, and that may cause financial distress later in life. Younger individuals are less likely to experience financial distress compared

to older persons. Even though age is insignificant, individuals between the ages of 14 to 34 years are 3.8% less likely to experience financial distress than persons as old as over 75 years of age. This suggests that age has a non-linear relation with financial distress. At lower levels of age, the individual has a lesser probability of experiencing financial distress, but at later ages, the probability increases (Rasoaisi and Kalebe, 2015). Perhaps, younger persons might be engaged actively in the labour market and thus could earn more to help escape financial distress than their elderly counterparts.

Agarwal, Driscoll, Gabaix, and Laibson (2009) noted similarly that an increase in age comes with the accumulation of knowledge based on practical life experiences. Again, the geographical location of individuals plays a part in the likelihood of them experiencing some financial difficulties in life. Table 4 further reveals that rural dwellers are 1.7% more likely than the urban populace to be financially distressed or experience the financial difficulty of not being able to cover their basic typical family/personal expenses, including food, clothing, housing, bills, and other living expenses. This finding is similar to Cole *et al.*'s (2008) observation that people who live in rural areas demonstrate the lowest level of financial knowledge, thus having a higher probability of experiencing financial distress. This finding could also be so because most rural settings are where poverty is at high levels, with welfare being at lower ranks than in urban areas (GSS, 2018).

Educated individuals have little chance of experiencing financial distress (difficulty) than uneducated persons. A person who is, at least, a basic/primary school leaver is 6.7% less likely to be financially distressed than a person with no formal education. Similarly, a more-educated person like a tertiary education leaver has a 7.4% reduction in the chance of being financially distressed than a person with no formal education. Thus, an educated person might know how to manage his/her finances better and earn more than an uneducated person. Dewi *et al.* (2020b) concluded that education could mediate the effect of financial literacy on financial behaviour. Also, being married or living together as like couples brings a collaborative effort in pooling to finance expenses. Married/cohabiting or living together individuals are 3.2% less likely to experience financial distress than single or never married persons.

Similarly, a person who has ever married and either divorced or widowed or separated is less likely (1.3%) to be financially distressed than someone who has never been married or is single. Perhaps, being married or staying together could help couples pool resources together to finance their expenses than persons who have never been married or are single. Married individuals have different responsibilities in financial decision-making (Dewanty and Isbanah, 2017) and thus are financially literate. The result corroborates with that of Anderloni *et al.* (2012), who summarised that married status plays a significant role in impacting household financial distress levels as being separated raises the level. Our finding is not significant, partly because majorities (more than half) of the respondents are never married or are single. Though this finding is not significant, it is intuitive.

Investment and savings are deemed as twin brothers in finance management. Thus, these twins could help relieve a person of financial burden and thus make him/her escape financial distress. Table 4 shows that an individual who has ever saved is 2% less likely to experience financial distress, and a person who has ever made any investment is 6.6% less likely to experience financial distress. However, having ever made some savings is insignificant in affecting the likelihood of being financially distressed. Delafrooz and Paim (2011) also found financial distress and savings behaviour to have an insignificant relationship. Suppose a person has an emergency recovery, such as falling on someone in times of need. In that case, such an individual is 10% less likely to experience financial distress than somebody who has no emergency recovery. Intuitively, having an investment or having ever invested could be linked to emergency recovery. Thus, these two (ever saved and emergency recovery) are significant in determining a person experiencing financial distress than ever save. The result corroborates what Gjertson (2016) noted that making efforts to save money for emergencies reduces the likelihood of future hardships such as skipped utility or housing payments and food insecurity.

Table 4 further reveals that individuals from larger households are susceptible to financial distress. An increase in the number of household members increases the chance of the household members experiencing financial distress by 0.3% more than smaller membership homes. However, this is not significant. The minimum amount a household needs to survive for a week affects a member of that household experiencing financial distress. If the minimum amount a

household needs to survive increases by one percent, the likelihood of a member experiencing financial distress reduces by more than double. Perhaps, household pooling could cover members' financial needs, making it less likely for members to experience distress financially. Also, if the number of household members with regular income increases by one individual, each member faces a 2% reduction in the likelihood of being financially distressed. Thus, increases in regular income earners in a household could increase the total household pooling, which could offer a shield to the members against financial distress.

Table 4 about here

Working and earning an income is evident in determining whether one could experience financial distress or not. An individual who does no work is 8.1% more likely to experience financial distress than a person who is in the labour force and does some work. All things being equal, a non-worker might not earn an income like a worker and, thus, might experience financial difficulty than a worker. This finding is significant at the 5% level. An individual who owns any investment is 0.2% more likely to be financially distressed. However, it is not significant. On our variable of interest (financial literacy), it is revealed that being financially literate helps to reduce the probability of financial distress one could experience by 2.4%. This is similar to the conclusion by Idris *et al.* (2013) that financial distress and financial literacy were moderate, showing a positive but weak relationship between financial literacy and level of financial distress. Again, Anderloni *et al.* (2012) indicated that financial literacy positively reduces household financial vulnerability.

Our model is robust, as the probability chi-square ($\text{Prob} > \text{Chi}^2$) is 0.0000, which indicates that the explanatory variables significantly determine the dependent variable. Again, our logit model was reaffirmed by the probit model, which ascertained the robustness of the logit model. The predicted probabilities of the logit model lie between 0.006 minimum and 0.67 maximum, while the predicted probabilities of the probit model lie between 0.002 minimum and 0.64 maximum. We further test for endogeneity to ensure that there is no correlation between an explanatory variable and regression error term(s) (Abdallah *et al.*, 2015). We omitted-variable bias to ascertain that the error term and the independent variables in the model are not correlated (Stock and Watson, 2003). A probability value of 0.3068 gotten is higher than the usual threshold of

0.05 (95% significance). Thus, we conclude that we do not need more variables. We further did a multicollinearity test to ensure no regressor should be a linear function of another (e.g. financial literacy improvement through financial management knowledge to help reduce future financial distress). A variance inflation factor (VIF) of 2.3 indicates that there is no multicollinearity in the model, which indicates that endogeneity is not a serious problem.

Conclusion and policy implication

This study sought to understand the issue of whether financial literate individuals can escape financial distress and whether the socioeconomic characteristics of individuals influence their likelihood of experiencing financial distress. Using individual and household survey data with logistic regression, the study surmises that socioeconomic characteristics of people greatly affect the likelihood of one experiencing financial difficulty. The major socioeconomic characteristics that significantly influence the probability of individuals being financially distressed are where the person stays (either rural or urban), the educational level of the person, investment behaviour, nature of household the person comes from (measured by the number of household members with regular income), employment status of the individual (either working or not), as well as the level of financial literacy of the individual. Other factors such as the individual's age, gender type, marital status, and ever saving insignificantly affect the way one could experience financial distress. Though these factors are insignificant, they affect individual financial burden as expected.

This study's contribution to literature concerns the revelation it has made regarding the nexus between financial literacy and financial distress. In this regard, the study revealed that, since financial literate individuals have better insights into the probability of them experiencing financial distress, in Ghana, there is a nexus between financial literacy and financial distress, at least at the individual level. However, financial literacy is backed by the individual's educational status (whether the person has formal education), residential status (whether rural or urban), investment behaviour, employment status, and family background (family with a pool or where members earn regular income). The theoretical contribution of this study lies in the assertion that socioeconomic characteristics are sensitive to financial distress. Policies could be focused on empowering people to be financially literate through education and financial information

availability. Policies makers in Ghana could employ financial literacy programmes that are run on media, make financial literacy part of the educational course even at the lower levels of schooling and make financial information readily available. The government's programmes could also be geared towards encouraging people to save and subsequently invest, and create jobs that help individuals to earn some income. Future studies could investigate the issue from a cross-country perspective, focusing on households and not on individuals as this current paper did. Cross-country studies could give the effect of the geographical, economic and social differences on financial literacy and financial distress. Also, studies can look at individual or household cash flow or cash traps and financial distress, as the present study did not consider that aspect. A household or individual cash trap could limit his/her ability to enjoy a financially distress-free life. Cash trap could also increase the burden of financial distress and thus, a study on this could be worth conducting.

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Table 1: Variables used in the study and their á priori expectations

Variable name	Type of variable	Expected sign
Financial distress	Financial distress nature of respondent (binary – financial distress or not)	Dependent variable
Financial literacy	Whether respondent is financially literate (binary – financially literate or financially not literate)	Negative/positive
Gender of respondent	Gender of household head (binary – male or female)	Negative/positive
Age bracket of respondent	Age of respondent (categorical – 14-34 years, 35-55 years, 56-74 years, over 75)	Negative/positive
Size of household members where respondent is from	Number of household members (continuous)	Negative/positive
Number of household members with regular income	Number of household members with regular income (continuous)	Negative/positive
Educational level of respondent	Years of formal schooling (No formal school, Primary, Secondary, Tertiary)	Negative/positive
Marital status of respondent	Marital status of respondent (categorical – single/never married, married/cohabiting, others-divorce, widowed or separated)	Negative/positive
Residence of respondent	Residence where household stay (binary – urban or rural)	Negative/positive
Employment status	Employment status of respondent – whether the respondent is working (working, not working, other – inactive)	Negative/positive
Saving	Respondent ever save (binary – Yes or No)	Negative/positive
Invest	Respondent ever invest (binary – Yes or No)	Negative/positive
Emergency recovery	Respondent have emergency recovery in times of need (binary – Yes or No)	Negative/positive
Minimum amount household need to survive	Minimum amount the respondent household need to survive (continuous)	Negative/positive

Source: Authors’

Table 2: Descriptive statistics and distribution of variables

Variable	Measurement	Response	Percent.	Obs.
Gender	The gender type of the respondent	Male	43.73	750
		Female	56.27	965
Education	Educational level of the respondent	No formal education	9.50	163
		Primary	38.60	662
		Secondary/Vocational	36.97	634
		Tertiary	14.93	256
Employment	The employment status of the respondent	Working	63.62	1,091
		Not working	35.51	609
		Other	0.87	15
Residence	The residence where the respondent stays (i.e. either rural or urban)	Rural	43.79	751
		Urban	56.21	964
Marital status	The marital status of the respondent	Never married	50.44	865
		Married	35.98	617
		Divorced	3.44	59
		Separated	2.92	50
		Widowed	4.14	71
		Cohabiting/living together	3.09	53
Ever save	Whether the respondent has ever save money	Yes	31.14	534
		No	68.86	1,181
Owned investment	Whether the respondent or any member of his/her household owned any investment	Yes	18.31	314
		No	81.69	1,401
Financial distress	Whether the respondent is financially distressed	Yes	8.22	141
		No	91.78	1,574
Financially literate	Whether the respondent is financially literate	Yes	73.70	1,264
		No	26.30	451

Source: Authors' computation

Table 3: Cross tabulation of financial literacy, financial distress and other variables for Chi ² analysis

Panel A: Cross tabulation of financial literacy with other variables															
Variables	Gender		Age brackets				Residence		Employment status			Educational level			
	Male (%)	Female (%)	14-34 (%)	35-54 (%)	55-75 (%)	Above 75 (%)	Urban (%)	Rural (%)	Working (%)	Not working	Other (%)	No formal education	Primary (%)	Secondary (%)	Tertiary (%)
Financial literacy (literate)	75.2	72.66	72.38	75.63	79.26	84.62	72.69	75.17	75.30	71.05	73.33	72.22	72.47	74.88	75.39
Total	750	965	1,166	399	136	14	964	751	269	176	7	46	182	159	63
Pearson Chi2 (df)	1.404 (1)		4.76(3)				1.336(1)		3.6367(2)			1.5332(3)			
Pr	0.236		0.190				0.248		0.162			0.675			
Panel B: Cross tabulation of financial distress with other variables															
	Gender		Age brackets				Residence		Employment status			Educational level			
	Male (%)	Female (%)	14-34 (%)	35-54 (%)	55-75 (%)	Above 75 (%)	Urban (%)	Rural (%)	Working (%)	Not working	Other (%)	No formal education	Primary (%)	Secondary (%)	Tertiary (%)
Financial distress (not distress)	91.47	92.00	91.25	92.46	94.07	92.31	92.63	90.65	93.57	88.65	86.65	87.65	91.53	92.89	92.19
Total	750	965	1,166	399	136	14	964	751	269	176	7	46	182	159	63
Pearson Chi2 (df)	0.1562(1)		1.6193(3)				2.1701(1)		13.0208(2)			4.7936(3)			
Pr	0.693		0.655				0.141		0.001			0.188			

Source: Authors’

Table 4: Marginal effects at representative values (MER) for financial distress

Explanatory Variable	Financial Distress	
	Logit	Probit
Gender of respondent (Male)	-0.0128 (0.02)	-0.0095 (0.019)
Age of the respondent		
Over 75 years	Base category	
Between 55 to 74 years	0.070 (0.09)	0.0105 (0.083)
Between 35 to 54 years	-0.0406 (0.09)	0.0463 (0.081)
Between 14 to 34 years	-0.0375 (0.09)	0.045 (0.080)
Residence (Rural)	0.0173* (0.021)	0.018 (0.02)
Educational level of respondent		
No formal education	Base category	
Primary	-0.0667 (0.046)	-0.061 (0.041)
Secondary/vocational	-0.0904* (0.050)	-0.086* (0.044)
Tertiary	-0.0741* (0.054)	-0.017 (0.048)
Marital Status of respondent		
Single/never married	Base category	
Married/cohabiting or living together	-0.0317 (0.024)	-0.0311 (0.022)
Others (widow, divorced, separated)	-0.0128 (0.036)	-0.01 (0.035)
Respondent ever save	0.0186 (0.024)	0.029 (0.022)
Respondent ever invest	-0.0657* (0.043)	-0.064* (0.039)
Emergency recovery	-0.102*** (0.039)	0.092*** (0.03)
Total household members	0.0033 (0.003)	0.0032 (0.003)
Minimum amount household need to survive	-2.88* (1.7)	-3.006 (0.001)
Household members with regular income	-0.0198* (0.012)	-0.0190* (0.011)
Financial literacy	-0.024* (0.21)	0.0054 (0.02)
Owned an any investment	0.0021 (0.028)	0.0053 (0.026)
Employment status of respondent		
Working	Base category	
Not working	0.0811** (0.038)	0.072** (0.032)
Other	0.102 (0.135)	0.080 (0.120)
Predicted probabilities		
Min	0.006	0.002
Max	0.67	0.64
Log likelihood	-457.02402	-456.28781
Prob>Chi²	0.0000	0.0000
Pseudo R²	0.0622	0.0632
Observations	1,715	1,715

Note: The standard errors are within brackets; ***, **, * =significant at 1 per cent; 5 per cent 10 per cent levels. **Source:** Authors' computation

Appendix

Explanation of questions on financial literacy and financial distress

Financial literacy	
Financial knowledge	<p>1. Imagine you have 100GHS and you have to divide among five persons. How much will each person received if you divide equally? a) 20GHS b) any other answer</p> <p>2. Imagine you have 100GHS in your savings account. Your account is earning 2% interest every year. How much will you have in five years if you do not withdraw anything? a) more than 100GH b) less than 100GHS c) exactly 100GHS</p> <p>3. Imagine you took a loan of 100GHS and have to pay a fee of 2% each month until you repay all. How much in total will you pay for one full year? a) more than 100GHS b) less than 100GHS c) exactly 100GHS</p> <p>4. Imagine you have 100GHS worth of investment which earn you 3% every year. The inflation is 3.5% a year. How much total money will you have in 2 years? a) more than 100GHS b) less than 100GHS c) exactly 100GHS</p>
Financial behaviour	<p>1. How often do you make a plan on how to spend your income? a) always b) never c) sometimes</p> <p>2. When you make a plan, how often do you spend according to the plan? a) always b) never c) sometimes</p>
Financial attitude	<p>1. When I get money today I spend, tomorrow will take care of itself</p>
Financial distress	
	<p>1. I paid all my typical family/personal expenses including food, clothing, housing, bills and other living expenses and still have some money with me</p> <p>2. I paid all my typical family/personal expenses including food, clothing, housing, bills and other living expenses and do not have any money with me</p> <p>3. I had to borrow money to pay some of my typical family/personal expenses including food, clothing, housing, bills and other living expenses.</p> <p>4. I had to borrow money to pay all my typical family/personal expenses including food, clothing, housing, bills and other living expenses.</p>

Note: 100GHS= 100 Ghana cedis; If an individual score 50% of the financial knowledge questions and plan and keep his/her expenditure plans, and also spend and be mindful of tomorrow, then he or she is regarded as financial literate otherwise financial illiterate. If an individual could cover his/her typical expenses without borrowing, he/she is not financially distressed.

Source: Authors'