

Ghanaian Journal of Economics, Vol. 7, December 2019

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Multiple Borrowing and Loan Default: Evidence from small and medium scale enterprises in Ghana

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Abstract

Financial institutions approve and disburse loans to individuals and firms to generate profit for their sustainability. However, one major challenge financial institutions face is loan default. Multiple borrowing is widely acknowledged as a major factor that contributes to loan default; but there is virtually no empirical evidence in support of this claim especially in the case of sub-Saharan African countries. This study therefore examines the impact of multiple borrowing on loan default with evidence from small and medium enterprises (SMEs). We rely on primary data and employ the binary probit regression for our analysis. The results show that SMEs that have multiple borrowing are more likely to default. The study therefore recommends that loan and credit officers of financial institutions should be more diligent and circumspect in their quality control checks and credit appraisal of prospective borrowers. Again, the study suggests the establishment of more Credit Reference Bureaus under the Credit Reporting Act, 2007 (Act 726) which facilitate information sharing among financial institutions about credit activities of borrowers. These are likely to reduce incidence of loan default because potential defaulters will be exposed and subsequently their loan applications declined.

Keywords: *Multiple borrowing; Loan default; Financial institutions; Probit regression; Ghana.*

JEL codes: *C25, E51, G21*

1. Introduction

Borrowing from financial institutions (FIs) constitutes a predominant source of financing for small and medium scale enterprises (SMEs) in developing countries (Abu *et al.*, 2017; Nzomo, 2017; Munene *et al.*, 2013; Cole and Wolken, 1995). SMEs' over dependence on FIs for financial assistance is due to their inability to generate adequate retained earnings and also access other alternative financing sources to finance their operations (Boadi *et al.*, 2017). According to Riding and Short (1987), the plight of SMEs are worsened especially when they have to depend on the often short-term financing sources such as bank lines of credit to finance long term projects due to lack of long term loans. The reliance on the limited short term credit (such as short-term bank loans, title loans and overdraft) leads to under financing of SMEs (Robson and Rhodes, 1984) which constrains expansion and realisation of their potentials (Egger and Kesina, 2014). In spite of the high concentration of bank finance in the SME funding structure, access to credit is widely reported to be limited (Quartey *et al.*, 2017; Ardic *et al.*, 2012; Abor and Biekpe, 2007). This outcome is confirmed in the case of Ghana by Aryeetey (1998) who reports that only 50 percent of all loan applications are likely to receive approval. The limited access to credit by SMEs is attributed to non-credit worthiness of entrepreneurs in the sector (Kutsuna and Crowling, 2013; Ojala and Tyrväinen, 2007; Smith, 2007).

These financing constraints notwithstanding, the role of FIs in SMEs financing cannot be overemphasised (Boadi *et al.*, 2017; Samer *et al.*, 2015; Mokhtar *et al.*, 2012) considering the substantial contribution SMEs make towards the overall well-being of economies through poverty reduction, job creation and economic growth (Abdullah *et al.*, 2016; Egger and Kesina, 2014; Dalberg, 2011). Financial institutions have been described as being actively involved in SMEs financing through the provision of loans to enable them realise their full potentials (Boadi *et al.*, 2017; Boateng, 2015). In fact, Kipyego and Wandera (2013) assert that provision of loans is one of the leading banking services offered by financial institutions. The authors further add that FIs perform this vital role by mobilising funds from surplus units and making them available to deficit units. However, funds mobilisation is often made arduous due to the low saving culture in developing countries (Baidoo and Akoto, 2019; Baidoo *et al.*, 2018a; Mumin *et al.*, 2013; Amu and Amu, 2012). This affects availability of loanable funds which makes FIs resort to market borrowing in order to meet the credit needs of prospective borrowers. Financial institutions therefore apply strict assessment test to loan applications in order to determine borrowers who are likely to repay should the loan be approved and disbursed. Nonetheless, these assessments to prevent multiple borrowing and loan default sometimes prove futile due to information asymmetry (Kipyego and Wandera, 2013).

Loan default has been noted as one of the challenges increasingly affecting the operations of FIs and hinders their contribution to the success and development of

SMEs in Ghana and the developing world at large (Bank of Ghana, 2017, 2016; Addae-Korankye, 2014; Munene and Guyo, 2013; Mokhtar *et al.*, 2012). For instance, the financial stability report of Bank of Ghana covering operation of financial institutions for the first seven months of 2016 indicates that non-performing loans (NPLs)¹ is increasing as the figure reached GHS6.1 billion with NPL ratio of 19.1 percent (Bank of Ghana, 2016). The report further indicates that this figure (GHS6.1 billion) actually shows an increase of about 70 percent from GHS3.6 billion in 2015 (with NPL ratio of 13.1 percent). Credit to private sector contributed 85.8 percent of the total banking sector NPLs as at July 2016, whilst the public sector accounted for 14.2 percent. Subsequently, the NPLs further increased to GHS7.96 billion in 2017 from GHS6.1 billion in 2016 with NPL ratio of 21.2 percent compared with 13.1 percent and 19.1 percent in 2015 and 2016 respectively (Bank of Ghana, 2017). The rising trend in NPLs gives cause to worry as loans eventually become bad debts which tend to affect profitability and sustainability of the FIs negatively (Tilakaratna and Hulme, 2015; Wangai *et al.*, 2014). For instance, Wangai *et al.* (2014) report that NPLs cause distress and sometimes the collapse of FIs which is also reported to have spiral effect on economies (Kipyego and Wandera, 2013; Munene and Guyo, 2013); it retards economic growth and increases unemployment since workers are laid off and entrepreneurs with viable investment plans may not have access to funds for such investment. Given this disquieting situation, it is imperative for researchers to examine factors that cause non-performing loans in order to address the problem of loan default.

In an attempt to curb non-performing loans and loan default, financial institutions have resorted to credit rationing. This has resulted in prospective borrowers receiving only fractions of loans applied which may be inadequate to meet their credit needs (Faruquee *et al.*, 2011). To bridge this financing gap, SMEs resort to borrowing from multiple sources; a situation that has the tendency to exacerbate credit default risk. This is so because FIs do not have the means to share credit information especially about new borrowers (Kipyego and Wandera, 2013). What is worrying is that SMEs that borrow from multiple sources tend to delay loan repayment (see Kutsuna and Crowling, 2013; Dukuly, 2012; Fraser, 2009).

The rising incidence of multiple borrowing in recent times is attributed to proliferation of FIs in developing countries, especially micro-finance institutions which encourage loan recycling by customers (Tilakaratna and Hulme, 2015). According to Wisniwski (2010), the growth in number of micro-finance institutions offers choice to borrowers and promotes competition for borrowers by FIs. This competition results in little attention given to loan repayment ability of these

¹ Non-performing loans are loans on which a borrower is neither paying the interest nor the principal amount for at least 90 days.

borrowers; a practice described by Bloem and Gorter (2001) as poor risk management practice of FIs credit officers. This emphasises the assertion by Kocisova and Stavarek (2018) that sustainability and stability of FIs is dependent on quality of loans approved and the ability to recoup amount disbursed. As a result, issues of loan default among FIs have attracted policy discourse and attention in the literature (see Abu *et al.*, 2017; Jabra *et al.*, 2017; Murthy and Mariadas, 2017; Addae-Korankye, 2014; Mokhtar *et al.*, 2012). This is because loan default has negative repercussion not only on FIs but also on individuals, businesses and the economy as a whole. However, these studies have not emphasised the role of multiple borrowing in loan default. Again, the occurrence of multiple borrowing coupled with virtually no study regarding its impact on loan default especially on Ghana to the best of the authors' knowledge is undoubtedly an issue of concern. This study therefore seeks to investigate this important subject so as to avert the increasing loan default cases that has the tendency of collapsing financial institutions.

The contributions of the present study are vast. First, this study provides the first empirical evidence on the impact of multiple borrowing on loan default in Ghana. Second, the study highlights the factors to be given the utmost attention before financial institutions approve and disburse loans to prospective borrowers. Further, the findings of this study will inform policymakers and various stakeholders including the Bank of Ghana on the strategies to be adopted in order to curb loan default which is on the ascendancy in the country. Finally, compared to all loan default studies on Ghana (see, for example, Abu *et al.*, 2017; Addae-Korankye, 2014; Dadson, 2012) this study uses a larger sample size for analysis which facilitates the generalisation of our results for effective policy purposes.

The rest of the paper is arranged as follows. Section 2 is devoted to the theoretical and empirical background whereas the third section focuses on the study methodology. What follows is the results and discussion. Conclusions and policy implications are presented in the final section of the paper.

2. Theoretical and Empirical Underpinnings

Theoretically, credit rationing and information asymmetry which lead to adverse selection and moral hazard are used to explain multiple borrowing and loan default among individuals and firms. According to Stiglitz and Weiss (1981), credit rationing which is the limiting of the amount of credit borrowers need to fund their projects and other purposes such as consumption is the result of market imperfections and information asymmetry. When the funds available to a prospective borrower from one financial institution is small or limited and may not be sufficient for an intended project, the borrower is then tempted to move to another financial institution to borrow additional funds; such a borrower will have multiple loans from different

financial institutions. Afroze *et al.* (2014) and Faruquee *et al.* (2011) report that one reason for multiple borrowing is insufficient funds due to the smaller amount of credit financial institutions (especially the micro financial institutions) approve and disburse to borrowers to undertake investment projects. The easy access for borrowers to obtain additional loan from different financial institution which often leads to higher financial burden and hence loan default (see Baidoo *et al.*, 2018b; Kutsana and Cowling, 2013; Dukuly, 2012) is due to information asymmetry and inadequate credit reference bureau system in the credit market (Kipyego and Wandera, 2013). Nzomo (2017) adds that multiple borrowing occurs due to lack of information sharing among FIs. These emphasise the assertion by Pagano and Jappalli (1993) that information sharing through credit reference bureau exposes bad and multiple borrowers and hence reduces loan default.

Information asymmetry is a situation where one party (borrower) has more information about risks and prospects of an envisioned investment than the other party (lender). In borrowing and lending activities, a borrower can choose to hide some negative information that is likely to impede the success of the project and loan repayment obligations from the lender; in this case the supplier of the funds is likely to be at risk (the loan will be in default) should the requested loan be approved and disbursed. Kipyego and Wandera (2013) report that borrowers tend to obtain multiple loans from different financial institutions due to information asymmetry and this increases loan default. According to Stiglitz and Weiss (1981), the inadequate information in the market leads to adverse selection and subsequently moral hazard. In the lending process, lenders often do not have enough information on the prospective borrowers and the prospect of the proposed project and for that matter are likely to select individuals who are less likely to repay the loan and rather reject those who are more likely to repay.

Adverse selection occurs due to the fact that financial institutions mostly have information on existing borrowers but no information on new prospective borrowers. According to Bofondi and Gobbi (2003), adverse selection and moral hazard contribute significantly to non-performing loans and loan default among financial institutions. Akerlof (1970) asserts that adverse selection has the potential of leading to non-repayment of loans because the selected borrower may not use the funds acquired for investment that will generate higher returns to facilitate loan repayment. Leland and Pyle (1977) further add that as a result of information asymmetry financial institutions normally select and approve loans to borrowers who present high quality project but with little negative information and reject relatively low quality project borrowers with no hidden information that is likely to inhibit the prospect of the project and loan repayment. Moral hazard on the other hand occurs as a result of financial institutions' inability to monitor borrowers properly after the

loan has been approved and disbursed to ensure that borrowers use the loan received for the intended investment to generate enough income to facilitate loan repayment. Kipyego and Wandera (2013) indicate that borrowers often have the incentive to default unless there is a penalty for such action or behaviour which may be future credit denial for such borrowers. A borrower who succeeds in obtaining additional loan from different financial institutions due to information asymmetry and knowing well that the loan cannot be repaid tend to use the loan acquired for other purposes other than the main reason for which the loan is approved and disbursed. In this case, such a borrower stands the risk of not generating enough returns to meet repayment obligations (Pauly, 1968), hence defaulting in repayment.

Empirically some studies have been conducted on loan default – both in and outside Ghana but from the perspective of individuals in different sectors of economies. For instance, whereas some researchers focus on loan default among farmers (see Dadson, 2012), others emphasise loan default among entrepreneurs of small and medium scale enterprises (see Abu *et al.*, 2017; Murthy and Mariadas, 2017; Addae-Korankye, 2014; Munene and Guyo, 2013; Mokhtar *et al.*, 2012). Several factors including age of firm, enterprise size or number of workers, loan repayment duration, loan amount, loan diversion, profit level, type of business or economic activity firms engage in, farm size and gender of firms' owner have been emphasised. However, there is virtually no focus on the impact of multiple borrowing on loan default.²

Using a sample size of 374, Dadson (2012) investigates the determinants of loan default among farmers in the Brong Ahafo region of Ghana. The results from the probit regression indicate a negative relationship between farm size, loan amount and loan default and a positive relationship between repayment period and loan default. Farmers who have larger farm size and obtain larger loan amount are less likely to default. With respect to the farm size, the author explains that increasing farm size increases farm output all other things being equal and this is translated into higher revenue which facilitate loan repayment. Regarding loan amount and repayment period, Dadson (2012) indicates that the larger loan amount enables the farmers to purchase all the needed inputs which in turn helps them to increase output and hence higher income to facilitate loan repayment. Longer repayment period on the other hand increases the likelihood of defaulting since the loan is spread over longer period of time and the farmer eventually become reluctant to future repayment. These results however contradict the findings by Abu *et al.* (2017) on Ghana who report that larger loan amount (longer repayment period) increases (decreases) the probability of defaulting loan repayment respectively.

² Notwithstanding the little emphasis on the impact of multiple borrowing on loan default, studies such as Afroze *et al.* (2014) and Chaudhury and Matin (2002) on Bangladesh, Mpogole *et al.* (2012) on Tanzania, Wisniwski (2010) on Bosnia and Herzegovina, Krishnaswamy (2007) on India, and Ryne (2001) on Bolivia have examined the effect of multiple borrowing on repayment.

Applying logistic regression model to a sample size of 472 microfinance borrowers, Mokhtar *et al.* (2012) examine the determinants of loan repayment default in Malaysia. The explanatory variables used include business type, gender of the borrower, repayment period, existence of extra loan and business revenue. The results show that there is a positive and significant relationship between business type, gender and loan repayment default. Specifically, individuals who engage in agricultural activities and male borrowers are more likely to default loan repayment compared with counterparts who engage in other small businesses and female borrowers. The authors attribute these findings to the fact that revenue from the agricultural activities is usually low and also fluctuates due to changes in weather which is uncontrollable. The low revenue in the sector therefore makes loan repayment difficult hence loan received are often defaulted. Regarding gender, Mokhtar *et al.* (2012) indicate that men are less responsible and discipline in loan repayment relative to women and hence often default loan repayment. The study however does not find a significant relationship between repayment period, extra loan, business revenue and loan default though the signs are positive.

Munene and Guyo (2013) examine the factors that influence loan repayment default in Kenya using a sample of 400 firms. The results from the descriptive analysis show that loan repayment default is higher among firms that engage in manufacturing sector and this is followed by those that engage in the service industry and agriculture activities. The Study also reveals that loan repayment default is relatively minimal with firms that engage in trade sector. The authors add that lower loan repayment default among firms in trade sector is due to the fact that these firms deal with fast moving goods with higher demand which translate into larger profits and hence are able to repay their loans. The results further indicate that loan repayment default are higher among firms that are relatively younger, have lower profit and have lager number of employees. Likewise, Addae-Korankye (2014) contributes to the subject matter by using a sample of 250 individuals from Ghana. The results from the descriptive analysis reveal late disbursement of loans, business failure, high interest rate, inadequate loan amount, unforeseen contingencies such as death and illness and unfavourable payment terms as factors that cause loan default.

Similarly, Asongo and Idama (2014) employ descriptive analysis to investigate the factors that affect loan default in Nigeria. Using data from 169 respondents, the study reveals high staff turnover, non-supervision of customers, lack of penalty for defaulters, lack of full compliance with lending policies by staff, non-reminder of customers regarding repayment of loan and multiple borrowing as factors that cause loan default. For example, borrowers do not see the need to repay their loan within the agreed period because there are no punitive measures in place to deal with such issues. In addition, some loan officers in an attempt to achieve their targets and get windfalls among others do not comply fully with lending policies such as quality

checks on the credibility of the prospective borrowers and this leads to approving and disbursing loan to a potential defaulter. Further, loan default is higher among borrowers with multiple borrowing and this is as a result of over indebtedness which tends to increase the financial burden of these individuals.

In a related study, Abu *et al.* (2017) investigate the determinants of loan repayment default among 200 small scale enterprises in Upper West region of Ghana. The study adopts probit regression model as estimation technique and the explanatory variables include enterprise size, loan duration, profit level, loan amount, age of firm and gender of the firm owner. The results show a negative relationship between age of firm, loan duration, level of profit, enterprise size and loan default. Firms that are relatively older, have larger profits, larger number of workers and acquire loan with longer repayment duration are less likely to default. The authors explain that firms that are older exhibit better recoveries because they are more skilful and experienced in terms of sales recovery which in turn enable them to generate higher income to facilitate loan repayment.

In addition, higher profits facilitate loan repayment and longer loan repayment duration reduces the financial burden of firms since the loan is spread over a longer period of time to commensurate the pace of enterprise cash flows. Regarding the enterprise size the authors explain that larger number of workers facilitate production processes which ensure more output and hence larger incomes to enable firms to meet their loan repayment obligations. Further, the study reveals a positive relationship between gender of SME owner, loan amount and loan default. SMEs that obtain larger amounts of loan as well as owners who are males are more likely to default compared with counterparts that obtain relatively smaller loan amount and female owners. The authors explain that larger loan amounts increase the financial burden and indebtedness of firms which in turn inhibit loan repayment obligations. In addition, Abu *et al.* (2017) add that males are generally risk lovers than females and for that matter obtain loans for risky ventures which have higher failure probability. Consequently, the failure of these ventures makes loan repayment very difficult all other things being equal. Murthy and Mariadas (2017) also examine the factors that contribute to loan repayment default in Malaysia and report a positive and significant relationship between business type and loan default. The study however reveals insignificant relationship between loan diversion, repayment schedule and loan default. A sample of 120 borrowers is used and ordinary least squares is employed as the analytical tool.

From the empirical review expounded – both on and outside Ghana, one thing is evident: with the exception of Asongo and Idama (2014) and Mokhtar *et al.* (2012) on Nigeria and Malaysia respectively, existing studies have not emphasised the role of multiple borrowing in loan default. It is also observed that none of the studies on Ghana emphasise the effect of multiple borrowing on loan default. However,

following the assertions by past researchers (see Kutsuna and Cowling, 2013; Dukuly, 2012; Fraser, 2009) that SMEs that have credit facilities from different financial institutions are more likely to be denied credit, it can be construed that these firms are denied due to their greater likelihood of defaulting as a result of increased financial burden.

Therefore, the present paper incorporates multiple borrowing in loan default studies in order to ascertain its impact. Further, two aspects of the studies by Asongo and Idama (2014) and Mokhtar *et al.* (2012) which consider multiple borrowing effect on loan default can be improved. The first has to do with the analytical tool employed by Asongo and Idama (2014); and secondly, validation of the insignificant relationship found by Mokhtar *et al.* (2012) in the Ghanaian context. The descriptive analysis Asongo and Idama (2014) use does not sufficiently show the relationship between multiple borrowing and loan default as well as its impact and hence the finding and recommendation may not be effective for policy purposes. In addition, the study by Mokhtar *et al.* (2012) on Malaysia which to the best of our knowledge is the only one that uses logistic regression capable of showing the relationship between multiple borrowing and loan default as well as the impact finds insignificant relationship. Therefore, the present study tests this relationship in Ghana to substantiate this finding.

3. Methodology

This section is divided into three parts. The first part is devoted to data and estimation strategy whereas the second part focuses on empirical model specification. The last part presents discussion on the variable description.

3.1. Data and estimation strategy

This study relies on primary data for analysis and the binary probit regression model is employed as the estimation technique. Firms' information such age, profit level, business plan, records keeping, type of economic activity firm engages in, number of management, gender of firms' owners as well as information on firms' loan: credit duration, loan default status, multiple borrowing status and collateral availability among others are elicited for analysis.

The study uses data on SMEs in Kwahu West Municipality and Accra Metropolis in the Eastern and Greater Accra regions of Ghana respectively. According to Abor and Quartey (2010), there is no legally binding definition of SME and this gives rise to reliance on diverse definitions proposed by different institutions such as National Board for Small Scale Industries, Ghana Enterprise Development Commission and Ghana Statistical Service. This paper follows the definition by the Regional Project on Enterprise Development and Ghana Manufacturing Enterprise Survey and defines small and medium scale enterprises as firms with 5-29 and 30-99 employees

respectively (Teal, 2002)³. Though the total number of small and medium scale enterprises in these two areas are not precisely known, the last Industrial Census Survey report by Ghana Statistical Service (2006) reveals that SMEs in Eastern and Greater Accra regions are 3,026 and 6,764 respectively. It is also indicated in the report that Eastern and Greater Accra regions where the study areas are selected are the third and first regions with respect to the number of SMEs establishment in Ghana and constitute 11.4 percent and 25.5 percent respectively, showing intensity of business activities in these areas. It can therefore be inferred that these two regions constitute 36.9 percent of the total SMEs in Ghana whilst the remaining 8 regions constitute 63.1 percent. Further observations from the report indicate that the SMEs in these two areas vary in terms of type of economic activity engaged in, size, age, registration status, and profit levels among others, hence subjecting them to empirical investigation in relation to the objective of the present study is worthwhile. Subsequently, considering the total number of small and medium scale enterprises and the number of Metropolis, Municipalities and Districts Assemblies (MMDAs) (26 and 16 MMDAs for Eastern and Greater Accra regions respectively) in the two regions, it is likely that the number of SMEs in each of the selected study areas will not be less than 500 given that they are commercial areas. Based on this, 1,000 SMEs (500 in each of the study area) are considered in this study. In view of the objective of this paper, any SME that has ever applied and received loan within at least the past 12 months (prior to data collection period) is considered a potential participant and therefore simple random sampling technique is employed for the selection of the SMEs.

Structured questionnaires are used to gather the data for this study. Both assisted and self-administered approaches for data elicitation are employed and the data collection period spans from March 2017 to July 2017. These two approaches are employed to avoid any potential biasness in the study: not ignoring SMEs owners who cannot read, understand or write in the language (English) used for the questionnaire design. To this end, respondents who cannot read, understand or write are interviewed and their responses are used to fill the questionnaire. On the other hand, respondents who can read, understand and write are given the questionnaire to fill by themselves. However, the study finally uses 710 respondents which represent 71 percent response rate for analysis. The remaining questionnaires are not included in the analysis because they are not properly filled and also incomplete; the respondents provide limited information.

³. *Though we use the SME's definition by the Regional Project on Enterprise Development and Ghana Manufacturing Enterprise Survey in this study considering the Ghanaian economy and its structure, we also recognise the definitions by other equally reputable international organisations such as World Bank, United Nations Industrial Development Organisation (UNIDO), European Commission (EC), Multilateral Investment Guarantee agency (MIGA)/International Finance Corporation (IFC) and Asia Pacific Economic Cooperation (APEC).*

Regarding data analysis, the study employs descriptive analysis and binary probit estimation technique. The binary probit estimation technique is used because of the dichotomous nature of the dependent variable (loan default). In addition, the dependent variable is a probability variable which takes values of one and zero (for the probability of defaulting and not defaulting respectively), making the binary probit model more appropriate (Greene, 2012; Asteriou and Hall, 2011). Frequency table is also employed to represent firms' characteristics and information on loans.

Finally, in order to ensure that the questionnaire used for the data collection is reliable and the estimated model not spurious, reliability test using Cronbach's alpha value proposed by Cronbach (1951) and diagnostic test (multicollinearity) are conducted in this study. Field (2009) reports that in order for an instrument for data collection to be reliable, the alpha value should be 0.7 and above. Multicollinearity on the other hand becomes problematic in a study when the correlation coefficients between the independent variables are more than 0.5 (Greene, 2012). Finally, robust standard errors of the explanatory variables are estimated to address any potential heteroscedasticity effects in this study to ensure efficient and reliable results.

3.2. Model specification

In order to examine the impact of multiple borrowing on loan default, a binary probit regression model is estimated following previous studies such as Abu *et al.* (2017), Munene and Guyo (2013) and Dadson (2012). In addition to our variable of interest – multiple borrowing, the study also includes other characteristics of firms such as firms' age, record keeping, business plan, type of economic activity engaged in, availability of collateral and credit duration which have been reported to influence loan default by past studies (see for example, Abu *et al.*, 2017; Omonywa and Muturi, 2015; Afroze *et al.*, 2014; Asongo and Idama, 2014; Mukhtar *et al.*, 2012).

The functional form of the binary probit model is specified in equation (1).

$$LD_i = f(MB, PL, BP, CD, MN, RK, TEA, AOC, AOF, GEN) \quad (1)$$

where LD is the dependent variable and represents loan default and $MB, PL, BP, CD, MN, RK, TEA, AOC, AOF, GEN$ are the explanatory variables and represent multiple borrowing, profit level, business plan, credit duration, number of management, records keeping, type of economic activity, availability of collateral, age of firm and gender of firm's owner respectively.

Equation (1) is further transformed into an estimable form as specified in equation (2).

$$LD_i = \gamma_0 + \gamma_1 MB_i + \gamma_2 PL_i + \gamma_3 BP_i + \gamma_4 CD_i + \gamma_5 MN_i + \gamma_6 RK_i + \gamma_7 TEA_i + \gamma_8 AOC_i + \gamma_9 AOF_i + \gamma_{10} GEN_i + \varepsilon_i \quad (2)$$

where $LD, MB, PL, BP, CD, MN, RK, TEA, AOC, AOF, GEN$ are as explained earlier in equation (1). γ_0 is the constant term, ε_i represents the stochastic disturbance term and γ_i ($i = 1, 2, 3 \dots 10$) are the coefficients of the respective independent variables. Given that the coefficients of probit regression do not have direct economic meaning and do not also show the magnitude of the impact of the change in the explanatory variable on the dependent variable (see Greene, 2012; Asteriou and Hall, 2011), the marginal effect at the mean is estimated for each independent variable and interpreted accordingly.

3.3. Variable description

Loan default which is the dependent variable is defined in this study as not able to repay loan received from formal financial institution such as universal banks, microfinance institutions, savings and loans and rural and community banks within the stipulated duration specified in the loan contract. Loan default usually occurs when a borrower is unable to repay loan received from a lender within the agreed period. Specifically, we obtain this variable by asking the respondents a follow up question: 'have you defaulted loan repayment within at least the past 12 months?' if a respondent indicates that he or she has ever received loan from any formal financial institution. The response is either the borrower has ever defaulted or never defaulted. As a result, the variable is measured as a binary dummy and takes the value 1 if a respondent has ever defaulted and 0 if never defaulted. Past studies such as Asongo and Idama (2014) and Mokhtar *et al.* (2012) have used the same measure for loan default.

Regarding the independent variable of interest: multiple borrowing, we operationalise it in this study as the situation where a borrower has more than one active loan (multiple loans) or has ever received more than one loan from different financial institutions within at least the past 12 month; in any of the cases the loans are to be repaid concurrently. This variable is obtained by asking the respondents 'do you currently have more than one active loan from different financial institutions which you are repaying concurrently or have you ever received more than one loan from different financial institutions which you repaid concurrently within at least the past 12 month?', and the response is binary: either 'yes' or 'no'. To this end, we measure this variable as a binary dummy and takes the value 1 for 'yes' response and 0 for 'no' response. Following the assertions by researchers (see Tilakaratna and Hulme, 2015; Mpogole *et al.*, 2012; Faruquee *et al.*, 2011) that multiple borrowing or multiple loans is detrimental to financial institutions and increase loan default, a positive relationship is hypothesised between loan default and multiple borrowing; $\gamma_1 > 0$. Multiple borrowing increases the probability of defaulting loan repayment which can be due to firms' higher financial burden which inhibits their ability to repay the multiple loans received. With respect to profit level, it is the profit of the selected firms for the past 12 month (in Ghana cedis [GHS]) prior to data collection period

and is measured in continuous terms. Negative relationship is expected between profit level and loan default; $\gamma_2 < 0$. Firms that have higher profits are less likely to default because they are likely to repay the loan within the agreed repayment period in the loan contract. In order to eliminate any possible outliers in the profit data that can influence our results, the study uses the natural log values for the analysis.

Number of management represents the number of employees in high ranking positions who oversee the activities of the firm and also ensure that the firm grows and meets all of its obligations that guarantee its sustainability. Management number is measured in continuous terms. It is expected that management number will have a positive relationship with loan default; $\gamma_5 > 0$. This is because these employees in high ranking positions are normally paid huge salaries and allowances which increase firms' expenditure and therefore likely not to have enough funds to meet its loan repayment obligations within the loan contract period. Credit duration in this study is defined as the agreed period required of a borrower to completely repay the disbursed loan in addition to the interest payment. Credit duration has three categorical variables: within 1 year, 2-3 years and 4-5 years which is the reference category. A negative relationship is expected between loan default and the credit duration categorical variables; $\gamma_4 < 0$. Firms or SMEs owners who apply for loan with a shorter repayment period are less likely to default because they are likely to fulfil their repayment obligations due to the shorter repayment schedule.

With respect to business plan, records keeping, availability of collateral and gender, they are measured as binary dummies and a value of 1 and 0 are assigned. We assign a value of 1 if a particular firm has business plan, keeps records of business activities, has collateral to secure loan and female as the owner; a value of 0 is assigned for the reverse occurrence accordingly. Business plan, records keeping and availability of collateral are expected to have negative relationship with loan default whereas a positive relationship is expected between gender and loan default; $\gamma_3 < 0$, $\gamma_6 < 0$, $\gamma_8 < 0$ and $\gamma_{10} > 0$. For instance, having business plan containing business ideas and their implementation procedures guides firms in their activities and therefore likely to execute activities that will ensure maximum sales and revenues which also guarantee possible loan repayment obligations to avoid loan default. Again, firms that pledge valuable items as collateral security will like to repay the loan received within the specified agreed period in order not to lose the item pledged. Similarly, firms that keep records of business activities are less likely to default because they are likely to follow up on their debtors in order to recover all incomes; this will then ensure that loan repayment obligations are fulfilled within the agreed loan repayment duration. Also, females are more likely to default relative to male counterparts. This is because firms belonging to females often tend to fail due to diversion of loans received for other purposes such as provision of social and economic needs of dependents (see Omonywa and Muturi, 2015; Kamanza, 2014). As a result, loan repayment becomes difficult for females and therefore tend to default.

Regarding age of firms and type of economic activity firms engage in, they are measured as a dummy and has three and four categories respectively: 0-5 years (reference category), 6-8 years and above 8 years and agriculture (reference category), manufacturing, retail and services respectively. Type of economic activity firms engage in and loan default are expected to have either positive or negative relationship whereas age of firm categorical variables are expected to have a negative relationship with loan default; $\gamma_9 < 0$. SMEs that have been in operation for relatively longer period are perceived as well established firms and for that matter will want to uphold their integrity and also ensure they remain in business. As a result, these relatively older firms ensure that they meet all their loan repayment obligations to guarantee future loan approval and disbursement to take advantage of investment opportunities and possible business expansion.

4. Results and Discussion

4.1. Descriptive analysis

The descriptive statistics summary of the variables this study uses are reported in Table 1. The statistics in Table 1 reveal that out of the 710 SME owners who have their loans approved and disbursed, 144 representing 20.28 percent have ever defaulted whereas 566 representing 79.72 percent have never defaulted loan repayment. The results further show that 568 (80 percent) of the firm owners indicate that they have no multiple loans from different financial institutions whereas 142 (20 percent) indicate otherwise. In addition, it is revealed that 286 of the SME owners are females and 424 are males and these represent 40.28 percent and 59.72 percent respectively. The larger number of males compared to females confirms the assertion by earlier researchers (see Sengupta *et al.*, 2015; Sena *et al.*, 2012) that female entrepreneurs are often discriminated in loan application and are at times reluctant to apply for loans for their business. With respect to firms' age, the results show that 325 (45.78 percent), 145 (20.42 percent) and 240 (33.80 percent) of the firms have been in existence for 0-5 years, 6-8 years and above 8 years respectively. Regarding credit duration, 193 (27.18 percent), 368 (51.83 percent) and 149 (20.99 percent) apply for credit with a repayment duration of within 1 year, 2-3 years and 4-5 years correspondingly. The results also reveal that 512 of the respondents pledge collateral security for their loan whereas 198 indicate otherwise. The result regarding profit level of the firms indicates a mean profit of GHS57,198.38 with GHS1,000.00 and GHS350,000.00 as the minimum and maximum profit respectively. The standard deviation of GHS54,487.51 shows that the profit level of the sampled SMEs are widely spread around the mean and this is due to the fact that the firms are not the same in terms of size and operation because some are small whereas others are medium which result in different level of profit. With regard to the number of management, the results reveal 1, 14 and 2.65 as the minimum, maximum and mean values respectively. This means that on the average the sampled SMEs have management size of about 3. The

relatively smaller standard deviation value of 1.50 shows that spread of the number of management for the selected firms is around the mean.

Table 1. Descriptive statistics summary

Variable	Frequency	Percentage	Variable	Frequency	Percentage
Gender			Credit duration		
Male	424	59.72	Within 1 year	193	27.18
Female	286	40.28	2 – 3 years	368	51.83
Multiple borrowing			4 – 5 years	149	20.99
Multiple borrowing	142	20.00	Economic activity type		
No multiple borrowing	568	80.00	Agriculture	53	7.47
Business Plan			Manufacturing	133	18.73
Have business plan	271	38.17	Services	249	35.07
No business plan	439	61.38	Retailing	275	38.73
Records Keeping			Age of Firms		
Keep records	508	71.55	0-5 years	325	45.78
Do not keep records	202	28.45	6-8 years	145	20.42
Collateral availability			Above 8 years	240	33.80
Collateral	512	72.11	Loan default status		
No collateral	198	27.89	Ever defaulted	144	20.28
			Never defaulted	566	79.72
	Minimum	Maximum	Mean	Standard Deviation	
Firm Profit Level	1,000	350,000	57,198.38	54,487.51	
Management number	1	14	2.65	1.50	

Source: Authors

Since these statistics do not reveal the effect of the respective variables on loan default, the study proceeds further to estimate equation (2) in order to establish the relationship and the impact of these variables on loan default.

4.2. Regression results

The estimates from equation (2) as well as the marginal effect at the mean are reported in Table 2.

Consistent with our a priori expectation, there is a positive relationship between multiple borrowing and loan default. This means that SMEs that have multiple loans from different financial institutions are more likely to default loan repayment compared with counterparts without multiple borrowing. The marginal effect shows that having multiple borrowing increases the probability of defaulting by 98 percentage points at 1 percent significance level.

Table 2. Estimated binary probit results (equation 2)

Variable	Coefficient	Robust Std. Error	Marginal Effect	P-value
MB (No multiple borrowing)				
Multiple borrowing	5.0898	0.5427	0.9815	0.0000
Profit level	-0.4335	0.1603	-0.0257	0.0068
BP (No Business plan)				
Have business plan	0.4778	0.3356	0.0324	0.1545
CD (4-5 years)				
Within 1 year	0.3255	0.2779	0.0225	0.2415
2-3 years	0.8928	0.5626	0.0561	0.1125
Number of management	0.1500	0.0432	0.0089	0.0005
RK (Do not keep records)				
Keep records	-0.1836	0.3274	-0.0118	0.5750
TEA (Agriculture)				
Manufacturing	0.9828	0.9611	0.1079	0.3065
Retail	0.3253	0.8607	0.0209	0.7055
Services	-0.0477	0.7996	-0.0028	0.9524
AOC (Did not pledge)				
Pledged collateral	-0.4328	0.2305	-0.0314	0.0605
AOF (0-5 years)				
6-8 years	-0.6252	0.2942	-0.0269	0.0336
Above 8 years	-0.7618	0.4118	-0.0380	0.0643
GEN (Male)				
Female	0.6931	0.2383	0.0491	0.0036
Constant	0.6586	1.4491	-	0.6495
Number of observation	710			
Wald Chi square (14)	532.46			
Prob > Chi square	0.0000			
Pseudo R squared	0.9096			

Source: Authors'

Note: MB, BP, CD, RK, TEA, AOC, AOF, GEN denote multiple borrowing, business plan, credit duration, record keeping, type of economic activity, availability of collateral, age of firm and gender respectively; and in parenthesis are the reference categories.

The positive relationship between multiple borrowing and loan default can be attributed to higher financial burden of borrowers. Having multiple borrowing increases firms' indebtedness which in turn makes it difficult for firms to meet all loan repayment obligations. This result justifies Nzomo (2017) who reports that multiple borrowing increases the indebtedness of firms which makes loan repayment very difficult. Afroze *et al.* (2014) also report that individuals who have multiple loans from different financial institutions often delay in loan repayment. The positive

relationship in this study is consistent with the finding by Mokhtar *et al.* (2012) though their relationship is insignificant.

The results further reveal a negative relationship between firms' profit and loan default. Firms with higher profits are less likely to default relative to counterparts with smaller profits. This is because higher profits reduce firms' financial burden and this enables them to fulfil all loan repayment obligations and also ensures that the loans received are repaid within the agreed period. This outcome confirms the assertion by Munene and Guyo (2013) that loan repayment default is higher and lower among firms with lower and higher profits respectively. The marginal effect further reveals that increase in firms' profit by GHS1.00 reduces the probability of defaulting by 3 percentage points at 1 percent significance level. Similar finding has been reported by Abu *et al.* (2017) on Ghana.

With regard to number of management and loan default, a positive relationship is revealed. SMEs with larger number of management employees are more likely to default compared with SMEs with relatively smaller number of management employees. The marginal effect indicates that increasing SMEs' number of management employees by 1 extra person increases the likelihood of defaulting by 1 percentage point and this is significant at 1 percent level. Increase in management number increases the financial burden due to huge salaries and allowances employees in high ranking positions often receive for services rendered. As a result, firms' expenses increase and may not be able to meet all loan repayment obligations and hence loan received is more likely to be defaulted. This result contradicts the findings by Abu *et al.* (2017). The difference in results can be explained by the fact that the present study considers number of management staff in high ranking positions whereas Abu *et al.* (2017) focus on the entire enterprise size which may comprise employees in low ranking positions with lower salaries. In most cases, employees in high ranking positions (top management staff) receive huge salaries and allowances compared with employees in the lower rank and therefore, though a firm may have larger number of employees it may not necessarily increase the financial burden if most the employees are in the lower rank. In this case the larger number of employees may not have any magnificent effect on firms' profit and hence all loan repayment obligations will be fulfilled. On the other hand, top management staff may be few but their huge salaries and allowances may impact significantly on firms' profit which then inhibit firms' ability to repay loans received as revealed in the present study.

Further, the study shows a positive relationship between female and loan default. SMEs owners who are females are more likely to default compared with counterparts with males as owners. This finding confirms the claim by researchers (see Omonywa and Muturi, 2015; Kamanza, 2014) that loan repayment is a major challenge among

women entrepreneurs in Kenya. For instance, Kamanza (2014) reports that women find it difficult to meet their loan repayment obligations due to business failure and diversion of funds. Specifically, the marginal effect reveals that being female SME owner increases the probability of defaulting by 5 percentage points at 1 percent significance level. Studies by Mokhtar *et al.* (2012) and Abu *et al.* (2017) on Malaysia and Ghana respectively reveal a contrary finding and this divergence in the results can be attributed to the differences in locations, conditions and practices of these study areas. For instance, Abu *et al.* (2017) explain that women in the Upper West region of Ghana are more skilful in agro-processing and trading, hence generate much incomes to repay their loans compared with their male counterparts. Mokhtar *et al.* (2012) on the other hand elucidate that men are less disciplined and responsible in repaying loans than women counterparts and so more likely to default.

Results in Table 2 show a negative relationship between firms' age categorical variables and loan default. This means that SMEs that have existed for relatively longer period (6 years and above) are less likely to default relative to counterparts that have existed for relatively fewer years (less than 6 years). The marginal effect reveals that being in existence for 6-8 years and above 8 years reduce the probability of defaulting by 3 percentage points and 4 percentage points at 5 percent and 10 percent significance levels respectively. However, the significance level for above 8 years category is relatively weak. This result can be explained by the fact that SMEs that have existed for longer period may be expert, experienced in sales recovery and other related activities which ensure higher sales to facilitate loan repayment. In addition, older firms may have gained integrity which they desire to uphold as well as the aspiration to continue operation or remain in business and hence try as much as possible to meet all loan repayment obligations to avoid loan default. Abu *et al.* (2017) also report a negative relationship between age of firm and loan default on Ghana.

Our regression results indicate that credit duration, records keeping, business plan, type of economic activity firms engage in and collateral availability do not have significant effect on loan default. Past studies have reported similar findings. For example, Murthy and Mariadas (2017) report insignificance relationship between loan repayment schedule and loan default for Malaysia. This however does not mean that these factors are not important when it comes to the issue of loan default. Nonetheless, other researchers (see Abu *et al.*, 2017; Munene and Guyo, 2013 on Kenya; Dadson, 2012 on Ghana; Mokhtar *et al.*, 2012 on Malaysia;) report significant relationship for these variables. The variation in outcomes can be due to differences in these economies and that of Ghana in terms of how SMEs undertake their activities and how these activities are financed by the financial institutions.

To ascertain the robustness of the results reported in Table 2, equation (2) is re-estimated without business plan, record keeping and type of economic activity variables and the results are reported in Table 3.

Table 3. Estimated binary probit results (robustness check)

Variable	Coefficient	Robust Std. Error	Marginal Effect	P-value
MB (No multiple borrowing)				
Multiple borrowing	4.6851	0.4195	0.9725	0.0000
Profit level	-0.4470	0.1543	-0.0370	0.0038
CD (4-5 years)				
Within 1 year	0.4567	0.2526	0.0460	0.0707
2-3 years	0.8624	0.5141	0.0741	0.0934
Number of management	0.1183	0.0441	0.0098	0.0073
AOC (Did not pledge)				
Pledged collateral	-0.3677	0.2442	-0.0354	0.1321
AOF (0-5 years)				
6-8 years	-0.3156	0.3152	-0.0223	0.3168
Above 8 years	-0.4992	0.5679	-0.0366	0.3794
GEN (Male)				
Female	0.4127	0.2442	0.0372	0.0911
Constant	1.3826	1.4087	-	0.3264
Number of observation	710			
Wald Chi square (9)	383.25			
Prob > Chi square	0.0000			
Pseudo R squared	0.9012			

Source: Authors

Note: Reference categories are in parenthesis; Dependent Variable: Loan default

The results reported in Table 3 are not different from those reported earlier in Table 2 in terms of the direction of the relationships. With regard to the variable of interest: multiple borrowing, the results again indicate that having multiple borrowing increases the probability of defaulting by 97 percentage points and this statically significant at 1 percent level which is consistent with the earlier finding reported in Table 2.

Regarding the validity and reliability of the instrument used for data collection and the efficiency of the estimates from the binary probit results, it is dependent on the assumptions that the questionnaire used is reliable and the regression model is also free from any econometric problem. Therefore, multicollinearity and reliability tests are conducted and the outcomes are reported in Table A1 (see the Appendix).

The results in Table 3 reveal that the overall Cronbach's alpha value for the explanatory variables is 0.751 (75 percent) which is higher than the proposed 0.7 (70 percent) by Field (2009); the minimum and maximum alpha values for the individual

variables are 0.711 and 0.773 respectively. This shows that the instrument for the data collection is reliable and there is high internal consistency among the variables. The high alpha value also indicates that similar or same outcome can be obtained when the questionnaires are administered at a different period. Again, the results from multicollinearity test indicate that none of the correlation coefficients is greater than 0.5 confirming the absence of multicollinearity in this study.

5. Conclusions and Policy Implications

This paper has examined the effect of multiple borrowing on loan default in Ghana with evidence from small and medium scale enterprises. The results from the binary probit show that there is a significant positive relationship between multiple borrowing and loan default. There is also a significant positive relationship between number of management, being female and loan default. The study therefore concludes that multiple borrowing significantly impacts on loan default in Ghana. It is further concluded that profit level, age of firm, number of management and gender of SMEs' owner are other significant factors that affect loan default.

The findings from the present study have some important policy implications especially for financial institutions, SMEs, policymakers and other stakeholders in the financial industry. First, given that having multiple borrowing increases the probability of defaulting loan repayment, the study recommends that loan and credit officers of financial institutions should be more diligent and circumspect in their quality control checks as well as credit appraisal of prospective borrowers. These will help to expose borrowers who are likely to default should the loan be approved and disbursed. In addition, financial institutions can discover and avoid SMEs with multiple borrowing through the establishment of more Credit Reference Bureaus under the Credit Reporting Act, 2007 (Act 726) which facilitate information sharing among financial institutions about SMEs credit activities.

Again, based on the positive relationship between number of management and loan default, it is recommended that SMEs' owners should try as much as possible to reduce the number of employees in high ranking positions who oversee the firm's activities. The reduction in expenses due to smaller number of staff in high ranking positions will ensure fulfilment of all loan repayment obligations. Again, reduction of employees in high ranking positions will reduce expenses such as salaries and allowances payment the firms incur and hence there will be no need for additional loans to finance firms' activities. As a result, multiple borrowing will be avoided.

Finally, with regard to level of profit, the study recommends that SME owners should be more innovative and efficient in their operations to increase profit. This will then ensure that the borrowed amount can be paid within the agreed loan repayment period to avoid loan default. Avoiding loan default will guarantee future

loan approval and disbursement in order to take advantage of available investment opportunities as well as possible expansion of the firm.

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Appendix A1: Cronbach's alpha reliabilities and correlations test results

Variable	Cronbach's Alpha	Correlations									
		1	2	3	4	5	6	7	8	9	10
MCL (1)	0.711	1.000									
PL (2)	0.714	0.297	1.000								
BP (3)	0.727	-0.241	-0.288	1.000							
CD (4)	0.740	-0.396	-0.175	0.110	1.000						
MN (5)	0.740	0.074	0.377	-0.284	0.034	1.000					
RK (6)	0.730	-0.223	-0.233	0.431	0.206	-0.299	1.000				
TEA (7)	0.773	0.025	-0.182	0.133	-0.018	-0.061	-0.024	1.000			
AOC (8)	0.722	-0.357	-0.363	0.165	0.310	-0.236	0.220	0.076	1.000		
AOF (9)	0.711	0.449	0.432	-0.203	-0.363	0.247	-0.238	-0.026	-0.446	1.000	
GEN (10)	0.766	-0.035	0.167	-0.274	0.029	0.273	-0.191	-0.017	0.083	-0.022	1.000

Source: Authors'

Note: The overall alpha and average inter item correlation values for all the variables are 0.751 and 0.215 respectively.