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Determinants of Financial Sustainability of Microfinance Institutions in Ghana

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Abstract: The importance of microfinance to developmental objectives relating to access to financial services, poverty alleviation, inequality reduction, and providing a solution to financial market failure among others cannot be over-emphasized. Academic literature confirming this is abundant. However the sustainability of these institutions has been a major concern in the recent past. This study seeks to determine what drives financial sustainability of microfinance institutions within the Ghanaian context. The study follows a quantitative approach using secondary data sourced from MIX Market. An unbalanced panel dataset from 25 Ghanaian microfinance institutions over six years (2006-2011) was used. Econometric results found that sustainability of microfinance institutions is positively related to the yield on gross portfolio and administrative efficiency ratio and negatively related to staff productivity. The direction of the staff productivity is puzzling and calls for more in-depth research to understand the source of the negative relationship between high level of staff productivity and financial sustainability.

Keywords: *Microfinance Institutions, Sustainability, Ghana*

1. Introduction

The seminal paper by Stiglitz and Weiss (1989) explored the impact of imperfect information in the credit markets its linkage to market failure. The authors postulate that banks are concerned with the interest received on loans relative to the risk taken on when granting such loans. Also it observed that interest being charged on a loan impacts on the risk associated with the portfolio of loans granted (Stiglitz & Weiss, 1989:393). Consequently as a result of imperfect information banks tend to ration out credit which denies the majority of the poor from accessing financial services from traditional banks (Stiglitz & Weiss, 1989:393). Theoretical explanations for the market failure identified by Stiglitz and Weiss (1989) have been investigated in the literature. Information asymmetries and contracting in credit markets has highlighted causes (Rao, 2012:294). According to Barr (2005:279), the poor in developing countries face serious limitations in terms of access to financial services; these limitations include cost, risk and convenience factors. Other factors, such as fragmented markets, dispersed populations and underdeveloped infrastructure, result in the cost of providing financial services to the poor being relatively higher (Woller & Schreiner, 2001:2). The consequence of those factors is significant exclusion of the majority of people by the traditional system. Financial exclusion in sub-Saharan Africa is approximately 76% of adults, which is well in excess of the global average of 50%, and that of high income economies at 11% (Demirguc-Kunt & Klapper, 2012:11).

As part of the solution to credit market failure, microfinance has emerged as a flexible alternative to help the poor (Barr, 2005:279). Furthermore, microfinance has been recognised as a critical developmental tool through its objective of reducing poverty by providing financial services to those excluded from the formal financial sector (Barr, 2005:278). In considering the role of microfinance, it is clear from the literature that inadequate access to credit is regarded as a key reason for the poor remaining poor, especially in developing countries (Hermes & Lensink, 2007:1). On this note, the role of microfinance as a tool for development cannot be overemphasised, as noted also by Aveh, Krah and Dadzie (2013:17). The microfinance sector has recorded significant growth in response to the credit market failure. Over the last five decades, microfinance has exhibited staggering growth, with outreach increasing from a few thousand in the 1970s, according to Lucarelli (2005:1), to over 130 million in 2012, as estimated by Rao (2012:294). Notwithstanding the impressive growth noted above, Microfinance Institutions (MFIs) face numerous challenges, which may impede the ability to increase outreach and achieve poverty alleviation and financial inclusion objectives. Anyanwu (2004:12) refers to a few critical challenges facing MFIs, namely: (i) increasing outreach, (ii)

developing a policy framework that regulates the sector, (iii) operating MFIs and the activities that are undertaken, and (iv) concern about financial sustainability of MFIs. The issue of MFI sustainability is the topic under investigation in this research paper. The sustainability of MFIs is considered a critical component in the quest for the development of the poor, as unsustainable MFIs are not likely to achieve their objectives in terms of reducing poverty and promoting financial inclusion (Schreiner, 2000:427).

2. Literature Review

The literature pertaining to microfinance in the Ghanaian context suggests that microfinance is not a new phenomenon in the country, as many poor people have historically relied on informal banking services through the use of savings and loan schemes prior to the establishment of formal banking systems in Ghana (Bank of Ghana, 2007:3). This section presents key concepts, a theoretical debate around financial sustainability and empirical literature on financial sustainability in microfinance.

The concept of microfinance and sustainability of microfinance institutions: According to Ledgerwood (1999) and Robinson (2001) microfinance is defined as the provision of financial services, generally in the form of credit, savings and insurance, to low-income individuals. According to Robinson (2001:9), "[m]icrofinance refers to small-scale financial services – primarily credit and savings – provided to people who farm or fish or herd; who operate small enterprises or microenterprises where goods are produced, recycled, repaired, or sold; who provide services; who work for wages or commissions; who gain income from renting out small amounts of land, vehicles, draft animals, or machinery and tools; and to other individuals and groups at the local levels of developing countries, both rural and urban". Financial sustainability, in the context of MFIs, has been defined differently by various researchers. Woller et al. (1999) stated that the sustainability of MFIs can be viewed from four different angles: "financial viability, economic viability, institutional viability, and borrower viability". They also noted loan default rate as an indicator of financial sustainability as lower default rates would assist the MFI in realising future lending. The financial sustainability of MFIs is defined by Ayayi and Sene (2010:304) as the ability of the MFI to service its expenses using its revenue as well as generating a margin that can be utilised to fund the growth of the MFI. Thus the financial sustainability of MFIs refers to the ability of the institution to carry out its business without the use of subsidies (Ayayi & Sene, 2010:304). Bogan, Johnson and Mhlanga (2007:12) have identified the following components of sustainability that are relevant to MFIs:

i. Operational Self-Sufficiency (OSS), which is defined as the total financial revenue divided by the sum of financial and operating expenses:

$$Total\ Financial\ Revenue\ \div (Financial\ Expense + Operating\ Expenses)$$

ii. Operational sustainability, which is defined as having OSS of at least 100%; and
iii. Financial sustainability (FSS), which is viewed as having OSS of at least 110%.

Kinde (2012:2) states that the financial sustainability of MFIs is measured in two stages, firstly operational sustainability, and secondly, financial self-sufficiency. Meyer (2002), cited in Kinde (2012:2), defines operational sustainability as the ability of an MFI to service its operating expenses from operating revenue irrespective of whether the institution is subsidised or not. Meyer defines financial self-sufficiency as the ability of an MFI to service both operating expenses and finance charges from the institution's operating revenues. In line with the literature, this study applies Bogan et al. (2007) definition as a measure of financial sustainability.

The sustainability debate (the Institutionalist and Welfarist Approaches): Financial sustainability of the microfinance industry is characterised by a debate between two groups, labelled in the literature as the welfarists and institutionalists, differing on the approach to be followed in terms of assisting the poor through access to microfinance (Woller, Dunford and Woodworth, 1999). The Welfarist approach focuses on the achievement of financial sustainability of MFIs. Proponents of this approach favour breadth of outreach, which refers to the number of individuals serviced, over depth of outreach, which refers to the levels of poverty reached (Woller et al., 1999:30). Institutionalists, on the other hand, postulate that "financial deepening", or the creation of a separate sustainable financial services sector for the poor, is one of the primary objectives of microfinance (Woller et al., 1999:31).

It is argued that given the severity of global poverty levels, successful poverty alleviation can only be achieved through the application of large scale financial resources far in excess of those available from donors in the form of subsidies (Woller et al., 1999). Access to private capital sources by MFIs is also crucial in the fight against poverty; however, access to these sources of capital requires that MFIs operate efficiently and profitably (Woller et al., 1999:34). Finally, Woller et al. (1999:35) postulate that institutionalists regard the approach of welfarists as a threat to the objective of industry-wide FSS through the latter's continued reliance on donor funding. Depth of outreach and a focus on improving the well-being of those participating in microfinance programmes are the critical cornerstones of the welfarist approach (Woller et al., 1999:31). Brau and Woller (2004:4) summarise the welfarist approach as follows: "[W]elfarists tend to emphasise poverty alleviation, place relatively greater weight on depth of outreach relative to breath of outreach, and gauge institutional success more so according to social metrics". They further state that whilst welfarists acknowledge the importance of financial metrics, these are not as important as they are to institutionalists, who focus less on the depth of outreach (Brau & Woller, 2004:4).

Those subscribing to the welfarist school of thought highlight their commitment to serving the very poor as a distinguishing factor over institutionalists; furthermore, the welfarists argue that whilst FSS may generally be desirable, they are unwilling to pursue it and accept that FSS is required in order to achieve their institutional objective of poverty alleviation (Woller et al., 1999:37). Reasons behind the reluctance of welfarists to pursue FSS have been aptly summed up by Woller et al. (1999:37) as follows: "if the industry embraces the institutionalist's position, it will have embarked on a potentially errant path that will have impact both on the industry itself and those whom it serves". This study has considered the two approaches, and opted for the institutionalist over the welfarist approach because of the long-term viability of the approach. The magnitude of poverty levels and erratic nature of donor funding are the key driving factors in the choice of approach followed by the researcher. The literature also highlights the importance of sustainable MFIs in the quest to reduce poverty, and the researcher regards this as further motivation to subscribe to the institutionalist approach. We acknowledge that over-emphasis may lead to mission drift as discussed in extant literature but seems to be the second best option for providing sustainable financial service to the poor.

Empirical studies relating to the sustainability of MFIs: Globally, Woller and Schreiner (2001) analysed the financial and portfolio information of 13 village banks in Colombia, El Salvador, Ecuador, Honduras, Kyrgyzstan, Malawi, Mexico, Nicaragua, Peru, Uganda, Bolivia, Tanzania and Togo over a three-year period, from 1997 to 1999, based on information obtained from the Micro Banking Bulletin (MBB), in order to define the determinants of FSS. Variables that proved statistically significant in determining FSS included the real portfolio yield, administrative expense ratio, loan officer productivity, average salary to Gross National Product ratio and average loan size (Woller & Screiner, 2001:10). Bogan et al. (2007:12), using cross-sectional data obtained from MIX Market on the top 300 MFIs, ranked by total assets, in three different continents (Africa, Asia and South America) and assessed the factors impacting on financial and operational sustainability. The size of the MFI's assets as well as its capital structure was found to be related to its sustainability. It was also found that grants as a percentage of assets is negatively correlated to the sustainability of MFIs (Bogan et al., 2007:26). Ayayi and Sene (2010) used extensive MIX Market data to identify the determinants of FSS for 217 MFIs across 101 countries in the nine-year period ending 2006. The results of the study indicated that portfolio quality, measured by PAR > 30, had the highest impact on FSS. Furthermore, interest rates that were sufficiently high, leading to profit generation, as well as good quality management practices in terms of controlling expenses were all critical factors for the financial sustainability of MFIs (Ayayi & Sene, 2010:321).

In analysing 26 MFIs from India and Bangladesh, Rai (2012) found that among other factors, the Capital/Asset Ratio, Operating Expenditure/Loan Portfolio, and Portfolio at Risk > 30 days (PAR > 30) were the largest contributors to the financial sustainability of MFIs in the two countries. Other important factors identified in the study included the Number of Active Borrowers, the Percentage of Female Borrowers in the portfolio, Borrowers per Staff Member, Yield on the Portfolio and the Age of the MFI (Rai, 2012). Within the African context, Adongo and Stork (2005:25) investigated the determinants of the financial sustainability of Namibian MFIs and concluded that none of the institutions included in the study were sustainable, a key reason for this being the fact that the interest rate MFIs require in order to breakeven exceeds that allowed in terms of the Usury Act which limits the amount of interest the institutions are allowed to charge. Further

afield, in a quantitative research study using cross-sectional data obtained from MIX Market for 14 MFIs in Ethiopia in the period between 2002 and 2010, Kinde (2012) found that the factors impacting most on the financial sustainability of the MFIs were the breadth and depth of outreach, the dependency ratio and cost per borrower. The ratio of donated equity to total capital of the MFI is referred to as the dependency ratio (Kinde, 2012). Kinde (2012) also noted that the capital structure of the MFI, along with staff productivity, did not have a significant impact on financial sustainability.

Kimando, Kihoro and Njogu (2012:40) concluded that the key factors impacting on the financial sustainability of MFIs in the Murang'a Municipality in Kenya included the regulatory regime overseeing the institutions, the repayment rate of credit that was granted, the individual lending model used and geographical coverage. Tehulu (2013:157) analysed unbalanced panel data collected from 23 MFIs in East Africa for the period 2004–2009, and found that financial sustainability correlated positively with the ratio of gross loan portfolio to assets and size. There was a negative correlation between financial sustainability and the operating expenses/asset ratio and PAR > 30 days (Tehulu, 2013:157). The existing literature in Ghana includes Richman and Fred (2010) who attempted to understand the nexus between the sustainability of MFIs in Ghana, gender composition and competition by analysing the short panel data of 72 MFIs over the period 2003–2007. These authors found a statistically significant impact relating to the proportion of men to total borrowers on OSS; this implies that having a greater proportion of men as borrowers of the MFI is associated with greater operational self-sufficiency for the MFI (Richman & Fred, 2010:13). The findings from Richman and Fred (2010) are corroborated in a study undertaken by Rai (2012) who found that the proportion of women borrowers impacted the sustainability of these institutions in Bangladesh. They both found that increased market concentration, or a less competitive market, leads to lower OSS for MFIs. MFIs in the Ghanaian market were therefore found to become less sustainable as the market became monopolistic (Richman & Fred, 2010:14).

Aveh et al. (2013) applied qualitative and quantitative approaches in investigating the relationship between business strategy and the sustainability of MFIs in Ghana. Exploratory interviews were conducted with 14 executives from a sample of MFIs to explore the microfinance environment and enhance understanding of the metrics under consideration (Aveh et al., 2013:18). Self-administered questionnaires were completed by a sample of employees at the 130 MFIs selected (Aveh et al., 2013:19). The results of the two-stage study highlighted a positive relationship between business strategies and the sustainability of MFIs; specific business strategies included "effective screening, enforcing group collateral, regular client meetings, high methods of minimising default rates, intensifying peer monitoring and innovation in financial products" (Aveh et al., 2013:26).

It can thus be concluded that the gender composition of the borrowers, market competition and business strategies impact on the sustainability of MFIs in Ghana. There are, however, numerous other factors that can also affect the sustainability of such institutions internationally, as highlighted earlier in this section. Given the limited literature pertaining specifically to the sustainability of MFIs in the Ghanaian market, the intention of this research paper is to add to the body of literature dealing with this phenomenon in the selected market. This paper will add to this literature by determining the extent to which a larger pool of variables is related to the sustainability of MFIs in Ghana. The intention is to provide practitioners as well as policy makers with a wider array of aspects relating to MFIs which can be considered when investigating the means by which these institutions can be made sustainable. The literature shows that enhancing the sustainability of MFIs promotes the achievement of developmental objectives, such as increased financial inclusion and decreased poverty levels. For these reasons, understanding the factors that determine the sustainability of MFIs in Ghana is critical.

3. Methodology

A quantitative research method, namely panel data regression analysis, was used. The dependent variable used was FSS and exploratory variables were the nine variables included in section 3.2.

Description of data and data-gathering process: Data used for the purposes of this research is sourced from a not-for-profit organisation, MIX Market. The organisation is a source of microfinance performance

data, with the objective of strengthening financial inclusion and promoting transparency within the microfinance industry. MIX Market lists approximately 2,000 MFIs from across the world and provides access to relevant financial as well as social performance indicators. The organisation's headquarters are in Washington DC, in the United States of America, and the organisation was incorporated in 2002. Other secondary sources of data that were used included relevant books, academic journal articles and internet sources, such as relevant online publications by the Ghanaian government. These were used in order to supplement the information obtained from MIX Market which only included statistics from the various MFIs.

The data available from MIX Market covers around 90 different parameters relating to MFIs. These include profile data, indicators, data on products and clients, balance sheets, income statements and portfolio reports. Prior to commencing the construction of the regression model and analysis, the extracted data was screened according to the following parameters: (i) the availability of information in terms of dates, and (ii) the completeness of data. It was evident upon sorting the data per MFI in order of date that certain MFIs had data for a longer period of time than others. After assessing the data it was decided that the regression analysis would be performed for the six year period between 2006–2011, this was done based on the completeness of the data set for this time period. Due to the fact that an unbalanced panel data set was used, it was possible for some years or variables to be omitted. For consistence reasons all MFIs with data availability of less than four years were omitted, with the research period being 2006–2011. MIX Market listed information for 46 MFIs in Ghana, and of these institutions, 21 were eliminated for the purposes of this research paper on the basis of the unavailability of data for the period noted above. A total of 25 MFIs were therefore used in this research, representing approximately 54% of the Ghanaian MFIs listed on MIX Market.

Dependent and Independent Variable Discussion: The focus of this section is on the identification and description of the dependent and independent variables used in this research. Kinde (2012:2) proposes that financial sustainability is measured in terms of operational sustainability and FSS, where operational sustainability measures the ability of the institution to service operational expenses from operational income, and FSS measures the ability to service both operational expenses and finance costs from operational income. In this research paper, FSS will be used as a proxy for financial sustainability; and is thus considered to be the dependent variable in the study. According to Ledgerwood (1999:17), "[f]inancial self-sufficiency indicates whether or not enough revenue has been earned to cover both direct costs, including financing costs, provisions for loan losses, and operating expenses, and indirect costs, including adjusted cost of capital". The definition of financial sustainability according to MIX Market is that an MFI is considered financially sustainable in the event that the organisation has an operational sustainability level of at least 110% (Bogan et al., 2007). Operational sustainability in the context of MIX Market is defined as the ratio between total financial revenue and the sum of financial expenses and operating expenses, where a level of 100% is considered operationally sustainable (Rai, 2012:2).

Despite the fact that MIX Market provides data on approximately 90 different variables, the current research was limited to the following variables:

i. Administrative expense;
ii. Average loan balance per borrower;
iii. Debt / Equity Ratio;
iv. Number of active borrowers;
v. Operating Expense / loan portfolio;
vi. Size of the MFI;
vii. Portfolio at risk (30 days);
viii. Yield on gross portfolio (real); and
ix. Staff productivity

The aforementioned factors were chosen for inclusion in the proposed regression model because these were identified as factors that influence the FSS of MFIs as noted in literature pertaining to this topic. This research also investigated the extent to which the determinants of FSS within the Ghanaian context mirrors that identified in other geographical regions, and for this reason the regression model is used in this research paper.

Data Analysis: Panel data regression analysis was employed in determining the factors impacting on sustainability. The use of panel data regression analysis as a method of answering the research question was also driven by the nature of data used and questions asked. This method has furthermore proven to be a popular research method, as it has been used in many studies of FSS, for example by Rai (2012) and Kinde (2012). The data of the 25 MFIs in Ghana over a period stretching over six years (2006–2011) was collected from the Mix Market database. In total, there were 123 observations. Nine MFIs had information available for the full six years, resulting in 54 observations, and 16 MFIs had information for only some of the six years. There are 27 missing years in total, thus the observations from these MFIs with partial information in terms of years covered is 69 (6 * 16 – 27). The objective of running regressions is to determine the extent to which the independent variables impact on the FSS of MFIs in Ghana. The regression analysis was conducted through the use of a computerised statistical package, Stata. The descriptive statistics to be analysed include the number of observations, mean, standard deviation, maximum and minimum.

Regression model specification: The fixed effect and random effect linear panel model were used. The final model selected was based on the Hausman test (Cameron & Trivedi, 2010). According to Hedges and Vevea (1998:486) "[f]ixed-effects models treat the effect-size parameters as fixed but unknown constants to be estimated and usually (but not necessarily) are used in conjunction with assumptions about the homogeneity of effect parameters." Hedges and Vevea (1998:486) specify that "[r]andom-effects models treat the effect size parameters as if they were a random sample from a population of effect parameters and estimate hyper parameters (usually just the mean and variance) describing this population of effect parameter". As noted above, the choice of which model to use in the research paper is determined through the computation of the Hausman test.
The panel regression analysis is expressed by the following formula:

$$FSSit = \beta 0 + \beta 1(YIELDit) + \beta 2(PAR30it) + \beta 3(NUMBORit) + \beta 4(LOANSIZEit) + \beta 5(DEit) + \beta 6(OPEX/PORTit) + \beta 7(ADMINEFFit) + \beta 8(STAFFPRODit) + \beta 9(SIZEit)) + Vi + \acute{\varepsilon} i$$

Where:
FSSit = the dependent variable, which represents the FSS of firm *i* for period *t*;
YIELDit = gross portfolio yield for firm *i* over period *t*;
PAR30it = PAR30 for firm *i* over period *t*;
NUMBORit = number of borrowers for firm *i* over period *t*;
LOANSIZEit = average loan size for firm *i* over period *t*;
DEit = debt to equity ratio for firm *i* over period *t*;
OPEX/PORTit = operating expense / loan portfolio for firm *i* over period *t*;
ADMINEFFit = administrative efficiency for firm *i* over period *t*;
SIZEit = size of assets for firm *i* over period *t*; and
Vi is heterogeneity specific to a speficic MFI
$\acute{\varepsilon}_{it}$= the error term.

The impact of the independent variables on FSS was assessed by means of the statistical significance of the coefficients βi. Since we had nine variables to consider as indicated in section 3.2, we used manual forward and backward variables selection approach.

4. Results and Discussion

Descriptive Results: Descriptive statistics in Table 1 show the mean value of financial sustainability is 1.07 (107%), implying that on average the MFI sector is operationally sustainable but not financially sustainable. The average debt structure (DE)is 3.40, which indicates that the capital structure of MFIs in Ghana is leveraged to the extent of 3.40 times debt to equity. The minimum ratio is negative at -354.28, implying that the capital structure of some MFIs is equity-funded as opposed to debt. The maximum value relating to this variable is 21.83 times, which indicates that some institutions in the country are highly leveraged relative to the mean. The observed debt is high when compared to the 2.27 times found by

Kinde (2012) in a study focusing on the Ethiopian market. Whilst Ghanaian MFIs in this study reflected higher levels of leverage compared to Ethiopian counterparts, it is noted that high leverage is a feature of both these markets as in both instances a much larger proportion of debt relative to equity is employed by the MFIs. The literature confirmed an adverse relationship between the debt to equity ratio and the sustainability of MFIs (Hartarska & Nadolnyak, 2007). Institutions in Ghana are thus encouraged to introduce higher levels of equity into their respective capital structures in order to enhance the ability of these institutions to reach sustainability.

Gross Portfolio Yield (YIELD) reflects the revenue the MFI generates from the assets it has under management, and the revenue generated from the loans extended to borrowers. The lower the YIELD, the less the MFI generates per unit lent to borrowers. The mean YIELD in this study was found to be 29%, meaning that institutions generate 0.29 of revenue for every 1.00 advanced to borrowers. The standard deviation is 16%, with the minimum and maximum values being -10% and 63% respectively. This indicates that the more profitable MFIs generate yield well above the median, with less profitable institutions generating negative revenues and thus being loss-making. High interest rates charged by MFIs are not an unusual occurrence and, as noted by Guntz (2011:23), the global average microfinance interest rate charged was approximately 25%, with rates of between 50% to 80% being not uncommon. It is thus noted that the interest rates charged by Ghanaian MFIs, whilst exceeding the global average, is not considered excessively high. In practice, this could aid both the sustainability and outreach objectives of these MFIs.

Table 1: Descriptive statistic results obtained

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
FSS	102	1.07	0.34	0.08	2.50
De	99	3.41	4.14	-14.31	21.83
Yield	85	0.29	0.16	-0.10	0.63
opexport	87	0.43	0.22	0.05	1.13
par30	82	0.07	0.06	0.00	0.34
admineff	106	79	118	0	500
staffprod	84	391	315	18	1336
adminex	97	955,700	1,348,297	6,125	5,203,018
size	108	9,301,430	13,100,000	36,779	61,800,000
numbor	106	13,828	22,002	50	133,420
loan size	106	505	593	33	3,399

Source: Researcher's own computation

The Operating Expenditure Ratio (OPEXPORT) is often used as a proxy for MFI efficiency. Thus, the lower the ratio, the higher MFI efficiency would be. In the current study, it was found that the mean OPEXPORT is 42%, which implies that for every unit lent to borrowers, the MFIs incur 0.42 unit of operating expenditure. The minimum and maximum values for this variable range from as low as 5%, implying an efficient MFI, to as high as 113%, which implies a very inefficient institution. In terms of this ratio, MFIs in Ghana appear to lean towards being managed in an inefficient manner, given the high OPEXPORTs. The abovementioned mean of 42% is higher than the 19% found by von Stauffenberg (2003:17). An implication of a higher operating expense structure is reduced profitability, and thus a reduced likelihood of reaching sustainability as MFIs with higher OPEXPORT ratios are considered less efficient (Tehulu, 2013:157). Practically, MFIs in Ghana would need to revisit their operating expenses in order to enhance sustainability.

Portfolio at Risk 30 days (PAR30)provides the researcher with an indication of the quality of loans in the MFIs portfolio. The correlation between PAR30 and sustainability is negative, thus the higher this ratio, the less sustainable the MFI is likely to be. From this perspective, MFIs in Ghana do not appear to have poorly performing loans on their books. The mean PAR30 value is 7%, with maximum and minimum results of 34% and 0% respectively. The aforementioned results compare favourably to other regions. Lafourcade, Isern, Mwangi and Brown (2005:12), for example, found the global average in terms of PAR30 to be approximately 5.2%, with African MFIs averaging 4.0%, South Asian MFIs 5.1% and East Asian MFIs 5.9%. The results obtained in this research show that the PAR30 ratio for MFIs in Ghana

exceeds that of the aforementioned markets. This does not bode well for the sustainability of Ghanaian MFIs, as a higher PAR30 ratio implies lower portfolio quality and ultimately lower sustainability. Practically, MFIs in Ghana should focus on improving the quality of loans on their books in order to enhance their sustainability.

Administrative Efficiency (ADMINEFF) relates to the cost the MFI incurs in order to extend and manage loans granted to borrowers. This ratio is positively correlated with the sustainability of the institutions. Thus, the more efficient the institution is, the more sustainable it is likely to be. Administrative Efficiency is measured in terms of Cost per Borrower, which in turn is calculated as Administrative Expense / Number of Borrowers. The mean ADMINEFF is USD79.33, with a standard deviation of USD117.53. The minimum and maximum values vary significantly at USD0.00 and USD499.81 respectively. According to Lafourcade et al. (2005:12), the average cost per borrower was USD72 among reporting African MFIs. It is noted that the Cost per Borrower is lowest in the East African region, at USD58, with the West African region having the second lowest Cost per Borrower of USD77. Based on the results obtained in the current study, the mean Cost per Borrower of Ghanaian MFIs, USD79.33, is slightly higher than the averages for East Africa (USD58), West Africa (USD77) and the overall average (USD72). It is concluded that Ghanaian MFIs are inefficient compared to the three regions noted above, but outperform in terms of efficiency when compared to Central Africa (USD84), the Indian Ocean (USD240) and the Southern Africa regions (USD83). It is thus concluded that there is room for improving the administrative efficiency of Ghanaian MFIs in order for the sustainability of these institutions to be enhanced.

Staff productivity (STAFFPROD) measures the efficiency of staff, as it considers the number of staff required to generate a certain level of output in terms of services provided to the MFI's clients. The mean in terms of staff productivity is 391.21, with a standard deviation of 315.48. The minimum and maximum results are wide-ranging, at 18.33 and 1,336.17, respectively. The ratio measures the number of borrowers managed per staff member, thus the higher the ratio, the better from a sustainability perspective. Some inefficient MFIs in the Ghanaian market have a staff productivity ratio of 18.33 borrowers per staff member, whilst more efficient institutions have a ratio of 2,509.00, implying that the latter institutions are highly efficient and sustainable. When compared to Lafourcade et al. (2005:13) findings, it is noted that Ghanaian MFIs are efficient as the mean of the institutions in this study (391.21) comfortably exceeds that observed in MFIs in Central Africa (85), East Africa (132), the Indian Ocean region (29), Southern Africa (150), West Africa (177) and the global average of 143.

The size of MFI (SIZE) is measured in terms of the total outstanding borrowings. The literature suggests that scale is an important contributor toward MFI sustainability. Increased size thus leads to increased sustainability. The portfolio sizes of the respective MFIs vary greatly, with a mean of USD9,301,430, a maximum value of USD61,815,018.29 and a minimum value of a mere USD36,778.91; the standard deviation in this study was USD13,100,000Authors. Relative to the African average of just over USD8,000,000 (Lafourcade et al., 2005:5), the Ghanaian MFIs in the current study were found to be above average. The SIZE is important as increased scale results in the institution extracting benefits from economies of scale in its operations, which leads to higher levels of profitability and, ultimately, increased sustainability of the institution.

Number of Borrowers (NUMBOR) relates to the number of individuals served by the MFI, which is known as breadth of outreach. The literature reveals that there is a positive relationship between the breadth of outreach and the sustainability of MFIs. Wider outreach therefore leads to the increased sustainability of MFIs. The results in this regard vary significantly, with the mean of 13,828 and standard deviation of 22,002. The maximum and minimum numbers of borrowers observed are 133,420 and 50, respectively. In this study, it is noted that the standard deviation exceeds the mean; this indicates that there are MFIs in Ghana with a smaller breadth of outreach. According to Kinde (2012:6), the MIX Market benchmark in relation to the number of borrowers is as follows:

i. Large (>30,000 borrowers);
ii. Medium (10,000–30,000 borrowers); and
iii. Small (<10,0000 borrowers).

Based on the data set used in this study, it is concluded that Ghanaian MFIs are medium in scale, as the mean falls within the range required in order to be classified as such according to the MIX Market benchmarks above. Breadth of outreach according to the literature refers to the number of poor individuals served by the MFI (Kinde, 2012:3). In the current study, the numbers served are low

compared to that found by Kinde (2012). In the latter study, the mean exceeded 130,000 borrowers and the maximum number of individuals served was over 700,000. It is thus concluded that in order for Ghanaian MFIs to improve in terms of sustainability, these institutions would have to increase the number of individuals served. Average Loan Size (LOANSIZE) measures the depth of outreach and deeper outreach implies greater outreach because loan sizes become smaller as outreach deepens. The literature postulates that the negative relationship between the sustainability of MFIs and LOANSIZE is due to the fact that assessing the affordability of the poor, a highly heterogeneous group, becomes more difficult as the poor have been found have been to be less able to signal their ability and willingness to repay borrowings (Navajas et al., 2000:9). The mean LOANSIZE equates to USD505.33 and the standard deviation is USD593.39. Minimum and maximum results for this variable are USD33.07 and USD3,398.85 respectively.

The average outstanding loan per borrower among MFIs reporting to the Micro Banking Bulletin is USD307 per borrower, according to Kinde (2012:6). Thus it is concluded that the MFIs in Ghana extend loans which are much higher than the average reported in the previous literature; this implies that loans are being granted to relatively wealthier individuals. Lower loan amounts are synonymous with greater depth, but also with reduced sustainability. The fact that Ghanaian MFIs provide relatively higher loans to their borrowers thus has a positive impact in terms of the sustainability of these institutions. On the other hand, higher loan sizes result in less borrowers being served and thus has an adverse impact in terms of the depth of outreach of the MFIs included in this study.

Econometric Results: The research question in this research paper sought to establish the key determinants of sustainability pertaining to MFIs in Ghana. The results of the current study are shown in Table 2.Based on our data, yield was the only variable which had a significant positive influence on financial sustainability. This confirms the existing empirical literature that high levels of profit are associated with financial sustainability (Marwa & Aziakpono, 2015). A ratio of operation cost to loan portfolio and staff productivity has a significant negative influence on sustainability as demonstrated in Table 2. The higher level of operating expenditure to loan portfolio indicates a higher level of inefficiency during the intermediation process which has a negative effect on financial sustainability. This is in line with theoretical expectations. We expected that a higher level of staff productivity would lead to a higher level of financial sustainability because of increased efficiency, but surprisingly our results contradict our expectation.

Table 2: Regression Results for Random Effect Model

OSS	Robust Coefficient	Standard Error	z	*p*>|z|	[95% Confidence Interval]	
de	-0.01	0.01	-1.01	0.31	-0.02	0.01
lsize	-0.01	0.03	-0.40	0.69	-0.07	0.05
yield	**0.66**	**0.34**	**1.94**	**0.05**	**-0.01**	**1.34**
opexport	**-1.08**	**0.28**	**-3.80**	**0.00**	**-1.64**	**-0.52**
par30	-0.69	0.45	-1.53	0.13	-1.56	0.19
ladmineff	0.01	0.03	0.30	0.77	-0.05	0.06
lstaffprod	**-0.08**	**0.02**	**-4.42**	**0.00**	**-0.11**	**-0.04**
_cons	2.04	0.48	4.22	0.00	1.09	2.99
sigma_u	0.193					
sigma_e	0.106					
rho	0.768	(fraction of variance due to u_i)				

Source: Researcher's own computation

The other variables included in the regression model were PAR30, the debt to equity ratio, the administrative efficiency ratio and the size of Ghanaian MFIs but these reflected an insignificant impact on the sustainability of MFIs in Ghana.

5. Conclusion and Recommendation

This research was undertaken in order to investigate the key determinants of sustainability among Ghanaian MFIs. The literature has highlighted the impact of MFIs on addressing credit market failures resulting from traditional commercial banks neglecting the poor. The key variables which had a significant influence on financial sustainability were lower levels of expenditure per loan portfolio and staff productivity. The direction of the staff productivity is puzzling and calls for more in-depth research to understand the source of the negative relationship between high level of staff productivity and financial sustainability.

References

Adongo, J. & Stork, C. (2005).Factors Influencing the Financial Sustainability of Selected Microfinance Institutions in Namibia. The Namibian Economic Policy Research Unit.

Anyanwu, C. M. (2004). Microfinance Institutions in Nigeria: Policy, Practice and Potentials. Paper Presented at the G24 Workshop on Constraints to Growth in Sub Saharan Africa, Pretoria, South Africa, November 29–30.1–29.

Aveh, K., Krah, R. Y. & Dadzie, P. (2013). Business Strategy and Sustainability of Microfinance Institutions in Ghana. *Research Journal of Finance and Accounting*, 4(10), 17–27.

Ayayi, A. G. & Sene, M. (2010). What drives microfinance institutions. *The Journal of Developing Areas*, 44(1), 303–324.

Bank of Ghana. (2007). A Note on Microfinance in Ghana.

Barr, M. (2005). Microfinance and Financial Development. *Michigan Journal of International Law,* 26, 271–296.

Bogan, V., Johnson, W. & Mlanga, N. (2007). Does Capital Structure Affect the Financial Sustainability of Microfinance Institutions? [Online]. Available: http://www.cid.harvard.edu/neudc07/docs/neudc07_poster_bogan.pdf[2013, September 25].

Brau, J. C. & Woller, G. M. (2004). Microfinance: A comprehensive review of the existing literature. *Journal of Entrepreneurial Finance*, 9(1), 1–25.

Cameron, A. C. & Trivedi, P. K. (2010). Micro econometrics Using Stata. Texas: Stata Press.

Demirguc-Kunt, A. & Klapper, L. (2012).Measuring Financial Inclusion: The Global Findex Database. Policy Research Working Paper 6025.The World Bank.

Guntz, S. (2011). Sustainability and profitability of microfinance institutions.

Hartarska, V. & Nadolnyak, D. (2007). Do regulated microfinance institutions achieve better sustainability and outreach? Cross-country evidence. *Applied Economics*, 39(10), 1207–1222.

Hedges, L. V. & Vevea, J. L. (1998). Fixed- and Random-Effects Models in Meta-Analysis. *Psychological Methods,* 3(4), 486–504.

Hermes, N. & Lensink, R. (2007). The empirics of microfinance: what do we know? *The Economic Journal*, 117(517), 1–10.

Kimando, L. N., Kihoro, J. M. & Njogu, G. W. (2012). Factors Influencing the Sustainability of Micro-Finance Institutions in Murang'a Municipality. *International Journal of Business and Commerce*, 1(10), 21–45.

Kinde, B. A. (2012). Financial Sustainability of Microfinance Institutions (MFIs) in Ethiopia. *European Journal of Business and Management*, 4(15), 1–11.

Ledgerwood, J. (1999). The Microfinance Handbook. Washington DC: The World Bank.

Lafourcade, A., Isern, J., Mwangi, P. & Brown, M. (2005).Overview of the Outreach and Financial Performance of Microfinance Institutions in Africa. Micro Banking Bulletin.

Lucarelli, B. (2005). Microcredit: A cautionary tale. *Journal of Contemporary Asia*, 35(1), 78–86.

Marwa, N. W. & Aziakpono, M. J. (2015). Financial Sustainability of Saving and Credit Cooperatives: Evidence from Tanzania. *International Journal of Socio-Economics,* 42(6).

Navajas, S., Schreiner, M., Meyer, R. L., Gonzalez-Vega, C. & Rodriguez-Meza, J. (2000). Microcredit and the poorest of the poor: theory and evidence from Bolivia. *World Development*, 28(2), 333–346.

Rai, A. K. (2012). Factors Affecting Financial Sustainability of Microfinance Institutions. *Journal of Economics and Sustainable Development*, 3(6), 1–10.

Rao, D. S. (2012).Credit Market Failures and Microfinance. *International Journal of Research in Management & Technology*, 2(3), 294–297.

Richman, D. & Fred, A. K. (2010). Gender Composition, Competition and Sustainability of Micro Finance in Africa: Evidence from Ghana's Microfinance Industry. [Online]. Available: http://www.csae.ox.ac.uk/conferences/2011-EDiA/papers/175-Dzene.pdf [2014, June 8].

Robinson, M. S. (2001). The Microfinance Revolution. Washington DC: The World Bank.
Schreiner, M. (2000). Why's Donors Can Help the Evolution of Sustainable Microfinance Organizations. *Savings and Development*, 24(4), 423–437.
Stiglitz, J. E. & Weiss, A. (1989). Credit Rationing in Markets with Imperfect Information. *The American Economic Review*, 71(3), 393–410.
Tehulu, T. A. (2013). Determinants of Financial Sustainability of Microfinance Institutions in East Africa. *European Journal of Business and Management*, 5(17), 152–158.
VonStauffenberg, D. (2003). Performance Indicators of Microfinance Institutions. Micro-Rate.
Woller, G. M., Dunford, C. & Woodworth, W. (1999). Where to Microfinance. *International Journal of Economic Development*, 1(1), 29–64.
Woller, G. & Schreiner, M. (2001). Poverty lending, financial self-sufficiency and the six aspects of outreach. [Online]. Available: http://www.microfinancegateway.org/gm/document-1.9.28981/50.pdf[2013, September 28].

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