

Determinants of Financial Inclusion in Malawi

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This paper explores the determinants of financial inclusion from the usage perspective in Malawi. Using data from the 2014 Baseline Survey on Financial Literacy and Consumer Protection ; and probit and multivariate probit models, the study reveals that financial capability is the most important factor in positively influencing the likelihood of usage of financial products. Other important factors include age, employment, income, marital status, education, gender and geographical distribution. The study, however, finds reverse gender gap in financial inclusion in Malawi, thus women are more likely to use financial products and services than men. Further, individuals residing in urban areas are more likely to use financial products and services than those in rural areas whilst those in the northern region are likely to be more included than those residing in other regions. With regard to individual products, the study finds that reverse gender gap also exists with regard to ownership of savings accounts, credit accounts and investments. The study further finds that the likelihood of owning these products increases with age, level of education, income, being married and living in an urban area. One key policy implication from the study therefore is the need to enhance financial capability through, among others, promotion of financial literacy so as to enhance financial inclusion.

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1. Introduction

Financial development and financial inclusion are important facilitators of economic growth and development (Christopoulos and Tsionas, 2004). In most low income countries like Malawi, financial systems remain thin and tend to serve a small segment of the population. Most citizens tend to rely on the informal financial system for financial intermediation. Savings rates remain low and formal financial systems are highly constrained in providing their intermediating roles in the economy. Theoretical literature and empirical studies suggest that countries with low savings rates tend to have retarded economic growth rates and remain underdeveloped (Todaro and Smith, 2011). Financial inclusion is therefore being realized as a necessary condition for ensuring inclusive and sustainable growth in Africa and other developing countries (Triki and Faye, 2013). More recently, there has been realisation that despite financial liberalisation and financial reforms in many countries, financial systems have not been inclusive with large proportions of citizens having little or no access to formal financial services. Definition of financial inclusion is based on three dimensions and these include access, usage and quality (Alliance for Financial Inclusion, 2013). For the purpose of this paper, a financially included group

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consists of those individuals that own products and services from banks and semi-formal financial institutions.

The Government of Malawi (GoM) recognizes the importance of financial inclusion as a vehicle for achieving inclusive and sustainable economic growth. Over the years, GoM has made efforts to enhance financial inclusion. Among the efforts included; the development of the first National Strategy for Financial Inclusion (NSFI) for 2010-2015; the institution of the Financial Sector Development Strategy in 2010; and the implementation of the Financial Sector Technical Assistance Project (FSTAP) for 2011–2017. Despite these efforts, financial inclusion remains low. Most of the formal financial institutions are mostly in the urban areas, leaving rural areas mostly underserved. For instance, as at end-December 2016, only 3.3 percent of the bank outlets were located in the rural areas (Nkuna *et.al*, 2018). In contrast, a large proportion of the population in Malawi, about 84 percent, lives in the rural areas (National Statistical Office, 2019) implying that modern financial services are not located within reasonable distances. In addition, Chirwa and Mvula (2014) find that only 15.4 percent³ of adult Malawians owned a formal bank savings or deposit account.

The low access to financial services in Malawi means that the country is missing out on significant welfare gains associated with financial inclusion. However, there is limited evidence on factors that affect financial inclusion in Malawi. Understanding the factors affecting financial inclusion is important in evidence-based policy-making and strategy formulation for sustainable improvements in financial inclusion. This notwithstanding, empirical studies on financial inclusion in developing countries are at an infancy stage but emerging. In Malawi, to the best of our knowledge, no study has been conducted that has focused at understanding the factors associated with financial inclusion. Chirwa and Mvula (2014) explored the link between indicators of financial literacy and socio-economic characteristics of respondents in Malawi. The study, however, focused at financial literacy and not financial inclusion in general. This study therefore, is expected to contribute to the understanding of the critical policy variables that influence financial inclusion that can help in the formulation of policies and programmes aimed at improving financial inclusion in Malawi.

As such, the overall objective of the study is to assess the impact of socio-economic and environmental factors on financial inclusion in Malawi. Specifically, the study aims at; assessing financial inclusion in Malawi from the usage dimension; analysing the impact of financial capability, social economic and environmental factors on financial inclusion in Malawi.

The results of the study are summarised as follows; First, financial capability is the most important factor in positively influencing the likelihood of usage of financial products. Secondly, age, employment, income, marital status, education, gender and geographical distribution also determine financial inclusion. The study, however, finds reverse gender gap in financial inclusion in Malawi, thus women are likely to use financial products than men. Further, individuals residing in urban areas are more likely to use financial products and services than those in rural areas whilst those in the northern region are likely to be more included than those residing in other regions. With regard to individual products, the study finds that reverse gender gap also exists with regard to ownership of savings accounts, credit accounts and investment. The likelihood of owning these products increases with age, level of education, income, being married and living in an urban area.

³ Finscope survey's 33 percent measures number of adults with direct or indirect access to banking services whereas Chirwa and Mvula measure the number of adults with bank accounts.

2. Background to Financial Inclusion in Malawi

Since 1980s, there have been several efforts by GOM to improve financial inclusion. In 1987, GOM established a department in the Ministry of Agriculture called Smallholder Agricultural Credit Administration (SACA) and Malawi Mudzi Fund (MMF) in 1988. The purpose of this institution was to provide seasonal loans to smallholder farmers (supplied on a group basis through farmers' clubs). However, loan recoveries plummeted later in 1992/93 and this led to the collapse of the scheme in 1993/94. Subsequently, SACA was converted into the Malawi Rural Finance Company (MRFC), in 1994. The MRFC, which was fully owned by GoM, was one of the major suppliers of credit in most parts of the country, with over 25,000 accounts as at end December 2006 (International Monetary Fund and World Bank, 2008). The government also fully owned the Malawi Savings Bank and had stakes in several commercial banks active in the financial sector, such as NBS Bank and Inde Bank.

In 2007, GoM with support from the United Nation Development Project (UNDP) and United Nations Capital Development Fund (UNCDF) launched the Financial Inclusion in Malawi (FIMA) project with the objective of tackling poverty by ensuring that the poor and vulnerable populations, especially in the rural areas have access to financial services (loans, savings, payment services, money transfers, and or insurance). This project culminated in the development of the first National Strategy for Financial Inclusion (NSFI) which was to be implemented in the period 2010-2015. The NSFI was meant to focus specifically on improving the delivery of quality and diverse financial services to those that were excluded from the financial sector. However, the strategy was not fully implemented due to absence of a coordinating institution. The strategy was supposed to be coordinated by FIMA which ended in 2011, yet no specific department in the Ministry of Finance was designated to coordinate implementation of the strategy. Consequently, only isolated elements of the strategy were implemented leaving key initiatives which could have made a tangible impact on financial inclusion unimplemented.

Second, another development that complemented the NSFI was the institution of the Financial Sector Development Strategy (FSDS) for 2010-2015. The objective of the FSDS was to build a financial sector which supports financial services and stimulates sustainable economic growth. Following implementation of this strategy, the financial sector legal and regulatory frameworks have been strengthened and there have been significant investments in financial infrastructure such as the national switch to facilitate interoperability among banks. Further, the Bankers Association of Malawi (BAM) also formed a taskforce to champion financial inclusion among banks though so far with very little progress.

Third, with the assistance of the World Bank, GoM through the Reserve Bank of Malawi implemented a Financial Sector Technical Assistance Project (FSTAP) for 2011–2017, with the aim of increasing access to finance for the unbanked, but bankable, population of Malawi. Under this project, a number of activities aimed at improving financial inclusion were undertaken and these included implementation of baseline surveys, establishment of consumer protection unit within the Reserve Bank of Malawi, and financial literacy campaign programmes.

3. Methodology

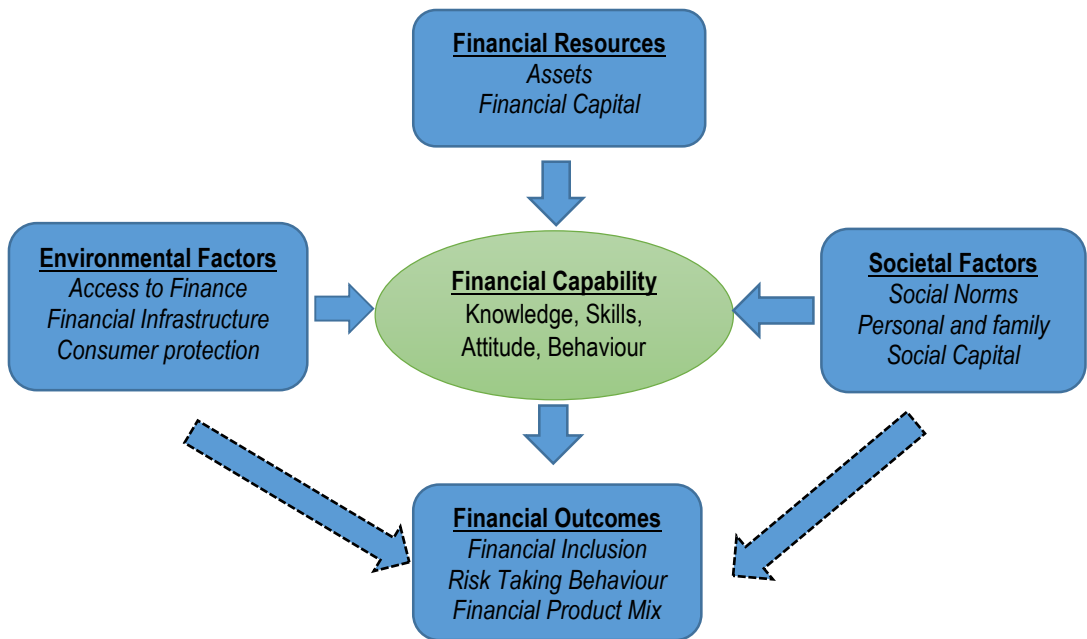
3.1 Conceptual Framework

One of the conceptual frameworks that has shaped the understanding of financial inclusion is the capability theory that identifies demand side factors that influence financial inclusion (Sherraden and Ansong, 2016; and Kuriakose and Iyer, 2005; Sherraden and Ansong, 2016). This uses the financial capability conceptual framework developed by the World Bank (2013) which links financial resources to financial capability and financial behaviour, with the relationships being mediated by environmental factors and societal norms or factors (Figure 1). This approach is insightful as it uses a combination of these three factors. The underlying basis for financial inclusion is the capital base or financial resources including assets and financial capital (liquid assets).

The availability or access to financial resources creates demand for information about ways in which the financial resources can be used and stored including demand for knowledge and skills, attitude towards risks and general financial behaviour (World Bank, 2013). This demand for information leads to financial capabilities of individuals. However, environmental factors and socio-economic factors mediate the relationship. Key environmental factors include ease of access to finance and rules governing such access, the stage of development of the formal financial sector and institutions for the protection of consumers from unfair practices in the financial system. Similarly, demand side factors such as society norms, can also mediate the financial capability of individual decision makers. For instance, social norms, may prohibit financial risk-taking behaviour and may encourage storing financial resources in non-financial assets such as livestock. Other societal factors include personal and family characteristics (education levels, family sizes, gender and intra-household resource allocation rules) and the extent of social capital (networks and associations).

Financial capability is expected to result into several financial outcomes. Firstly, financial capability can lead to financial inclusion. With knowledge of the available financial products, decision makers can decide on alternative ways of engaging with the financial system, such as short-term, medium-term and long-term financial savings and investment products, loan products, insurance products and other financial services. These financial services entail different levels of risk and financial capabilities can lead to risk taking behaviour. Financial capability can also lead to different levels of financial diversification or financial product mix—involving a mix of products with different term structure and different risk profiles.

Figure 1: Conceptual Framework of Financial Capability and Inclusion



Source: Modified from World Bank (2013)

We, however, modify the World Bank framework to incorporate the possibility of the societal factors and external factors impacting directly on financial inclusion. In terms of societal factors, gender for example, might directly influence financial inclusion, for instance, at times being a woman might limit the chances of financial inclusion. Other societal factors that might constrain women to have access to finance might include; difficulties to present collateral or personal guarantees, or husband’ adverse credit history. In addition, income is also one of the societal factors that can influence financial inclusion. For example, income might enable people to demand for financial products such as insurance and other financial assets and therefore directly related to financial inclusion. On the direct link between environmental factors and financial inclusion, one possible channel is the depth of outreach of financial services such as the penetration of bank branches or point of sale. It is expected that in urban areas, where majority of financial services providers are concentrated, financial inclusion will be higher compared to the rural areas.

A number of empirical studies have generally supported the framework. Zins and Weill (2016) in the study of financial inclusion in Africa found that being a man, richer, more educated and older favour financial inclusion with a higher influence of education and income. This is in line with the conceptual framework. Elsewhere, other studies have also found the importance of financial capability, financial assets, environment factors and societal factors (Mart’inez and Krauss, 2015; Tuesta *et al.* 2015; Clamara *et al.* 2014; Allen *et al.*2013).

3.2 Data

This study uses data from the nationally representative cross-sectional data set collected through the Baseline Financial Literacy and Consumer Protection Household Survey 2014, under the Financial Sector Technical Support Project (FSTAP) of the Reserve Bank of Malawi (Chirwa and Mvula 2014). Even though the survey was not specifically conducted to assess determinants of financial inclusion, we take advantage of the broad coverage of issues in the survey data and use it in investigating factors that would affect the likelihood of being financially included.

The sample for the baseline survey was based on the 2008 Population Census data and projected population data obtained from the National Statistical Office (NSO). Using the NSO sampling frame, each district was stratified into enumeration areas. Two stage stratification sampling was used in the survey. In the first stage, in each stratum, the sample number of enumeration areas was randomly drawn using STATA. In the second stage, 20 households from each selected enumeration area were randomly selected from a list of households (Chirwa and Mvula 2014). The population was further stratified into four residential strata representing different wellbeing groups and supply-side factors: (i) urban-city areas, (ii) urban-district town areas, (iii) peri-urban areas, (iv) rural areas. These strata accounted for 13 percent, 3 percent, 4 percent and 80 percent of the population, respectively. A sample of 5,000 individuals representing their households from urban-city, urban-district town, peri-urban and rural categorization was developed and yielded a randomly drawn sample of 4,999 across Malawi, except for Rumphu and Likoma in which none of the EAs were sampled at the design stage. Of the 4,999 households; 599 were from urban – cities, 140 were from urban–district towns, 200 were from peri-urban and 4,000 were from rural areas (Chirwa, and Mvula, 2014). However, after data cleaning, 4988 individuals had all the information needed to conduct the study.

Face-to-face interviews were conducted using a semi-structured questionnaire administered to one randomly selected adult member (of the household) above the age of 17 years old (from 15 years where there were no adult members of the household above 18 years). The first part of the questionnaire was aimed at identifying the respondents' individual characteristics. The second part included questions that were related to the following broad categories: money management, financial planning, financial services and products, financial literacy, and household income estimation.

3.3 Methods of Analysis

The study uses probit and multivariate probit models to investigate the relationship between financial inclusion, financial capability, social economic and environmental factors. Probit models have been widely used for econometric analysis of determinants of financial inclusion (Llanto & Rosellon, 2017; Tuesta *et al.* 2015; Clamara *et al.* 2014; Karp & Nash-Stacey, 2015). Probit models are binary classification models where the dependent variable is binary and are estimated by Maximum Likelihood Estimation (MLE) procedure. By using MLE, probit models resolves the problem of heteroscedasticity associated with other estimation procedures such as the Linear Probability Model (Gujarati 2004). These models quantify the probability of an individual belonging to the group under study. Given that our dependent variable is a binary response that only takes the values 0 or 1, the probit model is the best model of analysis.

Firstly, we construct a binary variable to proxy financial inclusion. Specifically, financial inclusion takes two possible values, 1 if an individual owns at least one financial product or 0 otherwise. The products were; savings account, credit account, investment in stocks, mutual funds, insurance, international remittances and mobile money. Following Clamara *et al.*, (2014), we assume that the

decision to own a financial product depends on an underlying but unobservable (latent) variable y^* which is influenced by a set of independent variables x^i such that;

$$y_i^* = x_i' \beta_i + \mu_i, \quad \mu \sim N(0, 1) \quad (1)$$

In probit model, we observe only y such that

$$y_i = 1 \text{ if } y_i^* > 0; y_i = 0 \text{ if } y_i^* \leq 0 \quad (2)$$

where the subscript i represents individual respondents, β is a vector of parameters to be estimated and μ is a normally distributed error term with mean 0 and variance 1. Therefore, the probability that an event occurs, in our case owning a financial product, is given by;

$$\begin{aligned} P(y_i = 1|x) &= P(y_i^* > 0) \\ &= P(x_i' \beta_i + \mu_i > 0) \\ &= P(\mu_i > -x_i' \beta_i) \end{aligned} \quad (3)$$

If the errors are independently distributed according to the unit-normal distribution, $\mu \sim N(0, 1)$, then

$$P(y_i = 1|x) = F(x_i' \beta) \quad (4)$$

F is the cumulative distribution function of a normal variable. The independent variables (x_i) include financial capability, individual personal characteristics, incomes and other variables controlling for supply side factors such as place of residence and region of residence.

However, in order to understand the relationship between individual characteristics and the probability of using individual financial products a multivariate probit was employed. The choice of the model was based on the assumption that binary responses on the ownership of the individual products may be correlated. Other studies have employed multinomial logit model to ownership of financial products in which the outcomes may in fact be correlated (Chen & Jin, 2017; Sanya & Olumide, 2017; Anson *et al.* 2013; Demircuc-Kunt *et al.* 2013). However, Young *et al.* (2009) found out that when the outcomes are correlated, the multinomial logit model produces substantially different predictions relative to the true predictions and that the multinomial logit is a poor approximation to the true underlying outcome probabilities relative to the multivariate probit model. A likelihood ratio test was employed to determine the suitability of the multivariate probit model.

Following Young *et al.* (2009) we assume again the following model for the latent variable;

$$y_{ij}^* = x_i' \beta_j + \mu_{ij}, \quad \mu \sim N(0, 1) \quad (5)$$

Where y_{ij}^* denote the underlying latent response associated with the j th financial product. Therefore, the marginal probability of owning the j th financial product can be expressed as;

$$P(y_j = 1|x) = F(x_i' \beta_j) \quad \text{for } (j = 1 - J) \quad (6)$$

Where $F(\cdot)$ denotes the cumulative distribution function of the standard Normal. Moreover, the joint probability of owning all financial products comes from a J-variate standard Normal distribution

$$P(y_1 = 1, \dots, y_j) = F_j(x' \beta_1, \dots, x' \beta_j; \Sigma) \quad (7)$$

where Σ is the covariance matrix.

Both the normal probit and the multivariate probit models are estimated using Maximum Likelihood estimation technique. The marginal effects are then computed from the coefficients estimated in the model. These represent change in the probability of financial inclusion when there is a unit change in the regressors included for continuous variables or the difference in probability of being financially included for the dummy variable.

3.4 Description and Measurement of Variables

3.4.1 Measurement of Financial Inclusion

Literature on the definition of financial inclusion is built on evidence-based studies which focus on accessibility, availability and affordability of financial products and services that the public demand and consume. In this regard, financial inclusion can be measured along several dimensions. These include accessibility (thus financial services that are available to customers); usage (the extent to and ways in which customers actually make use of the services they can access), and quality thus how well they meet the needs of the customers (Bank for International Settlement (BIS), 2015).

Researchers have used various methodologies in constructing the financial inclusion index. For instance, Sarma (2008); Park and Mercado (2015) used “usage” and “access” indicators from supply-side country level data in constructing the financial inclusion index whilst Honohan (2008) used financial access indicators. These methodologies which are non-parametric have been criticized since the weights assigned to indicators are chosen arbitrary based on the researcher’s intuition. Hence other studies like Amidžić, Massara, and Mialou, (2014) and Pena and Tuesta, (2014) have used parametric methods.

In this study, following Clamara et al. (2014), financial inclusion is a dummy variable which takes a value of 1 if an individual owns at least one financial product in the formal or semi-formal financial institution and 0 otherwise. The products include savings account, credit account, investment in stocks, mutual funds, insurance, international remittances and mobile money.

3.4.2 Explanatory Variables and Expected Signs

Our independent variables are classified into three groups: financial capability, socio-economic characteristics and environmental factors. Financial capability is the internal capacity to act in one’s best financial interest, given socio-economic environmental conditions. It encompasses the knowledge (literacy), attitudes, skills and behaviors of consumers with regard to managing their resources, and understanding, selecting, and making use of financial services that fit their needs (World Bank 2013). In the Baseline Financial Literacy and Consumer Protection Household Survey 2014, individuals were tested on their financial knowledge and ability to do basic financial calculations such as division, concept of inflation, simple and compound interests, differences between absolute and percentage discounts, risk and risk diversification. Further, respondents were asked about their money management practices and financial planning practices. We used Multiple Correspondence Analysis (MCA) to generate an index for financial capability by aggregating individual scores of the financial knowledge, financial behaviour, and attitude captured in the data. The theoretical framework suggests a positive relationship between financial capability and financial inclusion. Thus, the higher the financial capability, the higher the risk-taking behaviour and the higher the extent of engagement with the formal financial system (World Bank, 2013).

The second group of independent variables captures individual socio-economic and welfare characteristics that include demographic characteristics, household size, gender, education, economic activity and incomes of individuals. First, household size was captured as the number of individuals in

the household. The size of the household may influence financial inclusion in either direction. On one hand, the larger the household size, the higher the financial burden which in turn may necessitate demand for financial products to smoothen consumption. On the other hand, large household sizes may constrain savings behaviour. Income captures the amount of money the respondent receives in a month. During the survey individuals were asked to approximate the average monthly income they received. A priori, we expect financial inclusion to be positively related with income. Those with higher income are likely to open a bank account to save part of their income. Further, these people are able to command financial products such as insurance and other financial assets and therefore are more likely to be financially included compared to low income earners. A number of studies have found this positive relationship (Martinez and Krauss, 2015; Tuesta *et al.*, 2015; Clamara *et al.*, 2014; Allen *et al.*, 2013)

Further, gender is a dummy variable which takes a value of 0 if female and 1 if male. Gender of the respondent is expected to be positively related with financial inclusion. In general, men tend to have more financial responsibilities compared to women and hence are likely to open a bank account or borrow from microfinance institutions. A number of studies have also found that females or female-owned firms face more financial constraints than their male counterparts as they are unfavourably treated when it comes to accessing finance (Henderson *et al.*, 2015; Beck, *et al.*, 2011). Further, Demircuc-Kunt *et al.* (2013) note that economy-wide legal discrimination against women and gender norms can explain the gender gap. In terms of legal discrimination, women are less likely than men to own, manage, control, or inherit property, which in turn might affect women's demand for financial services (World Bank, 2012).

Education is a categorical variable with four categories, namely, no or some primary education (equal or below standard 5), primary education (standard 6 to 8), secondary education (form 1 to 4) and tertiary education (college or university). The no or some primary category was the reference category. We therefore expect education to be positively related to financial inclusion since individuals with higher levels of education are in a better position to technically assess financial products, to clear doubts and uncertainties associated with it and enhance its use. Empirical evidence has shown that low levels of financial inclusion are associated with lower levels of financial literacy (Clamara *et al.*, 2014; OECD/INFE, 2013; Neuberger, 2015, Mish, *et al.*, 2012).

Age is measured as the actual number of years of the respondent and is a continuous variable. The impact of age on financial capability can either be positive or negative. In general, as individuals become older more financial responsibilities surface and therefore push an individual to engage with the financial system to smoothen their consumption. However, beyond a certain age, the likelihood of financial inclusion falls. This is captured by age squared in the model and is expected to be negatively related with financial inclusion (Martinez and Krauss, 2015; Clamara *et al.* 2014).

The third group of factors influencing financial inclusion are external and environment factors. The survey collected information on the residency of the respondents, that is, whether the household is located in urban-cities, urban-district towns and peri-urban areas. In this study, we include the strata for geographical distribution (Urban—cities (1 for cities, 0 otherwise), Urban—district towns (1 for district towns, 0 otherwise), Peri-urban (1 for peri-urban, 0 otherwise). In Malawi, most financial institutions are located in urban-cities and urban-district towns, and we expect financial inclusion to be higher in these areas compared to rural or peri-urban areas.

4. Empirical Results and Analysis

4.1 Financial Inclusion in Malawi: An Assessment from the Usage Dimension

4.1.1 Descriptive Statistics

Table 1 presents descriptive statistics of the independent variables used in this study. From the table, the average household size was 4.8 persons which is slightly higher than the national average of 4.4 persons per household as documented by National Statistical Office (2019). The minimum household size was 1 person and the maximum was 19 persons. The data also shows that from the 4988 individuals sampled, 3,049 (61.1 percent) were females while 1,939 individuals (38.9 percent) were males. In addition, 967 respondents had no formal education, representing 19.4 percent of the sample size. A total of 2,986 individuals (59.9 percent of the sample size) had only primary education, 868 individuals (17.4 of the sample size) had secondary level education and 167 respondents (3.4 percent) had tertiary education.

The average household income per capita in the sample was K29,026.37. The data also shows that 463 respondents (9.3 percent) were employed for wage. In terms of the geographical distribution of the respondents, 559 were from the northern region, 1923 were from the southern region and 2437 were from the southern region.

Table 1: Summary Statistics for the Variables (n=4988)

Variable	Mean	Std. Dev.
Financial Inclusion	.3123	.4635
Financial Capability	.0012	.9994
Male	.3887	.4875
Age	38.81	16.22
Married	.7235	.4473
Primary Education	.5986	.4902
Secondary Education	.1740	.3792
Tertiary Education	.0335	.1799
Wage Employment	.0928	.2902
Household Size	4.821	2.126
Monthly Income	59,026	158,440
PSLC as Highest Education in H/H	.2336	.4231
Secondary as Highest Education in H/H	.4491	.4974
Tertiary as Highest Education in H/H	.2292	.4203
North	.1279	.3340
Centre	.3835	.4862
South	.4885	.4999
Rural	.8001	.3999
Peri Urban	.0401	.1962
Urban Districts	.0281	.1652
Urban Cities	.1317	.3382

Source: Author's estimations

4.1.2 Relationship between the Financial Inclusion and Socio economic and geographical Factors

Data reveals that only 31 percent of the surveyed participants use banks and semi-formal institutions (Table 2). This is different from the 2014 Finscope survey results which indicate that 55 percent use banks and semi-formal institutions but similar to the 2008 finscope survey results which indicate 34 percent. Data further shows that out of the 31 percent that are included, the majority mainly use credit (26.1 percent) and saving products (17.5 percent). Contrary to expectations, only a very small proportion use mobile services (2.8 percent) and remittance services (1.8 percent).

Table 2: Distribution of Usage of Financial Inclusion Products and Services

Financial Products and Services	Percentage
Financial Inclusion	30.9
Savings	17.5
Investment	1.4
Credit	26.1
Insurance	4.5
Remittances	1.8
Mobile Money	2.8

Source: Authors' compilation

Table 3 shows the distribution of the financially included by various categories; income, employment status, strata, region, gender, and marital status, for the whole sample and for the weighted sample. The table shows that the fifth income quintile (those with highest income) are the most included than the other income categories. This suggests that the higher the income the higher the likelihood of being included. The data also shows that the proportion of those included in the wage earners category (59.8 percent) was more than the proportion in the non-wage earners category (28.3 percent).

Further, as expected, the highest proportion of the financially included individuals was in the urban cities (58.6 percent) followed by urban-district town (55.7 percent). The lowest proportion was found in the rural areas where only 24.9 percent were financially included.

Regionally, a greater proportion of the included were in the northern region (43.3 percent), followed by the central region (34.2 percent) and Southern region (25.8 percent). The table also indicates that out of the sampled population, the proportion of those included among men was higher (33.5 percent) compared to the proportion among women (29.9 percent). Meanwhile, data also indicate that financial inclusion among married individuals was higher (33.2 percent) than among those unmarried (26.3 percent).

Table 3: Financial Inclusion by Category

Category		Financially included (%)	% Financially excluded
Income	Quantile 1 (poorest)	11.6	88.4
	2	20.0	80.0
	3	24.6	75.4
	4	32.4	67.7
	Quantile 5 (richest)	50.7	49.3
Employment status	Unemployed	28.4	71.7
	Wage Employed	59.8	40.2
Strata	Urban cities	58.6	41.4
	Urban district towns	55.7	44.3
	Peri urban	52.0	48.0
	Rural	24.9	75.1
Region	North	43.3	56.7
	Centre	34.2	65.8
	South	25.8	74.2
Gender	Women	29.9	70.2
	Men	33.5	66.5
Marital Status	Unmarried	26.3	73.8
	Married	33.2	66.8

Source; Author's compilation

4.2 Econometric Results

Three probit models were estimated and the results are shown in Table 4. Model 1 estimates the impact of financial capability on financial inclusion, Model 2 includes socio-economic variables and Model 3 includes locational factors. Results of the three models do not change in terms of significance and sign except for wage employment that becomes insignificant in model 3. In view of this, we focus our analysis of results on model 3. We further examined the relationship between individual characteristics and the probability of individuals using different financial products, using multivariate probit and the results are reported in Table 5.

Further, for robustness check, OLS estimation technique was employed on the financial inclusion index computed using the MCA method of aggregation. Results were generally similar to the ones obtained using probit estimation techniques.

4.2.1 Determinants of Financial Inclusion

Model 3 in Table 4 estimates the impact of financial capability, social factors and environment factors on financial inclusion. Estimated results show most of the variables to be statistically significant at conventional levels. Financial capability has the highest marginal effect on financial inclusion. Specifically, financial capability increases the probability of financial inclusion by 12.2 percent. Thus, the more one is able to successfully manage financial products and making informed choices about

personal finances, the more likely one is to be included. We, however, acknowledge that there can be a potential problem of endogeneity as financial inclusion can also affect financial capability. Those individuals who are financially included are more likely to enhance their financial knowledge and develop appropriate financial behaviour and attitude. Endogeneity affects the size of the coefficients and not precision of the model, with the reported coefficients being lower than they would have been if the endogeneity problem were not there.

The results also indicate that females are more likely to be included than males. Specifically, an average Malawian male is 3.6 percentage points less likely than a woman to be financially included, suggesting a reverse gender gap. The results are contrary to what is reported by a number of studies that find that men are more included than women (Fanta *et al*, 2016; Demirgüç-Kunt *et al*, 2013). Nevertheless, the finding of reverse gender gap is in line with the result of the World Bank (2015) for Philippines. Since our definition of financial inclusion includes microfinance institutions and these are widely spread, one possible explanation for the higher probability of financial inclusion for women would be the bias in microfinance products towards women.

Financial inclusion is found to increase with age, albeit beyond a certain age, financial inclusion starts to decline (this is captured by the coefficient for age squared which has a negative sign). Being married increases the likelihood of being financially included. This confirms the a priori expectation that married are more likely to have increased responsibilities hence increased need for using financial products. This finding is similar to that of Fanta and Mutsonziwa (2016) in their study of financial inclusion of Women in SADC.

The study further finds that an individual's income increases the likelihood of owning financial products. This is in line with findings of the 2008 FinScope study that found insufficient income as one of the main reasons why individuals do not have bank accounts. This notwithstanding, the impact is very small compared to the study by Finscope (2014) in which the impact of income on financial inclusion was found to be fairly large.

Further, the results show that education, in particular primary and secondary education, plays a key role in financial inclusion. These results are similar to Clamara *et. al* (2014), OECD/INFE (2013) and Neuberger (2015). Meanwhile, results are also suggestive that tertiary education does not matter. The probability of being financially included increases as one moves from primary to secondary education. From model 3, having primary and secondary education increases the probability of financial inclusion by 11.5 and 16.3 percentage points, respectively. These findings concur with results of most studies in the area of financial inclusion including Fanta and Mutsonziwa (2016), Martinez and Krauss (2015), Clamara *et al*. (2014), Pena *et al*. (2014), Allen *et al*. (2013). Despite the expectation of high correlation between education and financial capability, low correlation was found with primary education (0.9), secondary education (0.3) and tertiary education (0.2).

Table 4: Marginal Effects of the Probit Model of Financial Inclusion

	Model 1	Model 2	Model 3
Financial Capability	.1925*** -0.0072	.1240*** -0.0083	.1218*** -0.0084
Household Size		-0.0109 -0.0039	-0.012 -0.0039
Male		-.0394** -0.0158	-.0358** -0.016
Age		.0123*** -0.0026	.0128*** -0.0026
Age Squared		-.0001*** 0.000	-.0001*** 0.000
Married		.0326* -0.0177	.0302** -0.0178
Primary Education		.1236*** -0.0263	.1153*** -0.0264
Secondary Education		.1865*** -0.0376	.1629*** -0.0377
Tertiary Education		.5057*** -0.0584	0.4808 (.0624)***
PSLC as Highest Education in H/H		.0993*** -0.0361	-.1012*** -0.0358
Secondary as Highest Education in H/H		0.0408 -0.0387	-0.0566 -0.0385
Tertiary as Highest Education in H/H		0.0684 -0.0444	0.0386 -0.0436
Wage employment		.0818*** -0.0283	0.0757 -0.0287
Monthly income		.0000*** 0.0000	0.0000 0.0000
Urban			.0654*** -0.025
Centre			-.0447* -0.0222
South			-.1136*** -0.022

*** Statistically significant at 1 percent level ($p < 0.01$); ** statistically significant at 5 percent level ($p < 0.05$); * statistically significant at 10 percent level ($p < 0.10$).

(Robust Standard Errors in Parenthesis)

Source: Author's estimations

For locational factors, the estimated results suggest that compared to an average person living in the rural area, an individual who resides in urban-cities, urban-district and peri-urban areas has a higher probability of being financially included. This result reflects the fact that financial institutions are mostly located in urban centres, hence individuals living in urban areas are able to access and use financial products. Notwithstanding this, results further indicate that individuals residing in district towns (17.7 percent) have a higher probability to own financial products than Peri-Urban (10.2 percent) and Urban-Cities (6.5 percent). Further, the region where one resides also plays a role in financial inclusion with central and southern region residents having 5.5 and 11.4 percentage points less probabilities of financial inclusion compared to northern region residents.

Decomposing financial capability, results in Appendix Table 1 show that Knowledge, attitude and behaviour on financial matters are important determinants on financial inclusion with behaviour having a higher impact (6.8 percent).

4.2.2 Determinants of Individual Financial Products

A multivariate probit model was estimated as we assume that binary responses of the individual products are correlated. With a probability chi squared of (0.0) in Table 5, we reject the null that the binary responses are independent and conclude that the responses of these individual products are correlated. Further, we found that financial inclusion also affects financial capability. In view of these two factors, we proceed to interpret results from the multivariate regression as indicated in Table 5.

The results reveal that the reverse gender gap observed in the overall definition of financial inclusion also exists for probabilities of ownership of savings accounts, credit accounts and investment. For ownership of other products, however, the results suggest that gender does not matter.

The estimated results also indicate that for the use of savings and credit accounts (column 1 and 2), most variables are significant and have signs similar to the coefficients of the determinants of financial inclusion as indicated in Table 4. The likelihood of owning these products increases with age, level of education, income, being married and living in an urban area. Similar results were obtained by Tuesta *et al.* (2015) for Argentina.

The probability of having an investment in stocks, mutual funds and other financial products is positively affected by age, being married, education levels and income. In particular, those who have tertiary education have the highest likelihood of owning an investment, saving and mobile money products in the formal financial system compared to those with no formal education, those with only primary education and those with secondary education only.

Lastly, having insurance, making remittances and mobile money transactions seem to be affected by financial capability, education levels and income. According to the results, those with more financial knowledge are more likely to have an insurance arrangement and make international remittances and mobile money transactions. In terms of education, the higher the level of education, the higher the likelihood of owning an insurance product and making international remittances and mobile money transactions. Income, though statistically significant, has very small impact on these variables.

Further, to understand the effect of the individual components of financial capability on financial inclusion, we re-estimated a multivariate probit replacing financial capability with its components. The results, reported in Appendix Table 2 corroborate, in general terms, with those of the multivariate probit discussed above, that is, knowledge, attitude and behaviour on financial matters were found to be important on ownership of the products.

Table 5: Results of the Multivariate Probit on the Use of Financial Products

	Savings		Credit		Investment		Insurance		Remittances		Mobile Money	
	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E
Financial Capability	0.551***	-0.035	.363***	-0.026	-0.010	-0.059	.1739***	-0.046	.210***	-0.052	.268***	-0.050
Male	-0.106*	-0.058	-.084*	-0.048	-.232**	-0.114	-0.0446	-0.079	-0.020	-0.097	0.027	-0.090
Age	0.028***	-0.011	.036***	-0.008	.072***	-0.020	0.0193	-0.014	-0.004	-0.016	0.005	-0.017
Age Squared	-0.000*	-0.000	-.000***	-0.000	-.001***	-0.000	-0.0001	-0.000	0.000	-2.000	-0.000	-0.000
Married	0.245***	-0.069	.126**	-0.054	.247*	-0.133	0.114	-0.092	-0.106	-0.106	-0.117	-0.100
Primary Education	0.391***	-0.110	.276***	-0.082	.451*	-0.252	0.1096	-0.157	-0.132	-0.188	.417*	-0.251
Secondary Education	0.618***	-0.128	.298***	-0.102	.786**	-0.315	.3712**	-0.176	0.254	-0.205	.564**	-0.271
Tertiary Education	1.481***	-0.223	.689***	-0.172	1.544***	-0.375	.9985***	-0.209	.475*	-0.271	1.037***	-0.300
Wage Employment	0.337***	-0.088	0.064	-0.077	0.071	-0.170	.7067***	-0.094	0.029	-0.139	.433***	-0.107
Household Size	0.016	-0.015	-0.012	-0.012	-0.015	-0.028	0.0012	-0.018	0.028	-0.021	0.014	-0.020
Monthly income	0.000***	0.000	0.000** *	0.000	0.000***	0.000	0.0000***	0.000	0.000***	0.000	0.000***	0.000
Primary Education	-0.022	-0.211	-.349***	-0.118	-.250***	-0.310	0.2226	-0.299	-0.237	-0.285	0.011	-0.396
Secondary Education	0.286	-0.203	-0.179	-0.116	-0.407	-0.317	0.3885	-0.297	0.011	-0.254	0.052	-0.377
Tertiary Education	0.731***	-0.210	0.0718	-0.126	-0.345	-0.368	.6841**	-0.302	0.088	-0.269	0.137	-0.397
Urban	0.466***	-0.063	.208***	-0.058	0.012***	-0.118	.1539*	-0.087	0.134	-0.106	0.102	-0.099
Centre	-0.087	-0.073	-.197***	-0.066	0.983***	-0.326	.3979***	-0.129	.434**	-0.186	-0.191	-0.117
South	-0.120	-0.072	-.382***	-0.065	0.949***	-0.326	.3234**	-0.131	.471**	-0.184	-.0261***	-0.118

(i) Likelihood ratio test of $\rho_{21} = \rho_{31} = \rho_{41} = \rho_{51} = \rho_{61} = \rho_{32} = \rho_{42} = \rho_{52} = \rho_{62} = \rho_{43} = \rho_{53} = \rho_{63} = \rho_{54} = \rho_{64} = \rho_{65} = 0$:

(ii) $\chi^2(15) = 580.601$ Prob > $\chi^2 = 0.0000$

(iii) *** Statistically significant at 1 percent level ($p < 0.01$); ** statistically significant at 5 percent level ($p < 0.05$); * statistically significant at 10 percent level ($p < 0.10$). Robust Standard Errors in Parenthesis.

Source: Author's Estimations

5. Conclusions and Policy Recommendations

The objective of the paper was to assess financial inclusion in Malawi and also to examine the impact of socio-economic and environmental factors on financial inclusion in Malawi. Using probit and multivariate estimation technique, the study finds that about 31 percent of the surveyed respondents are financially included, with most of them using savings and credit products.

Further, the study finds that financial capability is the most important factor in positively influencing the likelihood of ownership of financial products. As such, promoting factors that would enhance financial capability, will be key in ensuring that more people are financially included. Such efforts might, among other things, include promoting financial literacy in the country. Therefore, there is need for the Reserve Bank of Malawi in conjunction with financial institutions to intensify financial literacy campaigns. The other important social economic factor that significantly influences the level of financial inclusion is education. This underscores the need for government to increase the country's literacy levels as would in turn, among others, lead to more people being included and hence reduce poverty. This may be pursued through the formal and informal education systems or adult literacy education.

Other factors that would influence the likelihood of being financially included are; age, wage, income and marital status. The study, however, finds reverse gender gap in financial inclusion in Malawi. Further, individuals residing in urban are more likely to use financial products and services than those in rural areas. As such, banks and other formal financial institutions should consider reaching out to the rural areas.

With regard to individual products, the study finds that reverse gender gap also exists with regard to usage. The likelihood of owning these products increases with age, level of education, income, being married and living in an urban area.

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Appendices

Appendix 1: Probit Results with Components of Financial Capability Disaggregated

Variable	Marginal Effects
Knowledge index	0.0222***
Attitude index	0.0379***
Behaviour index	0.0684***
Male	-0.0460***
Age	0.0125***
Age Squared	-0.0001***
Married	0.0359**
Primary Education	0.1099***
Secondary Education	0.1677***
Tertiary Education	0.5074***
Wage employment	0.0668**
Household Size	-0.0035
Monthly income	0.0000***
PSLC as Highest Education in H/H	-0.1037***
Secondary as Highest Education in H/H	-0.0609
Tertiary as Highest Education in H/H	0.0392
Urban	0.1180***
Centre	-0.0392*
South	-0.1007***
Number of observations	4988

*** Statistically significant at 1 percent level ($p < 0.01$); ** statistically significant at 5 percent level ($p < 0.05$); * statistically significant at 10 percent level ($p < 0.10$).

Appendix 2: Multivariate Probit Results with Components of Financial Capability Disaggregated

	Financial Service					
	Savings	Investment	Credit	Insurance	Remittances	Mobile money
Knowledge index	0.0662***	0.0612	0.0699***	-0.0507	0.003	0.0066
Attitude index	0.2132***	-0.034	0.1115***	0.0531**	0.0268	0.1103***
Behaviour index	0.1878***	0.0519	0.1956***	0.1458***	0.2299***	0.0943***
Male	-0.1129**	0.2608**	-0.108**	-0.0511	0.0052	0.0378
Age	0.0288***	0.0706***	0.0320***	0.0227**	-0.0065	0.0027
Age	-0.0002**	-0.0007***	-0.0003***	-0.0001	0.0001	0.0000
Married	0.2114***	0.2566**	0.0970**	0.0786	-0.1846**	-0.1393
Age Squared	0.3881***	0.4500**	0.2738***	0.1367	-0.1272	0.4070
Secondary Education	0.6283***	0.8006**	0.3166***	0.4218**	0.2878	0.6005**
Married	1.5094***	1.5100***	0.6949***	1.0590***	0.4750**	1.0533***
Wage employment	0.3197***	0.1115	0.0553	0.7078***	-0.0084	0.4148***
Primary Education	0.0142	-0.0171	-0.0174	0.001	0.0282	0.0099
Monthly income	0.0000***	0.0000**	0.0000***	0.0000***	0.0000***	0.0000***
Secondary Education Secondary as Highest Education in H/H	-0.0656	-0.2534	-0.3495***	0.1801	-0.2543	0.0308
Tertiary Education	0.2138	-0.4395	-0.2350**	0.3737	0.0032	0.0330
Urban	0.6748***	-0.3743	0.0694	0.6868**	0.0963	0.1276
Urban	0.4961***	-0.0199	0.2393***	0.1763**	0.1389	0.1093
Wage Employment	-0.0860	0.9967***	-0.2238***	0.4600***	0.4916**	-0.1968**
South	0.1070	0.9321***	-0.4035***	0.3789***	0.5725***	-0.2673**

Note: *** Statistically significant at 1 percent level ($p < 0.01$); ** statistically significant at 5 percent level ($p < 0.05$); * statistically significant at 10 percent level ($p < 0.10$).