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# Financial Inclusion in Myanmar: What Factors Determine Access to Saving and Credit Products for Informal Sector Workers?

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## Abstract

Financial inclusion remains a challenge in many low-income countries despite research showing many positive benefits of formal financial access. This paper focuses on Myanmar, and examines the determinants of formal financial inclusion in the non-agricultural informal sector in the country. The paper addresses the issue from the individual perspective, and draws on a unique individual-level demand-side dataset that is representative at the national level. Maximum likelihood estimation (MLE) methods are applied to provide answers as to what determine uptake of formal saving and credit products. Factors examined include attitudes and behaviors of respondents, whether or not remittance is received, geographical location, and socio-economic characteristics. Results indicate that, contrary to expectation, attitudes and behavior such as feeling stressed when dealing with finances, keeping a budget, and thinking carefully before spending do not contribute significantly to uptake of financial services. Presence of remittances also has a weak impact. Instead, socio-economic factors of the individual dominate the results.

**Keywords:** Financial Inclusion, Savings, Credit, Informal Sector

## 1. Introduction

Formal financial inclusion has been found to have a number of positive benefits, especially in developing economies. At the economy-wide level, financial deepening in a country has been linked to poverty reduction, reduced income inequality, improved economic growth, and faster growth in sectors where firms have more need for external sources of financing (see, e.g., Beck, Demirguc-Kunt, & Levine, 2007; Levine, 2005; Rajan & Zingales, 1998). At the microeconomic level, access to finance has been found to bring positive benefits in terms of increases in income, consumption, and well-being (see, e.g., Attanasio, Augsburg, Haas, Fitzsimons, & Harmgart, 2011; Dupas & Robinson, 2013). Furthermore, households and enterprises with access to finance have also been found to make more efficient production and employment choices (Morduch, 1995) as formal financial access helps firms to become less averse to risks when making financial decisions.

While financial inclusion has been shown to have many positive benefits, financial inclusion is not the norm in most of the developing world. The Global Financial Inclusion (Global Findex) survey of 148 industrialized and industrializing economies worldwide show that only about fifty percent of adults have an account at formal financial institutions (Demirguc-Kunt & Klapper, 2013). The survey also finds that the ratio adults with formal financial access in developed economies of more than twice the share in low income countries. For Myanmar, the country of study, financial inclusion is limited. Consumer survey data (FinScope Myanmar) shows that more than a third of the population is wholly financially excluded (39 percent), with 31 percent relying solely on informal financial services[1].

The statistics uncovered from the Global Findex and Fin Scope surveys, coupled with increasing evidence for the positive benefits of formal financial access, suggest that expanding financial inclusion is an important

[1] Formal financial inclusion is defined as using the services of financial service providers who are regulated. Financially excluded adults are those who do not use any financial products or services, formal or otherwise.

agenda in low income country settings. This view is shared by the Myanmar government, which sees promotion of financial access as a means to achieving greater social and economic development goals. The government has taken an active role in pushing forward the financial inclusion agenda, and a number of initiatives have been put in place to create an enabling environment for financial inclusion. (Chamberlain, et al., 2014).

With the associated benefits of formal financial inclusion, and the interest of the Myanmar and many other governments, one topic of interest is in understanding the determinants of formal financial access. This paper addresses this question primarily from the demand side by using a country-wide survey of 5,100 individuals in Myanmar. The paper focuses specifically on individuals working in the informal sector, as they would likely have a lot to gain from formal financial inclusion.

## 2. Literature Review

Factors that determine financial access can be divided into supply side factors that affect the availability of financial services, and demand side factors that determine individual decisions to use the provided services (Campero & Kaiser, 2013). From the demand side, the decision to use financial services could be determined by perceptions towards finance and behavioral traits. At the same time, uptake of formal financial service could also be affected by individual-specific characteristics such as income, education, and age.

When making financial decisions, such as when an informal sector worker decides between using informal or formal financial services, attitudes and behavioral traits could have a role to play (World Bank, 2015). Douglas North (1995) posits that when individuals make choices, they make it based on their own mental models. Studies of financial decision-making by behavioral economists and psychologists concur with this view. Emotional impulses and a focus on short-term gains are factors that have been found to drive financial decisions especially in low-income individuals (Baumeister, Vohs, & Tice, 2007; Shah, Mullainathan, & Shafi, 2012). Mullainathan and Shafi (2009)

also finds that for those in poverty, small emotional factors could hamper prudent financial decisions such as product uptake. Attitudes are found to be one factor affecting the extent to which individuals save with individual development accounts in the United States (Han & Sherraden, 2009). Thus, when deciding whether or not to use formal financial products, it is important to study individual behaviors and perceptions.

In addition to behaviors and perceptions regarding finance, in recent years a growing body of literature has started to examine the effect of remittances received from migrant workers as a factor that determines financial inclusion in developing countries. For savings, empirical research has found some evidence for positive impacts of remittances sent from overseas workers on savings indicators (Ambrosius and Cuecuecha, 2016). This impact has been found at the cross-country level (Aggarwal et al., 2010; Gupta et al., 2009), in Mexican case studies (Demirguc-Kunt et al., 2011), and El Salvador (Anzoategui et al., 2014). On the credit side, remittances could serve as a substitute for credit (Woodruff and Zenteno 2007; Giuliano and Ruiz-Arranz 2009). Anzoategui et al. (2014) also suggests that financial institutions could finance migration through credit markets. As such, there could be a positive association between access to credit and remittances received.

Apart from the person's perceptions, behaviors, and remittances, the decision to be formally included could be affected by a person's socio-economic characteristics. Some traits are consistently found to determine formal financial access, while there are mixed findings on the impact of other socio-economic attributes on formal financial inclusion. Individual-specific socio-economic traits which have been consistently found to have a positive association with formal financial access are income and educational attainment. Studies have found that the higher an individual's income and education, the higher the likelihood of having a formal account. Other factors such as marital status, gender, and living in urban locations have more mixed findings, and have been found to be significant determinants of formal financial access in some of the studies. (See, e.g., Allen, Demirguc-Kunt, Klapper, & Peria., 2012; Fungacova & Weill, 2015; Honohan & King, 2012; Pena, Hoyo, &

Tuesta, 2014). Nonetheless, evidence using individual-level information across multiple across countries suggests that the effect of individual-specific factors on being formally banked varies from country to country (Allen et al., 2012, Honohan and King 2012).

In summary, the literature on financial decisions and financial inclusion shows that individual attitudes and perceptions could influence the decision to use financial services. Furthermore, remittances, especially money received from migrant workers may also influence the uptake of financial products such as savings and credit. Individual-specific socio-economic characteristics such as income, education, age and gender could also be important factors that determine financial decision-making from the demand side. However, the extent to which individual-specific factors influence the decision to take up formal financial services could vary from country-to-country. As such, this study attempts to tease out the effects of such individual-specific factors in Myanmar.

## 3. Formal Financial Sector and Financial Inclusion in Myanmar

### 3.1. Formal Financial Sector

The financial sector in Myanmar is small and relatively less developed compared with other Southeast Asian nations, but reforms are under way to develop a full-fledged and integrated financial sector in the country. The financial sector in Myanmar has had a long history of being lacking in terms of a properly functioning financial system (Turnell, 2014). Thus, the sector is still small and relatively less developed compared with its neighboring countries. Nonetheless, there are ongoing changes driven by efforts on the part of the government. Since 2011, financial reforms have been taking place in the country, and the financial landscape is changing (Inada, 2015). As it stands, financial services are provided by both the informal and formal financial institutions. Formal financial institutions are providers which are legalliy registered and are regulated for the provision of financial services. Informal financial service providers, on the other hand, are not subjected to any kind of regulations be they prudential regulations or any other rules regarding the provision of financial services.

In the formal financial sector, which is of particular interest in this paper, the key players are the commercial banks. They are the location of some 99 percent of formal financial sector assets (Turnell, 2014). The government plays an important role in the formal financial sector, and the state owns or co-owns many of the existing commercial banks in the country. As of March 2013, there are 24 banks in Myanmar, 4 of which are wholly stated-owned, 9 are semi-state owned banks, and 11 are private banks[2] (KPMG., 2013). The banking sector is dominated by the 4 state-owned banks, which account for two-thirds of total banking assets in the country (Foerch, Thein, and Waldschmidt, 2013). Infrastructure-wise, the three types of banks have around 1,100 bank branches country-wide (Turnell, 2014). The majority of these branches are concentrated in Yangon, Mandalay, Nay Pyi Taw, and a few other urban centers (Foerch et al., 2013). However, Myanmar Economic Bank (MEB) and Myanmar Agricultural Development Bank (MADB) are two state-owned banks which serve the rural areas.

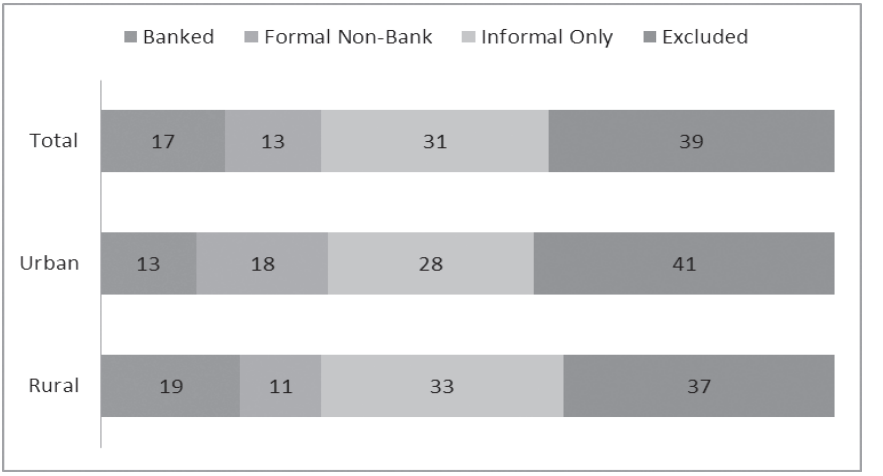
While commercial banks may dominate the financial sector landscape in terms of asset size, other types of formal financial institutions also exist in Myanmar. While much smaller in size, these financial institutions are more numerous with some having a large client base. These institutions include regulated cooperatives, regulated pawnshops, microfinance institutions, and providers of insurance services. In terms of loans, 16.4 percent of adults in Myanmar owe money to pawnshops, 4.4 percent owe money to cooperatives, and 3.7 percent owe money to MFIs. These figures indicate that these smaller financial institutions serve a larger client base than the commercial banks, which have about 0.3 percent of the adult population owing money to it.[3] (Chamberlain et al., 2014; Ni Lei Win, 2015).

[2] There are also 33 foreign bank representative offices in Myanmar (KPMG 2013).
[3] However, the average loan size of these smaller formal financial institutions is also much lower than the commercial banks.

### 3.2. Financial Inclusion in Myanmar

At the country level, 30 percent of the adult population in Myanmar is formally financially included, 31 percent uses only informal financial services, and 39 percent is wholly excluded financially[4]. The urban population has slightly higher formal inclusion, at 31 percent compared to the 30 percent in rural areas. However, the urban population also reports a higher level of financial exclusion at 41 percent. On the other hand, those in rural areas are less financially excluded (37 percent). (See Figure 1).

**Figure 1:** Financial Access Strand for Myanmar




**Source:** FinScope 2013

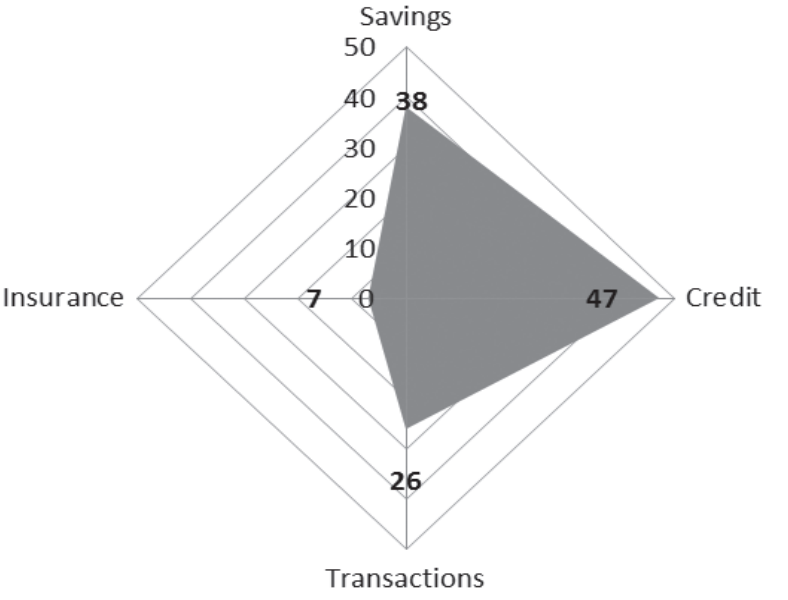
In terms of access to the different types of financial services, formal or otherwise, Figure 2 indicates that credit is the most used product, with 47 percent of the adult population in the country using some form of credit or another. Savings is the second-most used product, at 38 percent, followed by

[4] This paper uses the definition used in Chamberlain et al. (2014). Financially excluded group refers to adults who do not access financial products or services from any type of service provider. They also do not report any financial activity with family, friends, or themselves.

financial transactions at 26 percent. Insurance is the least used of all the four types of financial products, with only 7 percent of the population having some form of insurance or another.

When only usage is broken down into formal and informal sectors, FinScope Myanmar data shows that only about 7 percent of the total adult population in the country use any form of formal savings products. 25 percent use only informal products, and 6 percent keep their savings at home. These figures are larger for credit products. 18 percent of the total adult population in Myanmar borrows from formal financial service providers, while 18 percent borrowing from informal financial institutions and 11 percent only borrows from family and friends. When looking at the informal sector, 5 percent of the non-agricultural informal sector workers keep their savings at formal financial institutions. For credit products, 13 percent of such workers utilize credit services from formal financial service providers.

**Figure 2:** Usage of Financial Services




**Source:** FinScope 2013

Data from FinScope Myanmar indicates that financial inclusion is an important issue in Myanmar where two-thirds of the population still lacks access to formal financial services. This is true for both rural and urban residents. The issue is especially important for workers in the non-agricultural informal sector. This group of workers has lower access than the national average. This is true for both the uptake of formal savings products, and for formal credit products usage among this group of workers. Thus, this paper is concerned with understanding the factors that drive formal financial access among this group of informal sector workers who work in non-agricultural sectors of the economy.

## 4. Data and Methodology

### 4.1. Data

To understand the determinants of formal financial inclusion in the Myanmar context, this study draws on a nationally-representative data from the FinScope Myanmar survey[5] implemented in 2013. The survey focuses on the demand side of financial inclusion, collecting information on the financial lives of adult individuals[6] in Myanmar. The survey was overseen by a national steering committee, chaired by the Myanmar Microfinance Supervisory Enterprise (MMSE). A total of 5,100 face-to-face interviews were conducted by Myanmar Survey Research (MSR) from July to August 2013. The interviews include individuals working in both the formal and informal sectors. Of the 5,100 individuals interviewed, 2,692 individuals work in the non-agricultural informal sector. This study focuses on this group of adults, and examines the factors that determine their decision to subscribe to formal saving and credit products.

[5] The FinScope survey is a tool developed by FinMark Trust. At the time of the Myanmar survey, FinScope has been conducted in 18 countries in Africa and Asia.
[6] An adult is defined those of age18 or more.

### 4.2. Model Specification

The individual's decision to use formal financial product is generally modelled as being dependent on the latent variable, $D_{1i}^{*}$, the expected individual payoff from using formal financial product, such that:

$$D_{1i}^{*} = \boldsymbol{X}_{\boldsymbol{Ii}} \boldsymbol{\beta}_{\boldsymbol{I}} + \varepsilon_{Ii} \quad (1)$$

Where $\boldsymbol{X}_{\boldsymbol{Ii}}$ is a vector of exogenous variables for the $i^{th}$ individual, including whether or not the individual receives remittances, and $\boldsymbol{\beta}_{\boldsymbol{I}}$ is a vector of parameters. The latent variable $D_{1i}^{*}$ is unobserved. The observed variable is the uptake of formal financial product, $D_{Ii}$, which depends on $D_{1i}^{*}$ in the following manner:

$$D_{Ii} = 1 \text{ when } D_{1i}^{*} \geq 0, \text{ and} \quad (2)$$

$$D_{Ii} = 0 \text{ when } D_{1i}^{*} < 0$$

The error term, $\varepsilon_{Ii}$, is assumed to be normally and independently distributed. The relationship among $D_{Ii}$, $\boldsymbol{X}_{\boldsymbol{Ii}}$ and $\boldsymbol{\beta}_{\boldsymbol{I}}$ can be represented by the probit model shown in (3) where $F$ is the cumulative distribution of the standard normal variate $\varepsilon_{Ii}$ (Maddala, 1994):

$$D_{Ii} = F(\boldsymbol{X}_{\boldsymbol{Ii}} \boldsymbol{\beta}_{\boldsymbol{I}}) + \mu_{Ii} \quad (3)$$

Equations (1) – (3) provide the general framework for this study. In this paper, the dependent variable is a dummy variable equal to 1 if the individual decides to adopt formal financial product, and is 0 otherwise. For the formal saving equation, $D_{Ii}$ is equal to 1 if the individual uses at least one formal savings product, and is 0 otherwise. For the formal credit regression, $D_{Ii}$ takes the value of 1 if the individual uses formal credit products. Otherwise, it is 0.

The independent variables for both regression models can be classified into groups; perceptions and behaviors, geographical location, socio-economic characteristics, remittances, and additional factors that determine remittances. Description of variables can be found in Table 1. Summary statistics is presented in Table 2, while results can be found in Tables 3-6.

### 4.3. Estimation Strategy

Estimation of the probit model in equation (3) needs to account for the potential problem presented by the remittances variable, which is a dummy equal to one if the respondent lives in a household which receives remittances. As Anzoategui, Demirgüç-Kunt, and Martínez Pería (2014) points out, formal financial inclusion could lower costs for sending and receiving remittances. As such, migrants are more likely to send, and households are more likely to receive remittances if they have formal financial access. This means that households with access to formal saving accounts could be more likely to receive remittances in addition the receiving of remittances leading to formal financial inclusion. This suggests that there might be a reverse causality problem in the formal savings regression. Furthermore, access to credit could have made migration possible. As a result, financially included households could be more likely to receive remittances. Thus, a similar problem may exist in the formal credit regressions.

With the remittances and formal financial access variables both being dummies, accounting for the problem described above requires an estimation method that allows for the discrete nature of the dependent and the independent variables. This is done by estimating a recursive bivariate probit model similar to the model used by Ichida et al. (2013) to address the reverse causality problem in their data. To check the robustness of the bivariate probit results, endogenous switching regressions are estimated for both the formal savings regressions and the formal credit regressions.

In estimating the recursive bivariate probit model, the remittances equation is jointly estimated along with the formal financial inclusion regression specified in equation (3). The latent variable underlying the receiving of remittances is denoted by $D_{2i}^{*}$, such that

$$D_{2i}^{*} = \boldsymbol{X_{2i}}\boldsymbol{\beta_2} + \varepsilon_{2i} \tag{4}$$

The remittances dummy is denoted by $D_{2i}$. $D_{2i}^{*}$ is a latent variable with the following relationship with $D_{2i}$.

$$D_{2i} = 1 \text{ when } D_{2i}^{*} \geq 0, \text{ and} \qquad (5)$$
$$D_{2i} = 0 \text{ when } D_{2i}^{*} < 0$$

$\boldsymbol{X_{2i}}$ is a vector of exogenous variables, and $\boldsymbol{\beta_2}$ is a vector of parameters. The error terms, $\varepsilon_{1i}$ and $\varepsilon_{2i}$, are assumed to be independently and identically distributed and to follow the bivariate normal distribution with a correlation coefficient of $\rho$ (Greene, 2003, p. 849; Miranda & Rabe-Hesketh, 2006).

The explanatory variables included in the remittances regression include household and household head's characteristics. According to the remittances literature, the household head's income could lead to a greater amount of remittances money sent home if the migrant's intention is to receive bequest (Hagen-Zanker and Siegel 2007). Alternatively, if the migrant is altruistic, they are more likely to send money home if the household head's income is low (Funkhouser 1995). This is also true for the age of the household head. A household head whose age is high is more likely to receive remittances if the migrant's purpose for remitting money home is altruism. Finally, the household head's education is related to knowledge of opportunities for migrating. Thus, a household head's education can be a factor that determines migration, and, thus, the likelihood of receiving remittances. (Vanwey 2003; Barbieri and Carr 2005).

Two sets of bivariate probit (BVP) regressions are estimated, one set is for formal savings access and the one set is for formal credit access. For the formal savings access set of regressions, factors that determine subscription to formal saving products are examined. The dependent variable is equal to one if the individual has at least one formal saving product, and is zero otherwise. For the formal credit access regressions, the dependent variable is uptake of formal credit product. The dependent variable is a dummy equal to one if the individual has at least one formal credit product, and is zero otherwise. In each set of regressions, two models are estimated to overcome the multicollinearity problem from using two different variables as proxy for income. For both

sets of regressions, the measure of income used in Model 1 is whether or not the respondent has his/her own money. Model 2 uses having regular monthly income as a measure of income.

## 5. Results

Regression results confirm that the model is correctly specified, with the regression specifications being statistically significant at the 1 percent significance level for both the formal savings regressions and the formal credit regressions. The significance levels of the correlation coefficients ($\rho$) indicate that there is statistically significant correlation between the formal savings and remittances regressions. This justifies the need to control for joint determination of the formal savings and remittances variables. The formal credit regressions do not have this problem, however, with the correlation coefficients in both models not statistically significant. This means that, for the formal credit regression, the estimated outcome from the bivariate probit regression is the same as that of a regular probit regression. Results are consistent across models and estimation methods.[7]

In terms of uptake of formal savings products, regression results indicate that some geographical aspects matter. Informal sector workers who live in urban areas are more likely to have formal savings products than those in rural parts of the country. However, other locational factors such as living near public transportation and living near bank branches are not statistically significant. Such factors do not affect uptake of formal saving products for the informal sector group. The significance of the urban variable corresponds to the information on the number of contact points for formal financial institutions, which are more concentrated in urban areas. Furthermore, as the number of banks is small relative to the number of branches of other types of formal financial institutions, the location factor of being close to bank branches is not siginificant.

[7] Results from the endogenous switching model are available upon request from the author.

In addition to the urban/rural location of the individual, one other determinant of having formal savings product is whether or not the respondent receives remittances. Respondents who live in households which receive remittances, whether from overseas or domestic sources, are more likely to have formal savings access. The remittances variable is statistically significant, even after controlling for the potential for reverse causality of the variable with formal savings access. This indicates that the receiving of remittances is one important factor leading to access to formal savings products.

Regression results also find that individual-specific socio-economic characteristics determine access to formal savings products. Respondents who are female, older in age, and have their own income or have regular monthly income are more likely to have formal financial products. Educational attainment is also positively associated with uptake of formal savings products. The effect of education increases the higher the educational attainment. Nonetheless, for this group of workers in the informal sector, attitudes towards saving and behavior that are deemed conducive to saving are not found to have any positive impacts towards increasing the likelihood of uptake of formal savings products.

Results from the bivariate probit savings regressions provide the following implications for public policy. Given the low level of usage of formal savings products in the country, intervention to increase formal savings uptake should focus on 'quick wins,' or increasing usage among those who already have a higher likelihood for using formal savings products. These are older women with some education who live in urban areas, and who have their own income. Targeting this group would allow the government to increase access to formal savings products relatively faster while not expending too much effort in the process. Once this group has been exhausted, the government could move on to target other groups within the informal sector that have lower probabilities of using formal savings products.

With regards to formal credit product, summary statistics show that around 13 percent of those in the informal sector have formal credit, a larger number than formal savings uptake. Regression results indicate that the correlation between formal credit usage and remittances is not statistically

significant, suggesting that there is no need to worry about the reverse causality problem for the formal credit regression. This also implies that the result of the bivariate probit model for the formal credit equation is the same as the result from a probit model with the same specification. Factors found to be important determinants of formal credit uptake include certain perceptions, geographical location, and socio-economic characteristics.

In terms of using formal credit products, the perception found to be an important determinant of usage is *emergency*, which measures the degree to which the respondent agrees that he/she would only borrow when there are emergencies. This variable's marginal effects are negative and statistically significant at the 1 percent significance level. However, apart from this variable, other variables measuring other aspects of attitudes are not statistically significant. This include variables such as the respondents reporting feeling embarrassed if they borrow, that they would not be able to feed their families if they do not borrow, and that it is bad for their future lives if they die owing money.

Geographical location also matters. In contrast to the formal savings products where only urban location matters, a wider range of geographical variables are important determinants of formal credit uptake. Living within close proximity to bank branches positively contributes to the uptake of formal credit product. Living in urban areas also matters in determining formal credit usage. However, the relationship is negative. Those who live in urban areas are less likely to have formal credit products. The negative marginal effects of the urban area variable could be a by-product of past government policies and microfinance provided through rural development efforts. In the past, the Myanmar government policies focused on providing credit to those in the rural areas. Government-directed rural financing is primarily done through the Myanmar Agricultural Development Bank (MADB), a state-owned formal financial institution[8]. Rural credit tailored to those with lower

[8] Government rural credit policies in Myanmar focused on extending credit to farming households. Nonetheless, the author argues that the availability of credit-providing formal financial institutions in rural areas could have spillover effects to those in the non-agricultural informal sector in rural areas.

income is also provided through the Pact Myanmar microfinance project, a development effort first introduced under a UNDP welfare program in 1997. The availability of these targeted rural financing programs could explain the negative and significant sign of the urban variable.

Results from the regressions indicate that socio-economic characteristics are important factors affecting formal credit uptake. Factors such as age, gender, marital status, and education are positively associated with usage of formal credit products. Older individuals who are female and are married are more likely to obtain credit from formal financial institutions. Those who have regular income also rely less on formal credit products. Remittance has a positive, albeit weak, impact on formal credit access.

Findings for the formal credit product regressions indicate that initial demand-side policies to increase formal credit uptake should include targeting those who have higher chances of obtaining such products. These are older married females who live in rural areas, and who live in households which receive remittances. By targeting this group, policymakers are able to reap the low-hanging fruits first, before moving on to those with lower probabilities of using formal credit. On the supply side, the results suggest that increasing contact points with formal financial insitutions could help to increase formal credit usage among those in the non-agricultural informal sector. Policies which encourage the setting up of contact points such as bank branches, or agent banking could be useful in increasing uptake of formal credit products.

In summary, both geographical and socio-economic factors determine access to formal financial product usage. However, the impacts vary depending on the type of product under consideration. For formal savings products, urban location increases usage of the product, while for formal credit products, being in urban locations reduces usage. Feeling that they would only borrow in case of emergencies also reduces the chances of adopting formal credit products, while other attitudes, perceptions, and behaviors do not have any impacts on formal credit usage. Attitudes and behaviors are also not important in determining formal savings products. For both savings and credit regressions, socio-economic characteristics are important factors that lead to the use of formal financial products.

## 6. Conclusion

On the whole, results from both regressions indicate that formal financial service uptake in the informal sector in Myanmar is not so much determined by attitudinal factors as by geographic and socio-economic factors. This is seen most strongly in the case of formal savings product uptake, which is mostly determined by urban location and socio-economic factors such as age, income, and education. Behavioral factors such as thinking carefully before spending, and keeping a budget, have no impacts on formal savings product uptake. Attitudinal factors such as feeling stressed when dealing with finances, saving money for later use, etc. are also not significant.

In terms of formal credit products, the belief that they would take out loans only in emergencies has a strong negative impact on borrowing from formal sources. Geographical location also matters. Living near banks increases the likelihood of formally borrowing, while being located in urban areas and having monthly income coming in decrease the likelihood of having formal credit products. This could be because those in urban areas have less access to formal credit providers, and those with their own money are less likely to require formal credit products.

These findings indicate that there is a close link between certain geographical factors and formal financial product uptake, with the factors varying depending on the type of product. The importance of the urban location could be linked to the availability of formal financial services in that setting, suggesting that, in addition to the demand-side factors studied in this paper, supply-side factors could be driving the uptake of formal financial products. On the demand side, gender is an important determinant of both types of formal service uptake. Females are both more likely to save and to borrow from formal financial institutions. For other socio-economic factors, their importance varies depending on the type of financial product considered. These findings provide policy implications in terms of the design of programs aimed at increasing access to formal financial products. The identified determinents, which are mostly geographical and socio-ecoomic in nature allow policymakers to identify the group of individuals they could first target to obtain ‘quick wins’ in terms of increasing access to formal financial products.

## 7. Limitations of the Study

While the author has done her best to ensure that the research is of high quality, it is not possible to have a paper that is without limitations. Data availability serves as the main constraint in addressing the research questions posed in this paper. First, the data is only available for one year. A panel data would have allowed for better estimations of the causality of the factors that determine uptake of formal products. Second, the data does not allow for distinguishing those who choose to self-exclude themselves from using formal financial products even though they do have access. Thus, the regressions are run with the implicit assumption that those who are coded as excluded are not excluded by choice. Third, while some supply side information is available from the FinScope survey, the data collected is primarily from the demand side. This restricts the analysis to mostly variables from the demand side. With better data, these issues could have been addressed.

**Table 1:** Description of Variables

| Variables | Description |
|---|---|
| **Dependent Variables** | |
| ***FSave*** | Dummy = 1 if respondent saves at a formal financial institution |
| ***FCredit*** | Dummy = 1 if respondent borrows from a formal financial institution |
| **Financial Attitude : Saving** | |
| ***finstress*** | Dummy = 1 if respondent agrees that dealing with finance is stressful or a burden |
| ***saverain*** | Dummy = 1 if they respondent agrees that he/she has to save for difficult times |
| ***safe*** | Dummy = 1 if respondent agrees that saving means putting money in a place to keep it safe |
| ***uselater*** | Dummy = 1 if respondent agrees that saving means putting money aside to use later for a specific purpose |
| ***increase*** | Dummy = 1 if respondent agrees that saving means putting money away so that the total increases over time as more is put away |
| **Financial Attitude : Credit** | |
| ***avoid*** | Dummy = 1 if respondent avoids borrowing if possible |
| ***embarass*** | Dummy = 1 if respondent finds borrowing to be embarrassing |
| ***badfuture*** | Dummy = 1 if respondent agrees that it is bad for his/her future life if he/she dies still owing money |
| ***debtforfam*** | Dummy = 1 if respondent agrees that he/she would not be able to feed his/her family if he/she does not borrow |
| ***emergency*** | Dummy = 1 if respondent would consider borrowing in an emergency |
| **Financial Behavior** | |
| ***trackfin*** | Dummy = 1 if respondent agrees when asked if he/she keeps track of his/her income and expenditures on a monthly basis |
| ***thinkspend*** | Dummy = 1 if respondent thinks carefully before making a spending decision |
| ***gowithout*** | Dummy = 1 if respondent agrees that he/she can go without certain things to be able to save |
| **Location** | |
| ***nearbank*** | Dummy = 1 if respondent lives within less than 1 hour of a bank branch |
| ***pubtrans*** | Dummy = 1 if respondent lives within less than 1 hour of public transportation access |
| ***Urban*** | Dummy = 1 if respondent lives in urban areas |

**Table 1:** Description of Variables (cont.)

| Variables | Description |
|---|---|
| **Socio-economic Characteristics** | |
| ***age*** | Respondent's age (in years) |
| ***gender*** | Dummy = 1 if respondent is female |
| ***maritalstatus*** | Dummy = 1 if respondent is married |
| ***mthlyinc*** | Dummy = 1 if respondent has regular monthly income |
| ***ownmoney*** | Dummy = 1 if respondent has money of his/her own to do as he/she wishes |
| ***edu*** | Educational attainment of the respondent. Ordinal variable. 1 = no formal education, 2 = pre-primary education, 3 = primary education, 4 = lower secondary education, 5 = upper secondary education, 6 = vocational education (diploma, advanced diploma, certificate, 7 = tertiary/higher education. |
| **Remittance-related Variables** | |
| ***remit*** | Dummy = 1 if the respondent receives remittance from domestic or international source(s) |
| ***Hhhage*** | Age of the household head |
| ***Hhhinc*** | Income of the household head |
| ***Hhhedu*** | Educational attainment of the household head. Ordinal variable. 1 = no formal education, 2 = pre-primary education, 3 = primary education, 4 = lower secondary education, 5 = upper secondary education, 6 = vocational education (diploma, advanced diploma, certificate, 7 = tertiary/higher education. |

**Table 2:** Summary Statistics

| Variable | Mean | Std.Dev. | Min | Max |
|---|---|---|---|---|
| ***FSave*** | 0.05 | 0.21 | 0 | 1 |
| ***FCredit*** | 0.13 | 0.33 | 0 | 1 |
| ***remit*** | 0.20 | 0.40 | 0 | 1 |
| ***finstress*** | 0.68 | 0.47 | 0 | 1 |
| ***saverain*** | 0.70 | 0.46 | 0 | 1 |
| ***safe*** | 0.05 | 0.22 | 0 | 1 |
| ***uselater*** | 0.55 | 0.50 | 0 | 1 |
| ***increase*** | 0.10 | 0.30 | 0 | 1 |
| ***avoid*** | 0.11 | 0.31 | 0 | 1 |
| ***embarass*** | 0.23 | 0.42 | 0 | 1 |
| ***badfuture*** | 0.04 | 0.19 | 0 | 1 |
| ***debtforfam*** | 0.71 | 0.45 | 0 | 1 |
| ***emergency*** | 0.68 | 0.47 | 0 | 1 |
| ***trackfin*** | 0.61 | 0.49 | 0 | 1 |
| ***thinkspend*** | 0.83 | 0.38 | 0 | 1 |
| ***gowithout*** | 0.44 | 0.50 | 0 | 1 |
| ***nearbank*** | 0.57 | 0.50 | 0 | 1 |
| ***pubtrans*** | 0.91 | 0.28 | 0 | 1 |
| ***Urban*** | 0.31 | 0.46 | 0 | 1 |
| ***age*** | 44.35 | 15.74 | 18 | 98 |
| ***gender*** | 0.69 | 0.46 | 0 | 1 |
| ***maritalstatus*** | 0.71 | 0.45 | 0 | 1 |
| ***mthlyinc*** | 0.45 | 0.50 | 0 | 1 |
| ***ownmoney*** | 0.26 | 0.44 | 0 | 1 |
| ***edu*** | 3.02 | 1.50 | 1 | 7 |
| ***Hhhage*** | 51.39 | 14.16 | 18 | 98 |
| ***Hhhinc*** | 163,574.8 | 198,971.2 | 5,000 | 6,000,000 |
| ***Hhhedu*** | 2.90 | 1.46 | 1 | 7 |

**Table 3:** Results from Savings Bivariate Probit Regressions (Savings Regression)

| | Model 1 | | | | Model 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** |
| ***Savings regression*** | | | | | | | | |
| ***finstress*** | -0.018 | 0.090 | -0.002 | 0.012 | -0.028 | 0.087 | -0.004 | 0.012 |
| ***saverain*** | 0.127 | 0.106 | 0.017 | 0.015 | 0.143 | 0.101 | 0.020 | 0.014 |
| ***safe*** | -0.053 | 0.203 | -0.007 | 0.027 | -0.090 | 0.195 | -0.012 | 0.027 |
| ***uselater*** | 0.041 | 0.096 | 0.006 | 0.013 | 0.028 | 0.089 | 0.004 | 0.012 |
| ***increase*** | 0.112 | 0.149 | 0.015 | 0.020 | 0.104 | 0.141 | 0.014 | 0.019 |
| ***trackfin*** | 0.102 | 0.095 | 0.014 | 0.013 | 0.113 | 0.089 | 0.016 | 0.012 |
| ***thinkspend*** | 0.107 | 0.123 | 0.015 | 0.017 | 0.111 | 0.119 | 0.015 | 0.016 |
| ***gowithout*** | -0.056 | 0.086 | -0.008 | 0.012 | -0.054 | 0.081 | -0.007 | 0.011 |
| ***nearbank*** | 0.109 | 0.107 | 0.015 | 0.014 | 0.109 | 0.101 | 0.015 | 0.014 |
| ***pubtrans*** | 0.116 | 0.217 | 0.016 | 0.029 | 0.117 | 0.214 | 0.016 | 0.030 |
| ***Urban*** | 0.187* | 0.104 | 0.025* | 0.014 | 0.146 | 0.101 | 0.020 | 0.014 |
| ***age*** | 0.006* | 0.003 | 0.001* | 0.0004 | 0.005* | 0.003 | 0.001* | 0.0004 |
| ***gender*** | 0.274*** | 0.096 | 0.037*** | 0.013 | 0.273*** | 0.090 | 0.038*** | 0.012 |

**Table 3:** Results from Savings Bivariate Probit Regressions (Savings Regression) (cont.)

| | Model 1 | | | | Model 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** |
| ***maritalstatus*** | 0.024 | 0.096 | 0.003 | 0.013 | 0.041 | 0.089 | 0.006 | 0.012 |
| ***ownmoney*** | 0.401*** | 0.108 | 0.054*** | | | | | |
| ***mthlyinc*** | | | | 0.013 | 0.234** | 0.095 | 0.032** | 0.013 |
| ***edu*** | 0.140*** | 0.029 | 0.019*** | 0.004 | 0.139*** | 0.032 | 0.019*** | 0.004 |
| ***remit*** | 1.690*** | 0.369 | 0.228*** | 0.058 | 1.895*** | 0.306 | 0.262*** | 0.041 |
| ***Constant*** | -3.362*** | 0.313 | | | -3.314*** | 0.311 | | |
| | | | | | | | | |
| ***N*** | 2128 | | | | 2128 | | | |
| ***Chi-Square*** | 305.4*** | | | | 373.58*** | | | |
| ***rho*** | -0.804*** | | | | -0.874*** | | | |

**Table 4:** Results from Savings Bivariate Probit Regressions (Remittance Regression)

| | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | **Coefficients** | **Standard Error** | **Coefficients** | **Standard Error** |
| ***Hhhage*** | 0.013*** | 0.002 | 0.013*** | 0.002 |
| ***Hhhinc*** | 0.000000306** | 0.000000149 | 3.15e-07** | 1.40e-07 |
| ***Hhhedu*** | 0.065*** | 0.022 | 0.064*** | 0.022 |
| ***nearbank*** | -0.063 | 0.071 | -0.066 | 0.071 |
| ***pubtrans*** | 0.102 | 0.125 | 0.111 | 0.124 |
| ***Urban*** | -0.065 | 0.075 | -0.071 | 0.074 |
| ***Constant*** | -1.823*** | 0.177 | -1.803*** | 0.178 |

**Table 5:** Results from Credit Bivariate Probit Regressions (Credit Regression)

| | Model 1 | | | | Model 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** |
| ***avoid*** | 0.134 | 0.110 | 0.027 | 0.022 | 0.14 | 0.112 | 0.028 | 0.022 |
| ***embarass*** | 0.079 | 0.080 | 0.016 | 0.016 | 0.079 | 0.082 | 0.016 | 0.017 |
| ***badfuture*** | 0.040 | 0.180 | 0.008 | 0.037 | 0.020 | 0.183 | 0.004 | 0.037 |
| ***debtforfam*** | 0.068 | 0.081 | 0.014 | 0.016 | 0.067 | 0.082 | 0.014 | 0.016 |
| ***emergency*** | -0.613*** | 0.086 | -0.125*** | 0.015 | -0.623*** | 0.084 | -0.125*** | 0.015 |
| ***trackfin*** | -0.094 | 0.073 | -0.019 | 0.015 | -0.083 | 0.074 | -0.017 | 0.015 |
| ***thinkspend*** | 0.128 | 0.099 | 0.026 | 0.020 | 0.135 | 0.102 | 0.027 | 0.020 |
| ***gowithout*** | 0.018 | 0.069 | 0.004 | 0.014 | 0.031 | 0.070 | 0.006 | 0.014 |
| ***nearbank*** | 0.208*** | 0.078 | 0.042*** | 0.016 | 0.207*** | 0.079 | 0.0417*** | 0.016 |
| ***pubtrans*** | 0.208 | 0.146 | 0.042 | 0.030 | 0.211 | 0.147 | 0.042 | 0.029 |
| ***Urban*** | -0.687*** | 0.110 | -0.140*** | 0.020 | -0.669*** | 0.107 | -0.134*** | 0.019 |
| ***age*** | 0.002 | 0.002 | 0.001 | 0.001 | 0.003 | 0.003 | 0.001 | 0.001 |
| ***gender*** | 0.142* | 0.074 | 0.029* | 0.015 | 0.133* | 0.076 | 0.027* | 0.015 |
| ***maritalstatus*** | 0.219*** | 0.081 | 0.045*** | 0.016 | 0.216*** | 0.082 | 0.043*** | 0.016 |
| ***ownmoney*** | -0.118 | 0.082 | -0.024 | 0.017 | | | | |

**Table 5:** Results from Credit Bivariate Probit Regressions (Credit Regression) (cont.)

| | Model 1 | | | | Model 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** | **Coefficients** | **Standard Error** | **Marginal Effects** | **Standard Error** |
| ***mthlyinc*** | | | | | -0.177** | 0.077 | -0.036** | 0.015 |
| ***edu*** | 0.041 | 0.028 | 0.008 | 0.006 | 0.046* | 0.028 | 0.009* | 0.005 |
| ***remit*** | 1.039* | 0.590 | 0.212* | 0.128 | 0.908 | 0.574 | 0.182 | 0.124 |
| ***Constant*** | -1.635*** | 0.243 | | | -1.618*** | 0.245 | | |
| | | | | | | | | |
| ***remit*** | | | | | | | | |
| ***Hhhage*** | 0.014*** | 0.002 | | | 0.014*** | 0.002 | | |
| ***Hhhinc*** | 0.000* | 1.48E-07 | | | 0.000 | 1.52E-07 | | |
| ***Hhhedu*** | 0.062*** | 0.023 | | | 0.063*** | 0.023 | | |
| ***nearbank*** | -0.063 | 0.072 | | | -0.064 | 0.072 | | |
| ***pubtrans*** | 0.109 | 0.126 | | | 0.106 | 0.127 | | |
| ***Urban*** | -0.043 | 0.078 | | | -0.045 | 0.077 | | |
| ***Constant*** | -1.849*** | 0.176 | | | -1.851*** | 0.176 | | |
| ***N*** | 2128 | | | | 2128 | | | |
| ***Chi-Square*** | 265.52*** | | | | 251.95 | | | |
| ***Rho*** | -0.588 | | | | -0.522 | | | |

**Table 6:** Results from Credit Bivariate Probit Regressions (Remittance Regression)

| | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | **Coefficients** | **Standard Error** | **Coefficients** | **Standard Error** |
| ***Hhhage*** | 0.014*** | 0.002 | 0.014*** | 0.002 |
| ***Hhhinc*** | 0.000* | 1.48E-07 | 0.000 | 1.52E-07 |
| ***Hhhedu*** | 0.062*** | 0.023 | 0.063*** | 0.023 |
| ***nearbank*** | -0.063 | 0.072 | -0.064 | 0.072 |
| ***pubtrans*** | 0.109 | 0.126 | 0.106 | 0.127 |
| ***Urban*** | -0.043 | 0.078 | -0.045 | 0.077 |

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