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Access to Formal Financial Services: A Cross Country Study

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ABSTRACT

The importance of an inclusive financial system in the overall growth and development of an economy is well recognised. This paper empirically analyses the factors affecting access to finance at an individual level making extensive use of latest Global Findex database of World Bank. The paper uses three indicators of financial inclusion and several explanatory variables that include country-specific factor (GDP per capita), individual characteristics and individual economic circumstances of adult individuals from different countries. We find that individual characteristics and economic circumstances like education level, income level, employment, government transfers and saving behaviour are more likely to positively impact financial inclusion indicators than gender, age, payment status and borrowing behaviour of individuals.

Key Words: Financial inclusion; Global Findex

JEL classification: G21; P34; O16

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1. Introduction

An inclusive financial system has all the sections of the economy participating actively in the formal financial system and contributing towards growth and development. The importance of an inclusive financial system in the overall growth and development of an economy is well recognised. In many countries, mainstream commercial banks have not been able to penetrate widely in rural and remote areas and amongst low income and poor people, apparently due to high operating cost associated with it. Therefore, microfinance institutions which provide small sized loans to poor sections of the society play an important role as an alternative to commercial banks. In recent years, the role of technology has increased, and this has led to constant innovations in low cost financial products and methods of financial service delivery like smart cards, internet banking, mobile banking, business correspondents and agents, postal-system delivery etc. Some examples are e-money transfer service M-Pesa offered by mobile network operator Safaricom in Kenya since 2007, large scale introduction of "business correspondents" in Brazil, "no-frills"/"Basic Savings Bank Deposit Account" introduced in India since 2005 etc. As a result, financial institutions have managed to reduce the costs associated with poor clients and have started to regard it as business opportunity. However, despite all efforts, globally, only 62 percent of adult population has an account with a formal financial institution (The Global Findex database, 2014). Therefore, it is still a very long way to reach complete or near complete inclusive financial system.

Financial inclusion is defined as access to formal financial system and use of formal financial system. A well-developed inclusive financial system provides financial services to all sections of the society irrespective of income levels. The small amount of finance (in case of loans) can start a higher value job for some and contribute towards alleviating poverty; savings accounts can provide a safe place to save; insurance services can help individuals insure against accidents, crop failure etc. Proper usage of these services leads to economic growth, thereby raising overall income levels and reducing income inequality. Thus, extending financial services to all sections of the society, especially the very poor section, contributes towards more equitable society which is necessary for a prosperous and healthy economy.

In this paper, we attempt to empirically analyse the factors affecting access to finance at an individual level, thereby, aim to contribute to the existing limited literature. The paper is organised in five sections. The introductory section provides background on financial

inclusion. In Section 2, we present a brief literature review on status on financial inclusion, both at country level and individual level. Section 3 discusses the data and methodology used in this paper and provides descriptive statistics of indicators of financial inclusion of high income and low income countries. In Section 4, we present the empirical results of the study. Section 5 concludes the paper.

2. Review of Literature

Till recently, the studies on financial inclusion were mostly on the basis of supply side data (number of bank accounts, bank branches, loan accounts etc.) on financial inclusion indicators. With the availability of demand side data (households' level of income, gender, education level of household members etc.), the studies took a new turn to provide in-depth information on financial inclusion status. It is generally believed that provision of financial services to the individuals can help in smoothening income, insure against risks, poverty alleviation, broadens investment opportunities, raises overall income levels, improves income distribution, reduces income inequality etc. Empirically, the extent of impact of financial access on alleviation of poverty is unclear. Some studies did not find any conclusive evidence on anti-poverty impact of microfinance programs, a component of overall financial inclusion initiatives, on financial access. For example, Shaw (2004), based on her study of microfinance programs in Hambantota district in Sri Lanka, found that only poor clients from semi-urban areas benefitted from such programs. The impact of microfinance programs on income levels and poverty levels was nil for poor clients from rural areas. Honohan (2008) found negative correlation between financial access percentages and poverty headcount rates at cross country level. However, this correlation lost its significance in multiple regressions that included per capita income, suggesting its inability to prove anti-poverty potential of financial access on poverty, econometrically. On the other hand, some found positive impact of financial access in reducing income inequality and alleviating poverty (Mookherjee and Kalipioni, 2010; Imai et al., 2012). Mookherjee and Kalipioni (2010) found that higher financial access has negative impact on income inequality (measured by Gini coefficient) across countries, implying that financial services reduce income inequality. Imai *et al*. (2012) found that countries with higher gross loan portfolio per capita under microfinance institutions tend to have lower poverty, implying that access to financial services helps in alleviating poverty. Also, an environment which is conducive for realising the objective of

financial inclusion is necessary. Urbanisation, physical and electronic connectivity, information availability, literacy rate, income inequality level etc. play an important role in determining the extent of financial inclusion (Reserve Bank of India, 2008; Sarma and Pais, 2011). The income level of the economy also matters as low income economies generally have higher levels of income inequality, low rates of literacy, lower levels of urbanisation, poor connectivity and use of informal sources of credit (Sarma and Pais, 2011; Demirgüç-Kunt and Klapper, 2013). Thus, low income countries should promote a strong financial market that reaches out all sections of the economy, allowing for more effective and efficient execution of other social policies (Cull et al., 2014).

At an individual level, studies have found that financially excluded people are also the ones that are at the margins of the society—people with low income, the migrants, the unemployed, the uneducated, and the rural people, female-headed families and so on. Reserve Bank of India (2008) identifies the following factors affecting access to financial services—gender, age, legal identity, limited literacy, place of living, psychological and cultural barriers, social security payments, bank charges, terms and conditions, level of income, type of occupation and attractiveness of the product. Women who do not have title to assets, older people, people with lack of valid identity proofs like migrants, ethnic minorities etc., illiterate people, rural and poor population have limited access to formal financial services. According to Kempson and Whyley (1999), majority of households without financial products in United Kingdom are those headed by single parent especially female-headed households, those at pensionable age, poor households and ethnic minorities. Fungacova and Weill (2015) find that higher income, better education, being a man and being older are associated with greater use of formal accounts in China. Even in India, female-headed households are less inclined to access to formal finance (Ghosh and Vinod, 2016). Allen et al. (2016) took into account the policies that promote financial inclusion (for example, correspondent banking permitted, exception from KYC—Know Your Customer requirements, offer basic or low fee account etc.) in determining the factors associated with financial inclusion at individual level and found that effectiveness of policies depends on the characteristics of the individuals considered. They found that policies are relatively less effective in encouraging account use by women and youth. The likelihood of owning and using (to save) a formal account is higher among richer, older, urban, educated, employed and married individuals.

In contrast to above, there are some individuals who are self-excluded—people who are engaged in small cash transactions and do not require financial institutions, people who do

not find financial institutions trustworthy and people who cite religious reasons (Kempson et al., 2004; Claessens, 2006; Demirgüç-Kunt and Klapper, 2013).

Therefore, individual characteristics and economic circumstances like gender, age, family circumstances, ethnicity, income and employment are important factors in determining the likelihood of financial exclusion. This paper is likely to augment this strand of literature.

3. Data and Methodology

The data for this study are sourced from World Bank's Global Findex database, 2014. It provides individual level data on financial inclusion, based on a survey of adult individuals covering over 142 countries for the year 2014. The database consists of information on individual characteristics and financial inclusion status of around 146688 adult individuals for year 2014. A close look at the data showed that about 2700 observations were having inconsistent information. For example, some individuals responded "no" to the question on whether they had an account at a formal financial institution/mobile money provider but "yes" to the question on whether the individual had saved or borrowed using any financial institution. Thus, information pertaining to about 2700 individuals regarding their financial inclusion status was not consistent as by the former question they were financially excluded and yet by the later they seemed to enjoy savings and credit facilities from formal financial institutions. We regard these inconsistent data as errors and remove them from our sample. After removal of such inconsistent data, our sample consists of 143982 adult individuals from 142 countries (See APPENDIX Table A1 for the list of countries and the respective sample sizes).

The data on individuals' characteristics and their economic circumstances is utilised extensively in this study in an attempt to investigate factors that are associated with level of financial inclusion, indicated by individuals' access to formal financial services. Following Demirgüç-Kunt and Klapper (2013) and Fungacova and Weill (2015), the paper uses three main indicators of financial inclusion: formal account, formal saving and formal credit. These indicators are converted into binary variables to indicate whether or not an individual possess a formal financial account, whether or not an individual saved using a formal financial institution (formal saving) and whether or not an individual borrowed from a formal financial institution (formal credit). These binary variables are then used as the dependent variables in

a regression framework. Therefore, the methodology used in this paper is logit estimation model which is also known as binary dependent variable model. It tries to model the probability of a binary variable taking value 1 (indicating a "yes") as a function of the explanatory variables. Thus, we attempt to analyse factors that are significantly associated with the probability of access to formal financial services (formal account, formal saving and formal credit) of adult individuals of different countries.

The paper uses the following equation to examine how individuals' characteristics and economic circumstances are associated with financial inclusion:

$$p = Pr\{Y = 1\} = F(X'\beta) \qquad ---(1)$$

This equation relates probability of a dependent variable Y taking value 1 to various explanatory variables. F is a cumulative density function of Logistic distribution. Unlike the linear regression model, the coefficients β from this model cannot be interpreted as marginal impact of a particular explanatory variable on the dependent variable, due to the non-linearity in the model and so, one has to compute the marginal effects.

For the logit models, the marginal effects are calculated as:

$$\frac{\partial p}{\partial X_j} = F'(X'\beta)\beta_j \qquad ---(2)$$

where, index j refers to the j^{th} independent variable. The marginal effects depend on all explanatory variables X, so we generally estimate the marginal effects either at a specific value of X (typically the means) or calculated as the average of individual marginal effects i.e. average marginal effects. In this paper we are using the later approach. Also, the coefficients and marginal effects have the same signs because$F'(X'\beta) > 0$. Therefore, this paper reports only marginal effects.

In the equation (1), Y is a dummy variable that indicates an individuals' access to financial system. The main indicators of financial inclusion (an individuals' access to financial system) used in this paper are formal account, formal saving and formal credit. Therefore, Y=1 if the individuals' response to indicators of financial inclusion is "yes" and X is the set of explanatory variables.

The main indicators of financial inclusion are:

Formal account: It indicates the ownership of an account. It takes value 1 if the respondent has a formal account (it can be an account with financial institution or mobile money account) and zero otherwise. The paper further estimates equation (1) separately using "*Account at financial insti.*" and "*Mobile Money Account*" as dependent variables to assess the difference in the impacts of different individual characteristics and economic circumstances. "*Account at financial insti.*" includes account at a bank or any other type of financial institution, such as credit union, cooperative, or microfinance institutions. On the other hand, "*Mobile Money Account*" consists of mobile phone-based services used to pay bills or to send or receive money (Demirgüç-Kunt et al. 2014). Individual who uses mobile money account linked to their financial institution are considered to have an account at a financial institution. The questions regarding mobile money account were asked only in 74 economies where mobile money accounts were available at the time of survey was carried out (Demirgüç-Kunt et al. 2014). Therefore, Formal account is not sum of "*Account at financial insti.*" and "*Mobile Money Account*".

Formal Saving: It is defined as a binary variable that takes value 1 for all those individuals who have saved or set aside money using an account at a bank or another type of formal financial institution in past 12 months, and zero otherwise.

Formal credit: It is defined as a binary variable with value=1 for all those individuals who have borrowed any money from a bank or another type of formal financial institution (excluding credit cards) in past 12 months from a financial institution and zero otherwise.

While formal account merely indicates financial system penetration, formal saving and formal credit indicate usage of formal financial system.

The explanatory variables are:

ln GDP per capita (constant 2010 US $): GDP per capita is gross domestic product (GDP) divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions of fabricated assets or for depletion and degradation of natural resources.[2]

[2] Data sourced from World Bank website http://data.worldbank.org, accessed on 14 October 2016.

Gender: It indicates the gender of the individual i.e. male or female. It is a dummy variable that takes value 1 if the respondent is female and zero otherwise.

Age: Age in number of years of the individual.

Age²: Age in number of years, squared. It is included to show the relation between financial inclusion indicators and very old individuals.

Education: It indicates the education level (primary or less, secondary and tertiary education) that the individual has completed.

Income: It is within-economy household income quintile. It shows how much is the monthly household income, before taxes and therefore in which income quintile it falls: poorest 20%, second 20%, middle 20%, fourth 20% and richest 20%. It includes income from wages and salaries, remittances from family members living elsewhere, farming, and all other sources.

Govt transfers: It captures if the individual, personally, received any government transfers (financial support like unemployment benefits, subsidy payments, payments for educational or medical expenses, any kind of social benefits) in past 12 months.

Agricultural payments: It captures if the individual, personally, received money from sale of family's agricultural products, crops, produce or livestock in past 12 months.

Saved: Saved is whether the individual saved in the past year or not.

Borrowed: Borrowed is whether the individual borrowed in the past year or not.

Wage employment: Wage employment is whether the individual received any wage payments by being employed in public sector or private sector or did not receive any wage payments at all in past 12 months.

Further details on these variables are given in Table 1.

Table 1 Variables and their definitions

Variables	Definition
Formal Account	=1 if individual has an account =0 otherwise
Account at Financial Insti.	=1 if individual has account at financial institution =0 otherwise
Mobile Money Account	=1 if individual has a mobile money account =0 otherwise (individual level)

Formal Saving	=1 if individual said "yes" to have saved in past 12 months using a bank or another type of formal financial institution =0 otherwise (individual level)
Formal Credit	=1 if individual said "yes" to have borrowed any money from a bank or another type of formal financial institution (excluding credit cards) in past 12 months =0 otherwise (individual level)
ln GDP per capita	ln GDP per capita (constant 2010 US $) (country level)
Gender	=1 if female =0 otherwise
Age	Age in number of years of individual
Age²	Squared Age
Education: Edu1 Edu2	 =1 if individual has completed secondary education =0 otherwise =1 if individual has completed tertiary education or more =0 otherwise
Income quintile: Inc_q1 Inc_q2 Inc_q3 Inc_q4	 =1 if individual belongs to income quintile-second 20% =0 otherwise =1 if individual belongs to income quintile-third (middle) 20% =0 otherwise =1 if individual belongs to income quintile-fourth 20% =0 otherwise =1 if individual belongs to income-fifth (richest) 20% =0 otherwise
Govt transfers	=1 if "yes" i.e. individual received financial support from govt in past 12 months =0 otherwise
Agricultural Payments	=1 if "yes" i.e. individual received money from sale of family's agricultural products, crops, produce or livestock in past 12 months =0 otherwise
Saved	=1 if "yes" i.e. individual saved in the past year =0 otherwise
Borrowed	=1 if "yes": i.e. individual borrowed in the past year =0 otherwise
Wage employment: Wage emp1 Wage emp2	 =1 if individual is public sector employed and received wage in past 12 months =0 otherwise =1 if individual private sector employed and received wage payments in past 12 months =0 otherwise

The country specific factor i.e. logarithm of Gross Domestic Product (GDP) per capita is included in the equation to incorporate the country specific impacts.

When the data is separated on the basis of income group of the economy the individual belongs to, there are 84 high income countries and 58 low income countries. The descriptive statistics of indicators of financial inclusion respective high income and low income economies are given in Table 2.

Table 2: Descriptive statistics of indicators of financial inclusion for high income and low income economies

	Formal account		Formal Saving		Formal Credit		Account at Financial Insti.		Mobile Money Account	
Economy	**Obs.**	**Mean**	**Obs.**	**Mean**	**Obs.**	**Mean**	**Obs.**	**Mean**	**Obs.**	**Mean**
High income	86228	0.7499 (0.4330)	86228	0.3285 (0.4697)	86228	0.1435 (0.3506)	86228	0.7486 (0.4337)	23859	0.0461 (0.2098)
Low income	57754	0.3456 (0.4755)	57754	0.1221 (0.3274)	57754	0.0685 (0.2527)	57754	0.3091 (0.4621)	47733	0.0909 (0.2875)

Note: Standard deviations in parentheses.
Data source: World Bank Global Findex database 2014

Table 2 presents the number of observations and means of different indicators of financial inclusion for high income countries and low income countries. High income countries include high income group and upper middle income group of World Bank's country classification and low income countries include lower middle income group and low income group World Bank's country classification.[3] As shown in Table 2, 74.99% of individuals in high income countries have formal account compared to only 34.56% in low income countries. When it comes to saving and borrowing, high income countries lead in both (32.85% and 14.35%, respectively) compared to low income countries (only 12.21% and 6.85%, respectively). On the other hand, only 4.61% in high income countries have mobile money account compared to 9.09% in low income countries. These percentages of individuals' deals in financial services only through mobile money account. Thus, it shows that low income countries have higher penetration of mobile money account than high income countries. This may be a reflection of new-age financial inclusion programmes like e-money transfer service M-Pesa offered by mobile network operator Safaricom in Kenya. Thus, this statistic provides some tentative evidences of low level of financial inclusion in low income economies.

4. Empirical Results

Table 3 presents the marginal effects for the logit regression estimations. Column (1), (2) and (3) have formal account, formal saving and formal credit as dependent variables. Column (4) and (5) present the results for separate regressions by separating formal account into account at financial institution (Column 4) and mobile money account (Column 5), as dependent variables.

We find that having a formal account is positively and significantly related to ln GDP per capita of the country (Column (1)). Similar is the case with formal saving and formal credit

[3] http://pubdocs.worldbank.org/en/626461483566287816/Methodology-2014.pdf

(Column (2) and (3)). It suggests that higher economic development (proxied by the GDP per capita) is likely to improve individuals' access to formal financial services in terms of penetration as well as usage of formal account.

Coming to individual characteristics, we find that the gender is negatively and significantly related to formal account, formal saving and formal credit. It implies that females are less likely to have a formal account compared to males and are also less likely to use a formal financial institution to save and borrow. Age is positively related to all the main indicators of financial indicators of financial inclusion (Column (1), (2) and (3)). The older the individual is, the higher is the probability of having a formal account, saving in financial institution and borrowing from a financial institution. However, Age^2 is negatively related to indicators of financial inclusion. It shows that after a certain age, the effect is reversed. There is a non-linear relation between age and financial inclusion. Education (both Edu1 and Edu2 i.e. dummy variables for secondary education and tertiary education) is positively related with formal account, formal saving and formal credit. This implies that compared to those individuals who have completed primary or less, those with secondary or tertiary education are more likely to have a formal account and are more likely to save and borrow from a financial institution. Also, as can be seen from Column (1), (2) and (3), the marginal effects of Edu2 (individuals who have completed tertiary education or more) is higher than Edu1 (individuals who have completed secondary education) throughout, suggesting that those individuals with tertiary education or more have higher probability of owning an account and making use of it. Likelihood of a formal account is also positively related to individuals' income level. The higher the income quintile, the higher is marginal effect. Similarly, formal saving and formal credit are also positively related to individuals' income level indicated by the income quintile dummies in our regression. All marginal effects are significant at 1% level and 5% level (Column (1), (2) and (3), respectively).

The variable—"Govt. transfers" is found to have a positive relation with all three main indicators of financial inclusion. This implies that individuals who received financial support from the government were more likely to have an account, saved and borrowed. Agricultural payments (money received from any source for the sale of family's agricultural products, crops, produce, or livestock) also have significantly positive relation with formal account, formal saving and formal credit. It suggests that those who are engaged in agriculture and earn some money are more likely to transact with formal financial system. Also, those individuals who saved and borrowed in the past year (from any source—formal or informal)

are more likely to be financially included than those who did not save or borrow. Wage emp1 and Wage emp2 (dummy variables for those employed in public sector and private sector respectively) have positive and significant relation with formal account, formal saving and formal credit (Column (1), (2) and (3)). It implies that compared to those who do not get any form of wage, those employed (either in public sector or in private sector) have better chances of being financially included. The marginal effects are higher for Wage emp1 implying that those employed in public sector have higher probability to be financially included than those in private sector.

Table 3: Estimated marginal effects

Dependent variables →	**Formal Account**	**Formal Saving**	**Formal Credit**	**Account at Financial Insti.**	**Mobile Money Account**
Explanatory Variables ↓	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
ln GDP per capita	0.105***	0.041***	0.023***	0.116***	-0.019***
Gender	-0.021***	-0.018***	-0.006***	-0.018***	-0.008***
Age	0.011***	0.007***	0.011***	0.012***	0.002***
Age²	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Edu1	0.092***	0.051***	0.043***	0.093***	0.029***
Edu2	0.195***	0.107***	0.061***	0.199***	0.034***
inc_q 1	0.018***	0.030***	0.007**	0.017***	-0.000
inc_q 2	0.044***	0.067***	0.013***	0.041***	0.013***
inc_q 3	0.073***	0.101***	0.022***	0.069***	0.024***
inc_q 4	0.136***	0.153***	0.026***	0.132***	0.044***
Govt transfers	0.154***	0.051***	0.025***	0.152***	0.035***
Agri Payments	0.013***	0.062***	0.030***	0.000	0.041***
Saved	0.174***		0.038***	0.164***	0.061***
Borrowed	0.047***	0.043***		0.037***	0.041***
Wage emp1	0.255***	0.083***	0.075***	0.255***	0.031***
Wage emp2	0.148***	0.061***	0.043***	0.145***	0.021***
Observations	107568	107568	107568	107568	67562
Mean of dept vars.	0.587	0.245	0.113	0.572	0.076
Predicted prob.	0.491	0.170	0.097	0.474	0.062
Pseudo R²	0.2512	0.114	0.113	0.273	0.148

Date source: World Bank Global Findex database 2014

*** and ** denote significance at the 1% and 5% levels, respectively.

Now, when we estimate the regressions separately for accounts at financial institution (Column 4) and mobile money account (Column 5), we find that ln GDP per capita is positively related to Account at financial institution and negatively related to Mobile money account. It suggests that as higher GDP per capita is associated with more likelihood of

accounts in a formal financial institution and less likelihood of mobile money account. This result is not surprising given the descriptive statistics of data on high income economies and low income economies (Table 2) wherein it showed that Mobile money account is more prevalent in low income economies. Coming to the individual characteristics, Gender has negative relation with both types of formal account, similar to the other main indicators of financial inclusion. Age also has similar effect, i.e. positive up to certain age and then negative (Age^2 is negatively related). Education (both Edu1 and Edu2 i.e. dummy variables for secondary education and tertiary education) has positive relation with account at financial institution and mobile money account. Again similar to the main indicators of financial inclusion, the marginal effects for Edu2 are higher than Edu1, especially for Account at financial Institution. The difference is, however, very small for Mobile money account. Individuals' income level is again found to be positively related to both account at financial institution and mobile money account. Again, the higher the level of incomes represented by dummy variables of higher income quintiles, the higher is the marginal effects. Government transfers have positive impact on both account at financial institution and mobile money account. Agricultural payments also have positive relation with mobile money account. Those who saved and borrowed in the past year have higher likelihood of financial inclusion. Also, those employed in public sector and private sector have higher chances of having account at financial institution and mobile money account.

Now, if the logit regression is estimated for high income and low income countries separately, we find little difference from the above results. Table 4 and Table 5 present the estimation results for high income and low income countries, respectively.

Table 4: Results of Logit estimation (marginal effects) for High income countries

Dependent variables →	**Formal Account**	**Formal Saving**	**Formal Credit**	**Account at Financial Insti.**	**Mobile Money Account**
Explanatory Variables ↓	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
ln GDP per capita	0.150***	0.071***	0.025***	0.150***	0.003
Gender	-0.013***	-0.017***	-0.013***	-0.012***	-0.002
Age	0.012***	0.007***	0.013***	0.012***	0.001**
Age^2	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Edu1	0.077***	0.024***	0.051***	0.077***	0.029***
Edu2	0.203***	0.115***	0.074***	0.205***	0.038***
inc_q 1	0.022***	0.037***	0.007	0.021***	0.002
inc_q 2	0.045***	0.076***	0.011**	0.044***	0.004
inc_q 3	0.061***	0.112***	0.027***	0.060***	0.014***
inc_q 4	0.106***	0.158***	0.028***	0.105***	0.033***

Govt transfers	0.159***	0.050***	0.025***	0.160***	0.029***
Agri Payments	-0.012**	0.084***	0.026***	-0.013**	0.029***
Saved	0.156***		0.030***	0.156***	0.037***
Borrowed	0.038***	0.040***		0.037***	0.033***
Wage emp1	0.281***	0.084***	0.094***	0.282***	0.024***
Wage emp2	0.191***	0.074***	0.056***	0.193***	0.008***
Observations	53538	53538	53538	53538	22397
Mean of dept vars.	0.749	0.328	0.143	0.748	0.046
Predicted prob	0.634	0.216	0.124	0.632	0.040
Pseudo R^2	0.217	0.084	0.086	0.217	0.185

Date source: World Bank Global Findex database 2014

***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 5: Results of Logit estimation (marginal effects) for Low income countries

Dependent variables →	**Formal Account**	**Formal Saving**	**Formal Credit**	**Account at Financial Insti.**	**Mobile Money Account**
Explanatory Variables ↓	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
ln GDP per capita	0.100***	0.028***	0.033***	0.113***	-0.023***
Gender	-0.031***	-0.017***	0.000	-0.026***	-0.010***
Age	0.011***	0.009***	0.009***	0.012***	0.002***
Age^2	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
Edu1	0.103***	0.066***	0.030***	0.104***	0.035***
Edu2	0.186***	0.087***	0.044***	0.191***	0.029***
inc_q 1	0.011*	0.024***	0.007*	0.012*	-0.002
inc_q 2	0.040***	0.062***	0.016***	0.037***	0.018***
inc_q 3	0.083***	0.093***	0.017***	0.078***	0.028***
inc_q 4	0.157***	0.147***	0.025***	0.151***	0.050***
Govt transfers	0.139***	0.047***	0.027***	0.139***	0.033***
Agri Payments	0.023***	0.043***	0.028***	0.006	0.046***
Saved	0.189***		0.050***	0.171***	0.073***
Borrowed	0.053***	0.047***		0.036***	0.045***
Wage emp1	0.226***	0.082***	0.058***	0.225***	0.031***
Wage emp2	0.095***	0.047***	0.031***	0.091***	0.028***
Observations	54030	54030	54030	54030	45165
Mean of dept var	0.345	0.122	0.068	0.309	0.090
Predicted prob	0.350	0.125	0.069	0.317	0.082
Pseudo R^2	0.202	0.137	0.134	0.221	0.127

Date source: World Bank Global Findex database 2014

***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

For individuals in high income countries, country's GDP per capita has a positive relation with mobile money account, though insignificant. While being female is significantly negatively associated with all other indicators of financial access, this significance is lost when we consider mobile money account. Also, an interesting but somewhat counter-intuitive result for high income countries is that receiving agricultural payments (Agri Payments) is negatively and significantly associated with the probability of having an account with formal financial institutions. This suggests that those engaged in agriculture in high income countries are less likely to own a formal account especially account at financial institution. As mentioned earlier, the high income group in this paper comprises of countries having high and upper middle income as per World Bank's country classification. It is expected that few people would be engaged in agricultural activities in high income countries. When we looked closely at the data to investigate this, we found that the individuals who reported receiving agricultural payments belong mostly to these upper middle income countries—Angola, Azerbaijan, Botswana, China, Thailand and Turkmenistan. In her study on measuring inclusiveness of financial system, Sarma (2016) found that banking sectors of these countries have medium or low levels of inclusiveness. Perhaps the negative association of receiving agricultural payments with formal finance can be explained by the fact that those who received agricultural payments belonged to less inclusive financial systems among the high and upper middle income categories of countries.

On the other hand, for individuals in low income countries, country's GDP per capita has negative relation with mobile money account, though mobile money account is more prevalent in low income countries. Also, unlike the pooled regression and the regression for high income countries, Gender has a positive relation with access to formal credit, though insignificant. This implies that females in low income countries are more likely to use formal financial system by borrowing than their counterparts in high income countries. Also, unlike high income countries, receiving agricultural payments has positive relation with all indicators of financial inclusion.

Thus, overall we find that individual characteristics and economic circumstances like education level, income level, employment, government transfers and saving behaviour are more likely to positively impact financial inclusion indicators (marginal effects being higher) than gender, age, agricultural payments and borrowing behaviour. These findings are in line with Fungacova and Weill (2015) who focused only on China. Also, the country-specific

factor i.e. GDP per capita has positive relation with all indicators of financial inclusion except mobile money account.

5. Conclusions

We find that individual characteristics and economic circumstances play very significant role in determining financial inclusion. Country-specific factors also impact the financial inclusion indicators. A limitation of this paper is that it includes only one country-specific factors i.e. ln GDP per capita. More country-specific factors like financial inclusion policies (policies for attaining more inclusive financial system) can be included in the logit regression to establish how these factors impact individuals' access to formal finance. Future research that takes into account financial inclusion policies of the countries can provide further insight into status of financial inclusion.

APPENDIX

Table A1: List of countries and their respective sample sizes

Economy	Observations	Economy	Observations
United States	1021	South Africa	980
Egypt, Arab Rep.	941	Canada	1004
Lebanon	979	Australia	1002
Saudi Arabia	1018	Philippines	952
Jordan	926	Sri Lanka	1048
Turkey	971	Vietnam	838
Pakistan	976	Thailand	974
Indonesia	947	Cambodia	815
Bangladesh	962	Myanmar	954
United Kingdom	1000	New Zealand	1000
France	1000	Angola	1000
Germany	1012	Botswana	973
Netherlands	1002	Ethiopia	939
Belgium	1004	Mali	993
Spain	1000	Mauritania	979
Italy	1000	Niger	993
Poland	1000	Rwanda	995
Hungary	1003	Senegal	989
Czech Republic	1008	Zambia	977

Romania	973	Korea, Rep.	1000
Sweden	1001	Taiwan, China	1000
Greece	1000	Afghanistan	979
Denmark	1002	Belarus	1036
Hong Kong SAR, China	1007	Georgia	1000
Singapore	994	Kazakhstan	1000
Japan	1006	Kyrgyz Republic	1000
China	4184	Moldova	1000
India	2882	Russian Federation	2000
Venezuela, RB	994	Ukraine	1000
Brazil	994	Burkina Faso	965
Mexico	979	Cameroon	992
Nigeria	962	Sierra Leone	995
Kenya	991	Zimbabwe	985
Tanzania	990	Costa Rica	1000
Israel	1000	Albania	999
West Bank and Gaza	1000	Algeria	1002
Ghana	979	Argentina	990
Uganda	965	Armenia	878
Benin	965	Austria	1000
Madagascar	1000	Azerbaijan	1000
Malawi	963	Bahrain	1005
Belize	504	Macedonia, FYR	1000
Bhutan	1020	Malaysia	975
Bolivia	1930	Malta	1001
Bosnia and Herzegovina	1001	Mauritius	991
Bulgaria	1000	Mongolia	983
Burundi	985	Montenegro	1000
Chad	973	Namibia	985
Chile	996	Nepal	1002
Colombia	950	Nicaragua	885
Congo, Dem. Rep.	977	Norway	1000
Congo, Rep.	979	Panama	938
Croatia	1000	Peru	935
Cyprus	1000	Portugal	1013
Dominican Republic	968	Puerto Rico	500
Ecuador	1000	Serbia	1000
El Salvador	919	Slovak Republic	1000
Estonia	1000	Slovenia	1003
Finland	1001	Somalia	991
Gabon	986	Sudan	1000
Guatemala	953	Switzerland	1008
Guinea	981	Tajikistan	978
Haiti	486	Togo	981

Honduras	955	Tunisia	1023
Iraq	1007	Turkmenistan	1000
Ireland	1000	United Arab Emirates	987
Côte d'Ivoire	986	Uruguay	897
Jamaica	501	Uzbekistan	1000
Kuwait	1013	Yemen, Rep.	1000
Latvia	1002	Kosovo	1001
Lithuania	1000	**TOTAL**	**143982**
Luxembourg	1000		

Date source: World Bank Global Findex database

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