

The Determinants of Financial Inclusion in Western Africa: Insights from Ghana

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Abstract

There is low financial inclusion across developing countries, especially those in Sub-Saharan Africa including Ghana. This paper examines the determinants of financial inclusion in Western Africa with specific focus on Ghana. The data used in the analyses came from 1000 individual adults across Ghana and included people across the different wealth classes, occupations, geographical locations, gender and generations. Using the logit model, the determinants of individuals' inclusion in the formal financial market were estimated. The results show that only two in five adults are included in the formal financial sector of Ghana. Age of individuals, literacy levels, wealth class, distance to financial institutions, lack of documentation, lack of trust for formal financial institutions, money poverty and social networks as reflected in family relations are the significant determinants of financial inclusion in Ghana. The implication of this for policy is that there is the need for governments in Western Africa, particularly Ghana and their development partners to formulate a holistic financial framework that seeks to mitigate the negative determinants of financial inclusion and sustained the positive ones. It is recommended that such a policy framework should be politically neutral, economically viable, gender sensitive, socially stable and financially feasible so as to make it sustainable.

Key Words: Africa, Financial Inclusion, Financial Market, Ghana, Logit model

1. Background Issues

Progress in the financial sector of the world economy and economies of nation states for that matter is one of the necessary conditions for the attainment of sustainable socio-economic development. To this end, world leaders continue to make frantic efforts to ensure sustainable financial progress so as to promote economy-wide development and improvements in the livelihoods of their citizenry. This is particularly so among leaders in the developing world where the financial sectors of nation states are still in their doldrums. These efforts have led to some substantial financial developments in many developing countries including Ghana over the past few decades (Huang, 2010). These developments in the financial sector have been largely attributed to financial sector liberalizations (Kabango & Paloni, 2011). Notwithstanding the impressive developments recorded, the financial sectors of developing countries, especially those in Western Africa are still highly imperfect (Todaro & Smith, 2011) and fragmented. The two main fragments of the financial sectors have been captured in the empirical literature as the formal and informal financial markets (Tang, 1995; Chaudhuri & Gupta, 1996; Steel *et al.*, 1997; Bose, 1998; Diagne, 1999; Jain, 1999; Atieno, 2001; Chakrabarty & Chaudhuri, 2001; Aryeetey, 2003; Straub, 2005; Guirking, 2008; Swaminathan *et al.*, 2010; Giné, 2011).

The informal and formal financial markets are faced with two distinct challenges in their attempts to promote financial inclusion. The main challenge that the informal financial market faces is its lack of capacity to fully integrate many people into its fold and this is due to its limited resource base. For the formal financial market, its main challenge is the rules and regulations governing its operations. These rules and regulations make it difficult for it to include people, especially those in rural areas into the mainstream financial sector. This is because of issues of credit worthiness as most people are only included in the financial market through specially designed credit schemes (Mehrens & Lehmann, 1987; Quaye, 2008; Akudugu *et al.*, 2009). The focus of formal financial institutions on credit worthiness as a principal consideration for inclusion in the formal financial sector is responsible for the continuous fragmentation of financial markets in developing countries (Bose, 1998).

The continuous parallel existence of the informal and formal rural financial markets in most of rural Africa has largely been blamed on regressive financial policies pursued by African governments (Aryeetey, 2003). The most prominent repressive financial policies are the debt pardoning schemes which were rolled out especially in the 1970s and 1980s (Vogel, 1981, 1984a, 1984b) and subsidized interest rates (Gonzalez-Vega, 1983; Adams *et al.*, 1987). These policies were implemented with the hope that there would be trickle down-effects of reducing high interest rates charged by informal lenders so as to lower the cost of lending but this never happened (Bose, 1998). Such policies and structures had the overall objective of crowding out actors in the informal financial market instead of integrating them into the mainstream financial market. The failure of these policies led the informal financial market to build resilience hence its continuous survival. The resilience of the informal financial market which serves most people in rural areas might be responsible for the inability of formal financial markets in developing countries to integrate customers of informal financial markets into the mainstream formal

financial sector for savings mobilization and credit delivery. This observation is consistent with Christen and Pearce (2005) who argued that though household savings continue to be the primary funding source for most private, smallholder and microenterprise production and trade activities, actors in the formal financial markets in developing countries consider them a costly liability and do not reach out to them. The main difference between the formal and informal financial markets is that unlike lenders in the formal financial market, those in the informal financial market refinance borrowers with no interest payments when the need arises (Onumah, 2003). This continues to widen the gap between the formal and informal financial markets thereby making formal financial inclusion a daunting task.

Reaching out to actors in the informal financial markets is particularly important because all households, no matter how poor they are, are said to engage in a number of financial strategies to build assets, prepare for life events and emergencies, and cover daily transactions (Sebstad & Cohen, 2001). They predominantly engage in a number of non-financial means of savings such as accumulation of livestock, jewellery, and even staple food crops some of which have cultural and spiritual significance. In his publication entitled "*The Poor and their Money*", Rutherford (2000) noted that many rural households engage in informal financial relationships among themselves to the extent that they have over the years built credible rotating savings and credit associations, through which they are able to set aside some small amounts daily or weekly to meet their financial needs. By this, they lend to each other and to family members in a way that build solidarity among them. The empirical literature suggests that the volume of activities in the informal financial market of developing countries is far greater than that of organized formal financial institutions (Braverman & Guasch, 1997; Khandker & Faruque, 2003; Schindler, 2010). There is the need therefore to integrate the formal and informal rural financial markets in Africa and for that matter Ghana. This has been successfully done in countries such as Thailand, Brazil, Indonesia, Nepal, Peru, Madagascar, Costa Rica, Uganda and Uzbekistan among others (Wehnert & Shakya, 2001; Christen & Pearce, 2005).

The factors influencing access to formal credit have been identified in the empirical literature (Atieno, 2001; Aryeetey, 2003; Armendáriz de Aghion & Morduch, 2005; Khandker, 2005; Ayamga *et al.*, 2006; Kibaara, 2006; Akudugu *et al.*, 2009; Rahji & Fakayode, 2009; Akudugu, 2010; Armendáriz de Aghion & Morduch, 2010; Awunyo-Vitor & Abankwah, 2012). However, the issue of why a person will decide to be included in the formal financial sector has not been holistically examined in the literature. This is particularly so in Ghana where most people are excluded from the formal financial sector (IFAD, 2003) with only 29% of adults in the country being said to be banked (Demirgüç-Kunt & Klapper, 2012). The factors accounting for the low patronage of services provided by the formal financial market have largely not been identified in the empirical literature. This is a gap that must be bridged if efficient and effective strategies are to be developed for the inclusion of more people in the formal financial market. This paper therefore identifies and estimates the factors that determine financial inclusion in western Africa using Ghana as the case study.

Apart from the introduction presented in section 1, the rest of the paper is organised into three main sections. The methodology employed is presented in section 2. The results and discussion are presented in section 3. The conclusion and policy implications presented in section 4 conclude the paper.

2. Methodology

The data for the analyses came from the World Bank Global Financial Inclusion Index (Demirgüç-Kunt & Klapper, 2012). The data covered 1000 individual adults across Ghana and included people across the different wealth classes, occupations, geographical locations, gender and generations. Using the logit model, the determinants of individuals' inclusion in the formal financial market were estimated. Financial inclusion in the formal financial market in the context of this paper is defined as people who patronize services rendered by actors in the formal financial market. These services principally include accounts operations, savings mobilizations and credit delivery. Thus individuals across Ghana who open accounts with formal sector financial institutions, make savings or take credit from them are classified as people included in the formal financial market.

The paper uses the principle of adoption to estimate the factors that determine or otherwise the inclusion of adult individuals across Ghana in the formal financial market. This is because services provided by actors in the formal financial market are seen as innovations that can either be adopted or not adopted by the target group. This is particularly so because just as in the case of innovations, individuals will only find the need to be included in the formal financial market if they perceive that the benefits thereof will be more than the costs. The logit model was therefore employed to examine the determinants of individual adults' inclusion in the formal financial market of Ghana. Note that the formal financial market in this paper is made up principally of banks, insurance companies, credit unions and microfinance institutions that provide financial products for their customers.

The use of the logit model for this analysis is informed by the fact that adoption is known to be logistic in nature

(see for example Griliches, 1957; Alston *et al.*, 1995; cited in Akudugu *et al.*, 2012). The underlying theoretical foundation of the analyses in this paper is the threshold decision-making theory proposed by Hill and Kau (1973), Pindyck and Rubinfeld (1998a) and Greene (2003). The theory as it applies to this paper notes that when individuals are faced with a decision to seek inclusion or not to be included in the formal financial market of Ghana, there is a reaction threshold inherent in them which is dependent on a set of factors. At a given level of stimulus below the threshold, the individuals will not seek to be included in the formal financial market while at the critical threshold level the desire to be included in the formal financial market is stimulated. This phenomenon is captured in a mathematical relationship as:

$$Y_i = \beta X_i + u_i \quad (1)$$

Where Y_i in this case is equal to one (1) when an individual makes the choice to be included in the formal financial market and zero (0) otherwise. This means that:

$Y_i = 1$ if X_i is greater than or equal to a critical value, X^* and

$Y_i = 0$ if X_i is less than a critical value, X^* .

Note that X^* represents the combined effects of the independent variables (X_i) at the threshold level. Equation 1 represents a binary choice model involving the estimation of the probability of individual adults being included in the formal financial market of Ghana (Y) given a set of factors (X) which are exogenous to the individual adults. Mathematically, this is represented as:

$$Prob(Y_i = 1) = F(\beta'X_i) \quad (2)$$

$$Prob(Y_i = 0) = 1 - F(\beta'X_i) \quad (3)$$

Where: Y_i is the observed response for the i^{th} individual adult who is either included or not included in the formal financial market of Ghana. This means that $Y_i = 1$ for an individual adult who is included in the formal financial market and $Y_i = 0$ for an individual adult who is excluded from the formal financial market. X_i is a set of independent variables such as age, gender and level of education among others, associated with the i^{th} individual, which determine the probability of inclusion in the formal financial market, (P). The function, F may take the form of a normal, logistic or probability function. The logit model uses a logistic cumulative distributive function to estimate, P as follows (Pindyck & Rubinfeld, 1998b):

$$P(Y = 1) = \frac{e^{\beta'X}}{1 + e^{\beta'X}} \quad (4)$$

$$P(Y = 0) = 1 - \frac{e^{\beta'X}}{1 + e^{\beta'X}} = \frac{1}{1 + e^{\beta'X}} \quad (5)$$

According to Greene (2008), the probability model is a regression of the conditional expectation of Y on X giving:

$$E(Y/X) = 1[F(\beta'X)] + 0[1 - F(\beta'X)] = F(\beta'X) \quad (6)$$

Since the model is non-linear, the parameters are not necessarily the marginal effects of the various independent variables. The relative effect of each of the independent variables on the probability of inclusion in the formal financial market by individual adults across Ghana is obtained by differentiating equation (6) with respect to X_{ij} and this results in equation (7) (Greene, 2008):

$$\frac{\partial P_i}{\partial X_{ij}} = \left[\frac{\lambda \beta'X}{(1 + \lambda \beta'X)^2} \right] \beta = F(\beta'X)[1 - F(\beta'X)]\beta \quad (7)$$

The maximum likelihood method was used to estimate the parameters. This estimation procedure resolves the problem of heteroscedasticity associated with other estimation procedures such as the Linear Probability Model (LPM). It constrains the conditional probability of inclusion of individual adults in the formal financial market to lie between zero (0) and one (1). The use of the logit model in this paper over the probit model is because of its mathematical convenience and simplicity as noted by Greene (2008). Besides, it has been used by a number of researchers in related studies (examples include Akudugu *et al.*, 2009; Akudugu, 2012; Akudugu *et al.*, 2012; Dufhues *et al.*, 2013). The empirical model for the logit estimation is specified as follows:

$$\log \frac{P_i}{1 - P_i} = \alpha + \beta X_i + \varepsilon_i \quad (8)$$

Where:

$\log \frac{P_i}{1 - P_i}$ = The log-odds in favour of inclusion in the formal financial market;

X_i = The combined effects of X explanatory variables that determine or otherwise the inclusion of individual adults in the formal financial market and ranges from $X_1 \dots X_{11}$ defined as follows:

X_1 = Gender (Dummy: 1 = Male; 0 = Otherwise)

X_2 = Age of the individual adult (Years)

X_3 = Age square (Years)

X_4 = Literacy (Dummy: 1 = Literate; 0 = Otherwise)

X_5 = Wealth class of individual adult (Dummy: 1 = Poorest 20%; 0 = Otherwise)

X_6 = Distance to formal financial institution (Dummy: 1 = Problem; 0 = Otherwise)
 X_7 = Cost (Dummy: 1 = Expensive to be included; 0 = Otherwise)
 X_8 = Documentation (Dummy: 1 = Lack of documentation; 0 = Otherwise)
 X_9 = Trust (Dummy: 1 = Lack of trust for formal financial institutions; 0 = Otherwise).
 X_{10} = Money (Dummy: 1 = Lack of money; 0 = Otherwise).
 X_{11} = Family influence (Dummy: 1 = Family member included; 0 = Otherwise).
The estimation of the empirical model was done using STATA (Version 11).

3. Results and Discussion

The results show that about 40 percent of the research participants are included in the formal financial market of Ghana with the remaining 60 percent of them excluded. This implies that the level of financial inclusion in the formal financial market in Ghana is less than the global financial inclusion index of 50 percent (Demirgüç-Kunt & Klapper, 2012). Demographically, about 49 percent of the research participants were males and the remaining 51 percent were females (Table 1). This is an indication of near gender parity which means that the results are representative of men and women on issues of financial inclusion in Ghana. The research participants were found to be within the age cohort of 15 to 98 years and average of about 36 years. The implication of this is that the results reflect the views of the different generations on financial inclusion. Thus the outcome of this paper captures the concerns and views of the young, the middle age and the old on financial inclusion or exclusion across Ghana. Majority (65%) of the research participants were literate with the remaining 35 percent of them being illiterate. As such, the results capture the interests of the literate and illiterate regarding financial inclusion in Ghana. In terms of the wealth class, about 22 percent of the research participants belonged to the poorest 20 percent across the country with the remaining 78 percent belonging to the other segments of wealth categorization. This implies the results reflect different categories of people irrespective of their wealth class.

A number of the research participants (15%) indicated that distance is a challenge to their inclusion in the formal financial market with the remaining 85 percent saying otherwise. Also, 12 percent of the research participants noted that it is costly to be included in the formal financial market with the remaining 88 percent saying otherwise. With regards to documentation, about 14 percent of the research participants stated it is difficult to provide the requisite documents to be able to be included in the formal financial market with the remaining 86 percent saying otherwise. The results also revealed that about 10 percent of the research participants do not trust the formal financial institutions with the remaining 90 percent saying otherwise. It was further found that about half (50%) of the research participants indicated that lack of money affects inclusion in the formal financial market with the remaining half (50%) saying otherwise. Finally, about 3 percent of the research participants stated they had relatives who are included in the formal financial market with the remaining 97 percent saying otherwise (Table 1).

To examine the how the various factors identified (Table 1) determine the inclusion of individual adults across Ghana in the formal financial market, the logit model was estimated. The regression yielded a Likelihood Ratio (LR) of about 936 which is statistically significant at 1 percent. This implies that all the variables included in the model jointly influence the probability of inclusion of individual adults in the formal financial market of Ghana (Table 2). A Pseudo R^2 of 0.6935 means that the included variables are able to explain about 69 percent of the variations in the probability of individual adults being included in the formal financial market of Ghana. The goodness of fit measures (LR and Pseudo R^2) indicates that the model used for the estimation is robust.

At the individual variable level, gender was found to have a positive influence on the probability of inclusion in the formal financial market of Ghana. This means that adult males are most likely to be included in the formal financial market than their female counterparts. It was however, found not to be a statistically significant determinant of inclusion of individual adults in the formal financial market of Ghana. The age of individual adults was found to have a positive influence on the probability of inclusion in the formal financial market of Ghana and is statistically significant at 1 percent (Table 2). This means that an extra year gained by individuals leads to an increase of about 0.02 in his or her probability of inclusion in the formal financial market of Ghana (Table 2). This however, reduces as one reaches an old age. This is captured in the age squared variable which is negatively related to the probability of inclusion in the formal financial market and is statistically significant at 1 percent. The implication here is that age assumes a quadratic function. As people move from childhood to adulthood, the probability of their inclusion in the formal financial market increases up to a point when they pass the economically active age group and then the probability starts to decrease hence the negative relationship. Thus as one reaches old age, every extra year gain leads to the probability of being included in the formal financial market of Ghana declining by about 0.0002. This finding supports that of Akudugu (2012) who found in his study that individuals' demand for financial services from formal sources decline as they grow pass their economically active age group.

The literacy level was found to be a positive determinant of inclusion of individual adults in the formal financial

market of Ghana (Table 2). It is statistically significant at 1 percent. This implies that people who are literate are more likely to be included in the formal financial market of Ghana than their illiterate counterparts. The probability that a literate individual adult will be included in the formal financial sector of Ghana is about 0.11 higher than an illiterate individual (Table 2). A negative relationship between individual adults within the poorest 20 percent and the probability of inclusion in the formal financial was found and is statistically significant at 10 percent (Table 2). This means that the probability of individuals within the poorest 20 percent of the population of Ghana being included in the formal financial market is about 0.05 less than the probability of individuals outside this group. The implication of this is that the poorest in Ghana who are the most vulnerable and require assistance from the formal financial market of the country are less likely to be targeted by actors in that market.

Distance was found to have a negative relationship with the probability of inclusion of individual adults in the formal financial market of Ghana. It is statistically significant at 1 percent (Table 2). This means that people who see the distance to formal financial institutions to be a problem are less likely to be included in the formal financial market of Ghana than their counterparts who see it otherwise. The probability that individual adults who think that distance is a problem will be included in the formal financial market is about 0.13 less than those who think otherwise (Table 2). Though the cost of inclusion in the formal financial market was found to be positively related to the probability of inclusion in the formal financial market, it is not a statistically significant determinant.

Regarding documentation, it was found that the lack of documentation is negatively related to the probability of inclusion in the formal financial market. It is statistically significant at 1 percent (Table 2). This means that individuals who lack documentation are less likely to be included in the formal financial market of Ghana. Thus the probability that an individual adult who lacks documentation is included in the formal financial market is about 0.14 less than those who have documentation (Table 2). Another important determinant of financial inclusion is the lack of trust for formal financial institutions by individuals. This was found to be negatively related to the probability of inclusion in the formal financial market and is statistically significant at 1 percent (Table 2). This means that individuals who do not have trust in the formal financial market are less likely to be included in it compared to those who have trust in it. The probability that individual adults in Ghana who lack trust in the formal financial market will be included in it was found to be about 0.14 less than those who have trust in the formal financial market of the country (Table 2).

Lack of money is negatively related to the probability of inclusion in the formal financial market of Ghana and is statistically significant at 1 percent (Table 2). The negative relationship implies that people who perceived that they did not have enough money are less likely to be included in the formal financial market than those who think otherwise. Thus the probability that an individual who perceived that he or she does not have money is included in the formal financial market of Ghana is about 0.62 less than those who perceive otherwise (Table 2). This is particularly so because people involved in the formal financial market of Ghana are perceived to be the rich and thus the formal financial market is seen as the preserve of people in society who are well to do. Besides, inclusion of relations in the formal financial market was found to be positively related to the probability of inclusion of individual adults in the formal financial market and this is statistically significant at 1 percent (Table 2). This means that individual adults who have relatives being included in the formal financial market are more likely to also be included than those who do not have any relations included in the formal financial market. The probability that individual adults who have relatives included in the formal financial market will be included in the formal financial market is about 0.16 higher than those who do not have any relations included in the formal financial market of Ghana (Table 2). This can be attributed to spill-over effects.

4. Conclusion and policy implications

There is low financial inclusion across developing countries, especially those in Sub-Saharan Africa including Ghana. The results show that the formal financial market of Ghana has been able to cover only 40 percent of the population which means an overwhelming 60 percent of the population is still unbanked. In other words, two in five adult individuals are included in the formal financial sector of Ghana with the remaining three in five being excluded. Factors such as age, literacy, wealth class, distance, lack of documentation, lack of trust for formal financial institutions, money poverty and social networks as reflected in family relations are the significant determinants of financial inclusion in Ghana. The implication of this for policy is that there is the need for governments in Western Africa, especially the government of Ghana and its development partners to formulate a holistic financial framework that seeks to mitigate the negative determinants of financial inclusion and sustained the positive ones. This framework should aim at integrating the formal and informal financial markets to build synergy and leverage capacity to be able to bring most of the currently unbanked population into the mainstream financial market. Such a policy framework must be made sustainable by ensuring that it is politically neutral, economically viable, gender sensitive, socially stable and financially feasible.

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Appendix

Table 1: Distribution of the variables

Dependent variable: Inclusion in formal financial market			
Variable	Description	Unit of Measurement	Freq./Mean/Range
Financial Inclusion	Adults with formal accounts, savings and credit	Dummy	Included = 404 Excluded = 596
Independent variables			
Variable	Description	Unit of Measurement	Freq./Mean/Range
X ₁	Gender of respondent	Dummy	Male = 491 Female = 509
X ₂	Age of respondent	Years	Mean = 35.5 Range = 15 - 98
X ₃	Age square: Proxy for old age	Years	Mean = 1496.4 Range = 225 - 9604
X ₄	Literacy level of respondents	Dummy	Literate = 650 Illiterate = 350
X ₅	Wealth class of respondent	Dummy	Poorest 20% = 215 Otherwise = 785
X ₆	Distance to financial institution	Dummy	Far = 151 Otherwise = 849
X ₇	Cost of inclusion	Dummy	Costly = 117 Otherwise = 883
X ₈	Documentation of eligibility	Dummy	Difficult = 137 Otherwise = 863
X ₉	Trust for formal financial institutions by respondents	Dummy	Has trust = 97 Otherwise = 903
X ₁₀	Money to participate in formal financial market by respondent	Dummy	Has money = 495 Otherwise = 505
X ₁₁	Inclusion of relatives in the formal financial market	Dummy	Included = 31 Otherwise = 969

Source: Author's computation based on data from Demirgüç-Kunt and Klapper (2012)

Logit regression results (Table 2)

Logistic regression	Number of obs =	1000
	LR chi2(11) =	935.64
	Prob > chi2 =	0.0000
Log likelihood = -206.77955	Pseudo R2 =	0.6935

participat~n	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
gender	.1956031	.2648301	0.74	0.460	-.3234543	.7146606
age	.2635688	.0448342	5.88	0.000	.1756954	.3514423
agesq	-.0027328	.0005073	-5.39	0.000	-.0037271	-.0017384
education	1.532406	.3094124	4.95	0.000	.9259692	2.138843
wealthclass	-.5674451	.3428176	-1.66	0.098	-1.239355	.104465
distance	-2.988418	1.080061	-2.77	0.006	-5.1053	-.8715367
cost	1.070285	.6709753	1.60	0.111	-.2448022	2.385373
documentat~n	-3.658925	.7461134	-4.90	0.000	-5.121281	-2.19657
trust	-4.759805	.8418237	-5.65	0.000	-6.409749	-3.109861
nomoney	-5.622424	.4505526	-12.48	0.000	-6.505491	-4.739357
familyinfl~e	1.909068	1.046591	1.82	0.068	-.1422121	3.960349
_cons	-4.513616	.9026202	-5.00	0.000	-6.282719	-2.744513

Source: Author's estimations based on data from Demirgüç-Kunt and Klapper (2012)

Marginal effects after logit
 $y = \text{Pr}(\text{financialinclusion})$ (predict)
 = .09203601

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	x
gender*	.0163821	.02271	0.72	0.471	-.028121	.060885		.491
age	.0220252	.00556	3.96	0.000	.011118	.032932		35.5
agesq	-.0002284	.00006	-3.78	0.000	-.000347	-.00011		1496.4
educat~n*	.1116229	.02954	3.78	0.000	.053733	.169513		.65
wealth~s	-.0474188	.02999	-1.58	0.114	-.106194	.011357		.215
distance*	-.1293616	.02741	-4.72	0.000	-.183092	-.075631		.151
cost*	.1247665	.10306	1.21	0.226	-.077231	.326764		.117
docume~n*	-.1390565	.03029	-4.59	0.000	-.198426	-.079687		.137
trust*	-.1371813	.03024	-4.54	0.000	-.196445	-.077917		.097
nomoney*	-.6151745	.05329	-11.54	0.000	-.71962	-.510729		.495
family~e	.159532	.08771	1.82	0.069	-.012374	.331438		.031

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Source: Author's estimations based on data from Demirgüç-Kunt and Klapper (2012)

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