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# Indonesian Muslim Household Financial Inclusion Profile: Evidence from IFLS4 and IFLS5 Panel Data

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# Indonesian Muslim Household Financial Inclusion Profile: Evidence from IFLS4 and IFLS5 Panel Data

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**Abstract**

This research aims to explore and examine empirically Indonesian Muslim financial inclusion profile using panel data. We explore various indicators for example if individual have borrowed money from financial institution, having an account, amount of borrowed money, and amount of money saved in financial services. This research uses IFLS (Indonesian Family Life Survey) fourth wave (2007) and fifth wave (2014) that has wide range information on financial inclusion indicators and other socio-economics variables that are not provided by other almost-similar-type database in Indonesia. We use Ordinary Least Square and Logit estimation to estimate what factors determine the probability of individual to have an access to financial service and the amount of money and individual has on average. The findings suggest that those who have better access to financial services are coming from urban area with better wealth, mostly are male and live in urban area. Banks remain to be a dominant source for Muslim in Indonesia to get a loan. Another determinant factor that increases the possibility for Indonesian to get loan is whether an individual has access to commercial bank like Bank Republik Indonesia (BRI). Baitul Maal WatTamwil (BMT) as one of Islamic microfinance is found to be statistically significant to increase probability of Indonesian Muslim to get an access to loans.

Keywords: Financial Inclusion, Muslim, OLS, Logit, IFLS.

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## 1. Introduction

Growing literatures about the impact of financial system tend to confirm its positive impact both from macroeconomic and microeconomic perspectives. Financial system is hypothesized to have influence to economic growth and is able to reduce inequality and poverty. According to World Bank (2008), a well-functioning financial system can foster growth and reduce poverty. A study from King and Levine (1993) support Schumpter's theory that financial services are important for economic development and technological innovation. Gine and Townsend (2004) find that financial liberalization in Thailand can be associated with substanstial increase in GDP percapita of Thailand during that period.

From microeconomic perspective, better access to financial system can improve living standards. Murdoch (1998) suggests that microfinance has potential impact to reduce vulnerability of poor people but not poverty line. Duy (2012) examines two modes of household access to financial system (individual and group based lending systems) and find that both types of microcredit lending affect the welfare of household in Mekong Delta of Vietnam. Similar finding is emerged in a study from Pitt and Khandker (1998) that the use of credit has positive and sifnificant effect of household's expenditure, household's assets, labor supply, and the likelihood that the children go to school.

Improved financial access also has other potential impact on human capital. Fuwa, et.al. (2005) finds that having an access to credit market boosts the likelihood of children in India to go to school by 60 percent. Tu, et.al. (2015) also finds that in the short term, education expenditure is positively and significantly influence by credit access.

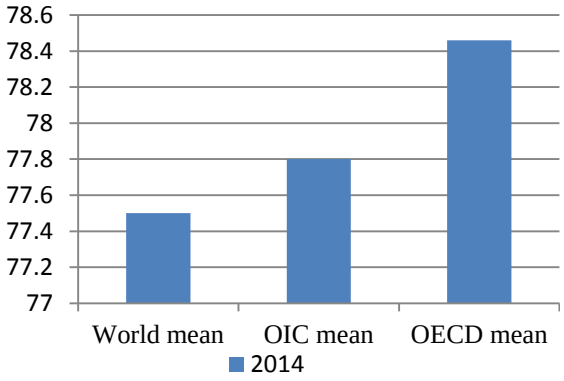
In the contrary, Coleman (1999) finds that micro credit has no significant impact of physical assets, savings, production sales, productiove expenses, labor, of expenditure on health care and education. In business sector, Cotler and Woodwuff (2007) find that microcredit only has positive and significant impact to profit and sales of small retailers but not for large retailers. Similar findings are emerged in Indonesia. Credit that was given to women in Lombok (Indonesia) who lived under poverty line enables their family to move above poverty line.

Although the impact of financial system is a little bit inconclusive, improving access to financial system has become a relevant and crucial goal for economic development. Financial inclusion means making financial services available to all which enables more people to harness its full potential benefit in economy. Globally, financial inclusion has become a core of development strategy that is supported by United Nations and the World Bank Group.

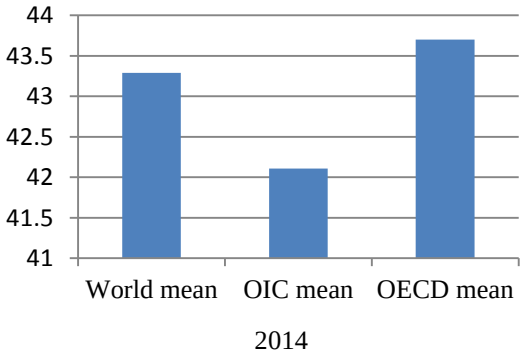
Nevertheless, Islamic world or muslim countries under the Organisation of Islamic Cooperation member (OIC) show less encouraging financial inclusion indicators. Naceur et al (2015) finds that financial indicators in OIC countries are lowers compared to non member OIC countries. For instance, in 2014, OECD countries on average performs better than OIC countreies on borrowing and saving money in financial institutions.

**Figure 1: Comparing OIC and OECD Countries in terms of the Percentage of People who have Deposit and Borrow Money in the Past Year**

(a) Deposit in the Past Year




(b) Borrowed Money in the Past Year




Source: Global Financial Index, calculated

Note: Percentage age 15+

Number of observations:

a. The world, for 2014: 146 countries
b. OIC countries, for 2014: 48 countries
c. OECD countries, for 2014: 28 countries

Unlike other OIC countries, MENA countries actually has better financial deepening as demonstrated by large proportion of private loan to GDP (Pearce, 2011). However, MENA countries are not good in channeling finance to SMEs which may need to be financed most. Table 1. shows Indonesia's performance on financial inclusion compared to some Southeast Asian and emerging economies. For almost all indicators, Indonesia fails to outperform other countries. It implies that financial inclusion in Indonesia is not optimal yet.

The World Bank in 2010 released a report that showed that only 21 percent of Indonesia's population has access to bank and other 2 percent engages in in-formal financial services. In more detailed report, Brodjonegoro (2010) shows that only 41 percent of the population have their own bank account. Further, 68.1 percent of the population save but only 47.6 percent saves at the bank while 18.2 percent prefers to save at informal while the rest of 31.9 percent of the population do not save. In relation to credit, 60 percent of the population borrow but only 17 percent borrows from bank, 34 percent borrows from informal services and 9 percent borrows from semi-informal services.

**Table 1. Financial Inclusive Indicators in Emerging Market Countries**

| Indicators | Indonesia | Malaysia | Thailand | Phillipines | Vietnam | India | Brazil |
|---|---|---|---|---|---|---|---|
| Population (billion) | 242.3 | 28.86 | 69.52 | 94.85 | 87.84 | 1241 | 196.7 |
| Loans per 1000 adults | 293 | 281.7 | 250.8 | 458.7 | n.a | n.a | 241.3 |
| Bank branches per 1000 sq km | 8.2 | 6.3 | 12.1 | 16.3 | 7.8 | 30.4 | 7.9 |
| Bank branches per 1000 adults | 8.6 | 10.5 | 11.3 | 8.1 | 3.6 | 10.6 | 46.1 |
| ATM per 1000 sq km | 16 | 34 | 83.8 | 35.7 | 42.9 | 25.4 | 20.5 |
| ATM per 1000 adults | 16.5 | 56.4 | 78 | 17.7 | 20 | 8.9 | 119.6 |
| Loan / GDP | 31.7 | 104.2 | 95.3 | 21.4 | 135.9 | 51.7 | 40.3 |
| Deposit / GDP | 43.4 | 130.8 | 78.8 | 41.9 | 136.4 | 68.4 | 53.3 |

Souce: Bank Indonesia, 2013

Figure 2 shows a map of the distribution of financial inclusion in Indonesia, it seems that many provinces are in low equilibrium bank level such as Jambi and South Sumatera provinces, five provinces are in underbanked level such as Papua, 4 provinces in the middle equilibrium bank level while the rest such as all provinces in Java and Bali islands are in an overbanked level.

**Figure 1. Distribution Map of Banking Access Level in Indonesia**


Source: Bank Indonesia, 2013

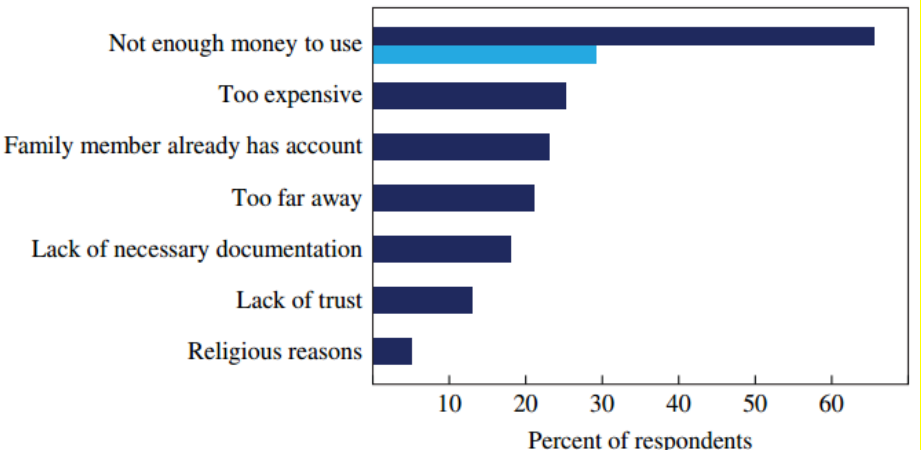
| | Criteria |
|---|---|
| | Underbanked |
| | Low equlibrium banked |
| | Middle equlibrium banked |
| | Overbanked 1 |
| | Overbanked 2 (Jawa, Bali) |
| | Overbanked 3 (DKI Jakarta) |

Why some provinces are in underbanked level? Bank Indonesia (2011) mentions several obstacles that hinder the acceleration of financial inclusion in Indonesia both from supply and demand sides. From supply side, there is a large gap of knowledge about risk and benefit of financial services between bank staff and local people. Transaction cost is considered high for poor people who cannot afford it and thus never use financial services. The needs of local people sometimes are different with what commercial banks offers. Currently, Indonesia focuses to improve financial inclusion for poor people and those who live in rural and remote areas. Likewise supply side, main obstacle from demand side come from lack of knowledge about the benefit and risk of financial system of the prospective customers in rural and remote areas. Culture and socio-economic background of poor people also hinder them to access financial services. Bank Republik Indonesia (BRI) must change its office interior design in rural area into a very simple one as people there resistant to enter due to its cleanliness.

Study conducted by Demirguc-Kunt and Klapper (2013) compares the level of financial inclusion among nations as well as individuals using data from Global FINDEX 2011. They find that only 5

percent of respondents have religious reasons to rationalize their reason to not have an account at a formal financial institution. Larger percentation of such people is found in some other Middle Eastern countries such as the West Bank and the Gaza Strip (Palestine), and in in several countries in South Asia such as Pakistan. In these countries, the development of financial products follow religious belief (i.e., Islamic finance). Therefore, Islamic Financial Institution has big potential to improve financial inclusion in those countries. Other reasons why people do not have bank account are provided in Figure 3.

Figure 3. Reasons Respondents Do Not Have a Bank Account




Source: Demirguc-Kunt dan Klapper (2013)

In contrast, Zulkhibri (2016) states that in Muslim countries, the low number of bank accounts can be caused by lack and uneven access to services and Islamic financial products. He added that the cause of the financial background of the exclusivity of religious reasons reached 9 percent in Muslim countries. He suggested that the development of better targeting of Inclusive Finance in rural and countryside ares should be better conduct with a profit sharing basis. There are four reasons why Islamic financial products based profit sharing tend to be more successful in developing financial inclusion in rural areas than in urban areas. First, the fraudulent practices tend to not be problems in a transparent society such as rural community. Second, rural community tends to be more conservative in religious matters than urban community. Third, the Islamic-based financial institution is a necessary mean to integrate rural community into the national financial

system. And lastly, there is a strong need for Islamic banking to be included to improve financial inclusion as it can be a way to reduce poverty and inequality in rural areas.

In the context of Indonesia, Gitahari, et.al. (2014) conducts a research on factors determinants of household borrowing in Indonesia. Using Susenas data year 2008 and 2012 they find that determinants of household in borrowing monest in financial institutions are household's location, gender (only for non-bank loan), marital status families (not significant for loans from individuals), age, education level, employment status, and poverty status. Apparently, national movement initiated by Bank of Indonesia that aims people to save money in banks does not increase credit acces of poor people to bank.

Cognizant to some studies mentioned above, this paper aims to contribute to financial inclusion literatures in three ways. *Firstly*, this paper will be the first paper that focuses on financial inclusion of Muslim that uses National Sampling. Most studies in this area uses aggregate data such as IMF's Financial Access Survey (FAS) oleh IMF dan Global Financial Inclusion Index (Global Findex. Some other study may use micro data such as Gitaharie et al (2014) who uses Susenas data yet her research does not focus on Muslim's household. Second, this research will use the latest data set from IFLS that will give better understanding on current financial inclusion status. Finally, information from IFLS is more complete rather than information in Susenas and thus it is possible to include some variables like community variables that may have association with financial inclusion.

Therefore, this research attempts to rigorously quantify the determinants of financial inclusion in Indonesia, particularly on Muslim households. We also attempt to examine status of financial institution in Indonesia by using IFLS fourth wave (2007) and fifth wave (2014) and explain the characteristics of the Muslims who do not have access to financial facilities.

## 2. Data and Methodology

### 2.1 Data

This paper uses IFLS fourth wave (2007) and fifth wave (2014). IFLS is a longitudinal survey that has been conducted for five times since 1993. The survey was conducted in 1993, 1997, 2000, 2007 and 2014. The survey contains various information about household and its individual members as well as community information where houshold lives. Information in individual and household data levels cover all socio-economic information, such as education, occupation, religion, health, marriage, active in the community and so fourth. Furthermore, at the community level we can obtain information about the condition of infrastructure, socio-economic conditions, and various social programs in the community including the existence of financial facilities that exist in every village.

In this study, we combine information of individual, household, and community levels. The purpose is to obtain a comprehensive picture of individuals aged 15 and older who has savings or loans and their demographic, socio-economic and community characteristics. According to that, we have 6754 same individuals in both years, 2007 and 2014. Among them, 6,032 people in 2007 and 6046 people in 2014 are Muslims. More detail explanation about our sample can befound in Appendix 1.

### 2.2 Method

Descriptive statistics is used to get first description and to compare average of each variable in each year. For instance, we compare the percentage of individuals who have savings, loans to other people or institution and his/her total loans in both years. The results are tabulated by using STATA 12 and then transferred to the Microsoft Excel 2010.

To check how individual accesses banking, we consider four variables such as a) ownership of bank account, saving, deposit, and stocks, b) nominal amount of saving, deposit and stocks, c) individual's loan in previous year, d) nominal amount of individual's loan in previous year.

For control variables, we combine some variables from individual, household, and community levels. For individual characteristics, we consider age, gender, education level, and marital status as control variables. While for household characteristics, we consider household members, asset ownership, and household's location. Lastly, community characteristic will be represented by the

number of community activities and whether there is a financial institution or not in that area. We thus formulate econometric specifications as follows:

Financial indicator equation:

$$Y_{it} = \beta_0 + \beta_1 Xd_{it} + \beta_0 Xh_{it} + \beta_0 Xc_{it} + \beta_4 Qinc * distance_{it} + a_i + \varepsilon_{it} \quad (1)$$

$$P(Y = 1 \mid X)_{it} = G(\beta_0 + \beta_1 Xd_{it} + \beta_0 Xh_{it} + \beta_0 Xc_{it} + \beta_4 Qinc * distance_{it} + a_i + \varepsilon_{it}) \quad (2)$$

Where Y in the first model are the nominal amount of saving or the nominal amount of loan then in the second model are the probability of an individual to a saving and the probability of an individual to get a loan. Then Xdit are demographic characteristics (education, age, gender, and marital status), Xhit is household characteristics (education level of head household, whether the head household is female, and the number of household's member), Xcit is community characteristics (urban/rural and whether there is a financial institution or not in the area), and Qinc*distanceit are the interaction between income quantile and the availability of bank in their village.

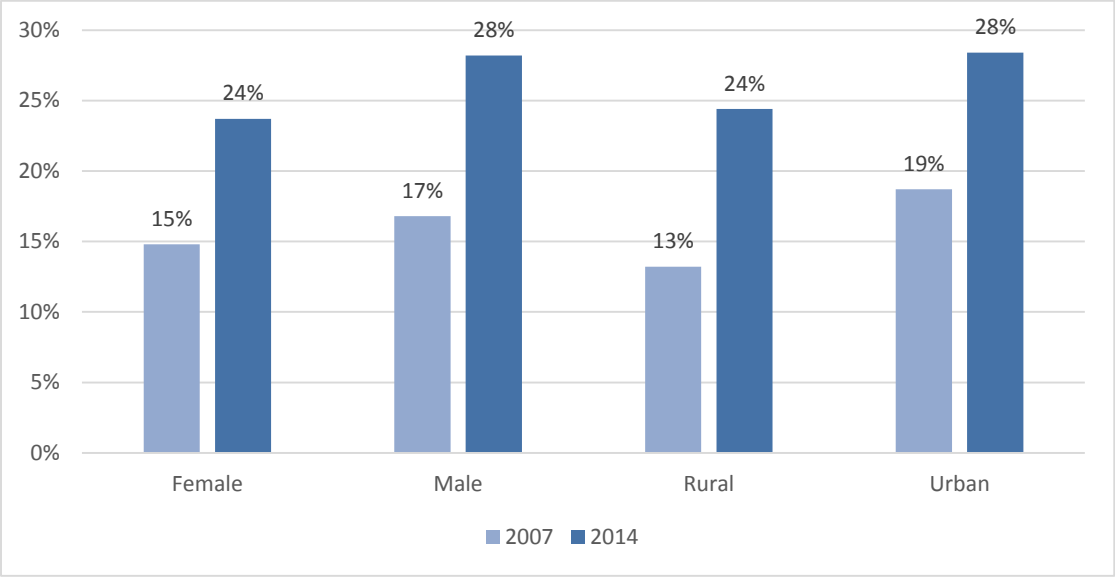
This research applies data panel analysis. In details, it applies Pooled Least Square, Logit Fixed Effect, Logit Random Effect for continues data. While for binary data, we apply Linear Probability Model (LPM), Pooled Fixed Effect dan Pooled Random Effect.

## 3. Result and Analysis

### 3.1 Descriptive Analysis

Before performing regression analysis, it is necessary to look at descriptive statistics that enables us to see common features. As shown in Figure 4, we compare respondent's characteristics who had loans in 2007 and 2014. Overall, there was a substantial increase in the number of borrower in 2014 than that in 2007. In terms of religion, muslims borrowed less money compare to non-muslim yet the difference became relatively smaller in 2014 than that in 2007; the difference was only 3 percent in 2014. The number of muslim borrower is larger for 11percent in 2014 than that in 2007. However, there was no substantial difference between the number of borrower in rural or urban area as well as whether borrower is male or female.

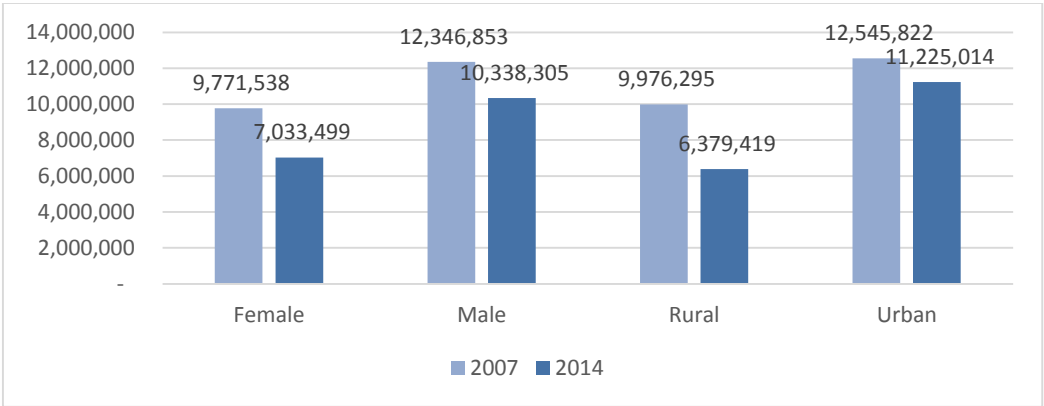
**Figure 4. Percentage of Muslims Indonesian Has Borrowed in the Past Year**




Source: Author Calculation based on IFLS 4 dan IFLS 5 (2007-2014)

The following figure shows the opposite of previous figure. The average amount of loans that were borrowed by people in Indonesia was smaller in 2014 than that in 2007, except for non-muslim category which in average borrowed higher amount of money. The average amount of loan that was borrowed by muslim borrower was higher than that of non-muslim borrower in both years. However, muslim borrower borrowed less amount of money in 2014; the decrease was almost 20 percent. Another substantial decrease happened in rural area which reached 56 percent decrease.

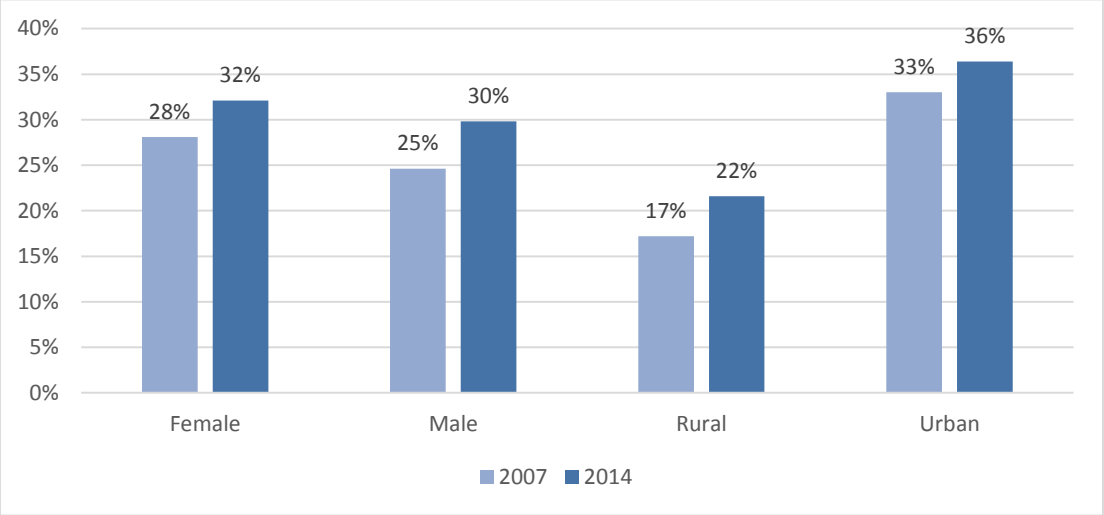
**Figure 4. Average Amount of Loans Held by Indonesian People**




Source: Author Calculation based on IFLS 4 dan IFLS 5 (2007-2014)

Moslem that owns savings and deposits can be divided into two categories; gender and whether moslem lives in urban or rural area. Substantial difference is shown in the later category that more moslem have savings and deposits live in urban area. Intuitively this difference is normal as living in urban area requires people to engange more with financial institution than those who live in rural area.

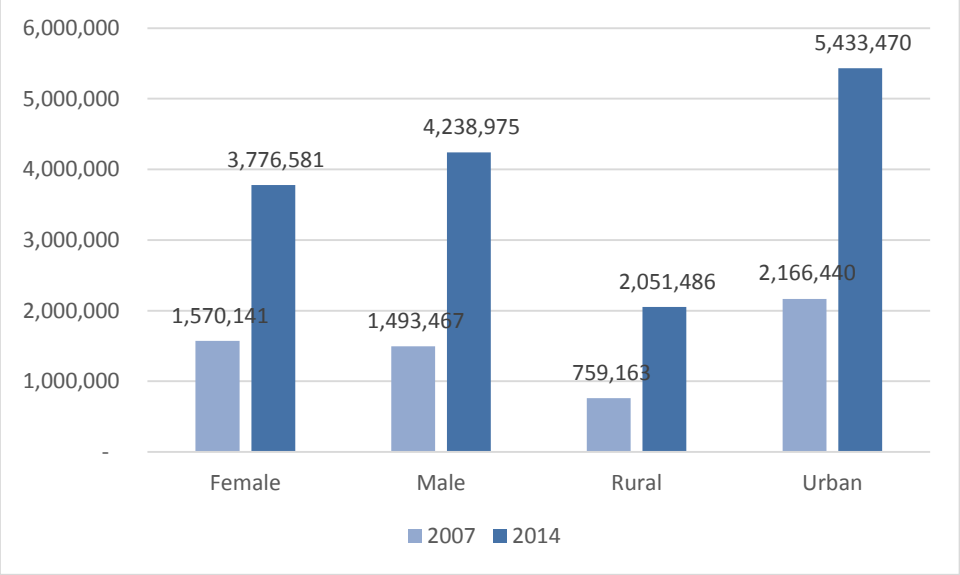
**Figure 5. Percentage of Moslem Indonesia Owns Savings and Deposits**




Source: Author Calculation based on IFLS 4 dan IFLS 5 (2007-2014)

The average amount of savings held by moslem Indonesia is again much higher in urban area than that of muslim who lives in rural area. Higher saving in urban area is due to higher income in urban area than that in rural area. However, there was a considerable increase of average amount of saving if we compare the difference between year 2007 and 2014. The average of savings was increasing considerably higher in the category of urban and rural area from 2007 to 2014. For both areas, the average amount of saving owns by moslem tripled in 2014. Similar pattern also happened if we compare the average of savings owns by moslem female and male.

**Figure 6. Average Number of Savings and Deposits Held Muslim Indonesia**




Source: Author Calculation based on IFLS 4 dan IFLS 5 (2007-2014)

The following table summarizes the source of loans obtained by Muslim Indonesia. In general, most of Muslim Indonesia borrowed money in bank or 72 percent of them had loans to bank in 2007. However, this percentage decresed for 10 percent in 2014 which was compensated by an increase proportion of other formal institution for about 3 percent. This fact is encouraging as it means other formal institution such as BMT is growing and can capture more customers or loans.

**Table 2. Where Loans Obtained by Muslim Indonesia**

| Source of Loan | Frequency | | Percentage | |
|---|---|---|---|---|
| | 2007 | 2014 | 2007 | 2014 |
| Bank | 7,938 | 7,980 | 72.14 | 62.75 |
| Other Formal Institution | 894 | 1,408 | 8.13 | 11.07 |
| Agricultural Bank | 3 | 7 | 0.03 | 0.06 |
| Office/Capital Owner | 292 | 322 | 2.65 | 2.53 |
| Community Organizations (PKK, Arisan, LKMD) | 143 | 219 | 1.3 | 1.72 |
| Loan Shark | 514 | 712 | 4.67 | 5.6 |
| Other | 1,219 | 2,069 | 11.08 | 16.27 |
| Total | 11,003 | 12,717 | 100 | 100 |

Source: Author Calculation based on IFLS 4 dan IFLS 5 (2007-2014)

Based on age, older people borrow less money than younger people. It is reasonable as older people will start to avoid debt due to uncertain income in the future while young people who have more steady income will borrow more (see Appendix 2). Similar pattern is shown in the category of saving; the older people are, the less money they save.

The rising trend would occur in whealth category. That the number of people who have loans in the richer group wealth quintile are larger than the first quintile. It is also common in the number of people who have savings or deposits are in the big quintile, we can say where the richer a person more likely to have savings (See Appendix 3).

### 3.2 Regression Analysis

As explained in the previous part, we have four interest variables. Each interest variable will have three difference types of regression and each type will be distinguished by the type of financial institution that found in their village. A variable of financial institution availability that is approached by the availability of Bank BRI or BMT. We assume that BRI could represent financial facilities since it has branches in almost every district in Indonesia. While BMT can be a representative of Islamic Financial Institution that is established mostly in rural area or countryside. Subsequently the sixth regresions are Pooled Least Square (PLS) regression, Fixed Effect (FE) and Random Effect (RE). In each regression Fixed and Random Effect Effect we do Hausman Test to find the most appropriate model. Our sample is Muslim Indonesia aged 15 and older.

Appendix 4 explains the determinants of bank account ownership. Account ownership can be in the form of saving, deposit, and stock ownership. We conduct PLS, FE, and RE and test the result by using Hausman Test and the results show that Logit with RE is the most appropriate model for us. The findings from Logit with RE suggest us that age and being a male correspond negatively with bank account ownership. Its mean when we are getting older will reduce the interaction with financial inclusion. And men are more lazy to interact with financial inclusion rather than women. Education level, the number of family members, the number of activity in the community, increment on income and wealth will increase the possibility of people to have bank account. This results are not surprising as people with more education level may have more role in community and more income and wealth and thus more engagement with financial institution.Then the result of interaction between financial inclusion and wealth quantile show that being fouth quantile and

having BRI in their village has positive sign. Its mean that rich people who live nearby BRI have possiblity of having saving or deposit bigger than otherwise.

For Appendix 5, we can see determinants of amount of saving which implies how often an individu interacts with bank and how much money that they put on bank. After conducting Hausman Test, the most appropriate model is Pooled RE. The findings suggest that education level has positive correlation with savings increment. It implies that educated people will interact more often with bank. Increment on wealth will also encourage people to interact more often with bank or to save. Living in urban area and the availability of BRI encourage people to save more. Perhaps by living in urban area or having BRI in an area the easiness for people to interact with bank or to save. But having more activities in a community makes people to have less savings. This condition also found for married people, that their saving are smaller than unmarried people. Being employ also has negative effect on amount of savings, because normally their bank account only to recieve their salary. After they got their salary they will spend it.

In Appendix 6. we will see what factors incluence individual to borrow money. In our sample, the number of people who have experience in borrowing money is relatively small, which is only 23.11 percent. After conducting Hausman test, the most appropriate model is the Logit Random Effect. Similar with the first model, age and being male correlate negatively with having loans while education level increases the possibility for people to have loan. This is show that getting older are decreasing their desire to borrowing money. Men also less likely to have loans. Marital status, however, has positive influence on loans. It implies that being married increases the opportunity to borrow money since maybe by being marriage, it is possible to share the risk of lending between marriage partner. Gender and the number of family members have negative effect on loans. The number of community activities, people who live in urban area, BMT and BRI availability and increasing on earnings positively correlate with loans. Similar with this condition having job and income have positive effect of loans. When you are rich and having a job its means easier for you to get loans. However, the most interesting finding from this model is that men ten to borrow less than women.

Our last model is in Appendix 7 which shows determinants of the amount of loans. According to Hausman Test, Pooled Random Effect is the best model. Education level and marital status have positive relation with the amount of loans. It implies that being more educated and being marriage

bank consider the borrowe to have good character and thus bank lends them more money. Increasing on wealth and earnings which implies the availability of borrower to return the money, also have positive effect on loan. Living in urban area lso help individual to get higher loan. Having more activities in society has positive impact on the amount of loans. The interaction between wealth quantile and BMT avalaibility show the possitive sign. Spesially in the bottom and top quantile, that having BMT nearby their neighbourhood will increase their loans. Meanwhile age and sex has negative effect. Its seem that old man has less debt than others.

## 4. Conclusion

This research attempts to rigorously quantify the determinants of financial inclusion in Indonesia, particularly on Muslim households. We also attempt to examine status of financial institution in Indonesia by using IFLS wave 4 (2007) and wave 5 (2014) and explain the characteristics of the Muslims who do not have access to financial facilities.

Our interest variables are a) ownership of bank account, saving, deposit, and stocks, b) nominal amount of saving, deposit and stocks, c) individual's loan in previous year, d) nominal amount of individual's loan in previous year. For control variables, we combine some variables from individual, household, and community levels. For individual characteristics, we consider age, gender, education level, and marital status as control variables. While for household characteristics, we consider household members, asset ownership, and household's location. Lastly, community characteristic will be represented by the number of community activities and whether there is a financial institution or not in that area

From descriptive analysis, we find that there is some change in the number of loans and savings according to some individual characteristics. Some of the changes give positive signals on financial inclusion like there are more people who borrow money to another formal institution eventhough the increasing is small. From regression analysis, some individual characteristics and BRI or BMT availability correspond positively with all four interest variables. Our result that old man are less like dealing with financial inclusion. But a rich people that have a job and great income preferred to deal with banks. The availability of bank in the village would be more profitable for the rich.

Another key limitation of this study is the analysis focuses on of financial inclusion in Indonesia, particularly on Muslim households. We do not study all of the social economic factor that might be

affected. Other possible mechanisms, maybe we need to put some sosio cultural factor that could explain Indonesian financial inclussion,  require further research.

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**Appendix 1. Descriptive Statistics IFLS4 and IFLS5**

| Variable | Observation | Mean/ Percentage | Maximum | Minimum |
|---|---|---|---|---|
| Year of Obesrvation | 13,508 | | | |
| 2007 | 6,754 | 50 | | |
| 2014 | 6,754 | 50 | | |
| Religion | | | | |
| Islam | 12,078 | 89.41 | | |
| Kristen Protestan | 513 | 3.8 | | |
| Kristen Katholik | 231 | 1.71 | | |
| Hindu | 664 | 4.92 | | |
| Budha | 21 | 0.16 | | |
| Konghuchu | 1 | 0.01 | | |
| Age (Year) | 13,508 | 44.20 | 15 | 101 |
| Years of Education (Year) | 13,508 | 8.07 | 0 | 19 |
| Marital Status (=1, Married) | 13,508 | 0.83 | 0 | 1 |
| Sex (=1, Male) | 13,508 | 0.78 | 0 | 1 |
| Household Size | 13,508 | 2.37 | 1 | 14 |
| Number of Community Organization Attended | 13,508 | 2.02 | 0 | 10 |
| Location | | | | |
| Rural | 6,383 | 47.25 | | |
| Urban | 7,125 | 52.75 | | |
| Nominal Wealth Owned (IDR) | 13.508 | 155,000,000 | 0 | 4,310,000,000 |
| Having Saving Account/Reserve/Deposits | 13.508 | | | |
| Yes | 3,677 | 27.22 | | |
| No | 9,831 | 72.78 | | |
| Nominal Saving Account/Reserve/Deposits (IDR) | 13.508 | 3,210,065 | 0 | 1,000,000,000 |
| Total Income in a Year (IDR) | 13.508 | 71,200,000 | 0 | 600,000,000,000 |
| Having Saving a Loan in the Last Year | | | | |
| Yes | 3,122 | 23.11 | | |
| No | 10,386 | 76.89 | | |
| Total Loan Attained | 7901 | 10,900,000 | 0 | 1,000,000,000 |
| Financial Institution Availability (from community level) | | | | |
| BRI Bank | 9,050 | | | |
| Available | 2,006 | 22.17 | | |
| Not Available | 7,044 | 77.83 | | |
| Baitul Maal Wattamwil | 9,050 | | | |
| Available | 671 | 7.41 | | |
| Not Available | 8,379 | 92.59 | | |

Source: Author Calculation based on IFLS 4 dan IFLS 5 (2007-2014)

**Appendix 2. Financial Inclusion by Age Group**

| Age Category | Percentage Ever Borrowing Last Year | | Average Amounts of Total Loans (IDR) | | Percentage Who Have Savings or Deposits | | Average Amounts of Total Savings or Deposits (IDR) | |
|---|---|---|---|---|---|---|---|---|
| | 2007 | 2014 | 2007 | 2014 | 2007 | 2014 | 2007 | 2014 |
| 15 to 34 | 14% | 27% | 9,225,786.00 | 8,205,036.50 | 31% | 35% | 1,307,319.63 | 3,452,727.54 |
| 35 to 44 | 21% | 32% | 13,625,527.00 | 11,940,606.00 | 27% | 33% | 1,973,609.38 | 4,207,440.93 |
| 45 to 54 | 18% | 28% | 12,312,021.00 | 12,097,424.00 | 22% | 28% | 1,662,406.38 | 4,892,128.22 |
| 55 to 64 | 16% | 21% | 13,551,944.00 | 6,322,104.50 | 22% | 25% | 1,519,746.25 | 4,873,378.91 |
| More than 65 | 7% | 12% | 5,416,814.50 | 2,139,107.75 | 15% | 15% | 900,639.63 | 3,399,874.85 |
| Total | 16% | 27% | 11,571,646.00 | 9,325,163.00 | 26% | 31% | 1,521,433.63 | 4,098,988.14 |

**Appendix 3. Financial Inclusion By Group Assets**

| Quantile Based Assets Owned | Percentage Ever Borrowing Last Year | | Average Amounts of Total Loans (IDR) | | Percentage Who Have Savings or Deposits | | Average Amounts of Total Savings or Deposits (IDR) | |
|---|---|---|---|---|---|---|---|---|
| | 2007 | 2014 | 2007 | 2014 | 2007 | 2014 | 2007 | 2014 |
| Quintile 1 | 11% | 23% | 2,838,085.75 | 2,266,759.00 | 18% | 18% | 219,464.06 | 228,720.71 |
| Quintile 2 | 16% | 26% | 4,236,656.50 | 3,223,858.75 | 23% | 27% | 579,320.63 | 1,001,334.90 |
| Quintile 3 | 14% | 27% | 4,921,415.00 | 4,638,982.00 | 17% | 24% | 455,175.53 | 1,111,477.01 |
| Quintile 4 | 18% | 30% | 8,420,348.00 | 10,989,091.00 | 24% | 33% | 841,696.94 | 2,853,862.31 |
| Quintile5 | 22% | 29% | 29,159,066.00 | 25,457,910.00 | 48% | 51% | 5,503,072.50 | 15,274,923.32 |
| Total | 16% | 27% | 11,556,970 | 9,300,252 | 26% | 31% | 15,19,061.875 | 4,093,388.153 |

Source: Author Calculation based on IFLS 4 dan IFLS 5 (2007-2014)

**Appendix 4. Regression Analysis on The Probability of Having Saving or Deposit**

| | (1) LPM | (2) LPM | (3) Fixed Effect | (4) Fixed Effect | (5) Random Effect | (6) Random Effect |
|---|---|---|---|---|---|---|
| Age (Year) | -0.0018*** | -0.0017*** | 0.0110 | 0.0092 | -0.0171*** | -0.0169*** |
| | (0.0005) | (0.0005) | (0.0249) | (0.0249) | (0.0035) | (0.0035) |
| Years of educ | 0.0165*** | 0.0167*** | -0.0553 | -0.0531 | 0.1044*** | 0.1051*** |
| | (0.0015) | (0.0015) | (0.0499) | (0.0500) | (0.0100) | (0.0100) |
| 1 = married | 0.0020 | 0.0016 | 0.3690 | 0.3865 | 0.0446 | 0.0446 |
| | (0.0170) | (0.0170) | (0.2857) | (0.2843) | (0.1256) | (0.1255) |
| 1 = male | -0.1017*** | -0.1019*** | . | . | -0.7029*** | -0.7065*** |
| | (0.0165) | (0.0166) | . | . | (0.1172) | (0.1171) |
| Household size | 0.0037 | 0.0043* | 0.0465 | 0.0469 | 0.0379** | 0.0397** |
| | (0.0025) | (0.0025) | (0.0445) | (0.0445) | (0.0183) | (0.0182) |
| Num. of Community | 0.0130*** | 0.0128*** | 0.0972** | 0.0979** | 0.0933*** | 0.0927*** |
| | (0.0031) | (0.0031) | (0.0388) | (0.0390) | (0.0217) | (0.0217) |
| logwealth | 0.0489*** | 0.0499*** | 0.2619*** | 0.2624*** | 0.3791*** | 0.3838*** |
| | (0.0033) | (0.0033) | (0.0603) | (0.0606) | (0.0315) | (0.0315) |
| logincome | 0.0349*** | 0.0373*** | 0.1215** | 0.1252** | 0.2723*** | 0.2838*** |
| | (0.0040) | (0.0039) | (0.0590) | (0.0579) | (0.0345) | (0.0330) |
| 1= employ | -0.0281 | -0.0274 | -0.0409 | -0.0284 | -0.1838 | -0.1804 |
| | (0.0244) | (0.0244) | (0.2732) | (0.2737) | (0.1653) | (0.1656) |
| 1= urban | 0.0802*** | 0.0814*** | 0.0862 | 0.1130 | 0.5788*** | 0.5842*** |
| | (0.0113) | (0.0109) | (0.2401) | (0.2417) | (0.0806) | (0.0776) |
| q1*BRI | -0.0088 | | -0.3923 | | -0.0798 | |
| | (0.0228) | | (0.4276) | | (0.2322) | |
| q2*BRI | -0.0413** | | -0.1709 | | -0.2083 | |
| | (0.0211) | | (0.2483) | | (0.1576) | |
| q3*BRI | -0.0263 | | -0.1535 | | -0.1228 | |
| | (0.0231) | | (0.2477) | | (0.1477) | |
| q4*BRI | 0.0737*** | | 0.0689 | | 0.2721** | |
| | (0.0242) | | (0.2239) | | (0.1346) | |
| q1*BMT | | -0.0370 | | -0.4506 | | -0.5186 |
| | | (0.0290) | | (0.6331) | | (0.3668) |
| q2*BMT | | -0.0483 | | 0.0695 | | -0.2512 |
| | | (0.0319) | | (0.3258) | | (0.2375) |
| q3*BMT | | -0.0474 | | 0.1523 | | -0.2853 |
| | | (0.0342) | | (0.3833) | | (0.2358) |
| q4*BMT | | 0.0560 | | 0.4138 | | 0.1705 |
| | | (0.0422) | | (0.4025) | | (0.2305) |
| _cons | -1.1939*** | -1.2525*** | | | -12.5468*** | -12.8234*** |
| | (0.0818) | (0.0789) | | | (0.7216) | (0.6991) |
| lnsig2u _cons | | | | | 0.0185 | 0.0139 |
| | | | | | (0.1807) | (0.1811) |
| Rsquare | 0.1477 | 0.1462 | | | | |
| Prob F | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Number of observations | 7214 | 7214 | 1700 | 1700 | 7214 | 7214 |
| Number of groups | 4090 | 4090 | | | | |

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

**Appendix 5. Regression Analysis on The Amount of Having Saving or Deposit**

| | (1) PLS | (2) PLS | (3) Fixed Effect | (4) Fixed Effect | (5) Random Effect | (6) Random Effect |
|---|---|---|---|---|---|---|
| Age (Year) | 0.0000 | -0.0001 | 0.0418 | 0.0404 | 0.0000 | -0.0001 |
| | (0.0037) | (0.0036) | (0.0370) | (0.0375) | (0.0036) | (0.0036) |
| Years of educ | 0.0601*** | 0.0605*** | -0.1888** | -0.1980** | 0.0601*** | 0.0605*** |
| | (0.0098) | (0.0098) | (0.0788) | (0.0787) | (0.0101) | (0.0101) |
| 1 = married | -0.3066** | -0.2969** | -0.2338 | -0.3315 | -0.3066** | -0.2969** |
| | (0.1290) | (0.1300) | (0.3981) | (0.4041) | (0.1343) | (0.1343) |
| 1 = male | -0.1619 | -0.1826 | . | . | -0.1619 | -0.1826 |
| | (0.1172) | (0.1178) | . | . | (0.1208) | (0.1208) |
| Household size | -0.0140 | -0.0164 | 0.0376 | 0.0491 | -0.0140 | -0.0164 |
| | (0.0192) | (0.0193) | (0.0640) | (0.0644) | (0.0195) | (0.0195) |
| Num. of | -0.0508** | -0.0473** | 0.0438 | 0.0481 | -0.0508** | -0.0473** |
| Community | (0.0229) | (0.0233) | (0.0555) | (0.0553) | (0.0223) | (0.0224) |
| Logwealth | 0.5022*** | 0.5073*** | 0.4190*** | 0.4655*** | 0.5022*** | 0.5073*** |
| | (0.0337) | (0.0336) | (0.1003) | (0.0994) | (0.0340) | (0.0340) |
| logincome | 0.3504*** | 0.3502*** | 0.0920 | 0.1141 | 0.3504*** | 0.3502*** |
| | (0.0389) | (0.0363) | (0.0898) | (0.0875) | (0.0375) | (0.0357) |
| 1= employ | -0.4925*** | -0.5157*** | 0.2693 | 0.2724 | -0.4925*** | -0.5157*** |
| | (0.1663) | (0.1659) | (0.3718) | (0.3757) | (0.1639) | (0.1647) |
| 1= urban | 0.2248*** | 0.2742*** | 0.7475* | 0.7485* | 0.2248*** | 0.2742*** |
| | (0.0857) | (0.0825) | (0.4163) | (0.4187) | (0.0857) | (0.0825) |
| q1*BRI | 0.5091* | | 0.4876 | | 0.5091* | |
| | (0.2952) | | (0.7219) | | (0.2808) | |
| q2*BRI | 0.0689 | | 0.4700 | | 0.0689 | |
| | (0.1712) | | (0.4275) | | (0.1798) | |
| q3*BRI | 0.1063 | | 0.6394* | | 0.1063 | |
| | (0.1491) | | (0.3414) | | (0.1544) | |
| q4*BRI | 0.1729 | | 0.5622** | | 0.1729 | |
| | (0.1165) | | (0.2642) | | (0.1217) | |
| q1*BMT | | -0.3984 | | 0.9471 | | -0.3984 |
| | | (0.4622) | | (1.0874) | | (0.5280) |
| q2*BMT | | 0.0621 | | 1.1491 | | 0.0621 |
| | | (0.2376) | | (1.0639) | | (0.2761) |
| q3*BMT | | -0.0200 | | -0.2030 | | -0.0200 |
| | | (0.2392) | | (0.4596) | | (0.2482) |
| q4*BMT | | -0.3567* | | 0.2247 | | -0.3567* |
| | | (0.2131) | | (0.4151) | | (0.2048) |
| _cons | -0.3463 | -0.3790 | 4.2381* | 3.3118 | -0.3463 | -0.3790 |
| | (0.6883) | (0.6513) | (2.3925) | (2.3688) | (0.7125) | (0.6813) |
| Rsquare | 0.3495 | 0.3498 | 0.0215 | 0.0193 | 0.3495 | 0.3498 |
| Prob F | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Number of observations | 1704 | 1704 | 1704 | 1704 | 1704 | 1704 |
| Number of groups | 1394 | 1394 | | | | |

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

**Appendix 6. Regression Analysis on The Probability of Loans Last Year**

| | (1) LPM | (2) LPM | (3) Fixed Effect | (4) Fixed Effect | (5) Random Effect | (6) Random Effect |
|---|---|---|---|---|---|---|
| Age (Year) | -0.0013*** | -0.0001 | 0.0576** | 0.0534** | -0.0100*** | -0.0104*** |
| | (0.0004) | (0.0036) | (0.0243) | (0.0244) | (0.0033) | (0.0033) |
| Years of educ | 0.0092*** | 0.0605*** | 0.0218 | 0.0212 | 0.0601*** | 0.0579*** |
| | (0.0014) | (0.0098) | (0.0452) | (0.0454) | (0.0095) | (0.0094) |
| 1 = married | 0.0712*** | -0.2969** | 0.4470 | 0.5016 | 0.5438*** | 0.5465*** |
| | (0.0157) | (0.1300) | (0.3261) | (0.3303) | (0.1267) | (0.1267) |
| 1 = male | -0.0732*** | -0.1826 | . | . | -0.5024*** | -0.4902*** |
| | (0.0167) | (0.1178) | . | . | (0.1135) | (0.1134) |
| Household size | -0.0086*** | -0.0164 | 0.0055 | 0.0005 | -0.0562*** | -0.0582*** |
| | (0.0026) | (0.0193) | (0.0435) | (0.0434) | (0.0182) | (0.0182) |
| Num. of Community | 0.0280*** | -0.0473** | 0.0869** | 0.0956** | 0.1828*** | 0.1818*** |
| | (0.0032) | (0.0233) | (0.0370) | (0.0373) | (0.0207) | (0.0208) |
| logwealth | 0.0045 | 0.5073*** | 0.0557 | 0.0616 | 0.0226 | 0.0198 |
| | (0.0035) | (0.0336) | (0.0532) | (0.0532) | (0.0262) | (0.0261) |
| logincome | 0.0248*** | 0.3502*** | 0.1629*** | 0.1615*** | 0.1930*** | 0.1759*** |
| | (0.0041) | (0.0363) | (0.0587) | (0.0577) | (0.0324) | (0.0310) |
| 1= employ | 0.0436* | -0.5157*** | 0.7347** | 0.7424** | 0.2879* | 0.3045* |
| | (0.0230) | (0.1659) | (0.3171) | (0.3169) | (0.1731) | (0.1733) |
| 1= urban | 0.0647*** | 0.2742*** | -0.1556 | -0.1488 | 0.4386*** | 0.3893*** |
| | (0.0114) | (0.0825) | (0.2191) | (0.2202) | (0.0767) | (0.0740) |
| q1*BRI | -0.0051 | | 0.0198 | | 0.0069 | |
| | (0.0258) | | (0.3659) | | (0.2089) | |
| q2*BRI | -0.0133 | | -0.2788 | | -0.0443 | |
| | (0.0215) | | (0.2580) | | (0.1463) | |
| q3*BRI | -0.0326 | | -0.1550 | | -0.1984 | |
| | (0.0228) | | (0.2315) | | (0.1452) | |
| q4*BRI | -0.0468** | | -0.2250 | | -0.3217** | |
| | (0.0228) | | (0.2375) | | (0.1379) | |
| q1*BMT | | -0.3984 | | 0.5784 | | 0.5264** |
| | | (0.4622) | | (0.4183) | | (0.2671) |
| q2*BMT | | 0.0621 | | -0.6008 | | -0.1394 |
| | | (0.2376) | | (0.3860) | | (0.2269) |
| q3*BMT | | -0.0200 | | 0.2505 | | 0.1832 |
| | | (0.2392) | | (0.3526) | | (0.2195) |
| q4*BMT | | -0.3567* | | 0.0337 | | 0.4512** |
| | | (0.2131) | | (0.3512) | | (0.2217) |
| _cons | -0.3560*** | -0.3790 | | | -5.7270*** | -5.4169*** |
| | (0.0819) | (0.6513) | | | (0.6273) | (0.6014) |
| lnsig2u _cons | | | | | -0.0350 | -0.0306 |
| | | | | | (0.1800) | (0.1799) |
| Rsquare | 0.0564 | 0.3498 | | | | |
| Prob F | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Number of observations | 7214 | 1704 | 1862 | 1862 | 7214 | 7214 |
| Number of groups | 4090 | 1394 | | | | |

**Appendix 7. Regression Analysis on The Amount of Loan**

| | (1) PLS | (2) PLS | (3) Fixed Effect | (4) Fixed Effect | (5) Random Effect | (6) Random Effect |
|---|---|---|---|---|---|---|
| Age (Year) | 0.0047 | 0.0050 | 0.0316 | 0.0419 | 0.0047 | 0.0050 |
| | (0.0032) | (0.0032) | (0.0309) | (0.0313) | (0.0032) | (0.0033) |
| Years of educ | 0.0802*** | 0.0799*** | -0.0709 | -0.0668 | 0.0802*** | 0.0799*** |
| | (0.0085) | (0.0085) | (0.0811) | (0.0804) | (0.0086) | (0.0086) |
| 1 = married | 0.3864*** | 0.3988*** | 0.3936 | 0.3940 | 0.3864*** | 0.3988*** |
| | (0.1295) | (0.1295) | (0.4053) | (0.3999) | (0.1236) | (0.1238) |
| 1 = male | 0.0539 | 0.0227 | . | . | 0.0539 | 0.0227 |
| | (0.1106) | (0.1107) | . | . | (0.1050) | (0.1048) |
| Household size | 0.0054 | 0.0049 | -0.0048 | 0.0062 | 0.0054 | 0.0049 |
| | (0.0172) | (0.0171) | (0.0541) | (0.0543) | (0.0171) | (0.0169) |
| Num. of | -0.0387** | -0.0351* | -0.0041 | 0.0065 | -0.0387** | -0.0351* |
| Community | (0.0179) | (0.0181) | (0.0452) | (0.0452) | (0.0179) | (0.0180) |
| logwealth | 0.2117*** | 0.2198*** | 0.1117* | 0.1117* | 0.2117*** | 0.2198*** |
| | (0.0241) | (0.0241) | (0.0662) | (0.0666) | (0.0246) | (0.0246) |
| logincome | 0.3904*** | 0.3735*** | 0.0710 | 0.0206 | 0.3904*** | 0.3735*** |
| | (0.0323) | (0.0310) | (0.0716) | (0.0691) | (0.0306) | (0.0297) |
| 1= employ | -0.1787 | -0.1788 | 1.1141*** | 1.2412*** | -0.1787 | -0.1788 |
| | (0.1595) | (0.1618) | (0.3657) | (0.3677) | (0.1553) | (0.1559) |
| 1= urban | -0.0718 | -0.0528 | 0.1373 | 0.1515 | -0.0718 | -0.0528 |
| | (0.0692) | (0.0673) | (0.2980) | (0.2972) | (0.0696) | (0.0674) |
| q1*BRI | 0.3589* | | 0.7349 | | 0.3589* | |
| | (0.1938) | | (0.4696) | | (0.1932) | |
| q2*BRI | 0.1799 | | 0.1849 | | 0.1799 | |
| | (0.1335) | | (0.2724) | | (0.1329) | |
| q3*BRI | -0.3366** | | -0.0220 | | -0.3366** | |
| | (0.1344) | | (0.2876) | | (0.1347) | |
| q4*BRI | 0.1916 | | 0.2648 | | 0.1916 | |
| | (0.1191) | | (0.2497) | | (0.1198) | |
| q1*BMT | | -0.0219 | | -0.3836 | | -0.0219 |
| | | (0.2593) | | (0.4967) | | (0.2480) |
| q2*BMT | | -0.2140 | | 0.0438 | | -0.2140 |
| | | (0.1539) | | (0.3480) | | (0.1941) |
| q3*BMT | | -0.4657*** | | -0.3401 | | -0.4657** |
| | | (0.1703) | | (0.3634) | | (0.1872) |
| q4*BMT | | 0.1786 | | 0.7516** | | 0.1786 |
| | | (0.1836) | | (0.3026) | | (0.1719) |
| _cons | 3.4018*** | 3.5451*** | 9.0862*** | 9.2734*** | 3.4018*** | 3.5451*** |
| | (0.6116) | (0.5925) | (2.0609) | (2.0396) | (0.5842) | (0.5638) |
| Rsquare | 0.3035 | 0.3008 | 0.0003 | 0.0002 | 0.3035 | 0.3008 |
| Prob F | 0.0000 | 0.0000 | 0.0003 | 0.0001 | 0.0000 | 0.0000 |
| Number of observations | 2053 | 2053 | 2053 | 2053 | 2053 | 2053 |
| Number of groups | 1697 | 1697 | | | | |

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$