TALLINN UNIVERSITY OF TECHNOLOGY

School of Business and Governance

Department of International Business Administration

Vladislava Sabanova

NATIONAL CULTURE AND FINANCIAL INCLUSION

Bachelor's thesis

International Business Administration, Finance and Accounting

Supervisor: Pavlo Illiashenko

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I declare that I have compiled the paper independently

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Vladislava Sabanova……

(signature, date)

Student code: 176360TVTB

Student e-mail address: sabanovavlada@yandex.com

Supervisor: Pavlo Illiashenko

The paper conforms to requirements in force

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ABSTRACT

This thesis investigates the association between the dimensions of national culture and several measures of financial inclusion. National culture is represented by four original cultural dimensions developed by Geert Hofstede, such as power distance, individualism versus collectivism, masculinity versus femininity, and uncertainty avoidance. Financial inclusion is proxied by account, mobile money account, debit card, and credit card ownership. Using the 2014 and 2017 waves from the Global Findex database (more than 300,000 observations), the study finds that uncertainty avoidance has a negative association with several measures of financial inclusion, while there is no statistically significant association found for individualism.

Keywords: Financial Inclusion, Culture, Power Distance, Uncertainty Avoidance

INTRODUCTION

Financial inclusion is defined as the ease of access, availability, and usage of the formal financial system by different agents (Sarma, 2008). Despite the general high level of development of the financial system in the world, there are still 1.7 billion people worldwide who do not have access to services by formal financial institutions or a mobile money provider (Demirguc-Kunt, 2018). Researchers all around the globe are trying to investigate the factors influencing financial inclusion. However, the cultural aspect has been overlooked in most of the studies.

This thesis will focus on determining if cultural factors, taken individual and country characteristics, affect financial inclusion. Although the topic of financial inclusion has been of high interest among researchers before, I will contribute by filling the gap on if culture has any effect on the likelihood to be financially included. What is more, I will employ a new database that has not been studied extensively before. To investigate what influence cultural, personal and country factors have on financial inclusion, this study will apply logistic regression analysis.

On the basis of comprehensive review of prior study, I formulate and test the following hypotheses.

H1: Uncertainty avoidance has a negative impact on financial inclusion.

H2: Individualism positively influence financial inclusion.

The data employed in this thesis originates from Global Financial Inclusion (Global Findex) Database 2017 that is collected by Gallup, Inc., in 2017. The survey is a cross-sectional study representing 97% of the global population. The sample size is more than 150,000 adults from more than 140 economies, providing more than 200 indicators on topics such as account ownership, payments, saving, credit, and financial resilience.

The empirical study held in this thesis is represented by the logistic regression analysis, logit binary model, in particular. The dependent variables report if the respondent has an account in the financial institution, a mobile money account, a debit card, and/or a credit card. The independent variables are split into socio-demographic, cultural, and country factors. Socio-demographic

variables will be gender, age, education, income, emergency funds, remittances sent and received, wage payments received, government transfers received, borrowing from family and friends, borrowing from a financial institution, mortgage. Country variables are GDP per capita, rule of law, legal origin, deposit insurance, developed financial market. Additionally, I will control for cultural variables, such as individualism, uncertainty avoidance, masculinity, power distance.

The structure of the thesis is as follows. In the first section, I discuss the theoretical framework required to conduct this study. I will focus on the previous methods to measure financial inclusion, and the determinants that have been observed to influence it. Section 2 presents the data and methodology of the study. In section three I present the empirical findings. In the fourth section, I will discuss the most important findings of this study and its contribution to the existing literature. Additionally, I will formulate further suggestions. Finally, I will end this thesis with a conclusion.

1. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In this section, I build the theoretical basis for the study. First, I review the determinants of financial inclusion. Then, I discuss the concept of national culture and some empirical results that show the importance of it. The final subsection presents the hypotheses.

1.1. Determinants of financial inclusion

In 2014, about 2 billion people worldwide remained financially excluded due to various reasons. By 2017, this number dropped to about 1.7 billion people that still represents around 23% of the global population (Demirguc-Kunt et al., 2015, Demirgüç-Kunt et al., 2018).

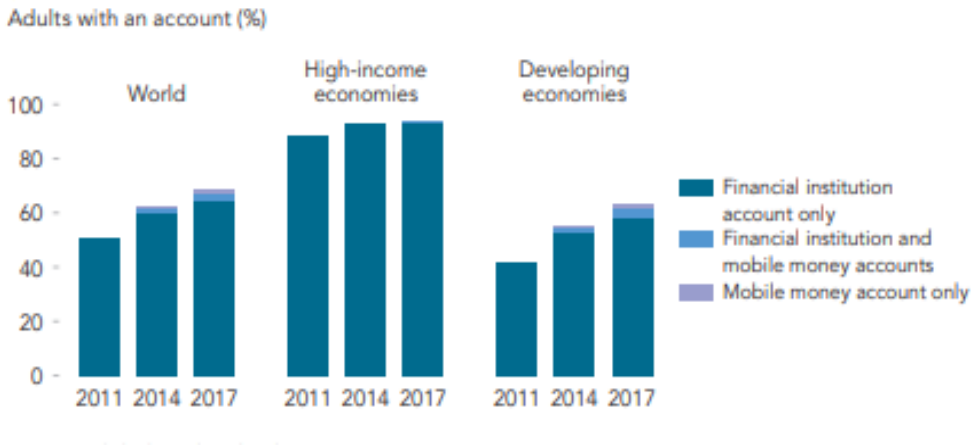

Figure 1. Account ownership by economies through years. Source: Global Findex Database
Note: No data are available for the share of adults with a mobile money account in 2011

Demirgüç-Kunt et al. (2018) showed an increase in account ownership worldwide among adults from 51% in 2011 to 62% in 2014 and further to 62% in 2017 (Figure 1). However, there is still a significant gap in financial inclusion between developing and high-income economies.

Figure 2 below shows a gender gap in account ownership in 2017 that indicates inequality between males and females in terms of access to formal financial services. 72% of males and 62% of

females own an account worldwide. Developing countries show close results to that worldwide, 67% of men while just 59% of women own an account (Demirgüç-Kunt et al., 2018).

Figure 2. Account ownership by gender in 2017
Source: Global Findex Database

Sarma (2012) shows that both individual and country-level determinants of financial inclusion explain the essence of being included in the financial system. Nonetheless, these factors must be considered together, otherwise, separately, they are not able to show the multifaceted character of financial inclusion. The usage of micro-level determinants could provide an inaccurate analysis of the financial inclusion rate in a particular country (Sarma, 2012).

Beck et al (2007) study the supply side of financial inclusion. Their survey investigated the financial system coverage and its factors in almost 100 countries. The indicators were (1) Geographic branch penetration: number of bank branches per 1,000 km^2. (2) Demographic branch penetration: number of bank branches per 100,000 people. (3) Geographic ATM penetration: number of bank ATMs per 1,000 km^2 . (4) Demographic ATM penetration: number of bank ATMs per 100,000 people. The determinants mentioned above were identified to forecast the utilization of the financial services. (Beck et al, 2007)

On the basis of the World Bank Global Findex Database of 2012 across around 100 countries Demirgu¨c,-Kunt et al (2013) conclude that there is a positive relationship between gender and financial inclusion. The research reveals a huge difference between males and females concerning the ownership of account and presence of savings and credits in the formal financial institutions. A negative link was found between the female gender and the financial inclusion. (Demirgu¨c,-

Kunt et al., 2013) Zins and Weill (2016) conducted a study with the usage of the World Bank's Global Findex database for about 40 countries in Africa. The following relations were discovered: female gender, low income, poor education, and younger age, partly, are negatively correlated with financial inclusion, with the stress on being poorer and uneducated. (Zins and Weill, 2016)

Allen et al. (2016) used the Global Findex Database of 2012 for discovering the micro- and country features connected to financial inclusion worldwide. The positive link was revealed between financial inclusion and smaller bank associated costs, closer neighbourship with financial mediators as well as higher empowerment of jural rights and countries with greater political stability. Additionally, lower income, poor education, younger, rural, unemployed, single were found to decrease the likelihood of financial inclusion concerning possession of a formal account. Identical personal traits were connected to the lower chances of formal saving. Lastly, they found that formal borrowing is less likely for younger, poorly educated, low income, and single women. (Allen et al, 2016)

Fungáčová and Weill (2015) utilized the 2011 World Bank Global Findex database to learn more about Chinese financial inclusion and make comparisons with BRICS states. The research figures out that the likelihood of possessing an account and credit in formal institution in China increases for older males with high income and good education. Concerning the obstacles for financial inclusion, a shortage of funds influences poorer population more, paying attention to the fact that there is an account in a financial institution in possession of one of the relatives. At the same time, higher educated population is more worried about the cost of transaction and confidence in the industry of banking. Females tend to have fewer accounts in formal institutions because of documentation shortage or a relative already possessing an account. Moreover, the research shows that there is a positive link between income and education, excluding gender, affects the employment of credit alternatively to formal institutions. Nonetheless, being educated is neutral regarding access to borrowing in formal financial institutions in China. (Fungáčová and Weill, 2015)

Honohan (2008) created his own financial indicator for 160 economies using official data obtained from financial institutions and research on households and combining them into a complex indicator. He analyzed macro-level features that could affect financial access. The study shows a negative link between allowances as a percent of gross national income, age dependency ratio, density of population, and financial access. Meanwhile, there is a positive relationship between

mobile phone subscription and better governmental institutions and financial access. (Honohan, 2008)

Rojas-Suarez (2010) has surveyed Honohan's (2008) financial inclusion indicator to analyze the weight of country-level features in a number of emerging economies. The research demonstrates that the variability of economy, weak rule of law, greater inequality among people by income levels, the backwardness of social environment, and administrative restrictions considerably decrease access to financial services. (Rojas-Suarez, 2010)

General condition of the economy can be estimated by GDP level, macroeconomic policy, rates of interest, and inflation. There is a positive link between beneficial state of economy and financial inclusion. The greater the level of income, the greater the extent of savings that are most probably kept on the financial accounts of the population. (Adusei, 2015)

Kosmidou (2008) showed that growth in GDP leads to greater profitability, thus encouraging financial stability. It is explained through higher GDP improving the overall level of income within the economy, which in turn increases financial inclusion. (Kosmidou, 2008)

Table 1. Summary of prior research in financial inclusion

Determinant	**Impact**	**Prior research**
Age	Mixed	Laukkanen (2016) Akudugu (2013) Schuh and Stavins (2010)
Female Gender	Negative	Ghosh and Vinod (2017) Laukkanen (2016) Yayar and Karaca (2012) Borzekowski et al (2008)
Education	Positive	Zins and Weill (2016) Teo et al (2012) Schuh and Stavins (2010) Abdul-Muhmin and Umar (2007)
Income	Positive	Zins and Weill (2016) Teo et al (2012)Yayar and Karaca (2012) Schuh and Stavins (2010)
GDP per capita	Mixed	Evans and Alenoghena (2017) Zandi et al (2013)

Previous literature traditionally studies demographic determinants like gender, age, levels of education, and income. However, I will also include several proxies of income, such as the ability of coming with emergency funds, remittances sent and remittances received, received wage,

received government transfers, borrowing from financial institutions, and borrowing from family and friends. Additionally, I control for economic variables, such as GDP level per capita, rule of law, type of legal system, deposit insurance, and DMMSI index of developed countries. Moreover, in this study I will add cultural variables presented by four cultural dimensions by Hofstede that are power distance, individualism versus collectivism, masculinity versus femininity, and uncertainty avoidance.

Age

Financial inclusion has a dual relationship with age. Akudugu (2013) found that financial inclusion increases as a person goes from childhood to age of high economic activity. However, after reaching this point, the financial inclusion decreases with every following year. (Akudugu, 2013) Laukkanen (2016) stated that younger people between 18 and 35 are more likely to have a mobile account than those of 36 to 55. (Laukkanen, 2016) Schuh and Stavins (2010) investigated that, with the increase in age, the person is less likely to own a debit card but has a greater likelihood of having a credit card. (Schuh and Stavins, 2010)

Gender

Female gender has a negative impact on financial inclusion. Ghosh and Vinod (2017) found that males are more likely to have an account in the financial institution than females. (Ghosh and Vinod, 2017) Laukkanen (2016) investigated that females are less likely to have a mobile money account than males (Laukkanen, 2016). Men tend more to have a debit and credit cards than women (Borzekowski, et al, 2008; Yayar and Karaca, 2012).

Education

Many researchers consider financial literacy as a more precise determinant of financial inclusion than education in their studies (Grohmann et al, 2018; Kaiser and Menkhoff, 2017; Doi et al, 2014). However, due to the lack of information about financial literacy of the respondents, I use their education levels as a proxy for financial literacy. Studies show that more educated people tend more to have an account in the financial institution, a mobile money account, a debit, and credit card (Zins and Weill, 2016; Teo et al, 2012; Schuh and Stavins, 2010; Abdul-Muhmin and Umar, 2007).

Income

Income is considered to have a positive relationship with financial inclusion. Zins and Weill (2016) found that higher income positively influences having an account in the financial institution (Zins and Weill, 2016). More educated people are more likely to employ mobile banking (Teo et al, 2012; Quazi and Talukder, 2011). Schuh and Stavins (2010) observed that higher income increases the likelihood of having a debit card (Schuh and Stavins, 2010). Yayar and Karaca. (2012) stated that an increase in income leads to a higher likelihood of credit card ownership (Yayar and Karaca, 2012).

GDP per capita

Previous literature finds a positive relationship between GDP per capita and financial inclusion (Evans and Alenoghena, 2017). Zandi et al (2013) found that higher GDP leads to a higher likelihood of debit and credit card ownership (Zandi et al, 2013).

1.2. National culture

National culture is defined as "the collective programming of the mind' that differentiates the members of various human categories from one another" (Hofstede et al., 2010). Culture consists of specific values that form behavior and the individual's world perception (Hofstede and Bond, 1988). While there are several popular conceptual frameworks used to understand the national culture, cultural dimensions developed by Hofstede (1980) are the most popular in finance.

The original four cultural dimensions formulated by Hofstede (1980) are the following.

- Uncertainty avoidance (low versus high). The degree to which a nation perceives uncertain and ambiguous circumstances in life and makes attempts to avoid these circumstances.
- Individualism versus Collectivism. The degree to which individuals are meant by the society to care of themselves and keep emotional independence from others.
- Masculinity versus Femininity. The degree to which values are shifted either to more assertive, tough and competitive (masculine) or nurturing and modest (feminine).
- Power distance (low versus high). The degree to which individuals, who lack power within communities, admit and anticipate the power to be allocated unevenly.

In terms of national culture, Israel is known as one of the countries with the lowest power distance (13 points), whereas Malaysia is known to be one of the countries with the highest power distance

(100 points). Indonesia is one of the most collectivistic countries with a score of 14, meanwhile, the USA is one of the most individualistic countries with a score of 91. Sweden is known as one of the countries with the highest femininity level (5 points), whereas Japan is considered to be one of the countries with the highest masculinity level (95 points). Singapore is seen as one of the countries with the lowest level of uncertainty avoidance (8 points), meanwhile, Greece is known to be one of the countries with the highest level of uncertainty avoidance (100 points).

Since the early 2000s, scholars (re)discovered national culture as an important determinant of national, corporate, and individual-level outcomes in finance and economics. For instance, Guiso et al. (2006) and Gorodnichenko and Roland (2017) demonstrate that national culture can influence economic development and growth, while Aggarwal and Goodell (2014) and Eun et al. (2015) provide evidence that national culture can influence both development and functioning of financial markets. The largest number of studies link cultural dimensions and corporate outcomes. For example, national culture affects capital structure (Chui et al., 2002), dividend policy (Shao et al., 2010), and risk-taking (Illiashenko and Laidroo, 2020). Finally, national culture is associated with a wide range of individual-level outcomes related to financial decisions such as risk attitudes (Illiashenko, 2019; Rieger et al., 2015), consumer behavior (De Mooij, 2019), and service quality expectations, in particular, in the banking sector (Dash et al., 2009).

1.3. Hypotheses development

My study aims to determine if cultural factors influence financial inclusion. The hypotheses are formulated based on previous literature and common sense. Earlier research studied the impact of age, gender, income, education, and GDP per capita. However, this thesis will study these factors on a new, world representing database. Several researches have determined relationship between culture and financial behaviors. Nonetheless, to my knowledge, there is no prior research on a global scale concerning the relationship between national culture and financial inclusion.

Individualism is expected to show a positive relationship with the financial inclusion. For this assumption I refer to the "tough guy" hypothesis that implies that people from countries with higher individualism have more overconfidence and, thus, are more willing to take risks (Li et al., 2013; Ashraf et al., 2016). Under the risks I mean saving money on the accounts or keeping a debit

card instead of storing money "under the mattress" or having a credit card from formal institutions instead of borrowing from relatives or friends, who are believed not to mistreat.

Uncertainty avoidance is expected to show a negative relationship with the financial inclusion. The avoidance of uncertainty is not equal to the avoidance of risk (Hofstede, 1980). Based on the warning mentioned above, I refer to individuals feeling ambiguous about the safety of their money on the accounts or debit card, rather than habitually storing cash, and about having deals with borrowing formally than from someone familiar, like family or friends.

Within this thesis, I formulate hypotheses only for the two most researched dimensions. However, as culture is a multifaceted phenomenon, four typical cultural dimensions are employed into the regression models.

On the basis of comprehensive review of prior study, I formulate and test the following hypotheses.

H1: Uncertainty avoidance has a negative impact on financial inclusion.

H2: Individualism positively influence financial inclusion.

2. DATA AND METHODOLOGY

2.1. Data

Data on Global Financial Inclusion (Global Findex) is collected by the World Bank in collaboration with Gallup, Inc. It is a cross-sectional study on households worldwide. The research was conducted in 2011, 2014 and 2017. The research studies how people globally save, borrow, make payments and manage risk. What is more, the 2017 wave has the data on the use of financial technology, including the use of mobile phones and the internet to conduct financial transactions

The data in each wave has about 150,000 observations from more than 140 economies that represent about 97 percent of the world's population. Each country sample is representative of the target population which is the entire civilian, noninstitutionalized population age 15 and above.

This thesis uses the data only from 2014 and 2017 waves as the 2011 wave lacks information on mobile money account and several independent variables. The original Findex data was cleaned and recoded in R while statistical analysis was conducted using Gretl.[1]

2.2. Measures of financial inclusion

In this study, I will focus on four dependent variables that proxy different depth of financial inclusion, from having a general of mobile account to having a debit or credit card.

First is *account_fininst* that provides evidence if the respondent, personally or together with someone else, has an account at a bank or another type of financial institution, such as a credit union, microfinance institution, cooperative, or the post office; has a debit card connected to an account at a financial institution with their name on it; received wages, government transfers,

[1] The replication R script can be found here: https://bit.ly/2T24bxC.

public sector pension, or payments for agricultural products directly into an account at a financial institution in the past year; or personally paid utility bills or school fees from an account at a financial institution in the past year. Second is *account mobile* which shows the percentage of the population having a mobile money account. Third is *debit_card* that shows the percentage of respondents who own a debit card. Fourth is *credit_card* that reports about the percentage of respondents who own a credit card.

2.3. Individual-level controls

Gender variable *female* has a mean of 0.54 and median of 1. This means that the number of female and male respondents is almost equal, with insignificant predominance of females. Age mean is 41.4 and median is 39. This means that most of the respondents are working population and that the study demonstrates the opinions of several generations on financial inclusion.

In this study, education is presented as a dummy variable. The mean is 0.34 for those who completed primary or less (*Deducation_1*), 0.51 for those who completed secondary (*Deducation_2*), and 0.16 for those who completed tertiary or more (*Deducation_3*). Median is 0 for those who completed primary and less and for those who completed tertiary or more, and 1 for those who completed secondary. This means that the half of population has at least secondary education, followed by primary and lower, and by tertiary and higher education, respectively.

Income is also shown as a dummy variable. The mean is 0.17 for the lowest 20% quantile (*Dincome_1*), 0.18 for the second 20% quantile (*Dincome_2*), 0.19 for the third 20% quantile (*Dincome_3*), 0.21 for the fourth 20% quantile (*Dincome_4*), and 0.25 for the highest 20% quantile (*Dincome_5*). Median is 0 for all the levels of income. This means that a quarter of the population identify themselves as rich. This is followed by 21% of close to rich, 19% of the middle class, and 17% of poor.

Several proxies of income are used in this study. Variable *emerg_funds* shows if the respondent is able to come up with the emergency funds within the next month. Variables *remittances_send* and *remittances_received* report if the respondent sent or received domestic remittances in the past 12 months respectively. *Received_wage* shows if the respondent received wage payments in the last 12 month while *received_govttransfer* reports same for received government transfers.

Variable *emerg_funds* shows if the respondent can come up with the emergency funds within the following month. The mean is 0.60 and median is 1, implying that most of the population can find money for emergencies. Variables *remittances_send* and *remittances_received* report if the respondent has sent or received domestic remittances in the past 12 months, respectively. The mean is 0.19 for remittances sent and 0.23 for the remittances received. The median is 0 for both variables. This means that only one-fifth of the population sends money home, whereas slightly more respondents, 23%, receive domestic remittances. Variables *received_wage* and *received_gottranfer* show if the respondent received wage payments and government transfers in the past 12 months, respectively. The mean is 0.35 for receiving wage payments and 0.15 for receiving government transfers. The median is 0 for both variables. This indicates that 35% of the population receive wage payments in the past 12 months and only 15% of respondents received financial support from the government during the last year.

Variables *borrowed_famfr* and *borrowed_fininst* indicate if the individual borrowed money from family and friends or from financial institution in the past 12 months, respectively. The median is 0 for both variables. The mean is 0.12 for borrowing from family and friends and 0.23 for borrowing from financial institution. This means that people on average tend to borrow from close people rather than from banks. The variable "mortgage" indicates if the individual has a mortgage. The mean is 0.12. The median is 0. It implies that on average only 12% borrow money for the mortgage globally.

2.4. National culture and country-level controls

Additionally, in my study, I control for the cultural aspect of the nations. For this reason I address 4 types of Hofstede's cultural dimensions which are individualism versus collectivism, uncertainty avoidance, masculinity versus femininity, and power distance (Hofstede, 1983). Each dimension is indexed from 0 to 100. The mean is 65.42 for power distance, 38.61 for individualism, 48.88 for masculinity, and 64.53 for uncertainty avoidance. The median is 70 for power distance, 30 for individualism, 48 for masculinity, and 65 for uncertainty avoidance. This implies that most countries distribute power equally in society, that around 40% of all countries have personal independence as a valuable phenomenon, that around half of all nations appreciate tough and assertive behavior, and that almost 65% of all population feel uncomfortable with ambiguous situations.

Table 2. Descriptive statistics

Variables	Mean	Median	S.D.	Min	Max
account_fininst	0.55	1	0.50	0	1
account_mobile	0.11	0	0.31	0	1
debit_card	0.41	0	0.49	0	1
credit_card	0.19	0	0.40	0	1
Female	0.54	1	0.50	0	1
Age	41.40	39	17.67	15	99
Dummy education					
Deducation_1	0.34	0	0.47	0	1
Deducation_2	0.51	1	0.50	0	1
Deducation_3	0.16	0	0.36	0	1
Dummy income					
Dincome_1	0.17	0	0.37	0	1
Dincome_2	0.18	0	0.38	0	1
Dincome_3	0.19	0	0.39	0	1
Dincome_4	0.21	0	0.41	0	1
Dincome_5	0.25	0	0.43	0	1
emerg_funds	0.60	1	0.49	0	1
remittances_send	0.19	0	0.39	0	1
remittances_received	0.23	0	0.42	0	1
received_wage	0.35	0	0.48	0	1
received_govttransfer	0.15	0	0.35	0	1
borrowed_fininst	0.12	0	0.32	0	1
borrowed_famfr	0.23	0	0.42	0	1
mortgage	0.12	0	0.32	0	1
GDP	9.30	9.45	1.13	6.53	11.89
Ruleoflaw	0.61	0.58	0.20	0.08	1
legal	0.26	0	0.44	0	1
depInsurance	0.75	1	0.43	0	1
DMMSCI	0.15	0	0.36	0	1
PDI	65.42	70	20.35	11	100
IND	38.61	30	21.71	6	91
MAS	48.88	48	17.80	5	100
UAI	64.53	65	22.11	8	100

Table of variables and their definitions are in Appendix 1.

Further I control for the country variables to examine if the effect of culture remains or it is the impact of country-level factors. The following set of variables regards the health of the economy and the credibility of major government institutions. These include gross domestic product (GDP)

level that is smoothed by taking the natural logarithm from GDP per capita. Rule of law (*ruleoflaw*) shows the extent to which agents have confidence in and abide by the rules of society. Population feels more confident about their private property, including money on the account, if the economic agents are judicially secure (Haggard and Tiede, 2011). The literature distinguishes four main types of legal origins: English, French, German, Nordic (La Porta et al., 1999). Djankov et al. found a positive link between the amount of private credit and English, German, and Nordic legal origins (Djankov et al., 2007). In this study, variable "legal" reports if the country has British legal origin. Next, I control for deposit insurance (*depInsurance*) that tells if the country provides insurance for its nation's deposits, which serves as an additional security for private investors. Finally, I pay attention to the fact if the country is considered to be classified as "Developed market" by MSCI that should also provide a positive correlation with having an account.

GDP variable shows a natural logarithm of GDP per capita, controlling for constant 2011 international USD. The mean is 9.30 and median is 9.45. This indicates that most of the respondents live in countries with relatively high GDP per capita.

Variable *ruleoflaw* shows the extent to which agents have confidence in and abide by the rules of society. The mean is 0.61 and median is 0.58. This means that most of the countries have a relatively strong rule of law. Variable *legal* addresses to the British type of legal systems used in the country. The mean is 0.26 and median is 0. This shows that only 26% of all countries implement British legal system. Variable *depInsurance* reports if the government provides insurance for the deposits. The mean is 0.75 and median 1. This means that the majority of countries implement deposit insurance. Variable *DMMSCI* shows if the country is classified into category Developed Market by MMSCI. The mean is 0.15 and median is 0. This implies that only 15% of all countries are considered to be developed.

2.3. Regression specification

The cross-sectional study analyzes data at one point in time. The regression analysis of cross-sectional data provides with the determinants causing financial inclusion through testing the relationship between dependent and independent variables.

Operating with mostly binary variables has resulted in using the logit binary model as the econometric regression model. Consequently, in contrast to time-series analysis, one cannot provide control for trends in an outcome as well as there is a difficulty in concluding the relationship between factor and outcome over time. Thus, only the associative link, not a causal relationship, can be concluded from the cross-sectional study (Sedgwick, 2014).

In this study, I have formed twelve models, three models for each of the dependent variables. These eight models demonstrate the regression analysis results. Among the dependent variables, there is a possession of an account in the financial institution, possession of a mobile money account, possession of a debit and/or a credit card. As financial inclusion is a broad phenomenon, it is wise to examine the access to several financial services, thus, four dependent variables are considered to be enough for the understanding of this aspect.

All the independent variables listed above are split into three categories: individual controls, country controls, and national culture. The first category includes age, gender, levels of education and income, the ability of coming up with emergency funds, remittances sent and received, received wage and government transfers, mortgage, borrowing from family and friends, borrowing from financial institution. Country controls include GDP per capita, type of legal system, rule of law, deposit insurance, DMMSCI index. National culture controls include power distance, individualism, masculinity, uncertainty avoidance scores.

Thus, for the ease of interpretation, the logistic regression model takes the following equation:

$$Fin.inclusion = \beta 1 Indiv.controls + \beta 2 Country\ controls + \alpha 3 National\ culture \quad (1)$$

where

$\beta 1$— vector of all coefficients included in Individual controls

$\beta 2$— vector of all coefficients included in Country-level controls

$\beta 3$— vector of all coefficients included in National culture controls

3. EMPIRICAL RESULTS

3.1. Account at financial institution

Table 3 reports the results of logit regression with a binary dependent variable *account_fininst*.

Most individual-level variables are statistically significant at 1% in all models (Models 1.1-1.3). Only *female* and *remittances_received* are not statistically significant in Models without the main country-level controls. However, both are statistically significant at 5% in the Model 1.3. The regression indicates that females, taken economic and cultural variables, are less likely to have an account in the financial institution than male by 11%. This outcome reflects the earlier research findings (Demirguc-Kunt et al., 2015; Ghosh and Vinod, 2017). Age has a positive link with the likelihood of having an account in the financial institution. The positive coefficient demonstrates that the increase in age leads to an increase in the likelihood of having an account in the financial institution by roughly 2% for each next year of life. This indicates that older people are more likely to have a financial account than younger people are. There is similar evidence in the previous research stating that an increase in age makes it more likely for a person to be financially included.

The regression shows that people with secondary and, especially, tertiary education are more likely to have an account in the financial institution. Having secondary education increases the likelihood to have a financial account by 91%, whereas having tertiary education leads to a 324% increase in likelihood to own an account in the financial institution in comparison to having a primary education. These results agree with previous studies that people that are more literate are more likely to have an account in the financial institution (Akudugu, 2013; Zins and Weill, 2016).

The results indicate that higher income leads to a higher likelihood of having an account in the financial institution. This is true for both measures of income, four dummy variables reflecting the quantiles in income distribution (*Dincome_2* to *Dincome_5*) and for *emergency_funds*, a possibility to come up with funds to cover an emergency need. The higher income is associated with higher

likelihood of having an account. The increase in likelihood to own a formal account is 13%, 25%, 45%, 100% for the second, third, fourth, and fifth 20% quantiles respectively in comparison to the first 20% quantile of income. Furthermore, having a possibility to come with funds additionaly increase the likelihood of having an account by 87%. These finding support previous findings in the domain of financial inclusion (Zins and Weill, 2016; Akudugu, 2013).

Table 3. Determinants of possession of an account in the financial institution

Variables	**Model 1.1**			**Model 1.2**			**Model 1.3**		
	Odds r.	St.Error		Odds r.	St.Error		Odds r.	St.Error	
Individual controls									
Female	0.99	(0.00)		0.94	(-0.04)		0.89	(-0.04)	**
Age	1.03	(0.00)	***	1.02	(0.00)	***	1.02	(0.00)	***
Deducation_2	2.55	(-0.12)	***	2.50	(-0.11)	***	1.91	(-0.08)	***
Deducation_3	5.76	(-0.15)	***	6.25	(0.14)	***	4.24	(-0.11)	***
Dincome_2	1.08	(-0.02)	***	1.09	(0.03)	***	1.13	(-0.03)	***
Dincome_3	1.16	(-0.03)	***	1.16	(0.03)	***	1.25	(-0.03)	***
Dincome_4	1.27	(-0.04)	***	1.29	(0.04)	***	1.45	(-0.04)	***
Dincome_5	1.59	(-0.05)	***	1.64	(0.06)	***	2.00	(-0.05)	***
emerg_funds	1.68	(-0.06)	***	1.83	(0.07)	***	1.87	(-0.06)	***
remittances_send	1.73	(-0.06)	***	1.76	(0.07)	***	1.93	(-0.06)	***
remittances_received	0.99	(-0.05)		1.05	(0.07)		1.13	(-0.06)	**
received_wage	3.47	(-0.07)	***	3.49	(0.08)	***	3.15	(-0.07)	***
received_govttransfer	3.47	(-0.09)	***	3.37	(0.11)	***	2.92	(-0.09)	***
National culture									
PDI				1.00	(0.01)		1.00	(-0.01)	
IND				1.02	(0.01)	**	1.00	(-0.01)	
MAS				1.00	(0.01)		0.99	(-0.01)	
UAI				0.99	(0.01)		0.99	(-0.01)	*
Country controls									
GDP							2.53	(-0.16)	***
Ruleoflaw							2.48	(-0.70)	
Legal							1.85	(-0.28)	**
depInsurance							1.16	(-0.27)	
DMMSCI							1.04	(-0.52)	
Other									
Dyear_2017	1.26	(-0.07)	***	1.19	(0.11)		1.19	(-0.09)	*
const		(-0.22)	***		(-0.82)	***		(-1.45)	***
N	225,276			136,533			133,090		
McFadden R2	20%			22%			26%		

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Cluster robust standard errors.

The coefficient estimates for both *remittances_sent* and *remittances_received* are statistically significant and positive. People who send domestic remittances are 93% more likely to have an

account while people who receive remittances are 13% more likely to have an account. Both results are in line with previous literature. In the first instance, a person working in another country is more likely to have a formal account to transfer money home. When it comes to remittances received a person, receiving money from other countries is more likely to have an account for money transfer and for a likely subsequent deposit (Toxopeus; Lensink, 2007). The difference in the magnitude of the coefficients probably highlights the difference in unaccounted difference in income between a person sending and a person receiving remittances.

Both *received_wage* and *received_govttransfer* have a strong positive effect on having a formal account. Both variables can be seen as yet another proxies of income, however, they also can be viewed as a proxy of participation in the formal economy. The fact that the coefficient estimates for both variables are of about the same magnitude suggest that these variables are more likely to proxy participation in formal economy than income. It is likely that people who report receiving wage are more likely to formally employed and receiving the wage to their bank account.
Likewise, it is likely that governments pay transfers officially through formal accounts.

GDP per capita and British legal origin are the only country-level predictors of the likelihood of having an account with financial institution. People in countries with British legal tradition have on average about 85% greater likelihood of having an account. Both resu;lts are in line with the previous literature (Evans and Alenoghena, 2017; Evans, 2016; Allen et al, 2016; Ardic et al., 2011). The results also indicate that controlling for an extensive list of factors, a person in 2017 had an almost 20% greater likelihood of having an account with financial institution than in 2014.

Finally, among variables that capture the dimensions of national culture only the coefficient for UAI uncertainty avoidance is statistically significant at 10% in the full model (Model 1.3). Results suggest that UAI has a negative association with financial inclusion when controlling for a full set of country-level variables. In respect to the magnitude of the association, increase in *UAI* leads to a 1% decrease in the likelihood of having an account for each next point of the index. This means that the lower the uncertainty avoidance index for the country, the higher the likelihood of having a formal account. For instance, the difference in UAI scores between Singapore (8) and Greece (100) is 92 points. This means that controlling for both individual-level and country-level characteristics, because of the difference in uncertainty avoidance, people from Singapore are almost two times likely on average to have a formal account than people in Greece.

3.2. Mobile money account

Table 4 reports the results of logit regression with a binary dependent variable *account_mobile*. In the following section, I mainly discuss the differences in predictors of financial inclusion when it is measured with having a mobile account in contrast to results reported in the previous section (when financial inclusion is proxied with the ownership of an account in financial institution).

The main difference in the domain of individual-level predictors between Models 1.3 and 2.3 is the association with age. The regression shows that age has a negative effect on mobile money account possession and makes it less likely by 2% for each next year. This supports earlier findings that older people are less likely to have a mobile account (Sulaiman et al, 2007; Laukkanen, 2016).

Other results are in line with the results for predictors of formal account ownership. The results are also in line with the previous literature focused on the ownership of mobile accounts: education (Teo, et al, 2012; Quazi and Talukder, 2011); income (Sulaiman et al, 2007; Teo et al, 2012); remittances sent and received (World Bank, 2008; GSM Association, 2009; CGAP, 2009); received wage (Fall et al, 2015); received government transfers (Kendall et al, 2011).

Within the set of country-level predictors, GDP is found to have a negative association with the likelihood of having a mobile money account. This result is expected as mainly underdeveloped and developing countries with low GDP per capita tend to use mobile banking more often than developed countries because of relatively low prices for account maintenance.

Interestingly, neither uncertainty avoidance nor individualism are statistically significant predictors of mobile money account ownership when controlling for the set of country-level predictors of financial inclusion. Instead, *PDI* is statistically significant at 10% and has a negative association with mobile account ownership. Each one-point increase on PDI score decreases the likelihood of having this type of account by 3%. One possible explanation is that countries where mobile money accounts are popular have rather similar levels of uncertainty avoidance and individualism and differ between each other mainly in the cultural dimension of power distance.

Table 4. Determinants of possession of a mobile money account

	Model 2.1		Model 2.2		Model 2.3	
Variables	Odds r.	St.Errors	Odds r.	St.Errors	Odds r.	St.Errors
Individual Controls						
female	0.79	(0.05) ***	0.76	(0.00) ***	0.83	(0.07) ***
age	0.98	(0.00) ***	0.97	(0.15)	0.98	(0.00) ***
Deducation_2	1.17	(0.12)	1.21	(0.22)	1.67	(0.10) ***
Deducation_3	1.14	(0.15)	1.40	(0.06) *	2.51	(0.14) ***
Dincome_2	1.16	(0.05) ***	1.10	(0.06) ***	1.09	(0.06)
Dincome_3	1.29	(0.05) ***	1.27	(0.09) ***	1.23	(0.06) ***
Dincome_4	1.40	(0.07) ***	1.37	(0.13) ***	1.27	(0.09) ***
Dincome_5	1.76	(0.09) ***	1.71	(0.10) *	1.49	(0.11) ***
emerg_funds	1.14	(0.06) **	1.19	(0.10) ***	1.27	(0.08) ***
remittances_send	3.50	(0.08) ***	3.28	(0.09) ***	2.85	(0.08) ***
remittances_received	3.07	(0.06) ***	2.98	(0.09) ***	2.65	(0.07) ***
received_wage	1.48	(0.06) ***	1.52	(0.14) **	1.90	(0.07) ***
received_govttransfer	1.38	(0.10) ***	1.39	(0.01) ***	1.76	(0.11) ***
National Culture						
PDI			0.97	(0.01) ***	0.97	(0.02) *
IND			0.98	(0.01) *	0.98	(0.02)
MAS			0.99	(0.02)	1.00	(0.02)
UAI			0.98	(0.01) **	1.00	(0.01)
Country controls						
GDP					0.51	(0.23) ***
ruleoflaw					1.47	(1.23)
legal					3.48	(0.50) **
depInsurance					1.82	(0.59)
DMMSCI					1.35	(0.90)
Other						
Dyear_2017	2.46	(0.15) ***	2.77	(0.07) ***	2.96	(0.14) ***
const		(0.24) ***		(1.33)		(2.26)
N	146,344		87,338		86,309	
McFadden R2	20%		23%		28%	

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Cluster robust standard errors.

3.3. Debit card

Table 5 reports the results of logit regression with a binary dependent variable *debit_card*. In the following section, I mainly discuss the differences in predictors of financial inclusion when it is measured with having a debit card in contrast to results reported in Section 3.1 (when financial inclusion is proxied with the ownership of an account in financial institution).

Table 5. Determinants of debit card possession

	Model 3.1		Model 3.2		Model 3.3	
Variables	Odds r.	St.Errors	Odds r.	St.Errors	Odds r.	St.Errors
Individual Controls						
female	1.00	(0.04)	0.93	(0.05)	0.86	(0.05) ***
age	1.02	(0.00) ***	1.02	(0.00) ***	1.01	(0.00) ***
Deducation_2	3.14	(0.13) ***	2.85	(0.12) ***	2.19	(0.08) ***
Deducation_3	6.47	(0.16) ***	5.75	(0.18) ***	4.01	(0.12) ***
Dincome_2	1.08	(0.02) ***	1.09	(0.03) ***	1.13	(0.03) ***
Dincome_3	1.16	(0.03) ***	1.15	(0.04) ***	1.25	(0.04) ***
Dincome_4	1.29	(0.05) ***	1.33	(0.05) ***	1.52	(0.05) ***
Dincome_5	1.59	(0.06) ***	1.68	(0.07) ***	2.10	(0.06) ***
emerg_funds	1.53	(0.07) ***	1.63	(0.08) ***	1.70	(0.05) ***
remittances_send	1.48	(0.06) ***	1.54	(0.07) ***	1.79	(0.06) ***
remittances_received	0.97	(0.05)	1.06	(0.07)	1.22	(0.05) ***
received_wage	3.24	(0.06) ***	3.00	(0.07) ***	2.61	(0.06) ***
received_govttransfer	1.91	(0.08) ***	1.64	(0.08) ***	1.38	(0.06) ***
National Culture						
PDI			1.00	(0.01)	0.99	(0.01)
IND			1.02	(0.01) ***	1.00	(0.01)
MAS			1.00	(0.01)	1.00	(0.00)
UAI			1.00	(0.01)	0.99	(0.01) **
Country controls						
GDP					2.92	(0.14) ***
ruleoflaw					1.98	(0.58)
legal					1.06	(0.22)
depInsurance					1.26	(0.23)
DMMSCI					0.14	(0.70) ***
Other						
Dyear_2017	1.26	(0.06) ***	1.24	(0.08) ***	1.24	(0.08) ***
const		(0.21) ***		(0.87) ***		(1.34) ***
N	223376		135489		132075	
McFadden R2	19%		20%		25%	

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Cluster robust standard errors.

The regression results for the Model 3.3 is virtually identical to the results of the Model 1.3 (except the size of some coefficients). For instance, age is found to have a positive impact on the debit card ownership. Each next year of life increases the likelihood of having a debit card by 1%. This result contradicts the earlier studies that increase in age makes it less likely to own a debit card (Jin and DeVaney, 2005; Schuh and Stavins, 2010). Similarly, being female decrease the likelihood of having a debit card by 14%. While this result is in line with the previous finding in Model 1.3, these findings contradict previous findings that females are more likely to own a debit

card (Fusaro, 2013; Borzekowski et al, 2008). However, there is also the evidence that females are more likely to use a debit card than to own it (Borzekowski et al, 2008).

Other results are also in line with previous findings. Those who are better educated (Jin and DeVaney, 2005; Borzekowski et al, 2008; Schuh and Stavins, 2010) and have higher income are more likely to own a debit card (Jin and DeVaney, 2005; Schuh and Stavins, 2010; Mantel and McHugh, 2001). However, Stavins (2002) and Borzekowski and Kiser (2008) did not find a positive association for income variables (Stavins, 2002; Borzekowski and Kiser, 2008). Those who send and receive remittances have a greater debit card ownership (Orozco et al, 2007).

Similarly to results in Model 1.3, GDP positively affects debit card ownership, which is in line with corresponding literature (Zandi et al, 2013). The main difference however from the determinants of formal account ownership is a positive association with the level of financial market development (*DMMSI*). People in countries classified as having developed financial market by MSCI are 86% more likely to have a credit card. At the same time, the coefficient estimate for the British legal origin is not statistically significant.

Uncertainty avoidance is found to negatively influence having a debit card. It makes debit card possession less likely for each next point of uncertainty avoidance. The more the nation feels confident about the unfamiliar situations, the more the nation tends to have a debit card.

3.4. Credit card

Table 6 reports the results of logit regression with a binary dependent variable *credit_card*. In the following section, I mainly discuss the differences in predictors of financial inclusion when it is measured with having a credit card in contrast to results reported in Section 3.3 (when financial inclusion is proxied with the ownership of credit card). However, when comparing the results it is important to note that the specification of the Models 4.1 – 4.3 are slightly different from other specifications. First, Models 4.1. – 4.3 include additional controls that intend to capture borrowing behavior (*borrowed_fininst*, *borrowed_famfr*, *mortgage*). Secondly, *depInsurance* was removed from the list of country-level controls, as it does not capture an institutional characteristic that is important for credit card ownership decisions (in contrast to decisions regarding debit card).

In contrast to Model 3.3, the following variables lose their statistical significance: age, remittances_received, received_govttransfer. Other individual-level predictors are statistically significant and have the same signs as in Model 3.3.

Table 6. Determinants of credit card possession

	Model 4.1			Model 4.2			Model 4.3		
Variables	Odds r.	St.Error		Odds r.	St.Error		Odds r.	St.Error	
Individual controls									
female	0.99	(0.04)		0.98	(0.05)		0.92	(0.05)	*
age	1.01	(0.00)	***	1.01	(0.00)	***	1.00	(0.00)	
Deducation_2	3.06	(0.10)	***	2.81	(0.14)	***	2.03	(0.08)	***
Deducation_3	5.04	(0.14)	***	4.68	(0.18)	***	3.05	(0.12)	***
Dincome_2	1.06	(0.05)		1.05	(0.07)		1.09	(0.07)	
Dincome_3	1.09	(0.05)	*	1.10	(0.06)		1.19	(0.07)	***
Dincome_4	1.21	(0.07)	***	1.23	(0.08)	***	1.39	(0.08)	***
Dincome_5	1.48	(0.09)	***	1.56	(0.11)	***	1.99	(0.10)	***
emerg_funds	1.57	(0.09)	***	1.73	(0.09)	***	1.65	(0.07)	***
remittances_send	1.12	(0.06)	***	1.17	(0.06)	**	1.36	(0.05)	***
remittances_received	0.88	(0.05)	***	0.88	(0.06)	**	0.98	(0.04)	
received_wage	2.51	(0.06)	***	2.37	(0.07)	***	1.97	(0.06)	***
received_govttransfer	1.37	(0.09)	***	1.28	(0.08)	***	1.07	(0.07)	
borrowed_fininst	2.35			2.31	(0.08)	***	2.40	(0.07)	***
borrowed_famfr	0.79			0.82	(0.08)	**	0.98	(0.05)	
mortgage	2.09			1.95	(0.08)	***	1.71	(0.07)	***
National Culture									
PDI				0.98	(0.01)	**	0.99	(0.01)	*
IND				1.00	(0.01)		0.99	(0.01)	
MAS				1.01	(0.01)		1.00	(0.01)	
UAI				1.01	(0.01)		1.01	(0.01)	
Country controls									
GDP							2.19	(0.19)	***
ruleoflaw							0.64	(0.77)	
legal							0.77	(0.30)	
DMMSCI							3.34	(0.68)	*
Other									
Dyear_2017	1.01	(0.06)		1.01	(0.07)		0.99	(0.07)	
const		(0.18)	***		(0.78)	***		(1.67)	*
N	222744			134062			130693		
McFadden R2	14%			19%			23%		

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Cluster robust standard errors.

The regression shows that being a woman decreases the likelihood of credit card possession by 8%. This result supports previous findings that males are more likely to have a credit card than

females (Abdul-Muhmin and Umar, 2007; Yayar and Karaca, 2012). However, the effect of gender for credit card ownership is less important than in the case of debit card ownership.

There is a strong positive link between the level of education and credit card ownership. Secondary and tertiary education make it more likely to have a credit card by 103% and 205% respectively compared to those with primary education and less. This result is in line with results in Section 3.3 and with prior literature (Abdul-Muhmin and Umar, 2007; Kaynak and Harcar, 2001).

In line with results in Section 3.3, income has a strong positive association with credit card ownership. Third, fourth, and fifth 20% income quantiles make it more likely to have a credit card by 19%, 39%, 99 respectively to those with the lowest 20% quantile. It agrees with previous findings that an increase in income leads to the higher likelihood of credit card ownership (Yayar and Karaca, 2012; Abdul-Muhmin and Umar, 2007; Kaynak and Harcar. 2001). Emergency funds are found to have a positive impact on the credit card possession, increasing the likelihood of the latter by 65%. This agrees with earlier studies that a person is more able to come with emergency funds within the next month if he owns a credit card (Worthington, 2004).

Variables that capture other aspects of borrowing behavior also matter for credit card ownership. For instance, borrowing from a financial institution increases the likelihood of credit card ownership by 140%, while having a mortgage increases the likelihood by 71%.

Finally, in contrast to the case of credit card ownership, among cultural dimensions *UAI* is not statistically significant while *PDI* is statistically significant and the coefficient has a negative sign.

3.5. Robustness check

All models were estimated with robust standard errors clustered by country. In addition, since in some cases it might be expected that age has a non-linear association with financial inclusion, I run models where age and age squared included simultaneously. While there is a suggestive evidence that the association between age and gender is has an inverted U-shaped form, none of the important results change when controlled for age squared. Finally, I replicated the third models for each of the dependent variables using each of the cultural dimensions one by one. While I do not report the results for brevity, none of the major results changes. Therefore, it can be concluded that the results presented in this study largely survive robustness check.

4. DISCUSSION

In this section, I will discuss the hypotheses and findings based on logistic regression analysis. I will emphasize the contribution of this thesis and compare my conclusions with earlier studies. Additionally, I will highlight the limitations and challenges of data and methodology used in this study. Finally, I will give suggestions for the future research on this topic.

This thesis employs a cross-sectional regression analysis to investigate which determinants influence financial inclusion. Dependent variables are binary. Dependent variables are presented by ownership of 1) an account in the financial institution, 2) a mobile money account, 3) a debit and 4) credit card. Independent variables are age, gender, education, income, emergency funds, remittances sent and received, received wage, received government transfers, borrowing from family and friends and from a financial institution, mortgage, GDP per capita, rule of law, British legal system, deposit insurance, DMMSCI index, power distance, individualism, masculinity, uncertainty avoidance. The sample size of the study is more than 300,000 observations.

The implementation of a cross-sectional study makes it difficult to detect the cause and effect. Moreover, the sample size can occur non-representative because of the timing of the survey. As there is not a time-series survey, I have to concentrate thoroughly on the choice of independent variables. These variables must be strongly supported by previous research.

The findings are obtained from twelve models estimated from the logistic regression. As expected, socio-demographic characteristics, such as age, gender, income, and education, determine financial inclusion. This makes sense as the demand side of financial inclusion depends on personal features of the population: older, more educated people with stable income are more likely to be included in a formal financial system. Prior research finds a strong relationship between these variables and financial inclusion. My regression results mostly support previous findings. These determinants are statistically significant at 1%, 5%, and 10%.

In line with prior studies, country characteristics, such as GDP per capita, rule of law, type of legal system, deposit insurance, and country's level of development, determine financial inclusion. This makes sense as country factors determine the supply side of financial inclusion: a developed, richer country, with a strong rule of law is more likely to include more people into the formal financial system. GDP per capita shows a strong relationship with financial inclusion at 1% of statistical significance. DMMSCI index was found statistically significant at 5% only for credit and debit card ownership. British type of legal system was found to be statistically significant for ownership of an account in the financial institution and a mobile money account.

The findings are consistent with the first hypothesis that uncertainty avoidance is negatively related to financial inclusion. However, individualism did not show any statistical significance in the final models. Thus, it is impossible to make any conclusion on this variable within this study. That is why the second hypothesis, implying that individualism positively affects financial inclusion, is rejected. These factors have not been considered straightforward before, therefore, they are not supported by earlier research. Nonetheless, my results indicate that power distance and uncertainty avoidance influence financial inclusion. The results are statistically significant on the borderline of significance at 10% and 5%. It is remarkable to note that power distance is found to negatively influence financial inclusion. It can be explained by the fact that individuals

To conclude, on the basis of empirical results from logistic regression analysis controlled for personal, country, and cultural characteristics, the results are consistent with one hypothesis.

I can recommend to focus on reasons of financial exclusion as further research on this topic. Thus, more practical information could be found on what are the challenges for the people to enter the formal financial system and formulate ways of helping financially excluded people to become financially included.

CONCLUSIONS

Financial inclusion is still considered an important problem in economic development. About 1.7 billion people cannot get access to formal borrowing and saving. This issue has been of high interest among researchers for a long time. Prior literature focused mostly on the individual and traditional country-level factors, not taking into consideration national culture.

This thesis aims to fill the gap in the previous literature by examining the effect of national culture on financial inclusion while controlling on a large set of socio-economic characteristics and country-level controls. In this study, I have employed a global database, representing 97% of the global population, to investigate if cultural dimensions influence financial inclusion.

This study uses data from the Global Findex database for 2014 and 2017 waves. The observations were taken in more than 140 economies. The data is cross-sectional, providing information on how people save, borrow and make payments. The logit binary model is used for the examination of data by regression analysis. The dependent variables are whether an individual owns an account in the financial institution, mobile money account, debit and credit card. Independent variables are split into three categories, such as individual, country-level, and cultural controls.

Based on prior literature and common sense, I have formulated the following hypotheses: (1) Uncertainty avoidance has a negative impact on financial inclusion. (2) Individualism positively influence financial inclusion. The findings are consistent with the first hypothesis, showing that a higher level of uncertainty avoidance leads to a lower level of financial inclusion. However, the second hypothesis was rejected. Interestingly, the results report about a negative influence of power distance on financial inclusion.

To the best of my knowledge, this link has not been established by previous studies so far. The aim of the thesis to examine whether culture has an effect on being financially included was met.

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APPENDICES

Appendix 1. Variables definitions.

Variable	Code	Description	Values	Source
Dependent variables				
	account_fininst	Has an account at a financial institution(have an account at a bank or credit union (or another financial institution, where applicable - for example, cooperatives in Latin America)	Dummy variable : 1- Yes, 0- No	Gallup,Inc.
	account_mobile	Has a mobile money account	Dummy variable : 1- Yes, 0- No	Gallup,Inc.
	debit_card	Has a debit card	Dummy variable : 1- Yes, 0- No	Gallup,Inc.

	credit_card	Has a credit card	Dummy variable : 1- Yes, 0- No	Gallup,Inc.
Socio-demographic				
Gender	female	Respondent is female	Dummy variable: 1- female, 0-male;	Gallup,Inc.
Age	age	Respondent age	Levels: 15-99+	Gallup,Inc.
Education	education	Respondent education	Levels: 1 - completed primary or less, 2 - secondary, 3 - completed tertiary or more	Gallup,Inc.
Income	income	Respondent level of income	Levels: 5 quantiles:1 - lowest 20% to 5 - highest 20%	Gallup,Inc.
Income proxy (1)	emerg_funds	Possibility of coming up with emergency funds	Dummy variable: 1- possible, 0- impossible	Gallup,Inc.
Income proxy (2)	saved	Saved in the past year	Dummy variable : 1- Yes, 0- No	Gallup,Inc.

Income proxy (3)	remittances_send	Sent domestic remittances in past 12 months	Dummy variable : 1- Yes, 0- No	Gallup,Inc.
Income proxy (4)	remittances_received	Received domestic remittances in past 12 months	Dummy variable : 1- Yes, 0- No	Gallup,Inc.
Employed	received_wage	Received wage payments in past 12 months	Dummy variable : 1- Yes, 0- No	Gallup,Inc.
Receving benefits	received_govttransfer	Received government transfers in past 12 months	Dummy variable : 1- Yes, 0- No	Gallup,Inc.
National Culture				
Individualism	IND	Hofstede cultural dimension of Individualism	Index from 0 to 100	Greet Hofstede's website, Hofstede Insights
Uncertainty avoidance	UAI	Hofstede cultural dimension of Uncertainty avoidance	Index from 0 to 100	Greet Hofstede's website, Hofstede Insights
Masculinity	MAS	Hofstede cultural dimension of Masculinity	Index from 0 to 100	Greet Hofstede's website, Hofstede Insights

Power distance	PDI	Hofstede cultural dimension of Power distance	Index from 0 to 100	Greet Hofstede's website, Hofstede Insights
Country-level variables				
GDP	GDP	Natural log of GDP per capita, constant 2011 international USD	Continuous	IMF
Rule of law	ruleoflaw	Extent to which agents have confidence in and abide by the rules of society.	Index from 0 to 1.	Country Risk Guide (ICRG) database
Legal origin	legal	British legal origin	1 = YES; 0 = NO	Djankov et al. (2007)
Deposit insurance	depInsurance	If country has deposit insurance.	1 = YES; 0 = NO	Barth et al. (2013) updated to 2019 manually
Developed financial market	DMMSCI	Country classified into category Developed Market by MSCI	1 = YES; 0 = NO	MSCI

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