IMPACT OF FINANCIAL INCLUSION ON WELFARE: AN EMPIRICAL STUDY OF DEVELOPING COUNTRIES

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CERTIFICATE

This is to certify that this thesis entitled: **"Impact of Financial Inclusion on Welfare: An Empirical Study of Developing Countries"** submitted by Ms. Anza Yusuf is accepted in its present form by the Department of Economics & Econometrics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Economics**.

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DEDICATION

This thesis is wholeheartedly dedicated to my beloved parents for their love, endless support and encouragement.

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First and foremost, praise and thanks to Allah, the Almighty, for giving me the opportunity, determination and strength to complete the research successfully.

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Chapter 1
Introduction

1.1 Introduction

The idea of financial inclusion is multidimensional and various definitions of financial inclusion exist in the literature. Financial inclusion means individuals and organizations have access to financial products and services that meet their needs (World Bank). Mahendra Dev (2006) defined financial inclusion as "Delivering of banking services at an affordable cost to the vast section of disadvantage and low-income groups". Sarma (2008) views that "Financial inclusion ensures accessibility, availability, and usage of formal financial services to all the members of the economy". It is considered as a key empowering agent of economic growth and placed as a policy priority in most of the developing countries (World Bank, 2018). It is one of the topics that reflect continuous evolution and gained importance after the global financial crises. As stated by the Global Findex report 2017, seeing that 2010 more than 55 countries have made commitments to financial inclusion, and more than 60 countries have either launched or are evolving a national strategy. About 1.2 billion adults became part of a formal financial system by opening their accounts, where 515 million are from the past three years alone. 69% of adults have an account which was 62% in 2014 and 51% in 2011. Payments through digital technology has also increased globally from 42% to 52% since 2014. Women also gained access to financial services, 65% of the women globally have an account compared with 72% of men. In developing countries, 63% of adults have an account whereas in developed or high-income economies 94% do.

Financial Inclusion is considered as an important sustainable goal to reduce poverty and state as an aspiring worldwide objective to achieve Universal Financial Access (UFA) by 2020 (World Bank). The growing body of research has uncovered many benefits of financial inclusion. Use of digital financial services which includes payment cards, mobile money

services, and other formal financial services, reduces the costs and risks of keeping money in hand and enables and empowers people and communities (Singh, 2015). The empirical evidence reveals that financial inclusion plays a vital role in growth and poverty reduction (Anthanasius et al, 2017; Anwar et al, 2017; Park and Mercado; 2016).

Poverty reduction is one of the important features of millennium development goals as well as of sustainable development goals. Empirical study of Oya et al (2011) suggests that usage of formal financial services in a wide range could substantially improve the living standard of the poor. In the same vein, Tita and Aziakpono (2017) reveals that financial Inclusion not only helps in reducing poverty but also reduces income inequality in Sub-Sahara Africa. Wider access to financial services may result in a reduction of intermediation cost for entrepreneurs, thus increase productivity and employment opportunities which further reduces income inequality.

Early theoretical models also identify financial development as an instrument to decrease income inequality and boost economic growth after controlling the impact of financial frictions some of which are transaction cost and information asymmetry. (Galor & Zeira, 1993). Park and Mercado (2015) noted that financial inclusion significantly diminish income inequality and poverty in developing Asia. They suggested that measures should be taken to address financial exclusion in low-income groups to tackle increasing income inequality in the region, which will also promote poverty reduction efforts.

Despite these evidences, there are around 1.7 billion adults that lack a formal account in the formal financial system, where half of the unbanked are poor households in rural areas, women and those who are unemployed (Global findex report 2017). One main reason for adults being not a part of a formal financial system is because of low financial literacy. This circumstance is for the most part predominant in developing nations. Studies have demonstrated that the

absence of consideration or rather avoidance from the formal financial framework cause lost 1% to the GDP (Chattopadhyay, 2011). There are overabundance disparities in access and use of financial services which can be religious, cultural, social and political, hence it is important to investigate this particular topic and feature its significance.

1.2 Research Gap

The existing literature analyzed the impact of financial inclusion on poverty and income inequality however, only a few studies explore this impact in a wide context of developing countries, using different proxies for financial inclusion. In addition to this, the literature on financial inclusion, inequality, and poverty is narrow as most of the recent studies are conducted for the Sub-Sahara Africa region. Hence, further investigation on this particular topic is required. Therefore, this study contributes to the current literature related to financial inclusion, inequality and poverty nexus in several ways. **Firstly**, the present study is conducted specifically to find out how financial inclusion affects poverty and income inequality in a broad range of developing countries using three different proxies of financial inclusion that are account ownership, saving at a formal financial account and borrowing from a formal financial system. **Secondly**, the study used the most recent data on financial inclusion from the Global Findex dataset. **Finally**, the current study will also examine this relationship by generating a single index of financial inclusion using principal component analysis and thus make a modest effort to fill in a gap in the literature.

1.3 Research Objective

The present study aims to explore:

- *The effectiveness of financial inclusion on poverty and income inequality using three different proxies for financial inclusion.*
- *The effectiveness of financial inclusion on poverty and inequality using financial inclusion index.*

1.4 Significance of the study

Poverty and inequality are the major issues in developing countries. Financial inclusion is considered as an important mean to tackle poverty and boost prosperity (World Bank report, 2018). Moreover, growing consensus from theoretical stance and empirical evidences indicates that absence of consideration or rather avoidance from the formal financial framework causes a 1% loss to the GDP (Chattopadhyay, 2011) and this situation is predominant in developing countries. The present study is beneficial for regions with either low or lack of financial access. As lack of financial access limits the full potential of poor individuals and small enterprises by relying on their wealth of internal resources which can lead to poverty, inequality and further diminish growth in the region. The findings of the present study will help to pursue a policy to address the issues of financial exclusion and will be a guideline to reduce poverty and inequality from the region.

1.5 Organization of study

The rest of the study is organized as follows. A brief theoretical and empirical literature on financial inclusion, poverty, and income inequality is discussed in chapter 2. Chapter 3 presents the theoretical framework for explaining the relationship between the concerned variables, data source, variable descriptions, and methodology. Chapter 4 will present results, analyses, and interpretations. Chapter 5 deals with conclusion and policy recommendations will be discussed in the end.

Chapter 2
Literature Review

2.1 Introduction

The term "Financial inclusion" has attained importance since the early 2000s both at the national and international levels amongst policymakers and in the development arena as a major driver for economic growth and development. However, the literature on the impact of financial inclusion on income inequality and poverty is still nascent. Theories on the impact of financial inclusion on income distribution offer conflicting results: some literature predicts an inverted-U relationship while others propose an inverse relationship between financial inclusion and income inequality.

2.2 Early theoretical models on financial inclusion, poverty, and income inequality:

Greenwood and Jovanovic (1990) observed a nonlinear relationship between finance and income inequality, wherein the distributional effect of financial development is linked with economic development. The model utilized for the study was in accord with the Kuznets hypothesis that is: At the early stages of financial development, only the rich people can access financial services. Therefore, at the early stages of financial development, income inequality rises and economic growth tends to slow. Moreover, as the economy grows, the financial structure becomes common and more affordable to the poor because physical capital will be replaced by human capital as the main driver of growth. In contrary to the non-linear relationship, Galor and Zeira (1993) predicate a direct relationship that links financial development and income distribution. They propose that financial deepening can alleviate credit constraints which advantages the low-income group, through the channel of human capital and capital accumulation.

2.3 Empirical studies on financial inclusion, poverty, and income inequality:

Although the theory predicts conflicting results but the recent empirical studies support financial inclusion as a major contributor in diminishing poverty and inequality. Beck et al., (2005) and Demirguc-kunt and Levine (2005) examined the impact of financial development on poverty reduction and inequality, in a cross country regression. The result of the study indicated that finance exerts a disproportionately huge and positive impact on the poor and hence decreases income inequality from the region. Furthermore, the empirical study of Park and Mercado (2015) also examined the role of financial inclusion in reducing poverty and inequality for 37 developing Asian economies. The study used five indicators to measure financial inclusion: automatic teller machines (ATM), commercial bank branches, borrowers from commercial banks, depositors with commercial bank and domestic credit to GDP ratio. The study pointed out similar results that are increasing financial inclusion or reducing involuntary financial exclusion lowers income inequality and hence poverty in developing Asia.

Similarly, the study of Furceri and Loungani (2015) examines the impact of capital account openness on inequality and suggested that by liberalizing domestic financial systems, inequality can be reduced, both in the short and medium run which is strongly refuting the position of early theories. Kim (2016) predicted that reducing inequality through the channel of financial inclusion modify the negative relationship between income inequality and economic growth into a positive relationship. This trend is stronger in high-vulnerable countries compare to low-vulnerable countries.

2.4 Recent most studies on financial inclusion, poverty, and income inequality:

The recent most studies attempted to consider other dimensions of financial inclusion. Tita and Aziakpono (2017) studied the relationship between financial inclusion and income inequality at macro level for 37 nations in Sub-Sahara Africa by utilizing seven parts of financial

inclusion: account ownership, account use for business, electronic payments and loans from formal financial institution, formal loan to pay school charges, health insurance, and financial savings. The results indicate that some parts of financial inclusion are negatively related to income inequality and others are positively related. In the study account used for business purposes, formal saving and electronic payments have a positive relationship with income inequality. The reason for this positive correlation is justified as some account owners are first time users and have no transaction history.

Likewise, Agayemag-badu et al (2018) examined the correlation between financial inclusion, poverty and income inequality for 48 African countries, using fixed effect panel regression techniques. The study constructs financial inclusion indicator following the methodology of Sarma (2008) and Park and Mercado (2015) and concluded similar results.

Recent most studies of Seshamani and Tounkara (2018) attempt to check whether improvement in formal financial inclusion reduces inequality in a cross-section study of twelve countries in Sub-Sahara Africa. The study utilizes the calculation of concentration index using convenient covariance and convenient regression. The result of the study indicates that an increase in the usage of formal financial services can bring down income disparity. On the other hand, informal inclusion aggravate income inequality. The study recommends to expand the size of the formal financial sector and reduce the dependence of low-income groups on the source of informal finances. A majority of the low-income groups are unbanked which is the main reason for greater dependence on the informal finances. Hence, there is a need to find ways to make financial services within reach to the unbanked population.

Neaime and Gaysset (2018) accesses empirically the relationship between financial inclusion, poverty, income inequality, and financial stability for eight Mina countries over the period of 2002-2015. The research utilizes GMM and GLS econometrics models for estimation. The

empirical results show that financial inclusion shrink income inequality but has no significant impact on poverty. This insignificant correlation between financial inclusion on poverty is because of the lack of entrepreneurial activities and the banking structure of MENA. As the banking structure is not well developed and financial services seem not to reach the poor segment of the society.

2.5 Conclusion:

This chapter has provided a general review of the theoretical and empirical literature on the effect of financial inclusion on poverty and inequality. Empirical evidences indicate that financial inclusion alleviates poverty and income inequality from the region which strongly refutes the position of early theoretical models. Moreover, as financial inclusion is an emerging topic, the empirical studies that cover this topic are not enough hence, further investigation is required. The present study investigates the link between financial inclusion, poverty, and inequality in a broad range of developing countries. In addition to this, the study will also check this impact using the financial inclusion index.

Chapter 3
Data and Methodology

3.1 Introduction

The theoretical framework provides a complete set of information about financial inclusion, Income inequality, and poverty, the link between these variables and the effect of these variables on each other. Likewise, the data set and econometric models support to analyze the relationship among the variables empirically. Keeping the importance of theoretical background, data and methodology in mind we divide this chapter into three sections. The first section described the theoretical framework of the study, the second section deals with data and its sources and the last section of this chapter discussed the methodological framework developed for this study.

3.2 Theoretical Framework

Economic theories are ambivalent about the relationship between financial development, poverty, and income distribution. Some model implies that financial development can help in poverty alleviation, diminish income inequality and also accelerates growth. The literature on development economics has shown that financial inclusion is a major factor that increases financial development in a region whereas financial development leads to economic development (Levine, 2004). Nevertheless, other theories questions whether financial development brings down poverty and income inequality. Some models inferred that if financial development lessen income inequality, the reduction could slow down aggregate growth and boost poverty. Greenwood and Jovanovic (1990) predicted from their model that only rich people will get profit from the financial market at the advance stages of development hence increase income inequality. As financial markets become mature, inequality will start diminishing and hence poverty.

Financial inclusion falls in a border concept of social inclusion which emphasize on narrowing down the gap between rich and poor by providing them equal opportunities. Recent studies have uncovered many potential benefits of financial inclusion. Beck et al (2009) predicted that an affordable and trusted financial system can improve financial market operations. Moreover, it can help in reducing transactions as well as information costs and promotes better saving and investment decisions. An easy approach to financial services provides ingredients to improve economic growth and ensures a decline in income inequality among people (Ayenew and Zewdie, 2010). In addition to this, financial deepening improves the productivity level of the formal manufacturing firm and removes poverty. (Beck and Hosieni, 2014).

Education and financial inclusion seems to have a linear relationship. Fungacove and Weill (2014) found out that education, income, and age has a positive effect on financial inclusion. Camara and Tuesta (2015) analyzed the link between education and financial inclusion, using probit models, found out that education has a significant impact on financial inclusion. Poor, young and unemployed individuals are likely to be excluded from the formal financial institution due to their inability to access financial services. People with high education are likely to have more accessibility and affordability towards financial services (Allen et al, 2013).

Poverty and its determinants

Poverty is one of the most persistent and widespread social issues in the world especially in developing countries (Todaro and Smith, 2006). World statistics on poverty are alarming, as over 2.5 billion people in the world earn US$ 2 or less income a day and are deprived of essential human needs such as education, health, dignity, and freedom. Poverty elimination has become the global problem facing the world today and a requirement for sustainable development, particularly for developing countries" (United Nations report, 2002).

At micro level poverty is due to the lack of income and productive resources to assure hunger, starvation, bad health, limited or lack of access to education and other necessities. It is also characterized by the exclusion of the people from social and cultural life (World Bank 2001). Other factors that cause poverty at the micro-level include limited resources, lack of skills, natural calamities and disasters for instance wars and environmental degradation also develop transitional poverty (Yahie, 1993).

At macro level poverty depends on the overall health of the economy. It is mainly caused due to a decline in growth rate and employment rate, decline in subsidies on agriculture input, increase indirect taxes and a decrease in public expenditure on social services. As the economy grows, so do the employment opportunities and income growth. Higher-income level and stronger labor markets help the poor families to move above the poverty threshold (Amjad and Kemal, 1997). Moreover, Foreign aid and debt are found to be positively associated with poverty expansion (Azam et al, 2015).

Poverty has many aspects and does not merely entail low levels of income or expenditure. Education is considered as the primary weapon to reduce poverty and Inadequate education itself is considered as the form of poverty (Amartya Sen 1992). The higher will be the number of educated individuals, lesser will be the number of poor people as education imparts knowledge and skills, which results in higher wages (Awan et al, 2011).

Another important determinant of poverty is health. The correlation in poverty and education has captured much importance in the recent years. Health is considered as an essential determinant of poverty elimination and socioeconomic development. The effect of hunger on labor productivity lessens the gross domestic product of a country by 6%-10%. (UN Millenium project's Halving Hunger report)

Inequality and its determinants

A wide variety of studies have address inequality and various macroeconomics factors that affect inequality are defined in the literature. Inequality substantially slows down the overall economic growth of a region by restricting the usage of available resources equally and efficiently (Alesina and Perotti, 1996). Kuznet (1955) defined that as the nation's income rises, at the early stages the income gap increases but as a country grows richer, a combination of social, political and economic factors reduces the level of inequality within a country. Conceicao and Galbraith (2001) observed that in developing regions, higher-income tends to result directly in reducing inequality whereas Import substitution policies, political instability, and currency depreciations often lead to increasing income disparity.

Income inequality depends on various factors. Factors that affect income distribution in a region include the level of economic development achieved, regional factors, stage of economic cycle, size of government expenditure and share of the agricultural sector in the total labor force, as well as human and land resources endowment. (Odedokun et al, 2001). Moreover, among other factors, the population has a negative relation with income inequality. Alderson and Nielsen (1995) indicated that relatively high population growth may increase income inequality.

Other factors that impact inequality includes inflation, unemployment, education, natural resources, foreign aid, and trade openness. A time-series study by Maestri and Roventini (2012) analyzed the link of inflation and unemployment with income inequality in a set of member countries of the Organisation for Economic Co-operation and Development (OECD) and found that inflation and unemployment grows income inequality. Education is found to have a direct correlation with income inequality (Breen and Garcia-Penalosa, 1999).

Natural resource abundance is one of the vital determinants of income disparity. The production of and the general reliance on natural resources can create rents that are effectively captured by the ruling elite, which thusly enlarges the income gap between rich and poor. Therefore, heavy reliance on natural resources tends to increase inequality (Stevens, 2003). The effects of globalization and trade have additionally been discussed widely in the literature. Globalization and trade openness tend to benefit the poor and in turn, diminish inequality (Dollar and Kraay 2004).

3.3 Model Specification:

The current study analyzed the impact of financial inclusion on poverty and income inequality in the context of developing countries with some modifications in the model presented by Tita and Aziakpono (2017) and Park and Mercado (2015).

For empirical examination the present study worked with the following models:

$$Poverty_{it} = \beta_{0it} + \beta_1 GDP_{it} + \beta_2 FI_{it} + \beta_3 IQ_{it} + \beta_4 X_{it} + \varepsilon_{it}$$

$$Gini_{it} = \beta_{0it} + \beta_1 GDP_{it} + \beta_2 FI_{it} + \beta_3 IQ_{it} + \beta_4 X_{it} + \varepsilon_{it}$$

Where,

FI_{it} is *Financial Inclusion*

GDP_{it} is *Gross Domestic Product Per Capita*

IQ_{it} is *Institutional Quality*

X_{it} represents *Set of Control Variables*

3.4 Data and Variables:

We examine the relationship between financial inclusion, poverty and inequality in a broad range of developing countries from the period 2011 to 2017. Financial inclusion data are

accessed from the Global findex dataset (**GFD 2017**), data for income inequality is obtained

from Standardized World Income Inequality Database (**SWIID**) and data for poverty and other

control variables are accessed from World Bank Development Indicator (**WDI**). The data taken

from the Global Findex dataset is available for three years only that is for 2011, 2014 and 2017.

Therefore, the present study worked with three-year moving averages of the all variables due

to data limitation. Moving averages is a technique used to analyze the data set by creating a

series of averages of different subset of the complete data. It is a flexible method to eliminate

the short term fluctuations in the data and reduces the effect of extreme values (Molugaram

and Rao, 2017).

Variables:

Poverty and Income inequality are taken as dependent variables whereas financial Inclusion is

taken as independent variables with other control variables.

Independent variable:

Financial Inclusion is taken as an independent variable. Financial Inclusion cannot be measured

directly hence proxies given in the Global findex data are used. The present study used three

main proxies for financial inclusion as used by Kunt and Klapper (2013), Park and Mercado

(2015) and Tita and Azakpono (2017). Proxies that are used to measure financial inclusion are:

account ownership, borrowing from formal financial institutions and formal savings.

Dependent variable:

The present study is measuring welfare from the poverty gap and income inequality. Therefore,

the dependent variable of the study is poverty and income inequality.

Control variable:

Control variables in the model are GDP per capita growth, Inflation, unemployment, health expenditure, education, and institutional quality. The **GDP per capita growth** is used to control for mean income, **Secondary enrolment** to control for the effect of education, **Health expenditure** for the effect of public sector spending on basic health care. Among the control variables used are **Institutional quality index** which will be derived utilizing a principal component analysis from six governance indicators to capture the effect of institutions. **Inflation** and **unemployment rate** is also included to condition for the effect of the macroeconomic environment.

Table 3.1: Variables, Definitions, and Sources

Variable Name	Definitions	Sources
Gini Index	Gini index is used to measure Income inequality. Income Inequality is the degree to which the distribution of income among individuals inside an economy digresses from a perfectly equal distribution.	SWIID
Poverty Gap at $ 1.90 a day	The proportion of a population lives on less than $ 1.90 per day	WDI
Financial Inclusion	Financial Inclusion means accessibility, availability, and usage of formal financial services such as saving, borrowing and investing. Three aspects of financial inclusion are used; (i) Account ownership (ii) Saving at a formal financial account	Global Findex (2017 dataset)

	(iii) Borrowing at a formal financial system	
GDP per capita growth	GDP per capita growth is used to measure a country's standard of living.	WDI
Inflation	Inflation is the persistent increment in the general price level of goods and services in an economy over a period of time.	WDI
Health Expenditure	Health expenditure measures the final consumption of health care goods and services.	WDI
Institutional quality Index	Institutional quality index measures the quality of governance and institutions. The index composed of six parts; (i) Voice and accountability (ii) Political stability and absence of violence (iii) Government effectiveness (iv) Regulatory quality (v) Rule of law and control of corruption	WGI
Unemployment rate	The unemployment rate indicates the share of the labor force that is unemployed, yet actively searching for employment.	WDI
Secondary enrolment	To capture the impact of education secondary education enrolment is used.	WDI

3.5 Econometric Methodology:

The present worked with panel data from the year 2011 to 2017 therefore, **panel data estimation techniques** are used. The panel data estimation technique is considered as an effective analytical procedure for analysis as it allows to incorporate data from different cross-sections that are countries and time period.

There are many advantages to using a panel data estimation technique. Panel data estimation provides a more informative data set, efficiency and more degree of freedom. Moreover, it helps in determining variables that are not directly observable or measurable and it accounts for individual heterogeneity and taking the omitted variable bias. Finally, to study the dynamics of change, panel data are better suited. Two techniques are often used to examine panel data; Fixed Effect Model and Random Effect Model.

Fixed Effect Model:

We use fixed-effects when we are only interested in analyzing the impact of variables that vary over time. In this technique, we check for all the cross-sections whether constant term has fixed effects for all cross-sections or not. All the time-invariant characteristics for instance culture, race religion, and gender, are controlled to make sure that the estimated coefficients remain unbiased.

Random Effect Model:

Random effect model assumes that individual-specific variations are random and uncorrelated with the explanatory variable. Time invariant characteristics can be included in it, unlike the fixed effect where the time-invariant characteristics are captures in the intercept (Nwakyu and Ijomah, 2017).

To check whether to use fixed effect or random effect in the model, the Hausman specification test is often used. The null hypothesis in the test assumes a random effect as a preferred model

whereas the alternate hypothesis says that the fixed effect model is preferred. In the present study, as the p-value in the Hausman specification test was less than 0.05 hence, we rejected the null hypothesis and used the fixed-effect model in the study.

3.6 Descriptive Statistics

In the below table descriptive statistics of the developing countries are given.

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Table 3.2: Descriptive Statistics

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Variable name	Observations	Mean	Std. Dev.	Min	Max
Poverty gap at $1.90	186	4.835932	8.053371	0	39
Gini index	235	42.8005	7.425101	21.93333	68.55
Inflation rate	272	6.398503	10.11975	-2.316312	146.2851
Secondary education enrolment	212	90.26212	10.65901	42.24234	99.76653
Health expenditure	277	5.993188	2.250791	1.914402	18.89127
Unemployment rate	285	8.106311	6.171547	.3106667	27.68067
GDP (per capita growth)	285	2.24516	3.122834	-12.45158	14.88975
Account ownership	186	.3603821	.2232914	.015217	.9228025
Savings	186	.1234182	.0925532	.0028688	.428026
Borrowings	186	.0973777	.0639421	.0041908	.3566361
Financial inclusion index	165	-.2855888	1.332798	-2.66682	3.625095
Institutional quality index	300	-1.140209	1.593165	-4.263509	3.450906

3.7 List of countries

The present study examined the impact of financial inclusion on poverty and inequality in a broad range of developing countries. The selection of countries is purely based on the availability of data. A detailed list of countries is mentioned in the appendix portion of the thesis.

Chapter 4
Discussion of results

Introduction

This chapter will incorporate and analyzed all the results. Firstly, the present study examined the impact of financial inclusion on income inequality and poverty in a broad range of developing countries, using three main aspects of financial inclusion that are, account ownership, savings at formal financial institution and borrowing from formal financial institution then estimated the results by utilizing financial inclusion index that is derived using principal component analysis from the three aspects of financial inclusion.

4.1 Impact of Account ownership on Income inequality

We examined the impact of account ownership on income inequality and obtained the following results:

Table 1: Account Ownership: Regression Results on Income Inequality

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	-0.105	-0.246	-0.151	-0.104	-0.244
	(0.129)	(0.173)	(0.143)	(0.128)	(0.172)
Inflation rate	-0.0764**	-0.145**	-0.0752*	-0.0773*	-0.148**
	(0.0383)	(0.0630)	(0.0380)	(0.0398)	(0.0679)
Unemployment rate	-0.0623	-0.0795	-0.0749	-0.0627	-0.0734
	(0.0506)	(0.0686)	(0.0525)	(0.0513)	(0.0676)
Account ownership	-4.750***	-6.884***	-5.131***	-4.780***	-6.961***
	(1.676)	(2.283)	(1.783)	(1.736)	(2.350)
Education (secondary enrolment)		-0.0407			-0.0304
		(0.0355)			(0.0371)
Health expenditure (% of GDP)			0.00171		0.000325
			(0.00152)		(0.00154)
Institutional quality				-0.00269	-0.00932
				(0.0135)	(0.0163)
Constant	45.50***	50.37***	45.27***	45.61***	49.69***
	(1.148)	(4.355)	(1.058)	(1.524)	(4.531)
Observations	100	78	97	99	76
R-squared	0.387	0.505	0.409	0.388	0.515
Number of countries	68	55	67	67	54

*** p<0.01,**p<0.05,*p<0.1

Table 1 shows the results on the impact of account ownership on income inequality. Across specifications, we also used control variables as used by Tita and Aziakpono (2017) and Park and Mercado (2015) on the regression of income inequality. Our estimates show that account ownership appears highly significant with a negative sign. This negative sign depicts that more account in a formal financial institution leads to a decrease in income inequality in the developing countries as having a formal account serves as an entry point. According to the World Bank report on financial inclusion (2017) having an account is the first step to be part of formal financial system because it gives people a safe financial tool to save, borrow and invest. Therefore, an active financial account generates economic activity and hence decreases inequality from the region (Kunt and Klapper, 2015).

GDP per capita growth appears insignificant but with a negative sign. The negative sign shows GDP per capita growth and inequality have an inverse relation. Inequality in a developing region affects poor people's access to credit and therefore hamper their investment in education and other opportunities that lowers down growth and investment in a country (Galor and Zeira, 1993; Alesina and Rodrick; 1994; Barro 2000). Similarly, Chambers (2010) observed that in the case of developing countries, growth is accompanied by a reduction in inequality.

On the other hand, Thornton's (2001) results indicated that income inequality expected to rise at lower levels of income and subsequently fall with higher income levels. Among other control variables, Inflation in the model is negatively significant which states that low inflation rates are associated with higher income inequality. Few earlier studies also suggest a negative and U-shaped relationship between inflation and income inequality. Increased inflation may increase income inequality in the short run but after reaching a maximum level it will start decreasing inequality which indicates that in long run, inflation does have a negative relationship with income inequality (sun, 2011 and Heer and Maussner, 2004). Moreover,

wealth redistribution effects due to high inflation is another reason for lower-income inequality in the region (Park and Mercado, 2015).

Education and institutional quality in the models are although negatively insignificant but are worth discussing. Education to improve skill level increase social and personal income and hence reduces income inequality (Minsor, 1970; Lin, 2007 and Qazi et al, 2016). Likewise, Institutional quality leads to reduce the income inequality gap. It is widely believed that poor institutional quality has an adverse effect on income inequality. For instance, corruption can alter the changes in social spending that benefits the rich at the expense of the poor which leads to increase inequality. (Andres and Dobson, 2011).

4.2 Impact of Borrowing from a formal financial system on income inequality

Table 2: Borrowing: Regression Results on Income Inequality

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	0.136	0.155	0.130	0.135	0.134
	(0.106)	(0.147)	(0.115)	(0.105)	(0.166)
Inflation rate	0.0311	0.0150	0.0291	0.0315	0.00935
	(0.0202)	(0.0281)	(0.0210)	(0.0190)	(0.0381)
Unemployment rate	0.0109	0.0335	0.0196	0.0106	0.0543
	(0.0541)	(0.0746)	(0.0613)	(0.0533)	(0.100)
Borrowing (FII)	-1.754	-2.305	-1.809	-1.689	-3.020
	(1.868)	(3.201)	(1.910)	(1.812)	(3.803)
Education (secondary enrolment)		0.0516			0.0540
		(0.0544)			(0.0677)
Health expenditure (% of GDP)			-0.000561		-0.000206
			(0.00149)		(0.00287)
Institutional quality				0.00201	-0.00824
				(0.0193)	(0.0271)
Constant	42.47***	37.45***	42.59***	42.39***	37.69***
	(0.477)	(5.323)	(0.499)	(1.112)	(7.074)
Observations	100	78	97	99	76
R-squared	0.082	0.140	0.085	0.082	0.151
Number of countries	68	55	67	67	54

*** p<0.01, ** p<0.05, * p<0.1

Table 2 shows the impact of borrowing from a formal financial system on income inequality. Our results indicate a negative but insignificant relationship between the two measures which means that more borrowing from a financial institution rather from informal means, can reduce inequality.

Kunt and Klapper (2013) explained the borrowing behavior in developing countries. Most of the borrowing is done informally, even among adults who have a formal account. They are more likely to avail of informal sources of credit such as friends and family. These informal methods are used due to the high cost of borrowing in developing regions. Borrowing could have a significant negative impact on income inequality if the cost of borrowing will be made affordable and if people start using a formal account for the purpose. Among the control variables, Health expenditure appears insignificant with a negative sign while the rest are positively correlated with income inequality in the models. Various analytical and numerical studies on health expenditure show similar results that is, greater expenditure on health care services leads to higher long-run wealth levels and reduces inequality (Gamlath and Lahiri, 2014).

4.3 Impact of saving at a formal financial account on income inequality

Table 3 predicts the impact of saving at a formal financial account on income inequality. Our estimates show that the correlation between income inequality and saving at a formal account is significant only for some specifications.

When institutional quality and all other regressors are considered, model (4) and (5) shows a significant negative correlation between the two measures which means improving saving facilities can reduce inequality gap which is confirmed by empirical evidences (Dupas and Robinson, 2013 and Burges and Pande, 2005). Moreover, Access to reliable savings can be

used to smooth consumption in times of economic hardship which helps in shrinking the inequality gap from the region.

Table 3: Savings: Regression Results on Income Inequality

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	0.110	0.0980	0.100	0.192	0.187
	(0.111)	(0.131)	(0.120)	(0.136)	(0.156)
Inflation rate	0.00344	-0.0239	0.00561	0.0210	-0.00734
	(0.0258)	(0.0375)	(0.0248)	(0.0243)	(0.0322)
Unemployment rate	-0.00624	0.00446	-0.00751	0.00170	0.0348
	(0.0461)	(0.0607)	(0.0535)	(0.0429)	(0.0749)
Saving (FII)	-4.235	-6.211	-4.345	-4.687*	-6.452**
	(2.874)	(3.823)	(3.089)	(2.622)	(3.124)
Education (secondary enrolment)		0.0354			0.0247
		(0.0423)			(0.0413)
Health expenditure (% of GDP)			0.000397		-0.000351
			(0.00162)		(0.00166)
Institutional quality				0.871**	0.930*
				(0.420)	(0.469)
Constant	43.13***	39.93***	43.06***	43.85***	41.56***
	(0.633)	(4.069)	(0.568)	(0.825)	(4.097)
Observations	100	78	97	99	76
R-squared	0.151	0.245	0.152	0.264	0.353
Number of countries	68	55	67	67	54

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Institutional quality in the model shows a significant positive relationship with income inequality. However, this relationship in a democratic environment was expected to be negative but failed to realize. This negative correlation between the two measures is possible when democracy is captured by the elite segment of the population. This will allow the political elite minority of a country, through increased economic and political power, to institutionalize de facto their interest, regardless of the interest of the minority (Acemoglu et al, 2013). Institutional reforms may be an effective instrument to eliminate the inequality gap but political factors may prevent its implementation (Chong and Gradstein, 2007).

4.4 Impact of Account ownership on poverty

To check the impact of account ownership on poverty, we have taken poverty as dependent variable and account ownership as an independent variable. Poverty is measured by using the poverty gap at $1.90 a day.

Table 4: Account Ownership: Regression on Poverty Gap ($1.90 a day)

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	-0.295**	-0.129	-0.302*	-0.318*	-0.107
	(0.145)	(0.0949)	(0.166)	(0.168)	(0.109)
Inflation rate	0.0231	-0.00321	0.0258	0.0107	0.00279
	(0.0382)	(0.0283)	(0.0363)	(0.0390)	(0.0324)
Unemployment rate	-0.0977	-0.0533	-0.0978	-0.104	-0.0602
	(0.102)	(0.0613)	(0.111)	(0.107)	(0.0658)
Account ownership	-3.155**	-2.663**	-3.053**	-3.014**	-2.978**
	(1.471)	(1.069)	(1.478)	(1.386)	(1.197)
Education (secondary enrolment)		0.00545			-0.000580
		(0.0284)			(0.0272)
Health expenditure (% of GDP)			-0.149		0.112
			(0.249)		(0.222)
Institutional quality				-0.420	0.288
				(0.533)	(0.199)
Constant	5.362***	4.218	6.270***	5.073***	4.583
	(1.473)	(2.891)	(1.802)	(1.284)	(3.226)
Observations	90	74	85	88	69
R-squared	0.274	0.510	0.287	0.293	0.555
Number of countries	62	52	60	60	49

*** $p<0.01$,** $p<0.05$,* $p<0.1$

Table 4 shows the results on the impact of account ownership on poverty. We generate different models using various control variables as used by earlier studies. Our estimates offer a negatively significant relationship with poverty which means more formal accounts would lead to reduce poverty. The result supports the earlier studies that say account ownership can reduce poverty in the region. Klapper (2018) explained that having a bank account helps poor people more effectively as it tackles the problems that keep them stuck in poverty. A formal account

serves as a gateway to other financial services such as saving borrowing and investing, which is why ensuring that people have a formal account is the top focus (Nazir Ahmed sheik, 2019). Park and Mercado (2015) also predicted that if people would become part of a formal financial system, poverty will be reduced. GDP per capita growth appears negative and significant in the specification (1) (3) and (4). The negative relation between poverty and GDP growth is supported and explained by Dollar and Kraay, 2002. Their finding reveals that the two measures are negatively associated suggesting institutions and growth-enhancing policies will provide equal benefit to the poor people as well as everyone else in the society.

4.5 Impact of Savings at a formal account on Poverty

Table 5 shows the estimation results of saving at a formal financial account with poverty.

Table 5: Savings: Regression on Poverty Gap ($1.90 a day)

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	-0.177	-0.0306	-0.204	-0.219	-0.00333
	(0.122)	(0.0750)	(0.150)	(0.147)	(0.0964)
Inflation rate	0.0433	0.0201	0.0543	0.0228	0.0380
	(0.0351)	(0.0235)	(0.0481)	(0.0351)	(0.0311)
Unemployment rate	-0.0735	-0.0258	-0.0974	-0.0829	-0.0506
	(0.0985)	(0.0584)	(0.124)	(0.103)	(0.0693)
Saving (FII)	-4.920**	-3.966**	-5.176**	-4.998**	-3.738**
	(2.191)	(1.664)	(2.325)	(2.237)	(1.626)
Education (secondary enrolment)		0.0230			0.0353
		(0.0273)			(0.0345)
Health expenditure (% of GDP)			0.00120		0.00178
			(0.00173)		(0.00155)
Institutional quality				-0.540	0.105
				(0.561)	(0.214)
Constant	4.362***	1.651	4.310***	4.133***	0.233
	(1.030)	(2.472)	(0.785)	(0.907)	(3.452)
Observations	90	74	85	88	69
R-squared	0.236	0.475	0.248	0.268	0.519
Number of countries	62	52	60	60	49

*** p<0.01,**p<0.05,*p<0.1

The results indicate that savings and poverty has a significant negative relation. Higher savings would result in reducing poverty which supports the earlier studies that assumed saving to have a negative impact on poverty (Woolard & Klasen 2004, Nga 2007). Savings allows individual to smooth consumption, alleviate risk and uncertainty, to start a business or to invest in education which leads to decrease income inequality (Kunt and Klapper, 2013). Despite the interventions taking place over the last ten years to encourage financial inclusion, in most parts of the world especially in developing economies, people are still not saving enough, or they do so through informal channels. Realization of the number one Sustainable Development Goal might not be achieved in developing countries unless people start to save in a formal account.

4.6 Impact of Borrowing from a formal financial institution on Poverty

Table 6 shows the impact of borrowing from a formal financial institution on poverty. The estimation results are although insignificant but worth discussing. The negative sign depicts that borrowing leads to reduce poverty. As discussed above in the interaction of saving and income inequality, borrowing in developing nation are also commonly used through informal means such as from a family member or friend. Informal means do not create economic activity and hence cannot be beneficial in alleviating poverty (Kunt and Klapper, 2013). Borrowing from a formal financial institution reduces poverty, for instance, small loans at relatively lower cost to the poor people to make them start a business will help them to come out of the poverty threshold. It not only supports poor people financially but also has a positive impact on their social life through a better standard of living, access to education and health facilities. Inflation in the model is highly significant with a positive sign states that higher inflation leads to increase poverty which is supported by earlier studies (Cardoso, 1992; Powers, 1995; Ravallion, 1998 and Braumann, 2004). Increased inflation reduces the purchasing power of the poor people and further causes poverty in the region (Easterly and Fischer, 2001).

Table 6: Borrowing: Regression on Poverty Gap ($1.90 a day)

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	-0.107	0.0170	-0.0503	-0.160	0.0869
	(0.0961)	(0.0525)	(0.127)	(0.119)	(0.0886)
Inflation rate	0.0842**	0.0542**	0.0916*	0.0600*	0.0662**
	(0.0383)	(0.0222)	(0.0459)	(0.0334)	(0.0327)
Unemployment rate	-0.0629	-0.00710	-0.0804	-0.0702	-0.0171
	(0.106)	(0.0600)	(0.125)	(0.109)	(0.0720)
Borrowing (FII)	-1.237	-0.755	-0.399	-1.822	-0.155
	(1.419)	(1.085)	(2.059)	(1.242)	(1.383)
Education (secondary enrolment)		0.0395			0.0408
		(0.0359)			(0.0374)
Health expenditure (% of GDP)			-0.309		0.0184
			(0.302)		(0.257)
Institutional quality				-0.577	0.196
				(0.602)	(0.313)
Constant	3.484***	-0.641	5.309***	3.294***	-0.681
	(0.658)	(3.172)	(1.834)	(0.606)	(4.540)
Observations	90	74	85	88	69
R-squared	0.171	0.346	0.207	0.206	0.361
Number of countries	62	52	60	60	49

*** p<0.01,**p<0.05,*p<0.1

Financial inclusion Index, Poverty and Income Inequality

We also made an index of financial inclusion that is derived using principal component analysis and check the impact of this index on poverty and income inequality in developing regions. The index has three measurement dimensions as used earlier in the study that are account ownership, saving at a formal account and borrowing from the formal financial sector. When regression analysis is applied we obtained the following results;

4.7 Impact of financial inclusion index on Income inequality

We estimated the impact of financial inclusion index on income inequality and obtained the following results;

Table 7: Financial Inclusion Index: Regression Results on Income Inequality

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	-0.00306	-0.0338	0.000609	-0.0208	0.0520
	(0.0984)	(0.158)	(0.100)	(0.111)	(0.175)
Inflation rate	-0.0119	-0.0775	-0.0108	-0.00580	-0.0693
	(0.0330)	(0.0473)	(0.0326)	(0.0342)	(0.0435)
Unemployment rate	0.00255	0.0537	0.00425	0.000850	0.0844
	(0.0566)	(0.0668)	(0.0559)	(0.0620)	(0.0689)
Financial Inclusion	-0.309*	-0.615**	-0.308*	-0.344*	-0.662***
	(0.178)	(0.268)	(0.178)	(0.179)	(0.243)
Education (secondary enrolment)		-0.0154			-0.0210
		(0.0414)			(0.0406)
Health expenditure (% of GDP)			0.0521		0.0733
			(0.0885)		(0.112)
Institutional quality				0.557	0.957*
				(0.396)	(0.498)
Constant	43.57***	44.57***	43.27***	44.11***	45.14***
	(0.381)	(3.948)	(0.653)	(0.584)	(3.944)
Observations	107	81	106	106	79
R-squared	0.137	0.280	0.142	0.180	0.382
Number of countries	67	55	67	66	54

*** p<0.01, ** p<0.05, * p<0.1

Table 7 shows that financial inclusion has a significant negative relation with income inequality in the case of developing countries that support the earlier studies that says countries that have greater financial inclusion have lower income inequality (Honohan, 2007; Mookerjee and Kalipioni, 2010; Park and Mercado, 2015). Among control variables, GDP per capita, inflation and education appear insignificant with a negative sign, whereas unemployment rate, health expenditure, and institutional quality is also insignificant but with a positive sign.

4.8 Impact of financial inclusion index on poverty

Table 8 shows the estimation results of the financial inclusion index on poverty.

Table 8: Financial Inclusion Index: Regression Results on Poverty Gap at $1.90

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
GDP (per capita growth)	-1.079**	-0.617**	-1.343**	-0.924***	-0.0613
	(0.409)	(0.222)	(0.493)	(0.115)	(0.0992)
Inflation rate	0.0230	0.0415	0.161	0.0593	0.0250
	(0.206)	(0.169)	(0.185)	(0.0363)	(0.0451)
Unemployment rate	0.0561	0.516*	0.0621	0.651***	-0.0270
	(0.619)	(0.269)	(0.587)	(0.0927)	(0.0829)
Financial inclusion	-3.175***	-1.204***	-3.237***	-1.008***	-0.272**
	(0.519)	(0.368)	(0.594)	(0.108)	(0.110)
Education (secondary enrolment)		-0.0738			0.0257
		(0.150)			(0.0446)
Health expenditure (% of GDP)			0.0128		0.00140
			(0.00795)		(0.00192)
Institutional quality				-1.578***	0.152
				(0.285)	(0.248)
Constant	6.756	7.169	3.755	-1.781*	0.275
	(4.877)	(13.81)	(4.303)	(0.951)	(4.548)
Observations	32	35	31	42	64
R-squared	0.864	0.798	0.878	0.963	0.496
Number of countries	26	27	25	33	47

*** p<0.01, ** p<0.05, * p<0.1

The results predict that financial inclusion has a highly significant and negative impact on poverty which indicates that higher financial inclusion in developing countries will eliminate

poverty. Available literature on financial inclusion and poverty also indicates that financial inclusion plays a vital role in promoting growth and poverty reduction (Galor, 2011; Park and Mercado, 2015; Ajide 2015). The results predict that financial inclusion has a highly significant and negative impact on poverty which indicates that higher financial inclusion in developing countries will eliminate poverty. Available literature on financial inclusion and poverty also indicates that financial inclusion plays a vital role in promoting growth and poverty reduction (Galor, 2011; Park and Mercado, 2015; Ajide 2015).GDP per capita appears to be significant with a negative sign, predicting that higher GDP per capita growth will result in decreasing poverty. The previous studies on the two measures also provide strong evidence that sustained and rapid growth will eliminate poverty. For instance, China has lifted more than 50 million people out of poverty since 1979. Evidences shows that China's rapid economic growth plays a crucial role in the enormous reduction in poverty between 1985 and 2001 (Lin, 20013). Among other control variables, Institutional quality shows a highly significant and negative relationship with poverty. Low institutional quality will not only hurt income distribution through market inefficiencies but also boost poverty incidence via increased income inequality (Tebaldi and Mohan, 2010).

Chapter 5
Conclusion and Policy Recommendation

5.1 Introduction

This chapter gives an overview of the present study and is comprises of two sections. In the first section, the main findings of the present study are explained while the second section gives policy recommendations in accordance with the present study.

5.2 Conclusion

The present study examined the association between financial inclusion, poverty and income inequality with the intention to check whether financial inclusion reduces poverty and income inequality in developing countries. Three aspects of financial inclusion are analyzed in the study that are account ownership, savings in a formal account and borrowing from a formal financial institution. Later, the interaction between the three measures is also checked by using the financial inclusion index that is derived using principal component analysis.

Of the three aspects of financial inclusion analyzed, account ownership is found to have a significant negative relationship with income inequality and poverty, which indicates more formal accounts help eliminate poverty and income inequality gap in the case of developing countries. Savings are also found to have a significantly negative impact on both poverty and income inequality but with the influence of institutional quality. Borrowing from a formal financial system appears with a negative sign yet insignificant both in case of poverty and income inequality. This suggests that income inequality and poverty can be reduced from formal borrowing instead of borrowing from informal means.

Later, a financial inclusion index was made to check its impact on welfare which is measured by poverty and inequality. This index was derived using principal component analysis of the three aspects of financial inclusion that are account ownership, which includes both mobile money accounts and accounts at a formal institution, savings at a formal account and borrowing

from a formal financial system. The results indicate that financial inclusion is negatively correlated with poverty and income inequality which contradicts earlier studies that say financial inclusion enhances poverty and income inequality. Hence, financial inclusion can be used as a tool to reduce growing poverty and income inequality in developing countries.

5.3 Policy recommendation

Based on the present study's findings the following policy suggestions are given;

Financial inclusion is a significant tool to eliminate poverty and income inequality but still, 1.7 billion adults are unbanked in developing countries. Nearly half of them live in only seven developing countries that are Pakistan, India, China, Indonesia, Bangladesh, Mexico and Nigeria (Global Findex report, 2017). One main reason of financial exclusion is the lack of financial literacy in developing countries. People lack awareness that prevents them from using formal financial services and products. Hence, developing countries must launch financial literacy programs to ensure individuals can make sound financial choices, select those financial products and services that are in their interest and know-how of the usage of those products.

Another main reason of financial exclusion in developing countries is expensive financial services and products. Due to high cost, for instance, a high borrowing rate, provokes people to borrow money from informal means such as from a friend or family than from a formal financial system. Therefore, banks should not only look at financial inclusion as a business opportunity but also as a social responsibility. Easy and affordable financial products should be introduced for example small loans at an affordable cost to start a business or for educational purpose, will help bring poor people out of poverty.

Lastly, Institutional quality should be improved as it plays a significant role in a country's progress and considered as the backbone of a country. Better Institutional quality will help in reducing poverty as an economy with strong institutions to control corruption, an effective

government, and a stable political system will promote economic growth, reduces income distribution conflicts, and eliminate poverty. Hence, Institutional reforms should be made in such a way that institutional quality could not be disrupted by the political elites of a country.

Appendix

LIST OF COUNTRIES

Afghanistan	Egypt	Macao	Rwanda
Albania	El Salvador	Macedonia	Senegal
Algeria	French Guiana	Madagascar	Serbia
Argentina	Gabon	Malawi	Sierra
Armenia	Georgia	Malaysia	Leone
Azerbaijan Bangladesh	Ghana	Mali	Somalia
Belarus	Guatemala	Martinique	Sri Lanka
Belize	Guinea	Mauritania	Sub-Sahara
Benin	Haiti	Mauritius	Sudan
Bolivia	Honduras	Mexico	Tajikistan
Bosnia	India	Moldova	Tanzania
Botswana	Indonesia	Mongolia	Thailand
Brazil	Iran	Montenegro	Togo
Brunei	Iraq	Myanmar	Tunisia
Bulgaria	Jamaica	Namibia	Turkey
Burkina Faso	Jersey	Nepal	Uganda
Cambodia	Jordan	Nicaragua	Ukraine
Cameroon	Kazakhstan	Niger	Uzbekistan
China	Kenya	Nigeria	Venezuela
Colombia	Korea	Niue	Vietnam
Congo republic	Kosovo	Pakistan	Yemen
Costa Rica	Kyrgyz Republic	Panama	Zambia
Croatia	Lao PDR	Peru	Zimbabwe
Dominican Republic	Lebanon	Philippines	
Ecuador	Lesotho	Romania	
	Liberia	Russia	

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ABSTRACT

Financial inclusion is considered as a key empowering agent of economic growth and placed as a policy priority in most of the countries. It is one of the topics that reflect continuous evolution and gained importance after the global financial crises. It is also considered as an important sustainable goal to reduce poverty and inequality however this view is inconclusive. Some studies support financial inclusion as an important tool to reduce poverty and inequality while other studies contradict this view. The present study extends the literature on the impact of financial inclusion on welfare by focusing on a broad range of developing countries, using the Global Findex dataset (2017). Three aspects of financial inclusion are included in the study that are account ownership, saving and borrowing from a formal financial system whereas poverty and income inequality are used as a measure of welfare. We also examined the impact of the financial inclusion index, which is made by using principal component analysis of the three aspects; account ownership, borrowing and saving at a formal account, on poverty and income inequality. The results showed that out of three aspects of financial inclusion, account ownership, and saving has a significant negative relationship with poverty and inequality. The negative relationship indicates that financial inclusion significantly reduces poverty and inequality which refutes the position of early studies that predicted a positive relationship among the three measures. Our findings suggest that developing countries must launch financial literacy programs, introduce easy and affordable financial services and products for the poor households and improve the quality of institutions. These measures will broaden financial inclusion, thereby contributing to poverty reduction and lower income inequality.

Keywords: Financial inclusion, Poverty, Income inequality, developing countries