

RESEARCH ARTICLE

Effect of Financial Inclusion and Stability on Equality, Poverty, and Human Development: An Empirical Analysis in the Context of South Asia

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In this research endeavor, financial inclusion and its impact on three important aspects of human life (i.e., inequality, poverty, and human development) are explored in the south Asian region. Worldwide inequality is catching much attention from the academic community off late. Similarly, the extent of poverty and human development indicators of any country indicates the level of development. The penetration of the bank branch and automated teller machine (ATM) is considered as a proxy for financial inclusion. Long time-series data from 2004 to 2016 is considered for this study. This should be an important addition to the existing literature on these topics. System Generalized method of moments (GMM) is used for the analysis to mitigate the presence of endogeneity, heteroscedasticity as well as serial correlation in the dataset.

Keywords: Financial Inclusion, Inequality, Poverty, Human Development, South Asia

JEL Classification: O11, O15, O16, G00

The primary goal of financial inclusion is to bring the “unbanked” segment of society under the ambit of the formal financial system. In the process, they can improve their standards of living, which in turn leads to the overall economic development of the country and its growth. Over the past few decades, the banking industry has shown tremendous stride forward and grown manifold in terms of complexity and volume. We should acknowledge the fact that there are quite significant improvements in areas relating to financial viability, competitiveness, and usage of technology. Despite these significant achievements,

concerns regarding the reach of banking services remained, especially concerns regarding the reach of banking among the underprivileged segment of the society persists (Leeladhar, 2006). Researchers already explored the causes of financial exclusion in a whole host of countries. The reasons for the exclusion are not the same across the board, so the strategies should also vary from country to country.

According to Beck et al.(2007), there are multiple reasons for financial exclusion. The primary reason is that a certain segment of the population is often considered as “unbankable” by traditional financial

institutions because they do not generate enough income to be commercially viable as customers. Certain population groups may also face discrimination based on religion, ethnic identity, language spoken, among others. Product features may not be appropriate for a section of the population as well.

Financial inclusion has multiple dimensions. However, as per prior literature, financial inclusion, in general, refers to a state in which the entire working-age adult segment of society have effective access to the formal financial system.

On the other hand, financial exclusion is the process that creates barriers for the poor and marginalized social groups from gaining access to the formal financial system. It amplifies geographical differences in levels of income and economic development (Leyshon & Thrift, 1995). People who do not have access to the formal financial system have to fall back on private money lenders, pawnbrokers, among others (Mani, 2001). The informal financial system is unorganized and unregulated, and it also has multiple drawbacks such as high interest rates, frauds, and exploitation. Financial inclusion is a current policy priority because a lack of presence of formal financial services creates many socio-economic problems. First, it makes people vulnerable to high-interest credit in case money is needed. Second, lack of savings can lead to poverty in old age, and lack of insurance leaves the families susceptible to a financial crisis some exigencies and natural calamities like burglary, fire, and flood (Mitton, 2008).

Around two billion people (i.e., around 38% of the world population) do not have access to the formal financial system (Demirguc-Kunt, et al., 2015), majority of these people belong to underprivileged segment of society from the developing world. The primary reasons for high levels of financial exclusion are unavailability of financial services or high costs associated with access to it (The World Bank, 2016). As per region-wise global data, around 60% of the adult population in South Asia do not use formal financial services, compared to only 8% in high-income countries (Cull et al., 2013). South Asia's role is significant in the world economy as it is home to one-fifth of the world's humanity. It is also the most densely populated geographical region in the world. South Asia has experienced a long period of very high economic growth. As a result, it is counted among the fastest-growing regions in the world. Despite of the

strong economic growth shown by the region, poverty remains substantially high. The World Bank (2015) stated that a key to meet global poverty and prosperity goals lies in the development of the South Asian region. This region is home to the world's largest chunk of the working-age population as well as one-fourth of the world's middle-class consumers (Tin, 2006). Thus, the growth of the South Asia region is important to change the global poverty scenario (The World Bank, 2016). In light of these discussions, there is a paramount need to analyze the financial inclusion situation in South Asia.

The South Asia region has countries that are on the radar of the global investor community. India is now part of BRICS (Brazil, Russia, India, China, and South Africa) grouping. Bangladesh and Pakistan are featured in the N11 (Next 11) list of countries by the global investment bank Goldman Sachs. The banking sector remains the primary tool for financial inclusion in this vast region.

In recent years, the focus area for the policymakers and the opinion leaders in the academia is to increase the ambit of the formal financial system (Kempson, 2006). According to Beck et al. (2007), countries with higher levels of financial development do experience a faster reduction in proportion to poor populations (defined as those living on less than \$1 a day). Burgess and Pande (2005), for example, uncovered the evidence that the redistribution capability of a new bank branch resulted in a faster decline in poverty in the Indian context, especially in provinces where the initial financial development level was lower.

Rising inequality is a concern today across most of the developed as well as emerging market economies. Inequality within most of these countries has shown an upward trend in recent years, a phenomenon that has duly received considerable attention across the board. Equality as a value is important in most societies. Irrespective of ideological grounding, culture, and religion, people do care about rising inequality. A high degree of inequality signals a lack of upward mobility and opportunity for particular societal segments. Widening inequality also has significant implications in terms of growth and macroeconomic stability of any society, as it potentially concentrates political and economic power in the upper echelons of the society. This may lead to suboptimal usage of human capital, thus cause instability in political and economic life.

Existing literature is of the view that financial development in terms of the existence of financial

intermediaries does reduce inequality (Clarke & Cull, 2002).

The notion of human development stems from the conceptual framework coined by Amartya Sen's capability approach. According to the United Nations Development Programme (UNDP, (2007), human development is a process of enlarging people's choices and enhancing their capabilities. Access to formal financial system acts as one of the cornerstones of this enlargement in the people's choices.

In this context, it is pertinent to study whether there exists any link between financial inclusion on one side, and poverty, inequality, and human development on the other side.

Our objective is to study the relationship between financial inclusion and inequality, poverty level, and quality of human life in the context of South Asia. It should be noted that the relationship between financial inclusion, inequality, poverty, and human development is not one-directional, and they may have reverse causality.

Research Hypothesis

In view of the stated objective, we have the following three hypotheses:

H1: Extent of financial inclusion affects inequality in the context of South Asia.

H2: Extent of financial inclusion affects the poverty level in the context of South Asia.

H3: Extent of financial inclusion affects human development in the context of South Asia.

We intend to analyze the countries in the South Asian region. As a result, countries with the same socio-economic profile from other regions of the world are not taken into account. It can be considered as a limitation of the present study.

Literature Review

There has been a noticeable increase in inequality in terms of economic parameters in recent years. This has brought inequality into the focus of public discourse in recent times (Piketty 2014). It is more profound in the context of developing countries (Alvaredo & Gasparini, 2015). Although inequality is, to some extent, may be inevitable, the concern is

not limited to the degree of inequality but also the means through which current income and wealth generation and distribution take place. The preference for a more equal society is important in that context (Norton & Ariely, 2011). Prior research showed that individuals' perception of the causes of inequality determines their response to it (Konow, 2003; Cappelen et al., 2007, 2013). There are other consequences of inequality; for example, literature shows that higher inequality in a society leads to a decline in trust and trustworthiness (Fehr, 2018). According to Bardhan, (2005), this may make managing conflicts in society difficult. Higher inequality may lead to social unrest, reducing the opportunity cost of engaging in violence (Lichbach, 1989). The effect of inequality on economic growth is not certain (Madsen et al., 2018). Some researchers believe that the rising income of the rich and stagnant income of the poor and the middle class hurt the short term and long term growth prospects of an economy (Kumhof & Ranciere, 2010). Rajan (2010) contended that the financial crisis of 2008 was a result of prolonged inequality in the western world that led to the purchase of assets backed by a higher proportion of leverage and subsequent relaxation in standards for mortgage underwriting. Another problematic phenomenon in this context was the role played by the lobbyists to push for a higher degree of financial deregulation (Acemoglu, 2011). It is also of significance that the existing literature says that extreme inequality can lead to a backlash against globalization and market-oriented reforms (Claessens & Perotti, 2007). The Brexit referendum can be seen in this context. At the same time, power concentration at the hands of the elite could lead to less expenditure of public money in areas that boost economic productivity and growth, which in turn benefits the poor (Putnam, 2000; Bourguignon & Dessus, 2009).

However, there is a contrarian view that says there is a positive relationship between inequality and growth as inequality provides the necessary incentive for working hard (Cingano, 2014; Shin, 2012; Mirrlees, 1971).

There is also some interesting interaction between inequality and poverty. Ravallion (2004) believed that growth is less efficient in lowering the level of poverty in countries where the benefit of the growth is skewed towards the wealthier segment of society. Future economic growth can also be handicapped by high inequality because the poorer segment of the society

may not be in a position to accumulate enough physical and intellectual capital to become an effective factor of production (Galor & Moav, 2004; Aghion et al., 1999).

Prior research shows that the financial development of a country determines credit availability; thus, it influences inequality in a major way (Aghion & Bolton, 1997; Banerjee & Newman, 1993; Galor & Zeira, 1993; Piketty, 1997). Access to credit is found to be the predominant factor that impedes the development of a robust private sector in the context of emerging economies (Chauvet & Jacolin, 2017).

According to recent research by Didier et al. (2015), global poverty has reduced rapidly in the past one and half decades. For example, according to World Bank (2016), in the year 2000, as much as 37% of the total global population lived in a low-income country; however, as of December 2015, that number has reduced to only 8%. At the same time span, the proportion of the global population that lives in a middle-income country has increased from 48% in 2000 to 76% in 2015. This rapid decrease in poverty enabled the world to reach the Millennium Development Goal on reducing extreme poverty ahead of time, in 2011. Another notable achievement in poverty reduction front was that the share of the world population living on US\$1.90 or less per day (in constant prices) was 29% in 1999, but it reduced to 14% in 2011 (Didier et al., 2015).

Didier et al. (2015) noted that since 2010, growth had shown considerable deceleration in emerging market economies. The growth in these countries have shown considerable reduction to go below pre-financial crisis (2003–2008) rates, and, by 2014, the growth rate had further fallen below its long-term (1990–2008) average. In this backdrop, the level of poverty remains a cause of concern in the whole host of emerging market economies.

Existing literature showed that if the financial constraints are eased, then it has a cascading effect on growth at the firm and macroeconomic levels (King & Levine, 1993; Rajan & Zingales, 1998; Beck & Demirguc-Kunt, 2006).

Researchers started putting interest in financial inclusion in the late 1990s (Leyshon & Thrift, 1993, 1994; Collard, 2010). The existing literature argued that the financial inclusion of a country has a direct bearing on its economic development (Allen et al., 2016; World Bank, 2015). An inclusive financial system provides necessary financial resources across

all sections of society, including the marginalized and the disadvantaged segments (Bose et al., 2017). This also provides a platform for necessary saving and borrowing. Kempson and Whyley (1999) researched on the financially excluded population group, and they opined that for low-income group segment of the population, financial inclusion is achieved if they have a basic bank account. Financial inclusion has become one of the major policy objectives for policymakers across the globe. The existing literature provides evidence that financial inclusion increases savings (Aportela, 1999; Allen et al., 2016), reduces poverty, and income inequality (Bruhn & Love, 2014; Beck et al., 2007).

The objective of the Human Development Index (HDI) is to provide a broader perspective on the development of countries than what is possible by focusing solely on economic parameters. The index is based on country-level attainments in areas like life expectancy, education, and income. The index has been published since 1990 in the UNDP's Human Development Reports (HDRs). The HDI score is found to be an appropriate measure than the traditional economic indicators like Gross Domestic Product (GDP), GDP per capita, GDP growth rate, Gross National Income (GNI), among others, in the context of a country's relative human development level (Anand & Ravallion, 1993; Easterlin, 2000).

Sarma and Pais (2008) found a close relationship between human development and the financial inclusion of countries. According to this study, factors like inequality, education level, and income play major roles with respect to financial inclusion.

To understand the linkage strength between financial inclusion and income inequality, poverty, and human development, the present study uses standard control variables that have been widely used in the existing literature. We controlled for the lagged level of inequality and poverty and human development indicators. In the process, persistency in poverty, inequality, and human development is tested; this in accordance with Beck et al. (2007). The ratio of trade to GDP is taken into account to capture South Asian economies' degree of trade openness. The rate of inflation is added as a control variable following the example of Ravallion and Datt (1999), Easterly and Fischer (2001), and Dollar and Kraay (2002), as there is documentary evidence present that the inflation rate acts as a significant determinant of poverty. It is

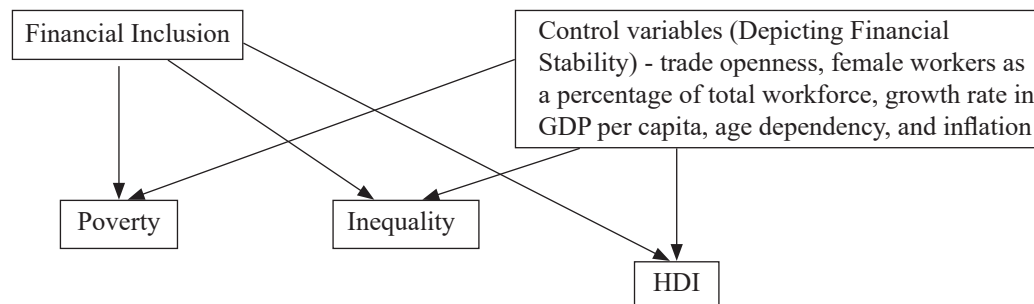


Figure 1

Schematic Diagram of Relationship Between Various Variables

also important to control whether financial inclusion affects those in the low-income bracket because of its effects on GDP per capita. Thus, the real per capita GDP growth rate is also included as a control variable.

The relationship between financial inclusion and financial stability is not well explored, especially in South Asia (Cull et al., 2012). It is pertinent to note that the financial crisis of 2008 has brought the focus back on financial stability. Population groups with lower levels of income can have severe issues due to financial instability. Financial instability leads to a financial crisis, which in turn affects economic growth and social welfare. As the South Asian region has one of the lowest per capita income in the entire world, financial instability may have a severe impact on its various population groups.

From the perspective of the banks, financial stability helps them to have a more stable deposit base. It is well accepted globally that money kept by retail customers are more prudent as a source for banks than money borrowed from financial markets. As a result, financial inclusion makes banks more robust and leads to financial stability.

Similarly, financial inclusion leads to financial stability by making the process of intermediation between savings and investments more efficient. If the customer base expands, banks can have a more robust balance sheet and diversify their risk. Financial inclusion brings different segments of society under the ambit of the formal financial system. Without financial inclusion, individuals do transactions in cash; subsequently, they take their decisions independent of the Central Bank's monetary policy. Financial inclusion brings those individuals into the formal financial system and makes the transmission mechanism of monetary policy more effective. Financial inclusion has the potential to reduce income inequalities, bridge

the gap between the rich and poor, and improve human development indicators. This is particularly relevant in the context of South Asia.

Research Gap

According to a Lewis et al. (2016) as far as financial inclusion in South Asia is concerned, it was found that financial inclusion in India got a major fillip from Pradhan Mantri Jan Dhan Yojana (PMJDY). Launched in 2014, which is arguably one of the most path-breaking initiatives to increase the ambit of the formal financial system, PMJDY is hailed as one of the largest ever initiative to achieve financial inclusion, where every adult citizen of the country is provided with a basic bank account, with very minimum documentation required. This initiative dramatically increased the financial inclusion proportion in India. Similarly, according to Lewis et al.(2017), Pakistan showed the best improvement in South Asia; Bangladesh also showed strong governmental commitment to financial inclusion.

It is pertinent to note that India, the largest country in South Asia, both in terms of size of the economic size and population, has seen increased inequality in recent years (Himanshu , 2018) . According to Byron & Parvez (2019) , the inequality level in Bangladesh is at its highest ever point. Dogra (2017), in his article headlined "South Asia is Losing the War Against Inequality" had argued that South Asia is probably the most unequal geographic region in the world.

It is also noteworthy that South Asia's share of the global poor has increased from 27.33% to 33.4% in the time span between 1990 and 2013 (Deyshappriya, 2018).

According to UNDP (2019), HDI ranking of South Asian countries as of 2019 remains quite dismal, with Sri Lanka leading the pack with a rank of 71, the

Maldives ranked second in the region with a rank of 104. Pakistan is ranked last at 152 in the region. India stood at 129, Bhutan, Bangladesh, and Nepal followed closely with ranks of 134, 135, and 147, respectively. It is pertinent to note that only one South Asian country ranked in the top 100 in terms of HDI score as of 2019.

As South Asia intends to make rapid strides on the financial inclusion front, it is interesting to study the effect of financial inclusion on poverty, inequality, and human development with respect to South Asia in the backdrop of high economic growth.

This should also be noted that there is no existing study that connects financial inclusion parameters (by taking automated teller machine (ATM) and bank branch penetration as proxy) with that of poverty, inequality, and human development (by taking HDI score as proxy), especially in the context of South Asia. This study intends to fill these gaps.

Variables of the Study

Dependent Variables

There are three dependent variables for three different models. The first dependent variable is poverty. The population percentage of a country living below the national poverty line is considered as the proxy for poverty. The second dependent variable is inequality, which is depicted by the Gini coefficient of the respective countries. The third dependent variable is human development. For this research HDI score of the respective countries is taken into account.

Explanatory Variables

In this research paper, financial inclusion is considered to be the explanatory variable. Automated teller machine (ATM) and bank branches per 1,000,000 populations are considered as a proxy for financial inclusion in this study. Financial inclusion primarily means having a bank account in the context of South Asia. An ATM/debit card is provided with every bank account opened. As a result, ATM and bank branch penetration can be considered as a proxy for financial inclusion. This is in accordance with Kim et al. (2018).

Control Variables

Standard control variables are used as per the existing literature. The control variables include inflation, age dependency ratio, female workers as a percentage of the total workforces, trade as a

percentage of GDP (signifying trade openness), and growth rate in per capita GDP. These control variables are considered as per Neaime and Gaysset (2018).

Data and Empirical Methodology

Seven South Asian countries, namely Bangladesh, Bhutan, India, Nepal, Maldives, Pakistan, and Sri Lanka, are considered for this study. The eighth country that is part of the South Asian Association of Regional Cooperation, that is, Afghanistan, could not be considered as adequate data is not available for this country. Long time-series data from 2004 to 2016 (13 years) was taken into account for the analysis. The source of the data regarding ATM and bank branches per 1,000,000 populations is the Financial Access Survey of International Monetary Fund (IMF). Data regarding these variables are available from 2004 onwards only, that is why 2004 is considered the starting point for the study. The data regarding other parameters are retrieved from the World Development Indicator Database of the World Bank. Data regarding HDI is sourced from the United Nations Development Program (UNDP) database.

Economic development may bring down poverty, and an increase in human development may spur the demand for financial services. At the same time, the reduction in income inequality may generate demand for more financial inclusion. In the context of this particular research endeavor, data is endogenous. The endogeneity of the panel data set is also empirically proved through residual statistics of the OLS method and the Wald test. The only exception is the effect of ATM penetration on HDI, where the p-value is much higher than 0.05. The data also shows heteroscedastic properties (as shown by the p-value of the White test). As a result, OLS regression results are not optimum. To overcome these issues, a dynamic panel estimator is used based on generalized methods of moments (GMM). Another advantage of GMM is that it takes care of the issue of serial correlation. These sets of data also contain serial correlation as depicted by the Breusch-Godfrey LM test for serial correlation.

Arellano and Bond developed the GMM method in 1991 in the form of difference GMM. It was further developed by Arellano and Bover (1995) and subsequently Blundell and Bond (1998) in the form of system GMM. In this research paper, system GMM method is used, as it is a perfect fit for panel data

with fewer time observations. In GMM, the lag of the dependent variable becomes an independent variable. As lagged dependent variables (i.e., inequality, poverty, and human development) are used, it shows the persistency of the dependent variable, as in Beck et al. (2007). A basic OLS based regression model is also included in the study. This methodology is in accordance with the study of Neaime & Gaysset (2018).

Our dynamic panel data model has the form:

$$Z_{it} = \alpha_i + \sum_{j=1}^p \varphi_j Z_{it-1} + \sum_{j=1}^N \gamma_j X_{jit} + \sum_{k=1}^L \beta_k Y_{kit} + \varepsilon_{it}, \quad (1)$$

where i stands for i th cross-sectional unit (country); t for the t th time period (year); X refers to the proxy for financial inclusion variables; Y is a vector independent economic variables; Z refers to the measure of poverty, inequality (in terms of income Gini), and human development (in terms of HDI score).

Empirical Results

In the first part of the empirical analysis, ordinary least square (OLS) regression was performed. According to the existing literature, OLS regressions are biased and inconsistent. Subsequently, these results are compared with more consistent, reliable, and robust GMM based models.

According to the OLS model, poverty is dependent on the number of bank branches, trade openness, and age dependency ratio. More bank branches act as the enabler for the reduction in poverty. On the other hand, the two other factors increase the level of poverty in the economy. With respect to inequality, the number of bank branches, trade openness, and growth rate in GDP per capita increases the extent of inequality, whereas inflation decreases it. Factors that contribute positively to human development are growth in GDP per capita and the number of bank branches. On the other hand, age dependency has a negative impact on HDI.

Table 1
Summary Statistics

Variable Name	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Bank per 100,000 adults	91	10.55007	3.746413	2.533338	19.43244
ATM per 100,000 adults	91	9.175518	7.539341	0.12518	32.25391
Inflation (in terms of %)	91	7.326442	4.1852	0.8214785	22.79926
% of female worker of the total workforce	91	34.5548	9.1779	16.7961	50.6999
Trade openness(as % of GDP)	91	70.0383	46.8165	24.5158	196.9972
GDP per capita (in US \$)	91	2117.858	1900.87	460.7579	8586.422
Age dependency ratio	91	57.5463	10.0559	37.9557	79.0504
Gini Coefficient	91	35.9749	3.6666	29.8	44.4
Human Development (HDI)	91	0.5945	0.0811	0.469	0.7748
% of population living below poverty line	91	25.4438	13.1469	4.76	51.7

Table 2
Results of OLS Regression

Dependent Variable:	Poverty	Inequality(Gini coefficient)	Human Development (HDI)
Bank per 100,000 adults	-1.507* (0.1550)	0.5528* (0.1008)	0.0078* (0.0016)
ATM per 100,000 adults	-0.0975 (0.0826)	-0.0182 (0.0537)	0.0013 (0.0008)
Inflation	0.0838 (0.1020)	-0.1773* (0.0663)	0.0015 (0.0010)
% of female worker of the total work force	-0.0172 (0.0475)	0.1757* (0.0309)	0.0003 (0.0005)
Trade openness(as % of GDP)	0.0316* (0.0124)	0.0243* (0.0081)	-0.0002 (0 .0001)
GDP per capita growth	-6.9955 (5.7101)	8.9257* (3.7136)	0.1238** (0.0604)
Age dependency ratio	0.8342* (0.0744)	0.0731 (0.0484)	-0.0046* (0.0007)
Constant	-7.2933 (5.9273)	18.7676* (3.8548)	0 .7458* (0 .0627)
R-square	0.9254	0.5877	0.7809
White Test p value	0.0004	0.0006	0.0001

*- significant at 1% level

**- significant at 5% level

Table 3
P-Value of the Residuals of the Explanatory Variables in the OLS Regression

Dependent Variable	Poverty	Inequality (Gini coefficient)	Human Development (HDI)
Residuals of Bank per 100,000 adults	0.0000	0.0000	0.0000
Residuals of ATM per 100,000 adults	0.0000	0.0000	0.2442

Table 4
F-Statistics (p-value) of the Wald Test of the Residuals of the Explanatory Variables in the OLS Regression

Dependent Variable	Poverty	Inequality (Gini coefficient)	Human Development (HDI)
Residuals of Bank per 100,000 adults	0.0000	0.0000	0.0000
Residuals of ATM per 100,000 adults	0.0000	0.0000	0.2442

Table 5
Breusch-Godfrey LM Test for Serial Correlation on OLS Regression

Dependent Variable	P-Value
Poverty	0.0000
Inequality	0.0000
Human Development (HDI)	0.0000

Table 6
Results of GMM

Dependent Variable:	Poverty	Inequality(Gini coefficient)	Human Development (HDI)
Lag(Dependent variable)	0.9699* (0.0237)	0.8430* (0.0221)	0.9904* (0.0052)
Bank per 100,000 adults	-0.0336 (0.0384)	0.1077* (0.0280)	-0.0003* (0.0001)
ATM per 100,000 adults	0.0689* (0.0152)	0.0045 (0.0146)	0.0001* (0.00003)
Inflation	-0.0599** (0.0323)	-0.0333** (0.0166)	-0.00005 (0.00005)
% of female worker of the total work force	0.0137 (0.0144)	0.0115* (0.0046)	7.37e-06 (0.00003)
Trade openness(trade as % of GDP)	0.0039*** (0.0023)	-0.0042** (0.0020)	-5.51e-06 (8.18e-06)
Growth in GDP per capita	1.1526 (0.9963)	0.59631 (1.0620)	0.0079*** (0.0046)
Age dependency ratio	0.0609** (0.0274)	-0.0235*** (0.0143)	-0.00008*** (0.00004)
Constant	-4.9167* (1.4745)	5.7031* (1.5672)	0.0198* (0.0053)
AR(1)	0.046	0.147	0.049
AR(2)	0.694	0.100	0.941
Hansen test (p value)	1.000	1.000	1.000

*- significant at 1% level

** - significant at 5% level

***-significant at 10% level

The p-value of the White test, as depicted in Table 2, clearly shows that the data has heteroscedastic properties (as the p-value for all the three models are less than 0.05).

The p-value of explanatory variables is less than 0.05 (as depicted in Table 3) in most of the cases; it proves that the data is endogenous in nature.

The p-value of the Wald test (depicted in Table 4) corroborates the same.

The p-value of the Breusch-Godfrey LM test for serial correlation, as depicted in Table 5, clearly shows that the data has a serial correlation.

As the data is endogenous, heteroscedastic, and has serial correlation, the dataset is found to be fit for

GMM. As the residual statistics of the OLS regression as well as result of Wald test shows, both the measures of financial inclusion (i.e. penetration of bank branches and ATMs) have endogenous relationship with all the three dependent variables i.e. poverty, inequality and human development, only exception being the relationship between ATM penetration and human development measure. In this context it is necessary to use GMM. The usage of GMM is further necessitated with the presence of heteroscedasticity and serial correlation as well in the dataset. The presence of heteroscedasticity and serial correlation in the dataset is borne out by the test results of White test and Breusch-Godfrey LM test respectively.

Now let us compare OLS results with more robust GMM. The J statistics p-value shows that the overidentifying restrictions are not rejected in any of the three models. AR (2) results show no autocorrelation of order 2 in these models.

It is seen that the standard error (as denoted within parenthesis for both OLS as well as GMM models) is much less in GMM models than OLS models. It shows that GMM models are much more robust in this particular case.

As per the GMM model, poverty gets reduced due to an increase in the number of bank branches. This is in accordance with the existing literature. For example, Demircuc-Kunt and Levine (2009) believed that the financial development of any country explains to a great extent the income growth in the poorest segments of society.

Trade openness has an inverse relationship with poverty. This can be explained through existing literature, which says that the liberalization in trade policy creates more disparity in wages between the skilled and the unskilled workers. Also, technology can replace unskilled worker's job through automation. As a result, it has an adverse impact on poverty levels (Winters & Martuscelli, 2014).

Surprisingly, financial inclusion has minimal impact on human development, as the coefficients of the financial inclusion parameters are minuscule. Moreover, the number of bank branches seems to have a negative impact on human development. One possible explanation for this is a country with a higher HDI score should be technologically more advanced. As a result, there will be more banking transactions through digital channels instead of bank branch-based channels.

Higher inflation lowers human development and increases inequality. This is in line with the existing literature. The proportion of female workers increases poverty and inequality, although, for poverty, the factor is not statistically significant. One possible explanation for this phenomenon can be reverse causality, where higher poverty is the reason for the higher proportion of female workers in a country, especially in the context of South Asia. Growth in GDP per capita has a positive impact on human development. Intriguingly, it also has a positive impact on inequality and poverty. Probably, poorer countries with lower per capita GDP showed faster growth due to low base effect.

More proportion of people who are outside the working-age population, as indicated by the dependency ratio, increases the level of poverty and human development score. However, it also decreases inequality. The possible explanation for this phenomenon is the wage disparity of the workers, as more people in the working-age population results in more inequality.

Conclusions

The study shows that the impact of financial inclusion has a mixed effect on the parameters of inequality, human development, and poverty. It is noteworthy that the study found that a higher degree of financial inclusion increases inequality. As a result, it can be concluded that financial inclusion is no remedy to the issue of inequality. This is a significant finding, especially in the present economic environment worldwide, where inequality is a hotly debated issue. As an alternative measure, the policymakers may think of universal basic income as a tool to reduce inequality.

For the other two dependent variables, namely poverty and human development, two parameters of the explanatory variable showed a conflicting effect. As a result, no conclusive inferences can be drawn.

The study found to support that trade openness is not always good for the economically weaker sections of society. The summary statistics table shows that the South Asia region has one of the most under-penetrated banking systems in terms of the presence of bank branches and ATMs. With the increasing penetration of the Internet and mobile phone, newer banking channels like internet banking and mobile banking are being popularized. It will be interesting to see how financial inclusion initiatives change in this backdrop and what

influences it shows on the overall well-being of human beings in this region.

South Asia remains one of the poorest region of the world, although approximately one-fourth of the human population lives in this region. As of 2014, only 6.5% of the world's output in terms of GDP is contributed by this region. As South Asia continues to be one of the world's poorest regions in terms of per capita income, financial inclusion will remain a formidable challenge to policymakers to ensure lesser inequality and poverty, as well as better quality of life in terms of human development indicators. This particular study should help policymakers in making the right decisions in this regard. This should also be noted that the South Asia region is expected to be at the forefront of the growth trajectory, among all the regions of the world, in the near future.

This study should be a significant addition to the existing literature on the subject. The same models may be tested on a much wider spectrum of countries in terms of socio-economic development.

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