



Economic Growth, Financial Development, Income Inequality and Poverty Relationship: An Empirical Assessment for Developing Countries

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ABSTRACT

The paper contributes to the current literature by investigating the effects of economic growth, income inequality, and financial development on poverty for fifteen (15) developing countries. Panel data over the period from 2002 to 2018 has been used. Pooled Mean Group (PMG) technique has been applied for estimating the results. The study employs panel unit root tests namely: LLC and IPS for checking the unit root in the data. The long results show that all variables turned significant in the model. The income inequality shows positive relationship with poverty. Financial development and economic growth reveal adverse impact on poverty. Government spending and employment (increase in labor force participation) impact on poverty are negative. Furthermore, trade openness and inflation coefficients turned significant however, its sign are not according to the theory. Moreover, in the short run income inequality and economic growth show no impact on poverty. Financial development relationship with the poverty is still positive. Inflation revealed positive relationship with poverty. Trade openness show positive relationship with poverty. And other two variables government spending and labor force participation rate coefficients remained insignificant. The error correction coefficient i.e. speed of adjustment parameter is - 0.089. On the basis of the findings it is suggest that effective policies for boosting up economic growth, advancement of financial sector and reducing income inequality can significantly contribute towards the poverty reduction in the developing countries. It is suggested that the government shall formulate appropriate policies for the development of financial sector, boosting up economic growth and reduction of income inequality which will contribute to the reduction in poverty of the selected countries.



1. Introduction

The desire of eradicating poverty is dependent on the level of sustained economic expansion and how its benefits are distributed across a society. Knowing the level of absolute poverty and its impact on low income group provides a deep understanding of income inequality amongst the poor. The significance of income inequality in the development process can be traced back to Kuznets (1955) hypothesis, which studied the relationship between economic growth and inequality and discovered that in the initial phases of economic development, a conventional inverted-U theory indicates that economic expansion will exacerbate income distribution. However, as economic growth increases, income inequality is likely to decrease. Despite the fact that various studies Anand and Kanbur (1993); Ram (1989); Sayed and Peng (2020) rejected this result. Rising inequality within countries, notably in Asia and Africa, has received increased attention. Higher income inequality slows economic growth and worsens the equal distribution of income among masses. In recent years, income inequality in many countries has risen, regardless of whether such countries are growing or not (The Standardized World Income Inequality Database (SWIID, 2020).

The latest and closest to our study is from Omar and Inaba (2020) on the impact of financial inclusion on poverty and income inequality for developing countries. This study differs from Omar and Inaba (2020) in a number of ways. First reason is, the current study includes as financial development index on poverty, while the former used financial inclusion proxies instead of proxies of financial development. While second reason is it used an unbalanced data. Another study done by Perera and Lee (2013) which finds closed to our study by determining the effects of economic growth on poverty and income inequality in East and South Asia, this study ignores the effect of financial development on poverty and secondly it was only done for developing South and East Asian countries & completely ignored African countries. Another study which finds closed to our study is done by Majeed (2017) and it differs from a previous study firstly because it done for Muslim countries only. Secondly this study used only two proxies of financial development while we have used five proxies for developing financial development index. To the best of our knowledge this will be the first study which made composite index for financial development for studying finance –income inequality on poverty for developing selected countries from Asian and African Region by using a Principal Component Analysis (PCA) tool and Pooled Mean Group technique.

Very little attention has been paid to estimate the impact of income inequality in explaining poverty -finance relationship. This will be the first study which focuses on economic growth, income inequality, and financial development on poverty for selected developing countries of Asian and African region. The available literature on economic growth and poverty in these two regions do not incorporate the role of finance and income inequality to explain its links with poverty (M. Nawaz, Hussain, Riaz, & Ahmad, 2019).

The World Bank (2020) report shows that the pandemics of COVID -19 are expected to push as many as 150 million population into extreme poverty by 2021. The situation is more worsen in developing countries like Asian & African region where despite a rapid increase in economic growth a large proportion of world's poorer population living are still deprived to achieve minimum standard of living. The African region contains 50.7 % of world extreme poor followed by Asian region, where the calculated value is approximately 40.7 % (World Bank, 2016).

Table 1 shows the trends in income inequality as measured by the Gini index from 1999 to 2018 for developing Asian and African countries. It is evident that income inequality increases in nine economies out of 15 countries which have been examined.

This study aims to investigate the effects of economic growth, income inequality and financial development on poverty in developing countries. Moreover, in order to avoid any misspecification in the empirical model, we also included some other regressors namely... We used balanced panel data on 15 developing countries over the period 2002 to 2018. We employed the most appropriate econometric techniques for empirical analysis. Based on the available literature on the subject topic, this is the pioneer study estimated the effects of economic growth, income inequality and financial development on poverty in the context of selected countries from Asian and African regions. It is assumed that the empirical findings of this study will guide the policy makers of developing countries in formulation policies for reduction in poverty.

Table 1
Measures of income inequality for developing countries for five-year periods, 1999-2018

| Countries | 1999-2003 | 2004-2008 | 2009-2013 | 2014-2018 |
|------------------|------------------|------------------|------------------|------------------|
| Pakistan | 36.21 | 36.65 | 38.10 | 38.47 |
| India | 47.2 | 46.2 | 49.4 | 51.5 |
| Sri Lanka | 44.29 | 45.10 | 45.23 | 45.71 |
| Bangladesh | 38.1 | 38.32 | 38.75 | 39 |
| China | 40.14 | 42.26 | 43.33 | 41.45 |
| Kazakhstan | 37.42 | 37.28 | 35.48 | 33.65 |
| Philippines | 46.2 | 45.81 | 45.32 | 45.1 |
| Tajikistan | 38.45 | 38.54 | 38.64 | 39.42 |
| Vietnam | 39.81 | 40.42 | 40.23 | 40.18 |
| Angola | 54.54 | 53.21 | 52.87 | 53.47 |
| Nigeria | 48.3 | 46.2 | 45.2 | 44.6 |
| Tanzania | 39.83 | 43.59 | 44.21 | 44.67 |
| Tunisia | 44.4 | 42.7 | 39.2 | 39.1 |
| Egypt | 46.21 | 46.82 | 47.31 | 48.17 |
| Malawi | 52.13 | 50.21 | 48.45 | 46.1 |

Source: Standardized world income inequality data (SWIID, 2020)

The rest of the article is arranged as follows. Section 2 presents the literature review. After that section 3 represents the data and methodology. Then the results of the study are presented in the results and discussions section mentioned as section 4. Finally, the conclusion is given in the last section of the study.

2. Literature Review

An extensive literature has examined the relationship between financial deepening and economic growth, and the importance of finance for economic performance has been widely acknowledged (Guru & Yadav, 2019; King & Levine, 1993; Yang & Shafiq, 2020). Nonetheless, little attention has been made in the empirical literature to the link between financial development and poverty (M. A. Nawaz, Ahmadk, Hussain, & Bhatti, 2020).

A significant source of poverty is capital market failure, which prevents the poor from borrowing and investing. Theoretical literature suggests that financial progress will have a detrimental influence on poverty. According to Schumpeter (1982), financial intermediaries enable savings allocation, which in turn boosts production and growth while alleviating poverty. Similarly, Stiglitz (1993) believes that poverty may be alleviated through expanding the poor's access to formal money by correcting financial market inefficiencies and defects. The empirical findings proved that the depth of financial development is instrumental to eradicate poverty (Aracil, Gómez-Bengochea, & Moreno-de-Tejada, 2021; Bhatti, Chaudhry, & Bashir, 2021; Majeed, 2017). Similarly, Rewilak (2013) studied the poverty-finance nexus found that financial development reduce poverty in South Asian Region while his results are insignificant for Latin

America and Caribbean countries. The study done by Honohan (2004) showed that private credit to GDP ratio have an inverse effect on poverty, his results shows that an increase in 10 % point in this ratio decreases poverty by 2.5–3%. Furthermore, Fulford (2011) finds inconsistent findings when examining how financial growth first decreases poverty by boosting poor consumption, but later raises poverty by lowering consumption.

De Haan, Pleninger, and Sturm (2021) studied the effect of financial development on poverty gap ratio for 84 countries by using unbalanced data set of taking five years average of panel dataset. Their results show that financial development may affect directly and indirectly on poverty through the channels of economic growth and financial instability. Cepparulo, Cuestas, and Intartaglia (2017) empirically examined the effect of financial development on poverty by taking interaction term for intuitional quality and financial development for 58 countries over the period 1984–2012. Their results confirmed that the financial development (proxies by the ratios of private credit, M3 and bank assets to GDP) reduces headcount poverty. The same result is found by Rashid and Intartaglia (2017) by using GMM technique to regress unbalanced sample of developing countries covering the period 1985–2008 and found that financial development (proxies by M3 and private credit) reduces poverty significantly (Hao, Shah, Nawaz, Nawazc, & Noman, 2020). Its effect is more effective with improved quality of institutions and when economic growth is higher.

Aracil et al. (2021) explored the determinants of poverty alleviation by including financial inclusion proxies such as debit cards, loans, ATMs machines, number of branches as a tool in poverty reduction. Majeed (2017) used twin proxies of financial development and his study results showed that financial development significantly eliminate poverty in Islamic world. Moreover, the effects of Institutional quality are found to be significant and negative on poverty.

3. Data and Methodology

In this study, we used panel data spanning from of 2002 to 2018 of 15 selected developing countries naming Pakistan, India, china, Philippines, Vietnam, Bangladesh, Tajikistan, Kazakhstan, Sri Lanka, Angola, Tunisia, Tanzania, Nigeria, Malawi and Egypt. All data are acquired from the official databases of the World Bank (2020), Povcal Net (2020), Global financial development database (GFDD, 2020) and Standardized world income inequality data (SWIID, 2020).

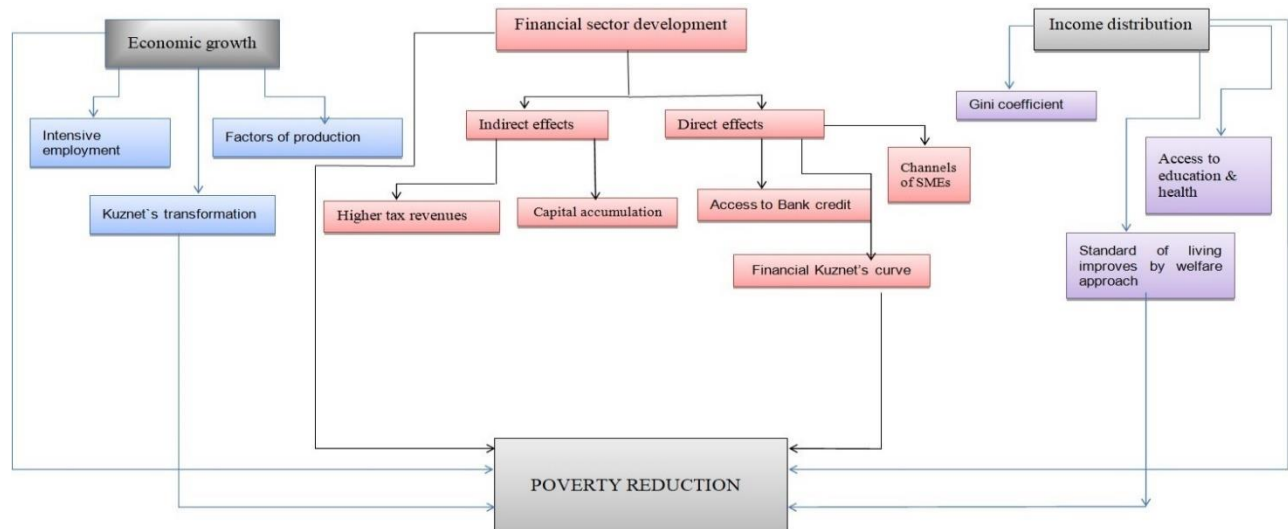


Figure 1: Conceptual Framework

Source: Author's Construction

Figure 1 shows that financial development can affect poverty reduction via two channels. The first is direct channel while second is indirect one. Through direct channel poor can be benefited via access to bank credit and secondly through Greenwood and Jovanovic (1990) theory of financial development which states that initially rich can be benefited while at later stages financial system developed and poor can participate in developed financial system and can reap all the benefits (Haber, 2005). Through indirect channel improved financial sector can help in to collect and fuels tax revenues and hence benefited poor. Secondly more funds can be available through capital accumulation channel for poor. The channel via which strong economic growth can reduce poverty by creating jobs for a poor and also by reducing the wage differentials between skilled and unskilled labor via Kuznets transformation at a later stage of development in a shape of equal distribution of income (Haq, Nawaz, Mahtab, & Cheema, 2012). It is believed that lower Gini value can leads to more equal distribution of income and is associated with less poverty (Beck, Demirgüç-Kunt, & Levine, 2007). And, it can affect poverty reduction by improving standard of living and easily access to education and health (Ahmad, Shafiq, & Gillani, 2019; Gillani, Shafiq, & Ahmad, 2019).

3.1 Construction of Financial development index

The principal component analysis (PCA) has been constructed to capture all aspects of Financial Development.

$$FD\ Index = \sum_{i=1}^n w_i \times FS_i \quad (1)$$

Where FS_i is the corresponding component value of each component (financial indicator) and w_i indicates the component's weight as the ratio of variance to the variability (Chen, 2010).

$$w_i = \frac{v_i}{\sum_{i=1}^n v_i} \times 100 \quad (2)$$

3.2 Empirical Model

Poverty model is estimated by using the empirical model of Dollar and Kraay (2002) and Majeed (2017).

$$Pov_{it} = a_{it} + a_1 Ineq_{it} + a_2 FDI_{it} + a_3 X_{it} + \mu_{it} \quad (3)$$

Where 'P' poverty measured by headcount ratio as PHC. Ineq represents inequality, by using a proxy of Gini coefficient. FDI is the financial development index which are composed of five different proxies utilize in literature namely domestic credit to the private sector(DCP), financial System (FSD), central bank assets(CBA), liquid liabilities (LL) and broad money (BM).

The vector X_{it} are control variables, which affect poverty and includes inflation as INF, trade Openness as TRD, labor force as LF, growth rate of GDP as GDPG and government spending as GS. Time span and number of countries are represented by subscripts t and i respectively.

3.3 The Pooled Mean Group

Pesaran, Shin, and Smith (1999) used an innovative cointegration technique by introducing the autoregressive distributed lag (ARDL) in form of error correction model. Pesaran

et al. (1999) claim that the panel ARDL model in particular, the PMG (pooled mean group) technique can be employed even with dissimilar order of integration. The ARDL specification in PMG formulation is given below:

$$y_{it} = \sum_{i=1}^p a_{ij} Y_{t-j} + \sum_{i=1}^q \beta_{ij} X_{t-j} + \mu_i + \varepsilon_i \tag{4}$$

y is dependent variable such as PHC. X_{it-j} denotes explanatory variables including GINI, FDI, TRD, GDPG, GS, INF, and LF. ε_{it} is error component.

$$\Delta y_{it} = \theta_i (y_{it-1} - \beta_i X_{it} - 1) \tag{5}$$

β_i are long run parameters, θ_i shows the convergence of variables towards long run equilibrium.

4. Results and Discussion

4.1 Empirical results

This study employs the panel unit root tests namely: LLC (2002) & IPS (2003) to the data and the results are presented in table 2. The outcome shown in table 3 illustrates that GDPG are stationary at level. However, other variables are non-stationary at level and at the first difference it becomes stationary.

Table 2
Panel Unit Root Tests Results (First Generation)

| Variables | LLC | | IPS | | Decision |
|--------------------|----------|------------------|----------|------------------|------------|
| | At Level | First Difference | At Level | First Difference | |
| PHC _{it} | -4.74*** | ----- | 0.90.90 | -5.11*** | I(0), I(1) |
| GINI _{it} | -0.33 | - 2.62*** | 3.05 | -0.11*** | I(I) |
| TRD _{it} | -1.79 | -7.80*** | 0.14 | -3.92*** | I(I) |
| GDPG _{it} | -3.85*** | ----- | -2.16*** | ----- | I(0) |
| GS _i | -2.29*** | ----- | - 0.84 | 2.88*** | I(0), I(I) |
| INF _{it} | -2.26 | - 5.10*** | -1.73 | -7.03*** | I(I) |
| FDI _{it} | -1.54 | - 3.33*** | 1.27 | -1.59*** | I(I) |
| LF _{it} | 1.14 | - 1.33*** | 2.27 | 1.53*** | I(I) |

***, ** & * represents significant at 1, 5 % and 10 % respectively.

The results show that all of the variables have a mixed order of integration which recommends using the PMG techniques to estimate the model. The PMG Technique was used to estimate the short run as well as long run coefficient for the entire panel.

Table 3 presents the descriptive statistics and correlation matrix among all the variables for developing Asian and African countries. The maximum value of Gini which is recorded to be 80.41, while its lowest value of 0.002 is found. The mean of PHC, GINI, TRD, GDPG, GS, INF, FDI, LF are 2.12, 43.5, - 6.06, 1.79, 66.55, 5.92, 11.19, 10.46, 2.09, 63.31 respectively and the standard deviation are 22.93, 5.13, 1.91, 0.87, 35.49, 2.79, 3.96, 16.13, 2.01 and 13.00 respectively. The table 5 shows GDPG are negatively skewed while PHC, GINI, TRD, GS, INF, FDI and LF are positively skewed. The kurtosis values are normally distributed. The correlation between HC, Gini, GDPG, GS, INF, FDI and LF are 0.40, - 0.24, - 0.14, - 0.10, 0.20, - 0.53 and 0.55 are found respectively.

The table 4 explains the results of PCA. The two components with Eigen value higher than one is the first (71%) and second (21%) numbers. These two factors are superior because it covers 92 percent of Standard Deviation.

Table 3
Descriptive statistics summary & correlation matrix results

| | PHC _{it} | GINI _{it} | TRD _{it} | GDPG _{it} | GS _{it} | INF _{it} | FDI _{it} | LF _{it} |
|--------------------|-------------------|--------------------|-------------------|--------------------|------------------|-------------------|-------------------|------------------|
| Mean | 2.12 | 43.45 | 66.55 | 5.92 | 11.19 | 10.46 | 2.09 | 62.312 |
| Median | 12.08 | 43.20 | 55.62 | 6.24 | 10.88 | 7.109 | -0.459 | 59.6700 |
| Maximum | 80.41 | 53.40 | 208.30 | 15.32 | 21.85 | 196.9 | 7.224 | 88.6000 |
| Minimum | 0.002 | 33.30 | 20.722 | -2.58 | 0.9511 | -16.76 | -2.6093 | 40.3700 |
| Std. Dev. | 22.93 | 5.138 | 35.49 | 2.79 | 3.963 | 16.13 | 2.01362 | 13.0023 |
| Skewness | 0.951 | 0.094 | 1.454 | -0.05 | 0.2511 | 7.693 | 1.13002 | 0.24351 |
| Kurtosis | 2.66 | 2.221 | 5.042 | 4.29 | 2.7501 | 79.88 | 4.24362 | 1.82712 |
| PHC _{it} | 1 | | | | | | | |
| GINI _{it} | 0.40 | 1 | | | | | | |
| TRD _{it} | -0.24 | -0.07 | 1 | | | | | |
| GDPG _{it} | -0.14 | -0.10 | 0.16 | 1 | | | | |
| GS _{it} | -0.10 | 0.27 | 0.10 | -0.08 | 1 | | | |
| INF _{it} | 0.20 | 0.20 | 0.12 | 0.01 | 0.10 | 1 | | |
| FDI _{it} | -0.53 | -0.07 | 0.22 | 0.23 | 0.12 | -0.28 | 1 | |
| LF _{it} | 0.55 | 0.12 | 0.16 | 0.07 | -0.01 | -0.15 | -0.05 | 1 |

Table 4
Construction of financial development index for developing countries through Principal Components Analysis

| Eigenvalues: (Sum =5, Average =1) | | | | | |
|-----------------------------------|----------|------------|------------|-------------------|-----------------------|
| Number | Value | Difference | Proportion | Cumulative Values | Cumulative Proportion |
| 1 | 3.553312 | 2.502250 | 0.7107 | 3.553312 | 0.7107 |
| 2 | 1.051062 | 0.744767 | 0.2102 | 4.604374 | 0.9209 |
| 3 | 0.306295 | 0.241984 | 0.0613 | 4.910668 | 0.9821 |
| 4 | 0.064311 | 0.039290 | 0.0129 | 4.974979 | 0.9950 |
| 5 | 0.025021 | --- | 0.0050 | 5.000000 | 1.0000 |
| Eigenvectors(loadings) | | | | | |
| Financial indicators | PC 1 | PC 2 | PC 3 | PC 4 | PC 5 |
| FSD | 0.459121 | 0.141081 | -0.865191 | 0.083162 | 0.117612 |
| LL | 0.514996 | 0.004693 | 0.213111 | -0.819806 | 0.131371 |
| CBA | 0.074138 | 0.957680 | 0.222432 | 0.127207 | 0.108144 |
| B | 0.522083 | -0.027903 | 0.188731 | 0.249817 | -0.792857 |
| DCP | 0.495903 | -0.249289 | 0.347754 | 0.492353 | 0.573229 |

Empirical estimates of long-run as well as short-run parameters that link poverty, income inequality, financial development Index and economic growth with labor force (labor force participation), trade openness, government spending (% of GDP) and Inflation (GDP deflator %) by employing the PMG method are reported in table 5.

The long run results show that income inequality positively and significantly related to poverty, showing that increase in income inequality can worsens poverty. Government spending inversely related to poverty, which means that as government spending increases, it lowers headcount ratio, as it has been noticed that government spending reflected in developmental projects in the form of spending in public utilities could decrease poverty (Anderson, d'Orey, Duvendack, & Esposito, 2018). While labor force is negatively related to head count ratio and

job opportunity for them can alleviate poverty in developing countries and could raise the living standards of general mass (Altaf, Ahmad, & Bhatti, 2021). The sign of financial development index to head count ratio is significant and negatively related.

Table 5
PMG Long run and short run results for full panel

| Dependent variable: Poverty (Headcount ratio) | | | | |
|--|--------------------|-------------------|--------------------|---------------|
| Variables | Coefficient | Std. Error | t-Statistic | Prob.* |
| Long Run Results | | | | |
| GINI _{it} | 0.009009*** | 0.003316 | 2.716938 | 0.0076 |
| LF _{it} | -0.08021*** | 0.011357 | -7.063241 | 0.000 |
| FDI _{it} | -0.0926*** | 0.011078 | -8.367809 | 0.000 |
| TRD _{it} | 0.00419*** | 0.000841 | 5.254305 | 0.000 |
| GS _{it} | -0.02091* | 0.011855 | -1.764736 | 0.0803 |
| GDPG _{it} | - 0.0436*** | 0.007301 | -5.978976 | 0.000 |
| INF _{it} | -0.010581*** | 0.002027 | -5.220579 | 0.000 |
| Short Run Results | | | | |
| ECM | -0.089*** | 0.030507 | -2.943440 | 0.0039 |
| Δ (GINI _{it}) | 0.013718 | 0.012979 | 1.056911 | 0.2928 |
| Δ (LF _{it}) | -0.000341 | 0.006075 | -0.056075 | 0.9554 |
| Δ (FDI _{it}) | 0.016031** | 0.007815 | 2.051186 | 0.0426 |
| Δ (TRD _{it}) | -0.000552** | 0.000236 | -2.340029 | 0.0210 |
| Δ (GS _{it}) | 0.000739 | 0.002566 | 0.287811 | 0.7740 |
| Δ (GDPG _{it}) | 0.001386 | 0.000911 | 1.520886 | 0.1311 |
| Δ (INF _{it}) | 0.001594*** | 0.000574 | 2.777056 | 0.0064 |
| Constant | 0.448526*** | 0.166366 | 2.696027 | 0.0081 |

***, ** & * represents significant at 1, 5 % and 10 % respectively

It means that 10 % boost in FD will decrease poverty by 0.92 %, which shows that financial sector development benefits poor masses as they are able to invest in productive activities (this is consistent with findings of Donou-Adonsou and Sylwester (2016); Rewilak (2017). Economic growth negatively and significantly related to poverty as expected, 10 % increase in GDP growth would decrease poverty by 0.43 %, which means that increase in GDP growth can lower poverty ratio (Gillani & Sultana, 2020; Majeed, 2017; Seven & Coskun, 2016). The effect of inflation on poverty is positive and significant in a short run but Interestingly its effect turned to be negative and significantly related to poverty in a long run. The effect of trade openness on poverty is found to be positive and significant. It may be the reason that because in trade liberalization economies are more exposed to foreign competition, firms may be compelled to cut costs by recruiting temporary workers rather than permanent ones, or even by laying off employees, who may then seek work in the informal sector. This could lead to an increase in poverty depending on salary differences between sectors. This is in line with the results of Singh and Huang (2015).

For a short run coefficient, the ECM term has been found negative and also statistically significant. The speed of adjustment parameter is -0.089. This means that the short-term deviation of income inequality is corrected by 8.90% in a long run.

5. Conclusion

The study was conducted to analyze the impact of economic growth, financial development and income inequality on poverty reduction in developing countries. For this purpose, panel data consisting of the time period from 2002 to 2018 were used. The unit root in the data has been investigated through LLC and IPS first generation stationarity tests. Pooled Mean Group (PMG) has been applied for computing the short run as well as long run results. The

results showed that in the long run the income inequality depicted a positive association with poverty and financial development and poverty coefficients turned significant with negative signs. However, in the short run the impact of financial development was positive. But economic growth and income inequality didn't show any relationship with poverty. Amongst other control variables government spending and employment effects on poverty negative in the long run. However, in the short run both variables coefficients were insignificant. Moreover, trade openness and inflation showed relationship with poverty both in short and long run. The error correction coefficient was negatively significant (-0.089) showing that the speed of adjust toward the long run equilibrium was 8.90%.

The findings of this study suggest that financial sector growth directly contributes to poverty reduction by increasing the poor's and vulnerable groups' access to money. Finance simplifies transactions, lowers the costs of remitting cash, allows poor households to acquire assets and smooth consumption, and allows poor households to better cope with shocks, reducing the danger of falling into poverty. The government should pay more attention to the execution of actions to expand financial sector development, so that the main goal of financial development namely increased economic growth and financial stability, as well as the elimination of poverty and income gaps, may be effectively realized. It is also compulsory to put those policies in place which addresses income inequality, as results reveals that it is positively related to income headcount ratio and it worsens poverty. The policy makers need to take appropriate steps where to utilize all available resources more efficiently and thereby economic growth and social welfare.

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