# Impact of Macroeconomic Instability on Income Inequality in South Asian Countries

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## Abstract

***Purpose***

*This paper aims to highlight the impact of economic instability on income inequality in South Asian countries.*

***Methods***

*Panel data analysis have been performed for South Asian countries namely Pakistan, India and Sri-Lanka for the period from 1990 to 2021. Foreign direct investment and labor participation have been used as control variables. The Macroeconomic Instability Index has been calculated by combining unemployment rate, inflation and external balance which is trade deficit.*

***Findings***

*It was observed that macroeconomic disturbance and foreign direct investment increase income disparity while labor participation rate reduces the inequality.*

***Novelty of the Study***

*The recent economic unrest all around the world increased the significance of this study. To gauge economic instability, an index has been created using geometric mean which was not used in previous studies.*

***Keywords:*** **Macroeconomic Instability Index, Income Inequality, Gini coefficient, South Asian Countries, Panel Data.**

**JEL Classification**: E00, D31, C23

**Research Type**: Research Paper

## 1. Introduction

There has been a significant rise in the use of digital media, due to which, reach has been amplified, observation sharpened and surveillance increased. Even a small gesture does not go unnoticed and observations related to significant social issues cannot be ignored such as; noticing ever increasing luxury and extravagance the richest people are enjoying. While on the other hand, the poorest people are facing severe hardships and are struggling just to survive and pass one more day. People now compare everything they have with others including cars, houses, amenities, incomes and life styles. It is important of know whether inequality in society is increasing or decreasing as it has significant effect on perception of individuals about system's fairness. Ma and Chen (2022) found that income inequality has a significantly negative relationship with happiness.

As far as the background of this study is concerned, Lorenz (1905) first introduced the graphical method of displaying concentration of wealth by plotting cumulative portion of population on horizontal axis and cumulative portion of wealth on vertical axis along with perfect equality line using data for the period from 1982 to 1901. Later on, it was named as Lorenz Curve and it has myriad of uses and benefits. Afterwards, Corrado Gini further expanded the work of Max Lorenz and came up with Gini coefficient in 1912. The area between the perfect equality line and actual income line as well as the total area to the right of perfect inequality line was used to derive Gini ratio.

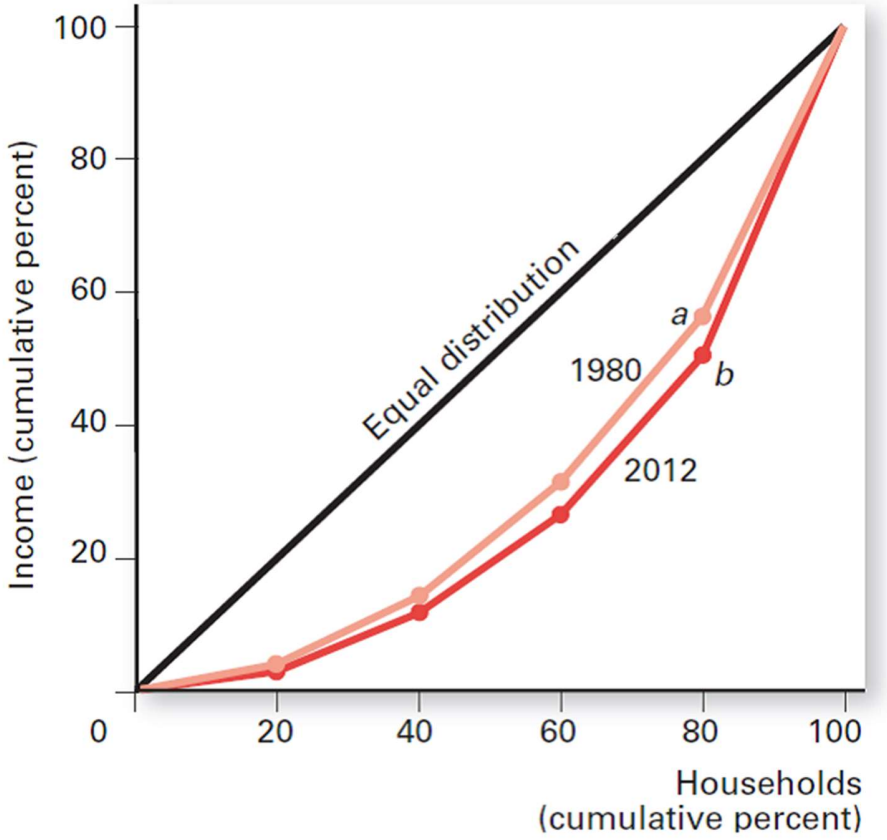


**Figure 1**
**Lorenz Curve**

The concept of inequality gained immense importance after 1950s, when US economist Simon Kuznets put forward a supposition about the evolution of inequality in market economies. He showed that income gap increases during the initial stage of economic development and this gap reaches to the highest point at middle-income level. It starts declining when the income level is highest. Its graph appears to be a bell-shaped, "inverted U curve" and is known as Kuznets Curve.

Although South Asian economy has experienced both internal and external shocks throughout its history, the severity of these shocks has increased since credit crisis of 2008. Policymakers and economists are concerned about the declining and untenable trend of economic growth. In

Pakistan, there is a budget shortfall, rampant inflation, political turmoil, a lack of physical and human resources, rising foreign debt, a weakening currency, natural disasters, and unfavorable rule of law and conditions for investments lead to unmanageable economic growth and progress.

Disparity of National Income provides a hint that something is out of line with respect to the global development. Astounding level of inequalities in most of the developing countries creates further distortion in the process of development. Existence of massive wealth and extreme poverty at the same time cannot be seen more clearly than on the streets of Karachi, Bombay, and other great Metropolitan areas of developing countries.

It is not the case that inequality does not exist in developed countries, but the fact that low average income in developing countries creates further complexity which causes and increases widespread destitution and poverty. Todaro and Smith (2003) mentioned that eradication of inequality is at the core of development issues and in many cases, it is treated as the principal development policy objective of growing and developing countries.

The recent turmoil all around the Globe led to stupendous increase in wealth of richest people and on the other hand, it pushed more people towards poverty (Berkey, 2021). In context of Pakistan, due to COVID-19, poverty has increased from 4.4% to 5.4% in 2020 which dragged 2 million people along with it. Estimated through lower middle-income poverty rate (3.2$ in 2011 PPP), 39% of population went below national poverty line (World Bank Report, 2021).

This paper looks at the problem that the economic progress in not being translated into reduction of inequality despite the fact that there has been a continuous growth in South Asian region in the past two decades. Perea and Lee (2013) performed empirical analysis to highlight that there is an inclination of GDP to grow in South Asia. This paper also attempts to scrutinize the role which governments can play in order to curtail rising levels of inequality.

The Countries which develop polices relating to broad-based access of resources for its people such as health care and education, will in all circumstances discover that economic growth is translated relatively equally between different groups in society. Presence of inequality is high amongst those countries which do not give attention to these features.

Although, there is a general perception that equity and growth are strongly linked but this might not be true in some situations. The amalgamation of low income and high inequality in its distribution raises a concern that in developing world many people might not have access to healthcare, education, sanitation, and so on. These indicators have been collectively termed as human development which is termed as progress (Ray, 1998).

**This paper is based on following question:**

1. Do the factors affecting the stability of an economy also affect inequality?
2. Can inequality be reduced if a government takes positive measures to reduce macroeconomic instability?
3. What are the controlling factors and determinants other than instability, for the rise of income inequality in the region?

The main objective of this study is to analyze the impact of Macroeconomic Instability on Income Inequality in South Asian Countries. This study will examine time span of 31 years from 1990 to 2021 using panel data analysis and by developing an index to quantify Macroeconomic Instability.

The secondary objective of this study is to identify controlling factors and other determinants of inequality such as labor participation rate and Foreign Direct Investment. This study hypothesizes that there is a significant relationship between Gini Coefficient and Macroeconomic Instability Index, labor participation and Foreign Direct Investment.

For the purpose of this study Pakistan, India and Sri-Lanka have been selected out of 9 South Asian Countries. The reason for their selection is availability of relevant data and these countries exhibit significant level of instability or income inequality.

South Asian countries have not been studied in this context before. Yue (2011) mentioned that variables of inflation, income distribution and growth have been used in many studies focusing on United States, United Kingdom and Latin American Countries. There is a lack of research on countries located in Asia.

This study will contribute to the existing literature due to following reasons; First, due to lack of available research on macroeconomic instability together with inequality. Second, there is a lack of research for South Asian countries. Third, this study will incorporate other economic factors which are important for a society in the regression model. Lastly, the instability index has been calculated using geometric mean rather than equal weighting technique.

The latter part of this study delineates review of existing literary studies, methodology and model specification and subsequently result, discussion and conclusion.

## 2. Literature Review

This section will bring detailed understanding of existing research and academic work pertaining to inequality and macroeconomic instability. Macroeconomic stability is a characteristic of a national economy which has minimum level of vulnerability to external shocks and prospects of sustainable growth are increased by its presence.

Lorenz (1905) first introduced the graphical method. Corrado Gini further expanded the work of Max Lorenz and came up with Gini coefficient in 1912. Kuznets sketched inverted U curve known as Kuznets Curve. Keynes (1936) suggested that government should intervene through taxes and expenditure to reduce output gap in order to raise aggregate demand.

Income inequality has been described by Todaro and Smith (2003) as the “disproportionate distribution of total national income among households”. It is a function which assigns a value to a distribution of income to enable direct objective comparison with other distributions. There are several measures through which income equality can be measured which include lorenze Curve

which is a graphical method and it is the simplest representation of inequality. It shows what percentage of income is owned by certain percentage of population. Gini Coefficient is calculated by dividing the area between equality line and Lorenze curve by total area to the right of equality line. It allows direct comparison between two income distributions.

However, the choice of one measure over the others includes trade-off as the measure of inequality should have certain properties to enable better comparison. Gini Coefficient is one of the measures that fulfill the four highly desirable conditions; Anonymity, Scale Independence, Population Independence and Dalton principle. But there is also a limitation that Gini index can provide similar values for two different Lorenze curves that cross (Todaro and Smith, 2003). Nevertheless, Gini Coefficeint is the most widely cited measure of inequality being used by international agencies like International Monitory Fund, United Nations, World Bank and other International Agencies.

## 2.1 Related literature

Latest empirical studies have applied different methodologies using different data sets to different countries and over different time periods, as a result existing knowledge is complex and diversified.

Kuznets parabolic relationship or inverted U-shaped curve highlight that as income increases, inequality increases to an extent and then it declines. However, Persson and Tabellini (1994), and Alesina and Perotti (1996) criticized this concept because they found negative relationship between the two variables. Barro (2000) demonstrated that a nonlinear relationship exists and poor countries are negatively affected by economic growth while rich countries get benefit out of it. On the other hand, Fishlow (1995), and Deininger & Squire (1997) have reported no significant relationship between inequality and income.

Stack (1978) highlighted that income inequality can be single handedly reduced by direct government involvement in the economy, by regressing data of 32 countries. Further, the impact of Macroeconomic Policies on Income Distribution: An Empirical Study of the Philippines by Alderson and Nielsen (1995) also mentioned that income inequality is lower in countries where rural population is high along with high level of employment in agricultural sector. Sylwester (2002) studied cross sectional data of 50 countries to examine the relationship between allocation of more resources to education and income distribution. Results showed that public expenditure on education subsequently reduces income inequality. However, Dreher and Gaston (2008) revealed that in OECD countries higher level of democratization increased the inequality.

Calderon and Servén (2004) found that government spending stimulates growth and it has significant impact on inequality reduction. Dollar and Kraay (2004) highlighted that trade openness and globalization tends to alleviate poverty along with reduction in inequality. Contending this observation, Milanovic (2012) observed that less privileged people are worse off in countries with high trade liberalization as the distribution of benefits related to trade are uneven. Barro (2000) supports this notion by claiming that elite class extracts most of the benefits related to international trade as compare to lower income group, therefore, trade leads to higher inequality.

Basu and Guariglia (2007) studied the relationship between Foreign Direct Investment (FDI) and inequality using panel data of 119 countries. Acosta et al. (2008) suggest that Latin American Countries and Caribbean countries benefitted from remittances; witnessing growth along with lower inequality and poverty. Milanovic (2012) recalculated international and global inequalities by incorporating new purchasing power parity (PPP) exchange rates.

Jäntti and Jenkins (2010), in a time series study on United Kingdom found that unemployment reduces income share of third quintile but increases income share of second and poorest quintile. Herzer and Nunnenkamp (2012) studied the effect of foreign aid on inequality. They found that due to political involvement and favoritism, the distribution process of foreign aid become less effective and increase the income gap in developing countries.

İsmihan (2003) used time series of Turkey from 1963 to 1999 and long-term instability sabotages private and public investment. Subramanian and Satyanath (2004) discovered that macroeconomic stability is strongly and statistically significantly impacted by dispute, accessibility and democracy. Dincer and Gunalp (2012) studied 48 contiguous states of the U.S. from the year 1981 to 1997 using dynamic panel data model. They found clear evidence that increase in corruption leads to increase in inequality.

Yue (2011) studied the relationship among inflation, growth and income distribution in Korea and found that high level of income inequality obstructs economic growth. A study based on European countries, Maestri and Roventini (2012) demonstrated that higher inequality is caused by extensive government spending. The study showed that inflation increases inequality in Germany, Sweden and United States but it reduces inequality in Canada. Ray (1998) mentioned that higher savings lead to economic growth but the relationship between savings and inequality is complex.

Deyshappriya (2017) examined the determinants of inequality using dynamic panel data analysis through generalized method of moments for 33 Asian countries from 1990 to 2013. He highlighted that inequality is increased by inflation, political risk and terms of trade. Agnello and Sousa (2014) used data from 62 countries to analyze the impact of financial reforms on income inequality. Bratoeva (2017) identified the determinants of inequality and noticed that between 1990 to 2015 inequality rose in Bulgaria. Shukla and Mishra (2020) mentioned that inequality in any sphere is an undesirable phenomenon and usually income inequality is a result of inequality in other capability enhancing areas.

Ali et al. (2019) analyzed the effects of globalization on macroeconomic instability. He performed panel data analysis of four South Asian Countries (Pakistan, India, Bangladesh and Sri-Lanka) from 1981 to 2016 using Panel ARDL technique. The results revealed that globalization has significant and negative effect on countries in short run, especially in India and Bangladesh.

Berisha et al. (2020) analyzed the impact of inflation and real interest rate on inequality by studying the BRICS countries. The relationship between inflation, real interest and disparity was positive and was even stronger after 2008.

Naz et al. (2020) studied three types of instabilities in Pakistan and their impact on growth using data from 1970 to 2019. These instabilities were Political instability, macroeconomic instability and terrorism. To determine and compare Macroeconomic instability, Karmowska and Mikiashvili (2021) uses two indices; Economic Discomfort Index (EDI) and rule of Law Index (RLI). EDI measures how an average individual is doing economically.

Dissanayake (2021) performed comparative analysis of Sri-Lanka, Malaysia and Korea investigating the impact of Inflation, Interest Rates, Exchange Rates, Debt and Real GDP Growth on Budget Deficit. The study found uni-directional causality between the variables. Ma and Chen (2022) examined Data of 67,725 respondents from 2006 to 2015. The results showed that income inequality has negative impact on people's happiness and perceptions about systems fairness.

## 3. Research Methodology

One of the objectives of this study is to come up with instability index that will enable the development of an economic model which will suffice the theory related to instability. Measurement of macroeconomic instability is an open area for discussion. If the fundamental macroeconomic variables, such as gross domestic product (GDP), inflation, unemployment, interest rate, trade deficit, budget deficit, debt and exchange rate, are going in the wrong direction then the economy is detracting towards an uneven path.

There is a lack of consensus as to which conditions would precisely equate macroeconomic instability. One group of researchers has used inflation as a proxy for instability (Fischer, 1991). Ocampo (2008) used price stability, performance of real economy, fiscal policy, public debt and balance sheets of private and public sectors to demonstrate the concept of macroeconomic stability. Inflation and unemployment rate have been used by Iqbal and Nawaz (2010) as a measure of macroeconomic instability; they named it misery index because of amplified hit of these variables on population.

Ali (2015) also came up with wide range of indicators to calculate macroeconomic instability index using inflation, unemployment, budget deficit and trade deficit. The latest trend in literature shows that it is not possible to capture the turmoil of the whole economy, using just one or two indicators. İsmihan (2003) developed instability index for Turkey with the help of inflation, exchange rate and public deficit as well as external debt as a percentage of Gross National Product.

The methodology developed by Ali (2015) uses indicators like inflation rate, unemployment rate, budget deficit as well as trade deficit relative to GNP. He assigned equal weight to each indicator followed by standard deviation of each indicator. Naz et al. (2020) also created macroeconomic instability index with the help of six variables namely; inflation, unemployment, budget and trade deficit, external debt and real exchange rate.

But this study uses geometric mean instead of equal weighting technique. The reason for taking geometric mean is that it smoothes out the index and it captures the movement in each variable in better manner. Further, standard deviation of index using geometric mean is more as compared to equal weighted index.

For this study, several economic variables and indicators which have been used by previous studies, are selected and analyzed. Several iterations were performed using different combinations of these variables to obtain an index which has appropriate characteristics and is most suitable for the model.

**Table 1**
***1: Index***

| **Macroeconomic Instability Index (MII)** | **Index Of Variable** | | | **Weighting** |
|---|---|---|---|---|
| | Trade deficit | Unemployment rate | Inflation rate | Geometric mean |

The unemployment rate and inflation move in similar direction, as of instability because inflation and unemployment increase instability of an economy. However, as trade deficit increase the instability decreases, therefore, the trade deficit values are included with opposite sign. The sign of trade deficit values has been reversed from negative to positive, so that instability and trade deficit move in same direction.

The method of calculating this index is similar to the one which is used in calculating the components of human development index. The minimum value of a variable among the countries is deducted from specific value for country and year. The resulting figure is divided by the range of variable i.e. the difference between maximum and minimum value. Indices of all variable are multiplied and a cube root is taken to come up with the final index. In this way, the most appropriate index value has been obtained through following equation:

$$\mathrm{MII} = \sqrt[3]{\left(\frac{\mathrm{TD_{it}} - \min \mathrm{TD}}{\max \mathrm{TD} - \min \mathrm{TD}}\right)\left(\frac{\mathrm{Un_{it}} - \min \mathrm{Un}}{\max \mathrm{Un} - \min \mathrm{Un}}\right)\left(\frac{\mathrm{Inf_{it}} - \min \mathrm{Inf}}{\max \mathrm{Inf} - \min \mathrm{Inf}}\right)}$$

Apart from the advantage of using geometric mean, for calculation of the index, a limitation associated with this method is that it cannot take a zero value. A value of zero for any one of the components provides a number error. It error occurs when there is an invalid numeric value in a formula. To avoid this problem, a zero-index value was excluded from the calculation and the geometric mean of remaining three variables was used with the square root of 3. This technique was applied forcefully for only four items in the whole data to be able to remove the numeric error.

The value of constructed index (MII) has a range from positive non-zero value to the maximum of one. The value of 1 represents highest level of macroeconomic instability while on the other hand, as value of MII decreases and moves towards 0, stability of an economy increases.

This study is based on secondary data that will be extracted from following sources:

**Table 2**
***Variables***

| Variables / Indicators | Source |
|---|---|
| Inequality Gini Index | World Inequality Database (WID) |
| Inflation, Unemployment & Foreign Direct Investment Inflow | World Bank Data (WDI) |
| Trade Balance as a percentage of GDP | Macro Trends (WDI) |

The model of current study in econometric or equation form is mentioned here in after:

$$GINI_{it} = \beta_0 + \beta_1 MII_{it} + \beta_2 LP_{it} + \beta_3 FDII_{it} + e_{it}$$

Where GINI is a dependent variable of income inequality, MII is the independent variable as well as LP and FDII, e is the error term.

Gini coefficients have a range from 0 to 1 where 0 means perfect equality and 1 is determined as perfect inequality. The percentage of people aged 15 and older who are economically active, or all those who provide labor for the production is known as the labor force participation rate. FDII is net Foreign Direct Investment Inflow as a percentage of GDP.

In panel data analysis there are two basic techniques available in panel data analysis; one is Fixed Effect Model (FEM) and the other is Random Effect Model (REM). Appropriateness of the technique is checked through a specific set procedure and tests. In FEM, one way procedure assumes that different cross sections have impact on intercept and two-way procedure allow intercept to be time-variant. REM assumes that data extracted is from a much larger population. Data from Pakistan, India and Sri-Lanka has been used for this study. The data is covering the period from 1990 to 2021 for above mentioned 03 countries which means T=31 and N=3.

The time series of this study is long enough to necessitate the performance of unit root testing to check stationarity of the data. For this purpose, 'Levin, Lin & Chu', 'Im, Pesaran and Shin W-stat', 'ADF - Fisher Chi-square' and 'PP - Fisher Chi-square' tests have been used to determine whether the data is stationary at level i.e. I (0) or at first difference i.e. I (1). The results show that Gini, MII and LP are stationary at first difference while FDI is stationary at level.

At this stage we need to identify the best statistical model. As a first step we made a comparison between the Pooled Least Square (PLS) regression and regression with random effect, in this regard a complete time series from 1990-2021 for the dependent variable (Gini) is regressed by using the explanatory variables of Macroeconomic Instability Index (MII), Labor Force Participation Rate (LP) and Net Inflow of FDI as percentage of GDP, irrespective of considering the impact cross-sections or time.

The results of Pooled regression are presented at Annexure-A. Statistically the model is significant, however the checking of Effect Model is quite essential in the panel-data analysis to select the best fitted model. Therefore, the test of the Omitted Random Effect LM) with the null hypothesis "There is no-effect" is applied and the results of Breusch-Pagan statistic are explained as under:

**Table 3**
***Breusch–Pagan LM Test***

| Test-Levels | Statistic | P-Values |
|---|---|---|
| Cross-Section | 0.9288 | 0.3352 |
| Over-Time | 4.8097 | 0.0283 |
| Both | 5.7386 | 0.0166 |

The results of test conclude there are the chances to have Effect Model with the dimension of 'Time', consequently the panel-data regression with the time-invariant is applied (as per conclusion from table-3) to further examine that, whether Random-Effect Model (REM) is appropriate or we should go for Fixed Effect Model (FEM). The result Random Effect Model are presented in Annexure-A. Apparently the Model looks good fit with highly significant regressors, however this model will be further examined by using the Hausmen Test to finally the decide the best model for this panel exercise between REM and FEM. The results of the Hausmen Test are given as under:

**Table 4**
***Hausman Test***

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Period random | 73.457305 | 3 | 0.0000 |

The null hypothesis of this test is explained as "The REM is efficient" though the Hausman test provides $p<0.05$ which means that null hypothesis of REM is appropriate has been rejected. Therefore, it is concluded that Fixed Effect Model will be considered as the best-fit to examine the association between inequality and macroeconomic instability. Hence, two-way fixed effect model is estimated and the results are presented in table-5.

**Table 5**
***Fixed Effect Model Regression Results***

| Regressor | Coefficients | Standard-Error | P-Val |
|---|---|---|---|
| MII | 0.1169 | 0.022022 | 0.0000 |
| LP | -0.655576 | 0.072734 | 0.0000 |
| FDII | 0.020272 | 0.004275 | 0.0000 |
| R-squared | 0.882184 | Adjusted R-squared | 0.809840 |
| F-statistic | 12.19 | Durbin-Watson stat | 0.940626 |
| Prob (F-stat) | 0.000 | JB-statistic | 1.2703 |

As we introduced the two-way FEM which is providing better results as compared to PLS and REM since the model's coefficient of determination and DW value have been improved. However, as final examination the test of Redundant Fixed Effect Model is applied for statistical endorsement of two-way FEM and the test's results are shown below:

**Table 6**
***Redundant Fixed Effects Test***

| Effects Test | Statistic | Degree of | Prob. Value |
|---|---|---|---|
| Cross- | 3.131009 | (32,57) | 0.0001 |
| Cross-Section/Period Chi- | 94.340919 | 32 | 0.0000 |

The above table shows that the p-value either from F-statistics or Chi-statistic for both Cross-section and time is highly significant. Hence, two-way Fixed Effect Model is found an efficient or consistent model for this study.

After the econometrics of the model, now we come to the interpretation of the model. The results of regression shown in Table 5; that the all the predictors are statistically significant. The R-squared value shows that the 88% variation in inequality is explained by the regressors. The value of Durbin-Watson Value is near to unity. Further, the F-test for overall significance of the regression indicated that the model is good-fit.

The association between Gini and MII is found positive and this positive association reflects the directly proportional relationship between these variables. It may be further explained as, if the macroeconomic instability increases by one-unit index so the inequality will be increased by 0.12 times. In a nutshell, the economic disturbances lead to increase in income inequality.

Another important macroeconomic variable Labor Force Participation (LP) has theoretically inverse relationship with economic-inequality because the more the participation of labor in income generating activity will reduce the income differentials. The coefficient of LP is found according to the economic theory and this variable may be interpreted as the 1% increase in labor force participation will reduce the economic-inequality by 0.66 time. In the economic literature the association of the FDI with inequality is found in both positive and negative dimension. One-school of thoughts explained that at aggregate the FDI gives benefit the county as the invest in the country increases and the labor of the peripheries receives monetary and structural benefit since the distribution of benefits received FDI is been highly unequal and the small part of the population (i.e skill labor/ executives) gets more benefit and majority which is consist on unskilled labor become again marginalized so our results in the cases Pakistan, India and Sri-Lanka reported that, if the net inflow of the FDI as percentage of GDP will be increased by 1% which will lead to increase the economic inequality by 0.02 times. The results of this study are in line with (Deyshappriya, 2017; Ali, 2015; Blejer & Guerrero, 1988; Berisha et al. 2020; Basu & Guariglia, 2007).

Cross section and time effects of each country are attached at Annexure-B in the Table A1 and and A2. Cross-section effect shows negative value for Pakistan and India. On the other hand,

the intercept value for Sri-Lanka is positive. Simultaneously 31 different period effects for all cross-sections are estimated form which some of them are positive some found negative.

The important assumption of the normality of the residuals is checked by the Jarque-Bera Test with the null hypothesis is the residuals are normally distributed and the test results shows that the hypothesis is fail to reject, hence it is concluded that the residual distribution is found normal. The value of DW statistics is 0.15 shows that there is negative autocorrelation in the model. This could also be due to presence of heterogeneity of countries taken for the model. However, graphical method depicts that there is no straight forward pattern being emerged which suggest diminishes the magnitude of this problem in the model.

## 4. Discussion and Conclusion

The purpose of this study was to ascertain how economic turmoil has affected inequality in the South Asian region. The null hypothesis for Macroeconomic Instability has been rejected which means that there is significant and positive relationship between instability and inequality. The null hypothesis for labor participation has also been rejected and there is a significant effect of labor participation on inequality. However, the value of coefficient for labor participation is negative. The negative sign denote that both variables are moving in opposite direction. As labor participation increases, the inequality decreases. From the result it is clear that labor participation helps in reduction of income disproportion and can be seen as controlling factor influencing the inequality in a society.

The study of macroeconomic factors reveals that inflation, unemployment, terms of trade and foreign direct investment increase the income disproportion. On the other hand, demographic and political factors including labor force participation, official development assistance and education reduce the inequality (Deyshappriya, 2017). Macroeconomic instability and Income inequality are positively linked. Female labor participation has negative but insignificant impact on inequality (Ali, 2015). Low employment level, inflation and government expenditure increases income allocation. On the contrary, gains in productivity, real interest rate and exchange rate help reduction of disparity. (Blejer & Guerrero, 1988).

Analysis suggests that association between income inequality and consumer price index does not exist (Ahn, 1997). The results of study on Korea show that there is no empirical evidence to suggest a connection between inflation and Korea's income distribution. Therefore, inflation has no impact on inequality in Korea (Yue, 2011). A rise in inflation and real income growth lead to higher level of inequality in BRICS countries. The study show that post 2008 data shows clear and strong results as compared to complete data set (Berisha et al., 2020). FDI leads to growth but it also results in increase the inequality of the recipient country (Basu & Guariglia, 2007).

The limitation of this study is that data for few South Asian Countries like Afghanistan and Bhutan is not available. Further, the implication of economic instability on each income group could be an area of future research. Lastly more variables can be included in calculation of the instability index as well as controlling variables in the model.

The solution lies in establishment of reasonable job market which is the most important aspect of inclusive growth as well as reversing the trend of people leaving the agricultural sector for other industries and to increase the rate of growth of formal non-agricultural employment.

Trade deficit is caused by large imports. As a result of foreign production, domestic output is replaced and labor market is negatively impacted. Additionally, by implementing appropriate trade policies, the administration may increase the benefits. In order to stop the household labor market from collapsing due to competition on the global market, human capital investments can be made to increase the expert knowledge of the residential labor force. In order to boost economic growth and create jobs in developing nations, financial flow is essential. The polices for Foreign Direct Investment should be beneficial for locals as well as for foreign partners.

While seeking to avoid real exchange rate mispricing specially overvaluation, reducing trade deficit, unemployment, inflationary pressures, and increasing labor force participation are all desirable outcomes. Indiscriminate policies that pay no attention to the makeup political structures will likely increase the distributional curve's skewness.

The results confirm that macroeconomic turmoil is causing income inequality in South Asian Countries especially in Pakistan, India and Sri-Lanka. For this study, instability means high trade deficit, high unemployment rate coupled with high inflation. Therefore, this research also answers the question raised at the start regarding the role of Governments. The Governments can play a significant role in reduction of inequality by creating a stable economic environment and taking steps to increase labor participation and fair investments.

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## Annexure A

**Table A1**

***Cross Section Fixed Effect - Intercepts***

| | Country | Effect |
|---|---|---|
| 1 | PAK | 0.002567 |
| 2 | IND | -0.004119 |
| 3 | SRI | 0.001552 |

**Table A2**

***Period Fixed Effect - Intercepts***

| | DATEID | Effect |
|---|---|---|
| 1 | 1990-01-01 | 0.004621 |
| 2 | 1991-01-01 | 0.007667 |
| 3 | 1992-01-01 | -0.001551 |
| 4 | 1993-01-01 | -0.002883 |
| 5 | 1994-01-01 | 0.006368 |
| 6 | 1995-01-01 | -0.007512 |
| 7 | 1996-01-01 | -0.014057 |
| 8 | 1997-01-01 | -0.005967 |
| 9 | 1998-01-01 | 0.027086 |
| 10 | 1999-01-01 | 0.035867 |
| 11 | 2000-01-01 | 0.028458 |
| 12 | 2001-01-01 | 0.026247 |
| 13 | 2002-01-01 | 0.033211 |
| 14 | 2003-01-01 | 0.047671 |
| 15 | 2004-01-01 | 0.039634 |
| 16 | 2005-01-01 | 0.029721 |
| 17 | 2006-01-01 | -0.000665 |
| 18 | 2007-01-01 | -0.029893 |
| 19 | 2008-01-01 | -0.044945 |
| 20 | 2009-01-01 | -0.012415 |
| 21 | 2010-01-01 | -0.003168 |
| 22 | 2011-01-01 | -0.012029 |
| 23 | 2012-01-01 | -0.010182 |
| 24 | 2013-01-01 | -0.009130 |
| 25 | 2014-01-01 | -0.004262 |

| | | |
|---|---|---|
| 26 | 2015-01-01 | 0.002708 |
| 27 | 2016-01-01 | -0.007847 |
| 28 | 2017-01-01 | -0.014613 |
| 29 | 2018-01-01 | -0.030615 |
| 30 | 2019-01-01 | -0.026267 |
| 31 | 2020-01-01 | -0.051258 |