Inclusive Growth and Macroeconomic Situations in South Asia: An Empirical Analysis

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Abstract
Inclusive growth is the main target of development economics, although developing countries have accelerated their overall economic growth but with less inclusiveness. This article has observed the impact of macroeconomic situation on inclusive growth in South Asia (Pakistan, India, Sri Lanka and Bangladesh) over the period of 1991 to 2014. This article has used panel autoregressive distributed lag (ARDL), the unit root issue of the variables is checked with the help of Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square unit root tests. The results of the study show that per capita income and level of education are reducing inclusiveness in South Asia. The study points out that macroeconomic situations, population growth and female labor force are promoting inclusive growth. The study recommends that for higher inclusive growth, South Asian countries would enhance level education, per capita income, female share in labor markets and control population growth with stable macroeconomic situations.

Keywords: macroeconomic situations, population growth, education
JEL Codes: F62, Q56, H75

I. Introduction

Higher economic growth is considered very important for poverty reduction, but empiric reveals that higher growth does not necessarily improve overall living standard. If growth benefits to fewer part of the society, this growth is not inclusive one (Tirmazee and Haroon, 2015). The developing countries, which have uneven income distribution (Hausman and Gavin, 1996) witnessed less inclusiveness. There are number of socioeconomic factors responsible for high income inequality (Bigsten, 1983) and the objective of all economic activities is to root out income inequality (Loranz, 1905). Pareto (1897) to Gibrat (1931), Kalecki (1945), Rutherford (1955), Metcalf (1969), Singh and Maddala (1976) and Bourguignon (2003) develop different measures of income inequality. Felipe (2012) and Afzal (2007) point out that inclusive growth is earned at the expense of less individual benefits, rather it promotes distribution of benefits among all members of the society. The developed countries have achieved the targets of inclusive growth in 1970's, but the developing countries are still trapped in high income inequality and high economic growth (Todaro, 1994). Kuznets (1955) finds the relationship of income inequality and phases of development in the case of middle-income countries. The starting phase of economic development enhances income inequality, but faster industrialization reduces income inequality.

The relationship of the macroeconomic environment and income distribution discloses a number of normative and positive questions. But the macroeconomic environment has very strong theoretical and historical relationship with inclusive growth. Normally, inflation and unemployment and inflation are used for the representation of the macroeconomic environment. Stable macroeconomic situations are the main targets of all economic policies by every economy, as macroeconomic stability is a situation when the national macroeconomic atmosphere predictable (Easterly, 2001). As unpredictability raises resource misallocation, less investment, high inflation and low growth. The level of macroeconomic stability sets the routes of economic development of a country (Hausman & Gavin, 1996). Several factors are responsible for macroeconomic instability such as; high inflation, irrelevant fiscal policy, deteriorating exchange rate (Anuradha, 2012). IDB (1995); De Ferranti et al. (2000), Rodrik (2001b) and Easterly et al., (2001) discuss that instability is the main issue of developing countries. Macroeconomic stability can have a very effective role in the development process of developing countries (Dhonte & Kapur, 1997, and UN, 2015). Demery and Tony (1987) discuss that distributional issues are created by increasing inflation, budget deficit and deficit in balance of payment. Lewis (1954) points out that income inequality increases as the overall national income increases because national income has slight impact on full employment in the economy and other socioeconomic arrangement of the country. Blinder & Howard (1978) and Blank & Alan (1985) calculate helpful and important association between unemployment, inflation and income inequality in the USA. Pasinetti (1989) argues that tendency to consume of wage income and non-wage income is decided by the budget. Nolan (1987) discusses those macroeconomic elements which indicate a significant impact on income distribution. Macroeconomic stability is a policy goal of governments as it decides the trend of income distribution. Empiric reveals that per capita has a positive impact on income distribution in case of developing countries. The upward trend in economic growth in developing countries reduces the poverty rate at the national and international level during the last few decades. But income inequality rises because of wages and rents difference of trained labor and capital shift upward in a competitive market and in open economies (Ali, 2016). Developing countries struggle for higher economic growth and face greater unemployment, inflation and income inequality.

South Asia is one of the most populous regions in the world, this region is full of many internal and external shocks (fiscal deficit, foreign debt, political volatility, high inflation rate, shortage of human and physical capital, natural disasters, weak law and order conditions for domestic and foreign investment and instable economic growth etc.) throughout the history. The degree of these shocks was converted into dangerous political conditions such as wars and terrorism. These conditions create the evil of high-income inequality and low inclusiveness. Under such scenario, policy makers and economists are much worried about this region. This paper empirically examines the relation of inclusive growth and macroeconomic instability in the case of South Asia. Inclusive growth is most discussed topic in advance development economics but the relationship between macroeconomic indicators with inclusive growth is discussed hardly in existing literatures. This study will be a good contribution in existing literature because this kind of work is hardly exercised in case of South Asia.

II. Literature review

There are a number of theoretical and empirical studies which examine the determinants of income inequality and inclusive growth. The most relevant and recent studies are selected here as a literature review. Torsten and Guido (1991) mention that inequality is harmful for growth. They construct theoretical model of inequality with the help of economic and non-economic factors which is known as "politico-economic equilibrium". For empirical analysis, this study uses two sets of data, 1st from US and 8 European countries in the 19th century and 2nd from developing and less developed countries in post-war. The study finds that from the both data sets, economic growth has a significant and negative relationship with inequality. Afzal and Xianbin (2004) highlight the role of infrastructure development on inclusive growth. They construct a theoretical model in the case of Asian countries. Three different perspectives are presented that closely related for the

development of policies to get sustainable infrastructure investment in developing Asia. First, modernizing agriculture and scaling up the development of rural economies. Second, supporting market expansion and efficient functioning of markets. Third, seizing and capitalizing on opportunities created by globalization.

Afzal and Jazhong (2007) describe that due to rising inequalities, the dream of Asia about inclusive growth is shutter down. The study argues that inclusive growth emphasizes creation of equal access to opportunities of all individuals. The study mentions that Asia is engaging itself to inclusive growth, for this Asian Development Bank highlighting the route map from Asian countries. Norman et al., (2007) theoretically establish a link between macroeconomic volatility and welfare in the case of less develop countries. The study highlights that the main causes of macroeconomic instability in developing countries (i.e. Large external shocks, volatile economic policies, weak institutions and macroeconomic rigidity) and conclude that macroeconomic instability has a direct cost of welfare and growth in less developed countries. Afzal (2007) explains the development agenda of developing countries about poverty reduction to inclusive growth. The developing country's policies are based on three keys: First, the attainment of the highest per capita growth and lower inequality would eradicate the extreme poverty in developing Asian countries by 2020. Second, high income and non-income inequality draw a present risk of sustaining Asian growth. Third, to make the agenda more motivated and complex for Asian inclusive growth. Moreover, there is a dire need to address economic, social and political inequalities. Amparo (2007) empirically investigates the impact of income inequality and human capital inequality on economic growth. The study uses a dynamic panel data model by controlling different country characteristics. Distribution of education and Gini coefficient are used respectively as human capital inequality and income inequality. The estimated human capital inequality and income inequality has different effects on growth in different areas following their development level. These have negative effects in less developed countries and positive effects in developed countries, but the positive effects are not stable over time.

Mutapha et al., (2008) analyze the impact of foreign direct investment (FDI) on economic growth in the Middle East and North African countries (MENA). Data from 1970 to 2005 of the dynamic panel model is estimated with the help of GMM and 2SLS estimators (Arellano and Bond (1991) and Blundell and Bond (1998)). The study highlights three types of findings: First, FDI does not (signify) independently affect economic growth in MENA countries. Second, poor growth of FDI does not depend on the degree of trade openness and income per capita. Third, FDI positively depends on macroeconomic stability. Ganesh and Ravi (2009) summarize the literature about inclusive growth or inclusive development that have been done by different research department of Asian Development Bank. They analyze that the main ingredients of Asian Development Bank for inclusive growth is aggregate economic growth. The study also highlights that sustainable and efficient economic growth, level political field and social safety nets are necessary for inclusive growth. The government should establish policies to enhance the pace inclusive growth. Berument et al., (2011) examine the relationship of macroeconomic instability and total factor productivity. In this study macroeconomic instability is based on three segments (1) Openness Volatility, (2) Inflation Volatility, (3) Financial Market Deepness Instability. A reduced-form vector autoregressive (VAR) model framework is used for empirical analysis. The study also examines that how these three conditional variability affects total factor productivity growth. The study finds that total factor productivity growth has a negative relationship with inflation volatility, whereas openness and financial market deepness volatilities has a positive impact on total factor productivity growth.

Anuradha et al., (2012) analyze macroeconomic vulnerability its approaches and issues in developing countries. The study finds that there is no single approach to assume macroeconomic susceptibility in the case of financial crises and economic crises in developing countries. Generally, the concept of susceptibility is come near from both the macroeconomic and microeconomic perspectives. Shocks on the well-being of single household is the microeconomic perspective, and the impact of these shocks on economic growth is macroeconomic perspective. Future more macroeconomic vulnerability in developing countries (conclusions) suggest a comprehensive framework and the policies needed to build systemic resistance. Such a framework involves • identifying financial and economic shocks • mapping, structural conditions and transmission channels that cause macroeconomic vulnerability, including income inequality and poverty • proposing policies for resilience • advocating for global policies and international organization mechanisms to minimize the frequency and cruelty of shocks.

Haghighi et al., (2012) analyze the effect of macroeconomic instability on economic growth in Iran. The study concludes the effect of macroeconomic instability on the economic growth through time series data taking from Statistical Yearbook of the Statistic Center of Iran (SCI) and Central Bank of Iran (CBI) in the years from 1974-2008. By using Johansen – Juselius Method the establishment of a long run relationship between macroeconomic instability and economic growth is developed and by using regression analysis (vector error correction model, framework of collective method) the relationship is diagnosed. Felipe (2012) tries to describe why Inclusive growth is important for developing Asia and provide an understanding of inclusive growth for the attainment of full employment (a condition of zero involuntary

unemployment) as a perfect policy objective. Meaning that who is willing and ready to work for a suitable salary is with a job, as well as a state of zero involuntary part-time employment. The study claims that inclusive growth involves attainment of full employment of the labor force. It is possible to attain full employment today and five suggestive policies attain inclusive growth are involved. Much of the discussion of the study emphases on developing Asia and many of the opinions applicable correspondingly to other developing economies.

Soumyananda (2013) empirically examines inclusive growth with the creation of social and human capital and concludes significant result. A cross-section data is used for different countries. The study describes that social capital is formulated with the development of human capital and human capital is created by productive consumption (government expenditure on education, etc.). With the improvement of social capital, the economic growth rises which contribute to economic development, and cyclically economic growth and economic development rise social and human capital. Churchill (2014) investigates the lending behaviors of commercial banks and the role of macroeconomic instability in Ghana. The study attained data for macroeconomic instability and for publishing accounts of the publicly quoted commercial banks from 1992 to 2009. The results of Vector Error Correction Modeling framework and Co-integration test show that macroeconomic instability and bank's lending has a long-run relationship and any disturbance of the equilibrium has a propensity to adjust back to the long run equilibrium. The study displays that bank loans have averaged 24 % of the whole asset of the banking industry per year. With respect to macroeconomic variability, broad money grows on the average by 29 per cent and inflation grows by 27 per cent yearly. Despite that increasing inflation and broad money supply encourage banks to restrict lending while exchange rate devaluation encourages the banks to raise lending in the long term. Vellala et al., (2014) explore the conversion of developmental economics from pro poor growth (PPG) to inclusive growth in the context of Indian economy in the last twenty years. The study also presents a theoretical framework for inclusive growth model to support further research regarding inclusive growth to analyze the progress of an economy. Chaudhary and Sadaf (2014) conclude the spread of inclusive growth for Pakistan during the period of 1970 to 2011. Indexes of the indicators of inclusive growth were established with the methodology of Asian Development Bank, which give different weight to indicators to measure inclusive growth. The study empirically concludes that the attainment of inclusive growth was poor, it was 3.15 index points (out of 10 points) during the period of 1970 to 2011. The study also reveals that economic functions were bad in dictatorship as compared to democracy in the case of Pakistan, and at the end some policies are suggested.

Ali and Rehman (2015) conclude detrimental impact of macroeconomic variability of gross domestic product in Pakistan. The study also captured gross domestic product and impacts of macroeconomic variability from 1980 to 2012. A wide-ranging macroeconomic instability index is built by including unemployment rate, inflation rate, budget deficit and trade deficit. The study uses Vector Error-Correction model for short-run changes of the variables and co-integration in the middle of the variables is calculated by Autoregressive Distributed Lag (ARDL). Short-run estimated results show that macroeconomic variability has a negative and significant influence on GDP in Pakistan, but the long-run estimated results reveal a significant and positive relation between financial development and GDP in the case Pakistan. Tirmazee and Haroon (2015) review that the growth in Pakistan is inclusive or not. The study observes that inclusive growth (growth go together with equal distribution) for Pakistan with the microeconomic idea of the social wellbeing function (social concentrated curve) at the macroeconomic level. The study adopts Anand et al (2013) methodology and calculate inclusive growth with two segments efficiency and equity. The study reveals progress in the economy, but efficiency without equity. Conclusions reveal that economic growth in Pakistan is not inclusive, this growth is attained at the cost of the equity, but the benefits of the growth are not equally distributed among the societies. Popoyan et al., (2015) is taming macroeconomic variability through Monetary and Macro Prudential Policy Interactions in an Agent-Based Model. The study uses an agent-based model by Ashraf et al. (2011) to examine the macroeconomic impact of alternative macro prudential regulations and their possible relations with different monetary policy rules. The purpose of the study is to focus on the most appropriate policy mix, to achieve the resilience of the banking sector and raise macroeconomic stability. Monetary policy and macro prudential rules are harmonizing raising flexibility of the banking sector and refining the workings of the economy. Results are gotten with the joint approval of a triple-mandate Taylor rule, pointing on output, GDP, inflation and credit growth, and a Basel III prudential rule.

Skorobogatova (2016) analyses the causes and consequences of macroeconomic instability of the economy of Ukraine. The study describes the ideas of appearance and removal of macroeconomic instability, as well as the Keynesian method for overcoming issues of macroeconomic instability in Ukraine. According to Ukraine economic and political situation (the basic reasons of macroeconomic instability as recorded) Government-implemented methods for overcoming the macroeconomic instability are recommended by the study. The study includes methodological and theoretical research base scientific works, legislative, normative basis of the macroeconomic instability and equilibrium. Jacob et al., (2016) estimate inclusive growth by a single composite index, the methodology used to analyze inclusive growth of 150 countries over the two-time period 2001 to 2005 and 2006 to 2010.

A single composite index was established by giving different weights to different dimensions of inclusive growth and different points were assigned to countries under consideration from 100 points. The study concludes that African countries got lowest rank with minimum points, Tunisia with 60 points overtaking other countries, oil generating economies (middle east) got a worst result.

III. Theoretical Model and Data Sources

The economic models are commonly used for presenting economic situations and to predict future. Economic models present actual economic situations under some assumptions and perceptions. The strength of economic models is decided by their predicting power, realism, delivered information, generalization and simplicity of assumptions. This study is trying to establish a relationship between inclusive growth and Macroeconomic Situations in case of Pakistan. The analysis of Macroeconomic Situations has been always a concerned area of economists and policy makers. Different economists define Macroeconomic Situations in different ways. Ramey and Ramey (1994), Fischer (1991), Shigoka (1994), Drugeon and Wignolle (1996), Azam (1997), Azam (1999), Yiheyis (2000), Caballero (2007), Iqbal and Nawaz (2010) and Shahbaz (2013) measure Macroeconomic Situations with the help of inflation. Ocampo (2005) measures Macroeconomic Situations with the help of public debt, price stability, fiscal policies and working of real sector. Azam (2001) explains that inflation and nominal interest rate are better measures for Macroeconomic Situations. Iqbal and Nawaz (2010) use macroeconomic instability index based on the inflation rate and unemployment rate. Following the previous literature this study uses inflation and unemployment as the representing of Macroeconomic Situations.

$$MS = \frac{Inf_{i,t} - mini\ Inf}{\max Inf - mini\ Inf} + \frac{Un_{i,t} - mini\ Un}{\max Un - mini\ Un} \qquad (1)$$

Economic growth is earned at the expense of labor and if the benefits of economic growth are properly distributed among same labor, this is inclusive growth (Ali, 2007). First time Corrado (1912) uses income inequality as a proxy of inclusive growth. Aslam and Sadaf (2012) try to analyze the tendency of inclusive growth in Pakistan, using GINI coefficient as inclusive growth. Amparo (2007) measures inclusive growth by GINI coefficient. Ali (2007) examines the impact of social, political and income inequalities in the case of Asia during 1990 and compare these findings with 2005. Pasha (2009) explores the components of income inequality, following the methodology of Ali (2007). Following the previous methodology, the functional form expression of the study becomes as:

$$INCL_{it} = f\ (EDU_{i,t}, MS_{i,t}, PG_{i,t}\ FLF_{i,t}, GDP_{i,t}) \qquad (2)$$

Where

INCL = Inclusive growth measure with help of GINI coefficient

MS = Macroeconomic Situations are measured with help of inflation and unemployment

GDP = GDP per capita

FLF = Female Labor Force Participation

EDU= Level of Education is measured with the help of Secondary School Enrolment

PG = Population Growth

i = represents each country

t = time series, t = 1, 2, 3, ... , N

For exploring the elasticity of dependent due to the independent variables, the following form of equation is followed:

$$INCL_{i,t} = \alpha_0 EDU_{i,t}^{\alpha_1} MS_{i,t}^{\alpha_2} PG_{i,t}^{\alpha_3} FLF_{i,t}^{\alpha_4} GDP_{i,t}^{\alpha_5} e_{i,t}^{\alpha_6} \qquad (3)$$

e denotes the log base

The log linear form of the model behaves as:

$$lnINCL_{i,t} = \alpha_0 + \alpha_1 lnEDU_{i,t} + \alpha_2 MS_{i,t} + \alpha_3 PG_{i,t} + \alpha_4 lnFLF_{i,t} + \alpha_5 lnGDP_{i,t} + e_{i,t} \qquad (4)$$

This study is going to examine the relationship of inclusive growth and macroeconomic situation in South Asia over the period of 1991 to 2014. The data is collected from different databases i.e. World Development Indicators (WDI), the databases of World Bank, UN Winder the databases of United Nation University and different national databases of Pakistan, India, Sri-Lanka and Bangladesh.

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IV. ECONOMETRIC SPECIFICATION

Econometric tools have become a part and parcel of economic analysis. Following the existing literature, when time series data are used for empirical purpose, this data has unit root problem. For the solution of unit root, there are a number of tests available. This study uses Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square. These tests are presented by Levin et al., (2002). LLC unit root methodology is based on homogeneity, it is also paralleled to the coefficient of autocorrelation. LLC unit root stationary test uses the methodology of the ADF in the data set for examining the unit root problem. The common form of LLC is as:

$$\Delta y_{i,t} = \theta_{0i} + p y_{i,t-1} + \sum_{i-1}^{pi} \theta_{1i} \Delta y_{i,t-j} + u_{i,t} \tag{5}$$

In equation (5) θ_{0i} is the constant term for different cross-sectional units in the data set and coefficient p represents the indistinguishable coefficient of autoregressive, θ_1 specifies the lag order, u_{it} is (the error term) assumed independent through the panel units and for each cross-sectional unit the ARMA stationary formula becomes as:

$$u_{i,t} = \sum_{j-0}^{\infty} \theta_{1i} \Delta y_{i,t-j} + \varepsilon_{i,t} \tag{6}$$

Null and alternative hypotheses as can be made for coefficient p. The basis of LLC model is a t - statistic, and p is assumed to be constant through the units under the null & alternative hypothesis.

H0: $p_i = p = 0$
Ha: $p_i = p <$ for all i

$$t_p = \frac{\hat{p}}{SE(\hat{p})} \tag{7}$$

The white noise assumption of the error term is considered, and when N and T $\rightarrow \infty$ and $\sqrt{\frac{N}{T}} \rightarrow 0$, the panel regression statistic t_p unite to standardized distribution. But for the dependent cross-sectional units the error term is auto correlated and a trend (time trend) is present, then regression statistic does not unite to 0. In such circumstances, adjusted form of the regression statistics is suggested by Levin et al., (2002).

$$t_p = \frac{t_p - N\widetilde{T}\widehat{S_N}\sigma^{\wedge-2}(\hat{p})u_m^*}{\sigma_m^*} \tag{8}$$

Here u_m^* and σ_m^* are adjusted mean and standard deviation of the error term, by using Monte Carlo Simulation by LLC (2002) method the estimates of u_m^* and σ_m^* are gathered.

For heterogeneous panel data IPS unit root test is offered as:

$$\bar{t_T} = \frac{1}{N}\sum_{i-1}^{N} t_{i,t}(p_i) \tag{9}$$

Here t_{it} represents the ADF test statistic and p_i is the lag order. In ADF unit root test, this can be calculated as:

$$A_t -= \frac{\sqrt{N(T)}\,[\bar{t_T} - E(t_T)]}{\sqrt{Var(t_T)}} \tag{10}$$

Im et al., (2003) also present a unit root test in heterogeneous panel data set for inspecting the unit root stationarity of the variables. The test is also run with the same procedure of ADF unit root test by using simple means of each included series, an indicated series in panel ADF is as:

$$\Delta y_{i,t} = \overline{w_\iota} + p y_{i,t-1} + \sum_{i-1}^{pi} \theta_{1i} \Delta y_{i,t-j} + v_{i,t} \tag{11}$$

V. Panel Autoregressive Distributive Lag Model (ARDL)

After fixing the unit root issue in the data, cointegration among the variables is examined. A number of cointegration tests are presented by many econometricians, like Engle-Granger (1987), Johansen (1991/1992), Johansen-Juselious (1990), Perron (1989, 1997) and Leybourne and Newbold (2003). But this article uses Panel Autoregressive Distributive Lag (ARDL) cointegration approach. Pesaran and Pesaran (1997), Pesaran and Shin (1999), and Pesaran, Shin and Smith (2001)

presented Autoregressive Distributive Lag (ARDL) bound testing approach which has several advantages regarding other approaches of cointegration. ARDL is applicable to mix the order of integration stationary variables, ARDL is used for small size of data for better results (Mah, 2000), ARDL gives lags selection information for catching the data making process in a general to specific modeling structure (Laurenceson *et al.*, 2003) and ARDL explains structural breaks in data by giving efficient and valid detailed information. Autoregressive distributed lag model (ARDL) can be explained by following process:

$$\Delta lnY_{it} = \beta_1 + \beta_2 t + \beta_3 lnY_{it-1} + \beta_4 lnX_{it-1} + \beta_5 lnZ_{it-1} + \cdots$$

$$+ \sum_{h=1}^{p} \beta_h \Delta lnY_{it-h} + \sum_{j=0}^{p} \gamma_j \Delta lnX_{it-j} + \sum_{k=0}^{p} \emptyset_k \Delta lnZ_{it-k} + \dots + \mu_{i,t} \qquad (12)$$

VI. Empirical Results and Discussion
This study has tried to establish a relationship between inclusive growth and macroeconomic situation in South Asia. The descriptive statistic of the study is given in table 1. The descriptive statistical summary in table 1 provides the value of Kurtosis, Skewness, Standard Deviation, Minimum, Maximum, Median and Mean. The results of the descriptive statistic demonstrate that deviations between maximum and minimum value of all selected variables in the model is not very much. The volatilities of data are analyzed with the help of Kurtosis and skewness. The estimated outcomes in the table 1 express that income per capita is positively skewed whereas inclusive growth, female labor force, secondary school enrollment, population growth and Macroeconomic Situations are negatively skewed. All the selected variables have positive Kurtosis. The calculated skewness and kurtosis are insignificant which indicate that the data is normally distributed. The values of the Jarque-Bera are also shown that the data is normally distributed.

Table 1 Descriptive statistic

	INCL	GDP	FLF	EDU	PG	MS
Mean	3.504662	6.556081	3.192636	3.881068	1.591937	0.899439
Maximum	3.893859	8.248147	3.560977	4.602103	2.794760	1.575730
Minimum	3.169686	5.651526	2.503866	3.108964	0.508520	0.074135
Std. Dev.	0.122654	0.615713	0.280863	0.438678	0.620463	0.364463
Skewness	-0.248497	0.772471	-0.741911	-0.065190	-0.188742	-0.257753
Kurtosis	3.468580	3.155546	2.665907	2.046048	1.860783	2.436875
Jarque-Bera	1.866281	9.644154	9.253375	3.708094	5.761236	2.331427
Probability	0.393317	0.008050	0.009787	0.156602	0.056100	0.311700
Sum	336.4475	629.3838	306.4931	372.5826	152.8259	86.34614
Sum Sq. Dev.	1.429191	36.01474	7.493989	18.28162	36.57253	12.61917
Observations	96	96	96	96	96	96

Table 2 shows the results of correlation matrix between the variables. The results indicate that income per capita has insignificant and positive correlation with the inclusive growth, but the level of education and female labor force have positive and significant correlation with the inclusive growth over the selected time period. While, population growth and macroeconomic situation have negative and insignificant correlation with the inclusive growth in South Asia. The outcomes describe that female labor force and level of education have positive and significant correlation with income per capita. Population growth is showing negative and significant correlation with income per capita. Macroeconomic situation and income per capita are insignificantly correlated with each other. The estimates indicate a positive correlation between female labor force and level of education, but population growth and macroeconomic situation are negatively correlated with female labor force, level of education is negatively correlated with population growth and macroeconomic situation. Macroeconomic situation has a positive correlation with population growth.

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Table 2 Correlation matrix

Variables	INCL	GDP	FLF	EDU	PG	MS
INCL	1.00000 ---------- ----------					
GDP	0.090 0.879 0.3817	1.0000 -------- --------				
FLF	0.213 2.139 0.0371	0.402 4.258 0.0000	1.0000 ------- -------			
EDU	0.215 2.139 0.0350	0.641 8,106 0.0000	0.901 20.089 0.0000	1.0000 --------- ---------		
PG	-0.194 -1.919 0.0579	-0.635 -7.978 0.0000	-0.852 -15.758 0.0000	-0.923 -23.203 0.0000	1.0000 ------- --------	
MS	-0.057 -0.551 0.5829	-0.302 -3.074 0.0028	-0.085 -0.826 0.4110	-0.179 -1.774 0.0793	0.065 0.635 0.52772	1.00000 ---------- ----------

(Covariance Analysis: Ordinary)

This study uses Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square unit root tests for investigating the issue of stationarity. The estimated results of Levin, Lin & Chu t*, Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square and PP - Fisher Chi-square unit root tests are shown in table 3. The results of Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square unit root tests reveal that inclusive growth is stationary at level. The estimated results of Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square unit root tests reveal that income per capita, female labor force, level of and population growth are not stationary at I(0) but income per capita, female labor force, level of education and population growth are stationary at I(1). Level of education is stationary at I(1) with the help of PP - Fisher Chi-square unit root test. The estimated results of Levin, Lin & Chu t* show that macroeconomic situation is stationary at I(0) but the estimated results of ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square unit root tests reveal that macroeconomic situation is not stationary at level. The estimated results of Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square unit root tests show that inclusive growth, income per capita, female labor force, level of education, population growth and macroeconomic situation are stationary at I(1). The overall results of the model indicate mix order of integration of variables. Mix order of integration of variables is the most appropriate situation for applying the panel ARDL co-integration approach for a long run relationship.

Table 3 Unit Root Results

Variables	Test	Statistic	Probability	Cross-Section	Obs
INCL (0)	Levin, Lin & Chu t*	-4.62200	0.0000	4	88
	Im, Pesaran and Shin W-stat	-4.08711	0.0000	4	88
	ADF - Fisher Chi-square	31.5174	0.0001	4	88
	PP - Fisher Chi-square	46.5187	0.0000	4	92
GDP (0)	Levin, Lin & Chu t*	2.38522	0.9915	4	88
	Im, Pesaran and Shin W-stat	4.45270	1.0000	4	88
	ADF - Fisher Chi-square	0.15110	1.0000	4	88
	PP - Fisher Chi-square	0.10499	1.0000	4	92
FLF (0)	Levin, Lin & Chu t*	0.44337	0.6713	4	88
	Im, Pesaran and Shin W-stat	0.33289	0.6304	4	88
	ADF - Fisher Chi-square	10.7610	0.2156	4	88
	PP - Fisher Chi-square	15.8248	0.0450	4	92
EDU (0)	Levin, Lin & Chu t*	0.93954	0.8263	4	88
	Im, Pesaran and Shin W-stat	2.90622	0.9982	4	88

	ADF - Fisher Chi-square	2.34337	0.9686	4	88
	PP - Fisher Chi-square	7.16747	0.5187	4	92
PG (0)	Levin, Lin & Chu t*	-0.45737	0.3237	4	88
	Im, Pesaran and Shin W-stat	0.29811	0.6172	4	88
	ADF - Fisher Chi-square	8.13708	0.4202	4	88
	PP - Fisher Chi-square	11.5446	0.1727	4	92
MS (0)	Levin, Lin & Chu t*	-1.71950	0.0428	4	88
	Im, Pesaran and Shin W-stat	-0.89509	0.1854	4	88
	ADF - Fisher Chi-square	10.0136	0.2641	4	88
	PP - Fisher Chi-square	14.4084	0.0717	4	92
INCL (1)	Levin, Lin & Chu t*	-8.16935	0.0000	4	84
	Im, Pesaran and Shin W-stat	-9.11180	0.0000	4	84
	ADF - Fisher Chi-square	72.9485	0.0000	4	84
	PP - Fisher Chi-square	298.580	0.0000	4	88
GDP (1)	Levin, Lin & Chu t*	-3.84329	0.0001	4	84
	Im, Pesaran and Shin W-stat	-2.76993	0.0028	4	84
	ADF - Fisher Chi-square	21.7519	0.0054	4	84
	PP - Fisher Chi-square	35.4996	0.0000	4	88
FLF (1)	Levin, Lin & Chu t*	-1.60997	0.0537	4	84
	Im, Pesaran and Shin W-stat	-3.59293	0.0002	4	84
	ADF - Fisher Chi-square	29.7275	0.0002	4	84
	PP - Fisher Chi-square	235.176	0.0000	4	88
EDU (1)	Levin, Lin & Chu t*	-1.29044	0.0984	4	84
	Im, Pesaran and Shin W-stat	-1.52785	0.0633	4	84
	ADF - Fisher Chi-square	13.0391	0.1105	4	84
	PP - Fisher Chi-square	33.1557	0.0001	4	88
PG (1)	Levin, Lin & Chu t*	-5.32065	0.0000	4	84
	Im, Pesaran and Shin W-stat	-4.45348	0.0000	4	84
	ADF - Fisher Chi-square	36.7198	0.0000	4	84
	PP - Fisher Chi-square	8.25664	0.4088	4	88
MS (1)	Levin, Lin & Chu t*	-8.34495	0.0000	4	84
	Im, Pesaran and Shin W-stat	-8.31039	0.0000	4	84
	ADF - Fisher Chi-square	66.3208	0.0000	4	84
	PP - Fisher Chi-square	169.641	0.0000	4	88

This paper is going to examine the impact of the macroeconomic situation, income per capita, female labor force, level of education and population growth of inclusive growth over the period of 1991 to 2014. The given methods like HQ, SC, AIC, FPE and LR are used for lag length selection. The estimated results of VAR lag length selection criteria are highlighted in table 4. With the help of AIC, FPE and LR methods maximum 2 lags are selected for this model.

Table 4 VAR Lag Order Selection Criteria

Endogenous variables: INCL GDP FLF EDU PG MI					
Lag	LogL	LR	FPE	AIC	SC	HQ
0	26.22496	NA	2.54e-08	-0.459658	-0.290749	-0.391609
1	685.9456	1214.486	1.78e-14	-14.63513	-13.45276*	-14.15878*
2	731.7467	78.06997*	1.44e-14*	-14.85788*	-12.66206	-13.97324
* indicates lag order selected by the criterion LR: sequential modified LR test statistic (each test at 5% level) Final prediction error (FPE) Akaike information criterion (AIC) Schwarz information criterion (SC) Hannan-Quinn information criterion (HQ)					

Following the results of Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat, and PP - Fisher Chi-square unit root tests, a mixture of integration among variables is found. So, we use Panel ARDL bound test for exploring

the co-integration among the variables and Wald-test is used for testing the null hypothesis of the ARDL. The outcomes in table 5 show that there is co-integration among the variables of the model. As F-statistic is greater than Pesran et al., (1999) upper bound at 1 % and therefore we reject the null hypothesis of the ARDL. This means that inclusive growth, income per capita, female labor force, level of education, population growth and macroeconomic situation have co-integration among each other in South Asian countries during 1991 to 2014.

Table 5 Wald Test of Co-integration

Test Statistic	Value	Df	Probability
F-statistic	11.14252	(5, 39)	0.0000
Chi-square	55.71262	5	0.0000
Null Hypothesis: C(1)=C(2)=C(3)=C(4)=C(5)=0			
Null Hypothesis Summary			
Normalized Restriction (= 0)		Value	Std. Err.
C(1)		0.228251	0.097353
C(2)		-1.091023	0.176405
C(3)		0.220488	0.112184
C(4)		-0.152462	0.079962
C(5)		-0.108356	0.049744
Restrictions are linear in coefficients			

The long run results of the study are given in table 6. The long run outcomes explain that level of education has a positive and significant effect on inclusive growth. This shows that inclusiveness decreases in South Asia by increasing levels of education. Claudia (2014), Kanwal and Munir (2015), Coady and Dizioli (2017) found same time of the relationship between level of education and inclusive growth. The outcomes display that macroeconomic situation has significant and negative influence of inclusive growth in South Asian countries. This reveals that macroeconomic situation is enhancing inclusiveness in South Asia. Breen and García-Peñalosa (1999), Lyigun and Owen (2004), Subramanian and Satyanath (2004), Jallab et al., (2008), Ali (2015), Ali and Rehman (2015), Ali and Audi (2016), Marzinotto (2016), Ali and Bibi (2017), Ali (2018) and Ali and Audi (2018) examine the theoretical and empirical relationship of Macroeconomic Situations and income inequality (inclusive growth). The outcomes disclose that population growth is showing the insignificant and the negative impact on inclusive growth in South Asian. Eloundou-Enyegue (2013), Sitthiyot and Holasut (2016) mention population is playing an insignificant role for inclusive growth in developing countries. The outcomes reveal that female labor force participation puts significant and negative influence on inclusive growth in South Asia. The contribution of Female labor force in these countries to growth is minimal, but proper female labor force participation enhances inclusive growth in South Asia. These outcomes are coherent with Albanesi and José Prados (2017), Kuhn and Ravazzini (2017), Wang et al., (2017), Gebrewolde and Leicester (2017). The outcomes reveal that income per capita puts significant and positive influence on inclusive growth in South Asia. Park and Shin (2015), Chang., et al (2016), Naguib (2015), Brueckner and Lederman (2017), Kandek and Kajling (2017) work in the same way. Gibrat (1931) and Kalecki (1945) also find a positive relationship between inclusive growth and income per capita.

Table 6 Long Run Estimates

Dependent Variable: INCL				
Dynamic regressors (2 lags, automatic): EDU MI PG FLF GDP				
Selected Model: ARDL(2, 2, 2, 2, 2,2)				
Variable	Coefficient	Std. Error	t- Statistic	Prob.
EDU	0.220488	0.112184	1.965414	0.0565
MS	-0.108356	0.049744	-2.178286	0.0355
PG	-0.152462	0.079962	-1.906678	0.0639
FLF	-1.091023	0.176405	-6.184751	0.0000
GDP	0.228251	0.097353	2.344563	0.0242

After the long run results of the model are examined, now the short run relationship of the variables can be examined. The results of short run relationship are given in table 7. The results of the short run relationship explain that many independent variables are showing the negative and insignificant impact on inclusive growth in South Asia (Pakistan, India, Sri Lanka, Bangladesh). The outcomes specify that only level of education shows a significant relationship with inclusive growth.

ECT represents that how the model converges from short run to long run. The results disclose that the coefficient of ECT is theoretically correct. This declares that there is a long run relation between the dependent variable and independent variables. The outcomes display that approximately one year is required to complete the emergence form short run to long run.
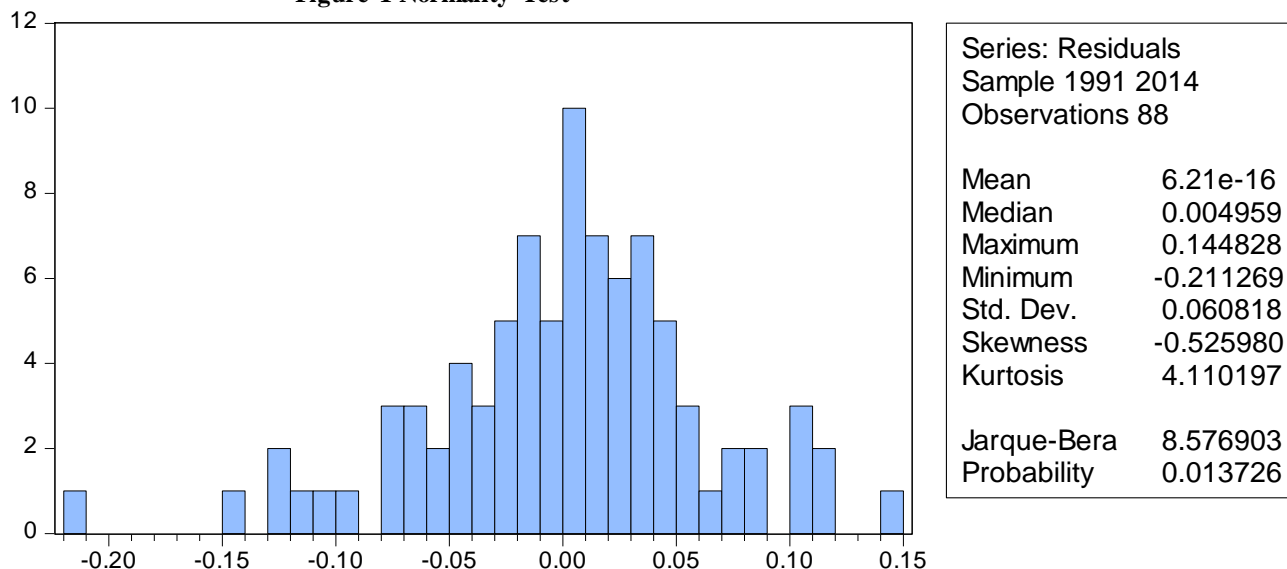
Table 7 Short Run Estimates

Dependent Variable: D(INCL)				
Dynamic regressors (2 lags, automatic): EDU MI PG FLF GDP:				
Selected Model: ARDL(2, 2, 2, 2, 2,2)				
Variable	**Coefficient**	**Std. Error**	**t- Statistic**	**Prob.**
COINTEQ01	-1.022958	0.326030	-3.137621	0.0032
D(EDU)	0.213721	1.209577	0.176691	0.8607
D(MI)	-0.018463	0.101200	-0.182444	0.8562
D(PG)	-3.482177	6.475596	-0.537739	0.5938
D(FLF)	-0.045725	5.796903	-0.007888	0.9937
DGDP)	0.034909	0.537036	0.065002	0.9485
C	5.266265	1.694427	3.107992	0.0035

Mean dependent var	0.003618	S.D. dependent var	0.1543
S.E. of regression	0.090837	Akaike info criterion	-1.610581
Sum squared resid	0.321801	Schwarz criterion	-0.087999
Log likelihood	134.3079	Hannan-Quinn criter.	-0.995129
*Note: p-values and any subsequent tests do not account for model selection			

The paper has examined the impact of income per capita, female labor force participation, level of education, population growth and macroeconomic situation for inclusive growth over the period of 1991 to 2014. We use standardized residual test to check the normality of the data. Figure 1 describes the normality of the data. The calculated results in the figure display that the particular data is normally distributed and provides consistent outcomes.

Figure 1 Normality Test

Series: Residuals
Sample 1991 2014
Observations 88

Mean	6.21e-16
Median	0.004959
Maximum	0.144828
Minimum	-0.211269
Std. Dev.	0.060818
Skewness	-0.525980
Kurtosis	4.110197
Jarque-Bera	8.576903
Probability	0.013726

VII. Conclusions

This paper has examined the impact of macroeconomic situations for inclusive growth in South Asia (Pakistan, India, Sri Lanka and Bangladesh) over the period of 1991 to 2014. Macroeconomic situations are measured with the help of inflation rate and the unemployment rate. To analyze the stationarity of the variables Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat and PP-Fisher Chi-square unit root is used. The study uses panel autoregressive distribution

lag (ARDL) cointegration approach. The estimated outcomes reveal that level of education and income per capita is reducing inclusive growth in South Asia. The results reveal that population growth, female labor force participation and macroeconomic stability are enhancing inclusive growth. So, if South Asian countries want to meet their targeted inclusive growth, they need stable macroeconomic situations with better education and higher female labor force participation. Inclusive growth is impossible without the reduction in unemployment and inflation rate. There are two major elements which can reduce the unemployment, use of labor-intensive methods of production and adoption of self-reliance policy. Modern technological training facilities should be provided to labor. In this way unemployed people will get a chance to enhance their skills and become able to earn more reasonable income. Precautionary measures should be taken so inflation could hurt the purchasing power of the masses.

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