Inclusive Growth in Pakistan: Measurement and Determinants

Faisal Munir[a] and Sami Ullah[b]

Abstract

This study empirically estimates a unified measure of inclusive growth for Pakistan and determines the impact of macroeconomic stability, financial deepening and structural changes on inclusive growth over the period from 1987 to 2016. Inclusive growth is measured by income growth and distributions which are calibrated by combining GDP per capita growth and income inequality GINI coefficient. We apply the microeconomic concept of a social mobility function at the Macroeconomic level to measure inclusive growth that is closer to the absolute definition of pro-poor growth. The study applied a two-step methodology to capture the empirical estimations, in the first step the study estimated inclusive growth by social function through combining the income distribution and of GDP per capita and in the second step incorporated it in time series analysis by applying standard unit root tests and autoregressive distributed lag model (ARDL) approach of Conintegration. The results are supported with standard diagnostic tests. Our results indicate that macroeconomic stability and structural changes are foundations for achieving inclusive growth. Other indicators which are included in the analysis have also some important implications, the role of external sector could also be positive with terms of trade fostering greater inclusiveness, while financial deepening has also prominent implications on inclusive growth. Financial development can lead to encourage more inclusiveness in the country.

Introduction

Inclusive Growth deals with the idea that economic growth is important but not sufficient to generate sustained improvements in welfare, unless the dividends of growth are shared fairly among individuals and social groups. Inclusive growth as about raising the pace of growth and enlarging the size of the economy by providing a level playing field for investment and increasing productive employment opportunities (Gable, 2011). The inclusive growth indicators is a set of 35 indicators of (i) poverty and inequality (income and non-income), (ii) economic growth and employment, (iii) key infrastructure endowments, (iv) access to education and health, (v) access to basic infrastructure utilities and services, (vi) gender equality and opportunity, (vii) social safety nets, and (viii) good governance and institutions (Anand et al., (2013).

Inclusive growth aims on ensuring that the economic opportunities created by growth are available to all, particularly the poor, to the maximum extent possible (Asian Development Bank). While United Nations Development Program (UNDP) emphasized inclusive growth as growth with low and declining inequality, economic and political participation of the poor in the growth process, and benefit-sharing from that process. Inclusive growth involves a long term perspective and focuses on generating decent employment in order to increase the income of excluded groups (Ianchovichina and Lundstrom 2009). Growth allowing every individual (group) of society participate in, and contribute to the growth process on an equal footing regardless of their individual circumstances is called to be growth with inclusiveness (Ali and Son, 2007).

Creation of economic opportunities and ensuring equal access to opportunities by all groups of society is essential and prerequisite for socio-economic development. An enabling environment is

[a] PhD Economics Scholar, Department of Economics, University of Gujrat, Pakistan
[b] Assistant Professor, Department of Economics, University of Gujrat, Pakistan

a pre-condition to allow all individuals to equally participate with growth process. Equity in the provision of public services particularly education, health and employment opportunities is required failing to which can worsen the situation. In last two decades the economic growth achieved in Pakistan has not been successful in engulfing the poor-rich gap and resulted in ever increasing inequalities. Until the fruits of development are not shared with and by all segments of society sustainable development, with its ultimate objective of poverty reduction, cannot be achieved. In recent years, Pakistan has increased its pro-poor expenditures to improve health, and education conditions, with major focus on skill development for productive labor force, and provide social safety net to the vulnerable groups[a]. Different policies and programs are in progress to achieve these objectives. Consistent with the definition and measurement approach of inclusive growth adopted by Anand et al (2013) this study aims to assess the inclusiveness of growth in Pakistan.

The purpose of this study is to estimate inclusive growth for Pakistan by using social mobility function; this will give appropriate definition and measurement of inclusive growth. Further in next step the study provides empirical analysis of determinants of inclusive growth. This is vital contribution in the existing literature, there is only limited literature found for Pakistan on the current subject matter of the study thus it magnifies the significance of the current study. Next sections of the paper provide literature review, comprehensive methodology of measuring inclusive growth and econometric estimation of parameters with discussion on findings, conclusion is provided at the end of document.

Literature Review

The usage of the term "inclusive" in the characterization of growth episodes can be traced back at least to the turn of the century when Kakwani and Pernia (2000) employed it to highlight the contents of pro-poor growth as that one enables the poor to actively participate in it and benefit from the growth process. Inclusive growth involved both poverty and inequality reduction. Ali and Son (2007) defines inclusive growth as the growth process that increases the social opportunity function which depends upon the average opportunities available to the population and how these opportunities are shared among the population. According to Ali (2007) the key elements in inclusive growth are employment and productivity, development in human capabilities and social safety nets and the targeted intervention.

Habitat (2009) defines inclusiveness of economic growth as gross domestic product growth that leads to significant poverty reduction. Elena and Susana (2010) of World Bank focused on both the pace and pattern of growth and have identified the employability of the poor and the cost of capital, geography and infrastructure as building blocks of inclusive growth analytical framework. Elena and Susana (2010) defined inclusive growth as that growth which can reduce poverty and allow people to contribute to economic growth and benefit from the growth process. They pointed out that rapid pace of growth is unquestionable necessary for substantial poverty reduction but for growth to be sustainable in the long run should be broad based across the sectors and inclusive of the large part of the country's labor force. This definition of inclusive growth has a direct link between the micro and macro determinants of growth. Inclusive growth is disadvantage reducing growth (Klasen, 2010).

Growth Report (2010) notes that inclusiveness is a concept that encompass equity, equality of opportunity and protection in market and employment transitions. World Bank (2009) stated that

[a] Economic survey 2015-16

inclusive growth can be achieved by focusing on expanding the regional scope of economic growth, expanding access to assets and thriving markets and expanding equity in the opportunities for next generation.

McKinley (2010) identifies that inclusive growth entails achieving sustainable growth that will create and expand economic opportunities and ensuring broader access to these opportunities so that members of society can participate in and benefit from growth. In reviewing the ADB literature Raumiyar and Kanbur (2010) point out that while there is no agreed and common definition of inclusive growth or inclusive development, the term is understood to refer to "growth coupled with equal opportunities and consisting of economic, social and institutional dimensions. They further pointed out that inclusive growth is accompanied by lower income inequality so that the increment of income accrues disproportionately to those with lower incomes. Asian Development Bank (ADB, 2013) defines inclusive growth economic growth that results in a wider access to sustainable socio economic opportunities for a broader number of people, regions or countries while protecting the vulnerable, all being done in an environment of fairness, equal justice and political plurality.

Ramos et al (2013) follow the concept of benefit sharing and participation to measure inclusiveness. Exchange rate coordination, improved international tax capacity, coordinated fiscal stimulus, global resource system, issue of macro-economic imbalances are some of the key policy actions that will stimulate inclusive growth in developing countries (Maritns and Lucy, 2013). Inclusiveness of growth is the growth elasticity of poverty in the sense that poverty reduction is the overall objective of any policy debate over a period of time (Han and Thorat, 2013). It depends upon two factors (a) income growth and (b) income distribution (Anand et al, 2013).

Research studies so far focused how to identify whether growth is pro poor or not. Growth process is called distribution neutral if the growth incidence curve is perfectly flat in such a way that all percentiles grow at the same rate, leaving inequality unchanged. The distributional change is pro poor if the redistribution reduces poverty sharply. Therefore the rate of pro poor growth is equal to the distributional correction multiplied by ordinary growth rate (Ravallion and Chen, 1997). The criteria and indicators for inclusive growth framework must be developed for monitoring country progress on inclusive growth (McKinley,2010).

Above listed literature is has highlighted the importance of measuring inclusive growth and its determinants. Inclusive growth is being measured by the income growth and income distribution. In case of Pakistan only few literatures seen in this subject to measure growth in all prospects given in literature. So, current study is vital contribution in the existing literature to provide empirical evidence for inclusive growth and its determinants for Pakistan.

Methodology

To integrate equity and growth in a unified measure, we estimated inclusive growth by following a measure of inclusive growth inspired with utilitarian social welfare function drawn from consumer choice literature, where inclusive growth depends on two factors: (i) income growth; and (ii) income distribution. Similar to the consumer theory where the indifference curves represent the changes over time in aggregate demand, we decompose the income and substitution effect into growth and distributional components. The underlying social welfare function must satisfy two properties to capture these features: (i) it is increasing in its argument (to capture growth dimension) and (ii) it satisfies the transfer property any transfer of income from a poor person to a richer person reduces the value of the function (to capture distributional dimension).

A measure of inclusiveness is based on the concept of a concentration curve.[a] Following Ali and Son (2007), we define a generalized concentration curve, which we call social mobility curve, S^c, such that:

$$S^c \approx \left(y_1, \frac{y_1 + y_2}{2}, \ldots\ldots\ldots \frac{y_1 + y_2 + \cdots y_n}{n}\right)$$

Where n is the number of persons in the population with incomes $y_1,\ y_2 \ldots y_n$ where y_1 is the poorest person and y_n is the richest person. This generalized concentration curve is basically a cumulative distribution of a social mobility vector $S \approx (y_1, y_2, y_3, \ldots\ldots, y_n)$ with an underlying function $W = W(y_1, y_2, y_3, \ldots\ldots, y_n)$ satisfying the two properties mentioned above to capture growth and distribution dimensions Since S^c satisfies the transfer property, a superior income distribution will always have a higher generalized concentration curve. Similarly, since it is increasing in its argument, higher income will also have a higher generalized concentration curve.

By following Ali and Son (2007) and Anand et al. (2013) we calculated unified measure of inclusive growth by incorporating social mobility function at macro level, by taking per capita GDP growth as income growth and GINI coefficient as measure for equity in income distribution among the population.

Further the study developed model to determine inclusive growth with some financial development, macroeconomic stability and external sector measures.

$$IG_t = \beta_0 + \beta_1 INF_t + \beta_2 M2_t + \beta_3 TOT_t + \beta_4 BM_t + \beta_5 DCP_t + \varepsilon_t$$

Where IG is the inclusive growth measured by inequality adjusted growth, INF is the inflation rate taken for macroeconomic stability measure. M2 is money supply growth, BM is broad money to GDP ratio and DCP is domestic credit to private sector which is financial development indicators. TOT is terms of trade taken as measure for external sector stability. The data for each particular independent variable is taken from World development Indicators (WDI). However the inclusive growth is measured by authors by considering the above mentioned estimation method.

Results and Discussion

The study used time series data from Pakistan over the period of 1987 to 2016 having 30 observations from six indicators. The analysis includes means values, minimum values, maximum values, median, stander deviation, sum and sum of squares. The variables of the interest are inclusive growth (IG) as dependent or endogenous variable. Inflation rate (INF), money supply growth (M2) broad money to GDP ratio (BM), terms of trade (TOT) and domestic credit to private sector (DCP) are exogenous variables which are included as determinants for inclusive growth Descriptive statistics are given in the table 2.

[a] Kakwani (1980) provides detailed discussions on the concentration curve

Table 1. Descriptive Statistics

	IG	INF	M2	TOT	BM2	DCP
Mean	1.6145	8.495	14.70	83.67	47.361	23.19
Median	1.716	8.379	14.74	84.31	46.814	24.18
Maximum	5.151	20.286	29.30	110.11	58.867	28.73
Minimum	-1.750	2.536	4.31	57.77	38.594	15.386
Std. Dev.	1.771	4.024	5.164	15.66	5.754	4.010
Sum	48.43	254.858	441.15	2510.19	1420.83	695.709
Sum Sq. Dev.	91.045	469.645	773.55	7115.74	960.34	466.37

Table 1 indicates that mean value of IG is 1.61% and minimum value is -1.75% and maximum is 5.15%, the data is taken on annual basis. The average value of INF is 8.49% and minimum value is 2.53 and maximum 20.28 and stander deviation is calculated as 4.02. The statistics of BM shows an average value of 47.36% of GDP and minimum is 38.59 and maximum value is 58.86 and stander deviation is 5.75. Average growth rate in M2 is 14.70% and minimum growth is observed at 4.31% and maximum growth is seen at 29.30%. The mean value of DCP is 23.19 % of GDP. On average TOT points at 83.67 and minimum is 0.57.77 and maximum is 110.11 and stander deviation is 15.66. Figure shows the comparison of inclusive growth and inflation.

Figure 1 Inclusive growth and inflation in Pakistan

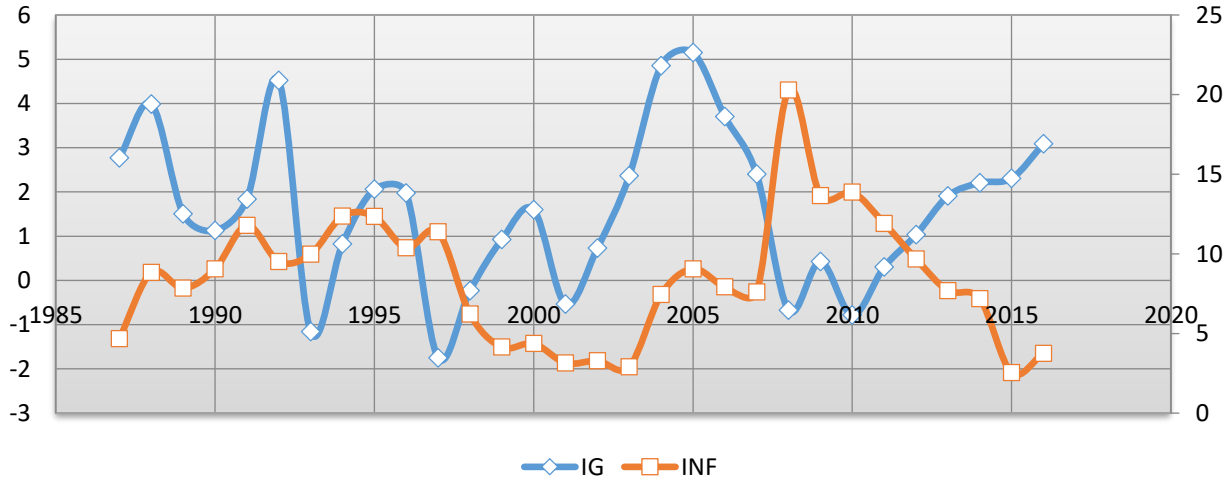
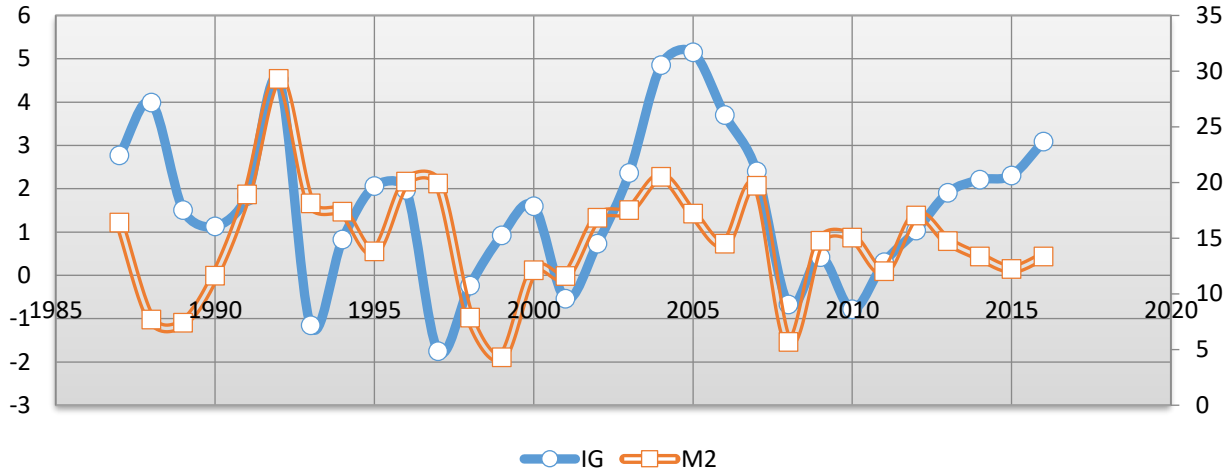


Figure 2 Inclsusive growth and money supply (M2) growth in Pakistan



The first step in time series analysis is to check the order of integration of each series included in the model and to estimate the stationarity for each variable Dickey & Fuller (1981) presented the augmented form of Dickey Fuller test which is commonly known as Augmented Dickey Fuller (ADF) test. The regression that is estimated with help of ADF is given below.

The ADF test estimates the following equation:

$\Delta y_t = \alpha_1 + \alpha_2 t + \delta y_{t-1} + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} \ldots\ldots\ldots\ldots \beta_n \Delta y_{t-n} + \varepsilon t$

Null hypothesis and alternate hypothesis is written as:

$H_{O:}\ \alpha=0$

H1: $\alpha<0$

Where y_t is the time series and εt is the residual term while δt is the time trend. The major difference between DF and ADF is that in ADF lag of dependent variable includes as independent variable. In ADF we still test the null hypothesis whether $\delta=0$ and the ADF test also follow the same asymptotic distribution as the DF test, so the same critical values can be used. The results of the unit root test are given in table 3.

Table 5.2 Results of Unit root test for stationarity

Augmented Dickey-Fuller test results					
	At level		At difference		
Variables	**With intercept**	**Intercept and trend**	**With intercept**	**Intercept and trend**	**Decision**
IG	-3.40[4]	-3.29[4]			I(0)
	(0.0206)**	(0.0907)*	--------	----------	
INF	-2.42[1]	-2.41 [0]	-6.77[0]		I(1)
	(0.1370)	(0.3667)	(0.0000)***	----------	
BM	-0.95[0]	-3.25[0]	-4.09[1]		I(0)
	(0.7562)	(0.0944)*	(0.0037)***	----------	
M2	-3.75[0]	-3.68[0]			I(0)
	(0.0084)***	(0.0394)**	----------	----------	
TOT	-1.29[0]	-2.02[0]	-6.57[0]		I(1)
	(0.6199)	(0.5631)	(0.0000)***	----------	
DCP	-0.95[0]	-1.36[0]	-4.02[0]		I(1)
	(0.7542)	(0.8492)	(0.0044)***	----------	

*, **, *** indicates the level of significance at 10%, 5% and 1% respectively.

The results of ADF test unit root suggested that except IG, BM and M2 other variables such as INF, TOT and DCP are integrated of order I(1). So with the combination of I(0) and I(1) we cannot apply OLS directly on the this situation the results will be considered as spurious. The literature suggested that for this situation Autoregressive Distributive Lag (ARDL) model is appropriate technique.

ARDL approach for co-integration

In the first step of ARDL approach of co-integration there is need to check the optimal lag selection for the further analysis. The study applied unrestricted VAR model and followed AIC to select lags in ARDL model. The results for optimal lag selection criterion under VAR model are given in table 3.

Table 3 VAR Lag Order Selection Criteria

Endogenous variables: IG INF M2 TOT BM2 DCP

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-451.3560	NA	20814576	33.8782	34.1669	33.9635
1	-343.5692	159.684	109763.0	28.568	30.5763	29.1607
2	-300.9275	44.221	105092.2	28.0680	31.8123	29.1815
3	-150.3993	89.207*	100.346*	19.5853*	25.0564*	21.2124*

* indicates lag order selected by the criterion

The results of VAR model suggested that lag selection criterion of AIC indicated three lags as optimal lags to incorporate in the ARDL model. In the second step in ARDL the study applied the following model for bond testing to check co-integration among the variables.

$$DIG_t = \beta_1 + \beta_{2i}\sum_{i=1}^{3} DIG_{t-i} + \beta_{3i}\sum_{i=0}^{3} DINF_{t-i} + \beta_{4i}\sum_{i=0}^{3} DM2_{t-i} + \beta_{5i}\sum_{i=0}^{3} DBM_{t-i} + \beta_{6i}\sum_{i=0}^{3} DTOT_{t-1} + \beta_{7i}\sum_{i=0}^{3} DDCP_{t-1} + \beta_8 IG_{t-1} + \beta_9 INF_{t-1} + \beta_{10} M2_{t-1} + \beta_{11} BM_{t-1} + \beta_{12} TOT_{t-1} + \beta_{13} DCP_{t-1} + \varepsilon_t$$

In model there are two kinds of coefficients in the equation which includes short run as well long run coefficients. For testing the existence of co-integration the study applied Wald test on following hypothesis.

$\boldsymbol{H_0}$: $\beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = \beta_{13} = 0$

(No co-integration exists between variables)

$\boldsymbol{H_1}$: $\beta_8 \neq \beta_9 \neq \beta_{10} \neq \beta_{11} \neq \beta_{12} \neq \beta_{13} \neq 0$

(There is Co-integration)

The results of Wald test determined that Ho is rejected in favor of existence of co-integration among the variables. F-statistics is 14.99 and probability value is 0.0244 which is significant at 5% level of significance. The F-statistics is compared with F-critical from Pesaran et al. (2001).

The results of the long run estimates indicates that M2 and DCP positively and significantly contributing in IG and TOT, INF and BM are also significant and negative determinant of inclusive growth. The long run results are given in table.

Table 4 Long Run Results

Dependent Variable: IG				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.624**	5.4499	2.1329	0.0438
M2	0.1512***	0.0530	2.8495	0.0091
INF	-0.3474***	0.0870	-3.9924	0.0006
TOT	-0.1031***	0.0312	-3.3057	0.0031
DCP	0.2355***	0.0787	2.9927	0.0065
BM2	-0.1280*	0.0711	-1.8005	0.0849
Diagnostics				
R-squared	0.79	F-statistic		4.4611
Adjusted R-squared	0.68	Prob(F-statistic)		0.0054

*, **, *** indicates the level of significance at 10%, 5% and 1% respectively.

In the next step error term named ECM is generated from long run regression and a unit root test is applied on it, the results of ADF test shows that ECM is stationary at level and this is regressed with first lag in short run estimates. Short run results are given in table 5.

Table 5 Short Run results (ECM)

Dependent Variable: DIG				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.0174	0.2758	-0.0631	0.9502
DM2	0.2029***	0.0474	4.2786	0.0003
DINF	-0.3982***	0.1029	-3.8692	0.0009
DTOT	-0.1388***	0.0479	-2.8955	0.0087

DDCP	0.4145**	0.1770	2.3417	0.0291
DBM2	-0.1965*	0.1033	-1.9018	0.0710
ECM(-1)	-0.3260***	0.3177	-4.1737	0.0004
Diagnostics				
R-squared	0.644	F-statistic		6.34
Adjusted R-squared	0.543	Prob(F-statistic)		0.0006

*, **, *** indicates the level of significance at 10%, 5% and 1% respectively.

The results of short run ECM models shows that ECM(-1) is significant and negative in the regression which reconfirmed the relationship is true in the long run estimates. The indicators in the regression like DINF, DTOT, DBM, DM2 and DDCP are significant in the short run model. Overall model diagnostics shows that R-squared is 0.64 which indicates that on average 64% variation in dependent variable is due to independent variables used in the model. Probability of F- test is 0.0006 which shows high level of significance and good fit of model.

Diagnostics tests which are applied on the short run ECM model one are, Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test of Breusch-Pagan-Godfrey, Jarque-Bera Test of Normality, and Ramsey RESET Test. The results of the diagnostics tests are given in the following table 6

Table 6 Diagnostic tests for ECM Model

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.06	Prob.	0.1018
Obs*R-squared	10.38	Prob. Chi-Square	0.1094
Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.51	Prob.	0.6054
Obs*R-squared	1.55	Prob. Chi-Square	0.4866
Jarque-Bera Test of Normality			
Jarque-Bera	1.74	Prob.	0.4172
Ramsey RESET Test			
t-statistic	1.03	Prob.	0.3118
F-statistic	1.07	Prob.	0.3118

Table 5.6 shows the results for standard diagnostic tests on short run ECM model. It indicates that there is no serial correlation in the model, no heteroskdasticity in the model, no normality problem and there is no misspecification problem in the model. The probability value of all tests shows more than 0.05 which confirmed the non-existence of the problem related to tests.

To check the stability of the results and parameters in the short run ECM model the study applied CUSUM and CUSUM squared tests of stability. The results are presented in the graphs which are given in figure 3.

Figure 3 CUSUM and CUSUM squared test for stability of ECM model

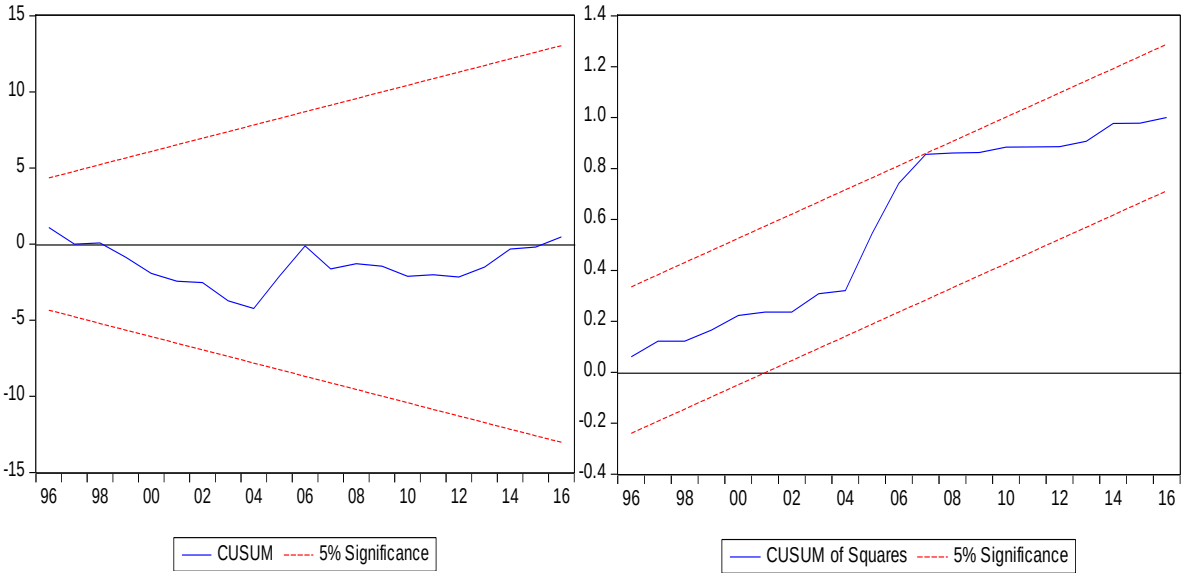


Figure 3 indicates that the CUSUM and CUSUM squared lines are within the 5% wall for significance. So this reconfirmed the results validity in the short run and then to the long run estimations.

Conclusion

This study empirically estimates a unified measure of inclusive growth for Pakistan and determines the impact of macroeconomic stability, financial deepening and structural changes on inclusive growth over the period from 1987 to 2016. Inclusive growth is measured by income growth and distributions which are calibrated by combining GDP per capita growth and income inequality GINI coefficient. We apply the microeconomic concept of a social mobility function at the Macroeconomic level to measure inclusive growth that is closer to the absolute definition of pro-poor growth. The study applied a two-step methodology to capture the empirical estimations, in the first step the study estimated inclusive growth by social mobility function through combining the income distribution and of GDP per capita and in the second step it incorporated it in time series analysis by applying standard unit root tests and autoregressive distributed lag model (ARDL) approach of Conintegration. The results are supported with standard diagnostic tests. Our results indicate that macroeconomic stability and structural changes are foundations for achieving inclusive growth. Other indicators which are included in the analysis have also some important implications, the role of external sector could also be positive with improving terms of trade

fostering greater inclusiveness, while financial deepening has also prominent implications on inclusive growth. Money supply growth, broad money and domestic credit to private sector are significant determinants of inclusive growth in Pakistan. Financial development can lead to encourage more inclusiveness in the country. This research concludes that Pakistan is facing continues income inequality over past decades, the growth in income is not justified without adjusting it with income inequality, so the study estimated the inclusive growth by adjusting normal growth with income inequality. This is vital and comprehensive contribution in the existing literature which could helpful for the policy makers and academia to design further research and policy decisions to make growth inclusive in Pakistan.

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