

Measuring the Threshold Level of Financial Deepening to Achieve Inclusive Growth in Pakistan

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Abstract

This study empirically investigates the relationship between financial development and inclusive growth in Pakistan with threshold analysis over the period of 1987-2020. The study measured inclusive growth as the measure hinged on two factors; growth in per capita GDP and income inequality this ensures the growth adjusted to inequalities which is close definition to pro-poor growth or inclusive growth. The econometric technique of quantile regression is used to obtain threshold estimates over the different quantiles. The results of are given as a threshold level on the basis on quantile (0.10, 0.25, 0.50, 0.75, 0.85 and 0.90). The study found that the impact of financial development on inclusive growth depends on the measure of the former up to the threshold level and not beyond. The results indicates that financial development indicators; domestic credit, broad money M2, and gross fixed capital formation are significant in 10th and 90th quantile, which means financial development is important in inclusive growth former to this threshold not beyond. Through a granger causality test, the direction of causality is through the inclusive growth rather than through financial development; through the financial deepening measure. While the study found that either a low level or high level of openness on trade and capital investment are desirable for inclusive growth in Pakistan, the results also reveal that policy variables in the workings of the Pakistan economy and financial openness are sensitive to the pattern of financial development. With financial deepening, both are negatively related to inclusive growth but positively related to inclusive growth when financial widening is considered. This suggests that government intervention in the activities of the private sector is detrimental when the latter are to drive financial development process. However, the involvement of government in ensuring the appropriate level of financial widening, through the central bank operations, produces a positive impact on growth.

Key Words: Inclusive Growth, Financial Deepening, Threshold, Quantile Regression.

1. Introduction

Achieving high and sustainable economic growth is one of the most important goals for policy makers and academia. In recent few decades literature provide debate on inclusive growth rather than only growth can help in reducing poverty and encouraging development. Inclusive growth refers to both the pace and distribution of economic growth. In order for growth to be sustainable and effective in reducing poverty, it needs to be inclusive (Berg and Ostry, 2011a; Kraay, 2004). Traditionally, poverty (or inequality) and economic growth analyses have been done separately, Recent work indicates that there may not be a trade-off between equity and efficiency as suggested by Okun (1975) and “that it would be a big mistake to separate analyses of growth and income distribution” (Berg and Ostry, 2011b). This paper attempts to integrate the two strands of analyses by developing a unified measure of inclusive growth. Ianchovichina and Gable (2011) explain inclusive growth as about raising the pace of growth and enlarging

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the size of the economy by providing a level playing field for investment and increasing productive employment opportunities.

Development economists and states have often been for a long time interested in the relationship between financial development and economic growth especially in the period which is known as the era of the Washington Consensus. A growing GDP is an evidence of a society getting its collective act together for progress. As its economy grows, a society becomes more strongly organised, more compactly interwoven. Growth is good, Sustained high growth is better and Sustained high growth with inclusiveness is best of all. Inclusive growth in the economy can only be achieved when all the weaker sections of the society including agriculture and small scale industries are nurtured and brought on par with other sections of the society in terms of economic development. Equitable growth is indeed an imperative for inclusive growth.

The relationship between financial development and inclusive growth has since remained topical in the finance literature and till today, experts have not been able to reach consensus on this nexus. Beginning with the seminal studies of McKinnon (1973) and Shaw (1973), some economists (Waqabaca, 2004; Chinaemerem & Chigbu, 2012; Nkoro & Uko, 2013 among others) have found positive relationship, results from other studies indicate that the relationship between the two concepts are negative (Maduka & Onwukam, 2013);¹ to some others, the relationship is neither positive nor negative but only due to other extraneous factors (Pan & Wang, 2013). Interestingly, some studies found mixed results (Caporale et al., 2009). To make far-reaching policy suggestions, some authors (Valickova et al., 2013) have, even, conducted a meta-analysis of the finance-growth nexus. These dynamics of the finance-growth nexus are not only based on old evidences but new interrelationships also reveal the same trend (Gründler & Weitzel, 2013). While the concept of financial development has not been disputed, the concept of growth has remains grossly controversial to development economists and has even make earlier view of financial development to be less holistic.

The objective of current study is to give importance to the phenomena of inclusive growth with special reference to Pakistan and to empirically estimate the relationship between financial development and inclusive growth. While achieving the objective of the study it can provides comprehensive contribution in the literature in many ways, first it provides discussion and measurement of reliable estimate of inclusive growth for Pakistan and secondly this study incorporated comprehensive econometric analysis of threshold analysis to validate the hypothesis tested in the study more elaborative way. Further, study applies quantile regression analysis to give opinion on threshold analysis. The study is unique in nature with special references to Pakistan as there only little evidence is found on the subject; financial development and inclusive growth in Pakistan. Thus it magnifies the remarkable contribution in the existing literature and highlights the significance of the study.

Further study provides literature review in coming section, methodology and econometric estimations technique is third section, model and data description is also given in third section. Descriptive analysis and regression results are in fourth section, fifth sections provide Conclusion.

2. Literature Review

The concept 'inclusive growth' has not been unanimously defined in the literature; given the evolutionary dimension of growth. In fact, some authors (Kirkpatrick, 2010) believe that inclusive growth is another term for pro-poor growth. A commonly used definition, however, is that inclusive growth is an absolute reduction in poverty associated with a creation of productive employment rather than direct income distribution schemes. It should accommodate

¹ Some other relevant studies are in line are Inter et al. (2012), Damary (2006) and Gründler & Weitzel (2013).

both the pace and pattern of growth (World Bank, 2009). It is of shared growth and broad-based in nature. For growth to be inclusive, the nexus of both economic growth and income distribution need be achieved. This is unlike pro-poor growth that focuses largely on the growth-poverty nexus without any recourse to the distribution pattern. Inclusive growth addresses absolute poverty as against the case of relative poverty in pro-poor growth. In effect, inclusive growth is an ex-ante analysis of the growth generating process fused with outcomes of generated growth while pro-poor growth is only an ex-post analysis of the outcomes of growth generated (Klasen, 2010). Putting these together, it suggests that a robust inclusive growth strategy will complement policies to stimulate economic growth with those that foster equality of opportunity, alongside a social security net to protect the most vulnerable. As such, economic policies to promote structural transformation and creative productive employment for the poor people will need be complemented by investments in human capital and other programmes to support social inclusion and equal access to jobs (McKinley, 2010).

There are numerous studies that have empirically examined the impact of financial development on growth. However, scanty studies have focus on inclusive growth. The available studies in the finance and growth literature have focus on components of inclusive growth such as income inequality and poverty reduction. Generally, there are two main strands of findings. The first strand of studies found support for the Greenwood & Jovanovich (1990) hypothesis that financial development help reduce income inequality between the rich and the poor. The second strands of studies documented positive relationship between financial development, income inequality and poverty reduction. The table below gives a cursory review of the extant literature in this regard.

The above listed literature in the table magnifies the importance of financial development in the growth literature, in recent developments with giving importance to inclusive growth rather than only growth, this phenomena taking vital place in emerging literature of growth and development. In case of Pakistan there are only few studies which are on the subject to determine the implications of financial development on inclusive growth, so the current study is an important contribution in the literature.

3. Methodology

Analysis on the determinants of inclusive growth is a recent phenomenon and there has not been a well-developed modeling framework. Basically, however, the social welfare function and social opportunity function remain the two major indicators for capturing inclusive growth (Anand et al., 2013). While the former measure combined a fundamental integration of both growth and equity into one measure to form inclusive growth; the latter measure hinged on two factors of average opportunities available to the population and how these opportunities are distributed in the population.

Current study reformulated the modeling framework of the financial development and inclusive growth nexus pioneered by Anand et al. (2013). Anand et al. (2013) developed a measure of inclusive growth by incorporating economic growth performance with that of distribution of income. We have taken per capita GDP growth as economic growth measure and GINI coefficient for unequal distribution of income.

The major development challenge is to make the growth inclusive. Policies for inclusive growth are vital components of majority of government strategies for sustainable growth. Inclusiveness is a concept that encompasses equity, equality of opportunity, and protection in market and employment transitions is an essential ingredient of any successful growth strategy. Three pillars of inclusive growth are; (i) Maximise economic opportunities (ii) Ensure economic well-being and (iii) Ensure equal opportunities to economic opportunities. An inclusive growth strategy encompasses the key elements of an effective poverty reduction strategy and, more importantly, expands the development agenda. As a poverty reduction

strategy, developing inclusive financial systems should be given priority, which is financially and socially sustainable (Ayindo et al., 2016)

The study developed the model by reviewing studies of Ayinde et al. (2016), and Anand et al. (2013)

$$IG_t = \beta_0 + \beta_1 GNI_t + \beta_2 INEQ_t + \beta_3 DCP_t + \beta_4 GCON_t + \beta_5 FDI_t + \beta_6 M2_t + \beta_7 EDU_t + \beta_8 GFCF_t + \beta_9 TOP_t + \mu_\tau \dots \dots \dots (1)$$

Table 1 Variable Description and Data Sources

Variable	Description	Data source
IG	Inclusive growth measured by taking income inequality adjusted growth in per capita GDP (2011 constant \$)	WDI (2020), Bastagli et al. (2020), Anand et al. (2013)
GNI	Gross national income per capita growth (2011 constant \$)	WDI (2020)
INEQ	Income inequality (GINI coefficient)	WDI (2020), Anand et al. (2013)
DCP	Domestic credit to private sector (% of GDP)	WDI (2020)
GCON	Government Consumption expenditures (% of GDP)	WDI (2020)
M2	Money Supply growth	WDI (2020)
FDI	Net foreign direct investment inflows (% of GDP)	WDI (2020)
EDU	Government expenditures on education (% of GDP)	WDI (2020)
GFCF	Gross fixed capital formation (% of GDP)	WDI (2020)
TOP	Trade openness (Trade % of GDP)	WDI (2020)

To estimate empirically the required parameters to give opinion on the subject matter of study, we used time series data for Pakistan from 1987 to 2020. The reason behind the time span is the availability of data of income distribution.

Econometric estimation methodology

In the first step of empirical estimation we estimated the inclusive growth by utilized the income inequality which is determined through GINI coefficient and for growth we take per capital GDP growth which is frequently used measure as unbiased measure for growth. The technique of analysis for this study is the quantile regression. We seek to undertake a threshold analysis of the financial development- inclusive growth nexus. It is this that assists us to ascertain the level that financial development in the Pakistan economy should be inclusive growth enhancing and otherwise.

Generally, the quantile regression is specified its simple form as;

$$y_t = X_t' \beta_\tau + \mu_\tau \dots \dots \dots (2)$$

And;

$$Quantile_\tau(y_t|X_t) = X_t' \beta_\tau \dots \dots \dots (3)$$

Where; y_t equals the dependent variable (Inequality adjusted growth in per capita GDP); as an indicator for inclusive growth; X_t' equals a vector of independent variables; β_τ is the vector of parameters associated with the τ^{th} quantile, and μ_τ equals the unknown error term. The distribution of the error term μ_τ remains unspecified as indicated in equation. We only

require that the conditional τ^{th} quantile of the error term equals zero, that is, $Quantile_{\tau}(\mu_{\tau}|X_t) = 0$, $Quantile_{\tau}(y_t|X_t) = X_t'\beta_{\tau}$ equals the τ^{th} conditional quantile of inclusive growth given financial development with $\tau \in (0,1)$. By estimating β_{τ} using different value of τ , quantile regression permits different parameters across different quantile of financial development. In other words, repeating the estimation for different values of τ between 0 and 1, we trace the distribution of y conditional on X and generate a much more complete picture of how financial development affects inclusive growth in Pakistan. Compactly, the quantile regression estimate β_{τ} solves the minimization problem of the form;

$$\min_{\beta} \left[\sum_{i \in \{i: y_t \geq X_t \beta\}} 2\tau |y_t - X_t \beta| + \sum_{i \in \{i: y_t < X_t \beta\}} 2(1 - \tau) |y_t - X_t \beta| \right] \dots \dots (4)$$

Implies that the quantile regression minimizes a weighted sum of the absolute errors, where the weights depend on the quantile estimated. The solution involves linear programming, using a simple-based algorithm for quantile regression estimation (Koenker & d'Orey, 1987).

4. Results and Discussion

The results of the study are given in three steps first of all descriptive analysis are given table 2 which includes measures of location such as mean and median, measures of dispersion which are minimum, maximum values and standard deviation and measures of spread' Skewness and Kurtosis.

Table 1 Descriptive Statistics

	Mean	Median	Maximum	Minimum	S.D	Skewness	Kurtosis
IG	1.614	1.716	5.151	-1.75	1.771	0.152	2.472
GNI	2.034	2.001	6.875	-1.927	1.966	0.326	3.043
GINI	31.416	31.500	33.300	28.700	1.400	-0.176	1.861
GFCF	15.971	16.146	19.235	12.520	1.806	-0.225	1.973
GCON	11.215	10.867	16.784	7.780	2.277	0.611	2.875
FDI	1.079	0.787	3.668	0.382	0.848	1.941	5.811
EDU	2.477	2.558	3.022	1.834	0.341	-0.462	2.272
DCP	23.190	24.182	28.736	15.386	4.010	-0.621	2.446
M2	14.705	14.743	29.3	4.314	5.164	0.23	3.78
TOP	33.62	33.672	38.909	25.139	3.317	-0.534	3.025

Descriptive statistics for inclusive growth (IG) are; mean is 1.614%, median is 1.716, minimum value -1.75 in 1993, and maximum value was 5.15 in 2005. Standard deviation for IG is 1.77. The comparative chart for IG and GNI per capita growth is given in bellow in figure 1.

Figure 1 Inclusive growth and GNI per capital growth for Pakistan (1987-2016)

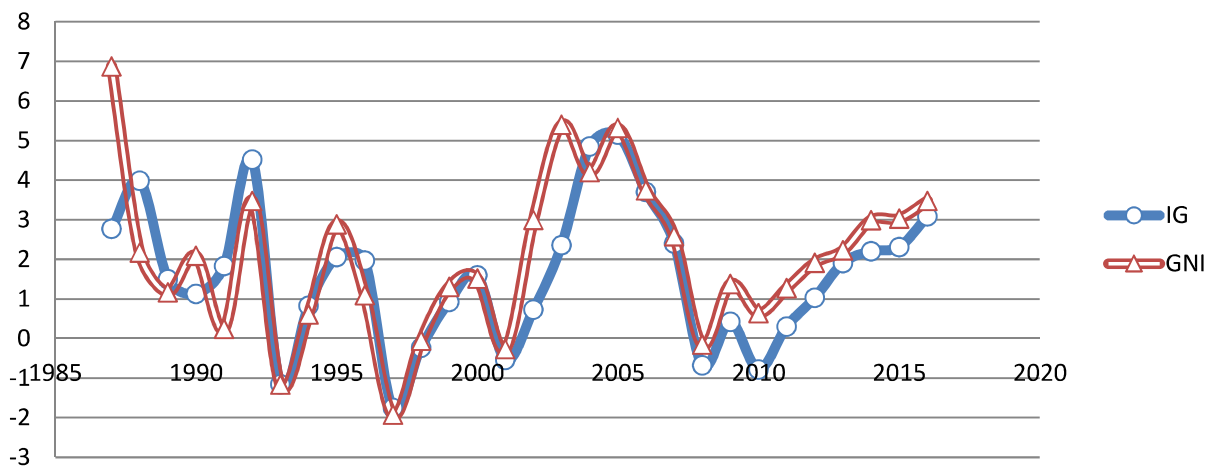


Figure 1 Source: World Bank and Author's own calculation

Figure 1 shows the comparison of GNI per capita growth and inclusive growth (adjusted with income inequality) the years in which inequality is high the gap between the two measures is also high. The gap is consistent and remains high in recent years.

Figure 2 Inclusive Growth and M2 growth in Pakistan 1987-2016

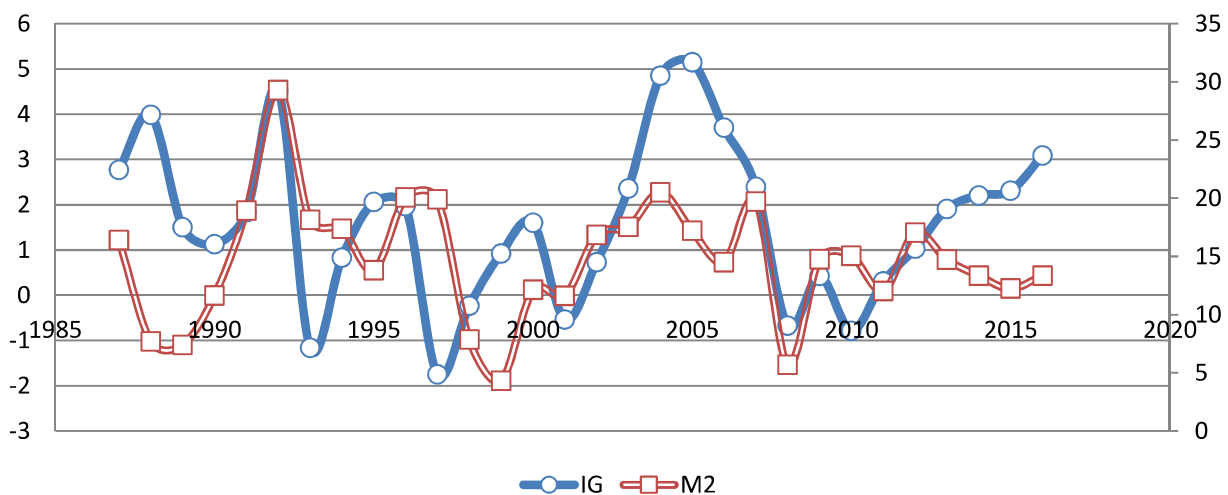


Figure 2 Source: World Bank and author's own calculation

Figure 2 is about the comparison of inclusive growth and money supply M2 growth, this graph shows very relevant analysis that both graphs are almost moving in the same direction except in some recent years inn 2005 the money supply growth was high which also cause a slight up to inclusive growth, so we can have the implications of financial development on inclusive growth in figure 2 and figure 3 as well.

Figure 3 Inclusive growth and Domestic credit to Private sector % GDP (1987-2016)

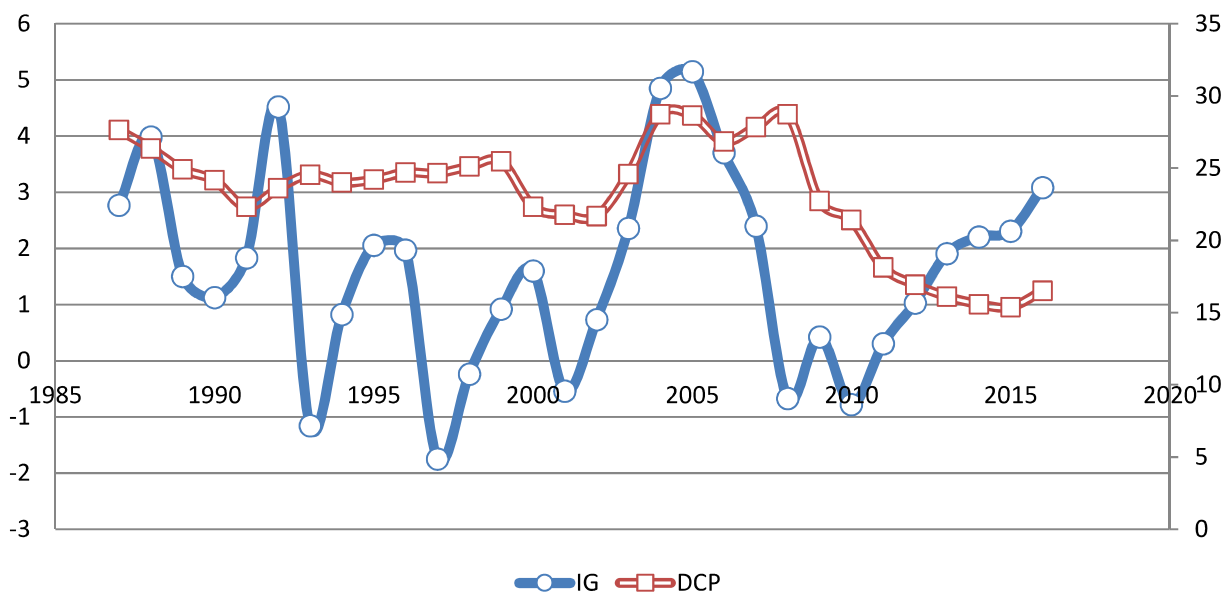


Figure 3 Source: World Bank and Authors own Calculation

Figure 3 shows the comparison of domestic credit to private sector and inclusive growth for Pakistan over the period from 1987 to 2016. It shows the credit to GDP ratio is slightly decreasing over the time since 2005 and inclusive growth also has some similar and uneven response to credit to private sector, however this graphical representation is not conclusive.

In the next step of empirical estimation the study provides results of quantile regression to check whether the financial development indicators along with other traditional control variables if significantly contributing at what threshold and what level it's not significantly contributing in inclusive growth. The results of quantile regression includes 6 different models which are calculated with different values of quantile; 0.1, 0.25, 0.5, 0.75, 0.85 and 0.9 respectively. The results are given in table 3.

Table 3 Quantile Regression results for Inclusive growth

Model	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	IG	IG	IG	IG	IG	IG
	10 th _Q	25 th _Q	50 th _Q	75 th _Q	85 th _Q	90 th _Q
GNI	0.492*** (0.0218)	0.462** (0.167)	0.901*** (0.175)	1.002*** (0.0706)	1.002*** (0.0460)	1.002*** (0)
FDI	0.0613 (0.0594)	0.498 (0.455)	-0.238 (0.476)	-0.192 (0.192)	-0.167 (0.125)	-0.167*** (0)
GCON	-0.0800** (0.0321)	0.261 (0.246)	0.0263 (0.257)	0.397*** (0.104)	0.388*** (0.0677)	0.388*** (0)
M2	-0.0363*** (0.00876)	0.0621 (0.0671)	0.0502 (0.0703)	0.0353 (0.0284)	0.0314 (0.0185)	0.0314*** (0)
EDU	0.889*** (0.148)	-0.620 (1.138)	0.350 (1.191)	-1.044** (0.481)	-1.132*** (0.313)	-1.132*** (0)
GFCF	0.288*** (0.0391)	0.120 (0.300)	0.145 (0.314)	0.0696 (0.127)	-0.00394 (0.0826)	-0.0039*** (0)

DCP	-0.274*** (0.0175)	-0.0889 (0.134)	0.0319 (0.141)	0.125** (0.0568)	0.107*** (0.0370)	0.107*** (0)
GINI	0.270*** (0.0351)	0.285 (0.269)	0.257 (0.282)	-0.0379 (0.114)	-0.0219 (0.0742)	-0.022*** (0)
TOP	0.0340* (0.0174)	-0.208 (0.133)	-0.0857 (0.140)	-0.0456 (0.0563)	-0.0119 (0.0367)	-0.012*** (0)
Constant	-9.219*** (1.151)	-4.578 (8.824)	-9.826 (9.235)	-3.097 (3.728)	-2.735 (2.430)	-2.735*** (0)
Pseudo R ²	0.61	0.54	0.56	0.63	0.71	0.73
Observations	30	30	30	30	30	30

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

The results of quantile regression provide very conclusive estimates to understand the subject matter of the study, measures for financial development are; GFCF, DCP, INF and M2. Financial development is significantly contributing to inclusive growth, DCP has negative sign in first quantile but after 75th quantile it becomes positive and significant determinant of inclusive growth. GFCF has positive and significant relationship with IG in 10th quantile but has negative and significant on 90th quantile. M2 is initial negative and significant and at 0.9 quantile has positive and significant. Other measures such as TO, GINI, and EDU are significantly affecting inclusive growth in multiple quantile estimations. GINI is positive and significant with inclusive growth it's also used in measuring inclusive indicator. Overall results of the study are according to expectations and consistent with other recent evidence in the literature for other economies.

In the third step of empirical justification of the subject the study estimated the Granger Causality tests for each different variable of financial development with inclusive growth. The results are given in table 4.

Table 4 Pairwise Granger Causality Tests

Lags: 2		
Null Hypothesis:	F-Statistic	Prob.
M2 does not Granger Cause IG	1.20859	0.3169
IG does not Granger Cause M2	0.05225	0.9492
BM2 does not Granger Cause IG	0.44099	0.6487
IG does not Granger Cause BM2	1.61580	0.2205
DCP does not Granger Cause IG	1.61645	0.2204
IG does not Granger Cause DCP	1.02416	0.3749
GFCF does not Granger Cause IG	0.92617	0.4103
IG does not Granger Cause GFCF	8.42668	0.0018

The results of granger causality test show that financial development indicators such as M2, broad money, domestic credit to private sector does not granger cause inclusive growth in Pakistan in total time span, however inclusive growth does granger cause gross fixed capital formation. This means inclusive growth has implications in capital formation in Pakistan.

Conclusion

This study determines empirically the relationship between financial development and inclusive growth in Pakistan by using time series data over the period of 1987-2020. The study measured inclusive growth as the measure hinged on two factors; growth in per capita GDP and income inequality this ensures the growth adjusted to inequalities which is close definition to pro-poor growth or inclusive growth. The econometric technique of quantile regression is used to obtain threshold estimates over the different quantiles. The results of are given as a

threshold level on the basis of 10th, 25, 50th, 75th and 85th and 90th quantile. The study found that the impact of financial development on inclusive growth depends on the measure of the former up to the threshold level and not beyond.

The results indicates that financial development indicators; domestic credit, broad money M2, and gross fixed capital formation are significant in 10th and 90th quantile, which means financial development is important in inclusive growth former to this threshold not beyond. Through a granger causality test, the direction of causality is through the inclusive growth rather than through financial development; through the financial deepening measure. While the study found that either a low level or high level of openness on trade and capital investment are desirable for inclusive growth in Pakistan, the results also reveal that policy variables in the workings of the Pakistan economy and financial openness are sensitive to the pattern of financial development. The study concludes that with financial deepening, both are negatively related to inclusive growth but positively related to inclusive growth when financial widening is considered. This suggests that government intervention in the activities of the private sector is detrimental when the latter are to drive financial development process. However, the involvement of government in ensuring the appropriate level of financial widening, through the central bank operations, produces a positive impact on growth.

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