

An Empirical Relationship Between Human Capital, Institutional Quality, and Economic Growth in Pakistan

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Abstract

Pakistan is a developing economy where different policies have been adopted to increase economic growth, but the targeted growth rates have remained an elusive dream. Low quality of institutions and less attention towards the development of human capital are two major reasons for this failure. This study explores the association of institutional quality and human capital on economic growth in Pakistan from the time period between years 1984 to 2018. For the estimation of our model, Auto-Regressive Distributed Lag (ARDL) model has been used. The variance decomposition analysis is also used to check the shocks, direction, and magnitude of the shocks within the selected variables. Impulse response function confirms that the magnitude and direction of the shocks are positive. The outcome of this research suggests that accumulation in human capital increases productivity, and institutional quality helps to sustain economic growth. Therefore, policy makers should design such policies, which are helpful for the development of human capital. It is also recommended that law and order situation be improved so that the confidence of people and trust of investors is restored that eventually will drive economic growth in Pakistan.

Keywords: Economic growth, Human capital, Institutional quality, ARDL.

JEL Classification: C15, D1, D63, E2, H2

1. Introduction

Human capital has a crucial role not only in the production process but also in all sectors of the economy. Due to effective rule of law, labor performs more efficiently in that specific sector and enhances economic growth.

Substantial and sustained economic growth is the primary goal of all economies. The nature of economic growth depends on both economic and non-economic factors (Nawaz, 2015). Enhancing and maintaining economic growth are

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two different things. Whereas some reforms are needed to start the process of economic growth, continuous institutional reforms can maintain productive interest, as well as economic growth (Rodrik, 2003). Countries that protect the institutional quality and focus on macroeconomic stabilization will be able to invest more in both physical and human capital to achieve a higher level of income and economic growth (Qasim et al., 2016).

Developing economies have more capacity to catch up with the world but they are not observed to be effectively catching up; the reason for this is the poor quality of institutions (Knack and Keefer, 1997; Rodrik, 1999, 2003). Institutional argument is considered as the key role for the joint evolution of political and economic development which propels economic growth (Acemoglu et al., 2005). Institutions affect economic growth by shaping political, economic, and social interconnections in a society (North, 1990 & 1991). The effect of institutional quality differs transversely when using a sub-sample of different economies (Eicher and Leukert, 2009). For example, the cultural and geographical characteristics of Pakistan and India are almost similar but in reality, the performance of democratic institutions is different from each other (Nawaz, 2015). On the other side, developed countries, for example, Hong Kong, Germany, Taiwan and the United Kingdom have high economic growth despite variances in the characteristics of institutional establishment in these countries (Valerian and Peluso, 2011). The quality of institutions is also plays an important role in enhancing the growth rate of an economy. As Barro (1990, 1991) point out that institutional quality helps to maintain growth rate in the long-run. Institutional rulers, in progress of an economy, operate largely through its major effect on human capital through efficiency of government provision, transfer to increase the learning outcome and structuring human capital (Adam-Kane and Lim, 2016). Improvement in institutional quality is linked with systematic development of human capital, which further increases growth rate in different sectors of the economy (Zhou, 2016, 2018).

Human capital is an important asset of every nation. The development of human capital is considered an essential condition for economic growth (Schultz, 1993; Qaiser and Winte, 2001; Abbas, 2001). Effective and qualitative human capital enhances the productivity and efficiency of the production process (Harbinson and Myer, 1964; Todaro, 2002). Human capital is considered as a prime source of growth ranking higher superior compared to institutional quality according to Glaeser et al. (2004). This is one of the reasons that South Asia has to stress on higher level of education to improve human capital (Riboundand Tan, 2009).

Today, Pakistan is half of the country it was in 1947 as 55% of the population lived in East Pakistan. The economy of Pakistan is much spectacular as compared to the growth of its early years. Pakistan would necessarily have grown from whatever existed in endowment (Khan, 2005). Since 1947, Pakistan's economy has been unable to maintain economic growth. The governments did not examine the essential fundamentals of human capital formation and development in infrastructure for the progress in economic growth. Pakistan scored 53.10 according to the human capital index 2016 and ranked 118th among 130 countries (Human Capital Report, 2016). What is distressing is that this rank was an improvement from the previous years. On the other hand, with regards to economic growth, it has fluctuated over the years and even became negative a few times in Pakistan. Although the performance of institutional quality has improved over the years, this improvement has not been much impressive. Law and order index ranges from 0 to 6 (0 Poor; 6 Good), and the index value observed in the past years show that the law and order condition in Pakistan is not adequate. Trend shows a slight improvement in law-and-order condition from 1984-1997. In the year 1998, its value decreased from 3.92 points to 3.00 points and remained the same till 2009. After that, the law and order condition improved and reached 3.50 points in 2012, and during the year 2016, its value again dropped to 3.00 points for Pakistan (International Country Risk Guide, 2016).

Institutional quality and human capital together can substantially boost economic growth in a country. Human capital in the case of Pakistan, has not received much attention from the policy makers while institutional quality is also lagging, which causes hurdles in the progress of the economy. Pakistan is a labor augmented country but still lies at the bottom among the lowest fifteen countries. The reason behind this is the poor performance on educational outcomes through all age groups (Human Capital Report, 2016). There is approximately 61.04 million working age population out of an estimated total population of 195.4 million. This shows that the ratio of dependent population is much higher in Pakistan (Labour Force Survey, 2014-15; Bhattacharjee, 2016; Pakistan Economic Survey, 2015-16). Pakistan ranked 134 out of 157 countries in the human capital index (HCI), during the year 2018. The condition of Pakistan's HCI is very critical by comparing with other Asian countries; Bangladesh ranked as 106, India 115, Afghanistan 133 (Nasir, 2018).

In this backdrop, the basic purpose of this research is to determine the impact of human capital and institutional quality on the growth of Pakistan's economy. We hypothesize that "there is a significant positive impact of human capital on economic growth of Pakistan" and "better quality of institutions enhance

economic growth in Pakistan”. This study also aims to trace the reasons for unstable economic growth in the country.

2. Literature Review

For effective human capital, spending on education has a strong impact, which later assists in enhancing economic growth. Effective labor played a vital role in the progress of economic growth both in the short and long run (Afridi, 2016). The specific group of people who have enough knowledge (human capital) had better ideas of substitution for the usage in manufacturing and commercial trade, which further enhances productivity level and boosts economic growth (Lucas, 1988; Sokoloff and Khan, 1989; Romer, 1990; Knack and Keefer, 1997; Barro, 1998; Stewart et al., 1998; Abbas, 2000; Abbas, 2001; Castelló and Doménech, 2002; Khan, 2005; Abbas and Foreman-Peck, 2007; Asghar et al., 2012; Angeles, 2010; Ali et al., 2012; Asghar et al., 2012; Mehrara and Musai, 2013; Yilmazer and Cinar, 2015; Afridi, 2016; Zhuo, 2018). Economic growth is affected by strong institutional quality, which plays a mediating effect on human capital accumulation (Acemoglu et al., 2004; Gleaser et al., 2004; Khan, 2005; Angeles, 2010; Dias and Tebaldi, 2012; Acemoglu et al., 2014; Adams-Kane and Lim, 2016). Better institutional quality is necessary for sustainable economic growth (Acemoglu et al., 2004; Gleasure et al., 2004; Nawz, 2005; Levchenko, 2007; Angeles, 2010; Slesman et al., 2015; Bhattacharjee, 2016). There is a need to work on labor skill management and remove trade barriers to enhance economic growth rate, specifically in the case of underdeveloped economies (Tariq et al., 2016).

Although researchers have examined the relationship between human capital and institutional quality on economic growth separately, there is a need to investigate the role of human capital on economic growth in the presence of institutional quality. Some literature also sheds light on the significance of institutions for a country’s economic prosperity as low institutional quality reduces the confidence for investment and also deters the development of human capital. Despite the attempt by these studies, no clear evidence has linked human capital to economic growth along with institutional quality in the case of Pakistan. The impact of human capital on economic growth in the presence of institutional quality is missing. Based on the reviewed literature, we also observe that there are mixed findings with a number of studies proposing a positive relationship of human capital and institutional quality on economic growth, while others arguing for a negative relationship (See for example, Adam-Kane and Lim, 2016; Tariq et al., 2016; Nawaz, 2015, Baum and Lake, 2003). Another point to note is that cross-country

studies on this topic do not effectively capture significant and specific characteristics of countries, which are important factors to consider in economic growth models. Cross-country studies, especially with reference to production inputs, also sometimes suffer from measurement problems (Tallman and Wang, 1994; Tamura, 1991; Becker et al., 1990). Therefore our main motivation in this paper stems from the dearth of studies that explore the link between human capital and institutional quality on economic growth. Specifically, we aim to conduct a country analysis of Pakistan, which does not suffer from cross-country biases as discussed above.

3. Data and Methodology

Improvement in human capital and strong institutional setup are important factors for economic growth (Afridi, 2016; Tariq et al., 2016). This research work has augmented the Mankiw-Romer-Weil (1992) model by adding new variables such as, institutional quality, inflation, and trade openness, as these variables are considered important in measuring the growth of the economy (Ali et al., 2016; Tariq et al., 2016; Nawaz, 2015; Sarel, 1996; Knack and Keefer, 1995).

The functional form of the model for this study is as follows;

$$EG = f(GCF, HCI, INS, INF, TO)$$

The econometric form of the model is:

$$EG_t = \alpha_0 + \alpha_1 GCF_t + \alpha_2 HCI_t + \alpha_3 INS_t + \alpha_4 CPI_t + \alpha_5 TO_t + \varepsilon_t$$

Where α_0 is the constant; $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ are the coefficients; t is showing the time period. EG_t , represents real GDP per capita at time t , GCF_t is gross capital formation in billion rupees at time t , INS is the institutional quality, proxied by law and order, CPI is inflation rate measured by the consumer price index, and TO is trade openness measured as the ratio of import and export as a ratio to GDP. HCI is the human capital index. Meanwhile, ε_t is the disturbance term. Variables such as human capital; gross capital formation; institutional quality; rate of inflation and trade openness have been frequently used in growth researches (See for example, Ali et al., 2016; Afridi, 2016; Tariq et al., 2016; Nawaz, 2015; Sarel, 1996; Knack and Keefer, 1995).

For the estimation of our model, we have used a time-series dataset for Pakistan over the time period 1984-2018. Time series analysis was also preferred in this case because of the variation in measurement of institutional quality of each country as each have distinctive institutional policies (Nawaz, 2015; Valerian and Peluso, 2011; Ahmed, 2006). GDP per capita is measured at constant local currency

unit. Gross capital formation is used to measure physical capital. Human capital is measured by using the human capital index based on one-year schooling and return to education, from the Penn World Tables. For the variable of institutional quality, we have used the proxy of law and order. Better law and order situation translates into better institutions. For inflation, we have used the consumer price index (CPI).

The impact of institutional quality and human capital on economic growth is measured using time series analysis and ARDL estimation was considered as an efficient analytical method for analysis since it allows us to include data for Pakistan at time period t . ARDL bound testing for cointegration was used to check the long-run relationship of the selected model.

4. Results and Discussion

Logarithm form of the selected model is used for econometric analysis and unit root tests are applied to check the stationarity level of each variable. Augmented dickey Fuller (ADF) test and Phillips Perron (PP) unit root tests have been applied to examine the unit root estimations.

Table 1: Unit Root Test

Variable	ADF Test	Stationary	PP Test	Stationary
LNEG	-3.488715	I(1)	-3.49526	I(1)
	0.0147**		0.0145**	
LNGCF	-3.83017	I(0)	-4.73787	I(1)
	0.0282**		0.0006*	
LNINST	-3.224861	I(0)	-4.35028	I(1)
	0.0982**		0.0016*	
LNHC	-1.380212	I(1)	-1.81078	I(1)
	0.0525**		0.0676**	
LNCPI	-4.99989	I(0)	-2.45304	I(1)
	0.0018*		0.0348**	
LNTRADE	-6.655808	I(1)	-6.65489	I(1)
	0.0000*		0.0000*	

Note: *&** are 1% and 5% level of significance respectively.

The results of ADF test confirmed that economic growth, human capital and trade openness are stationary at first difference while gross capital formation, institutional quality, and inflation are stationary in the level form. The result of the PP unit root test predicts that economic growth, gross capital formation, institutional quality, human capital, inflation and trade openness, all selected variables are stationary at first difference. The results of the unit root analysis

suggest applying ARDL bound testing for cointegration to check whether a long-run relation of the selected model exists.

The results of the unit root test suggested that we apply the ARDL bound testing for cointegration to test for the presence of a long-term relationship in the selected model. The results of the bound test are presented in table 2. The results confirm that a long-run relationship exists in the selected model as the upper bound is less than the test statistic (F-value).

Table 2: ARDL Bounds Testing

Estimated Model	Optimal Lag Length	F-Statistics	I(0)	I(1)
FlnEG (lnEG/lnGCF, lnINST, lnHCL, lnCPI, lnTRADE)	1,3,2,3,3,1	5.171287*	3.41	4.68

Note: * denotes 1% level of significance.

Various stability tests confirmed that there is no serial correlation in the data and heteroskedasticity test also confirmed that the variance of the model is constant over time with zero mean.

Table 3 shows the long and short-term analyses for the selected model. Human capital and institutional quality both have a significant impact on the economic growth of Pakistan in congruence with literature (Tariq et al., 2016; Dias and Tebadli, 2012; Ali et al., 2012; Khan, 2005). Strong institutional quality is the result of the implementation of law and order. It attracts investors for a secure investment that promotes businesses and boosts economic growth. Institutional quality positively impacts economic growth of Pakistan and it has a significant relationship in both the short and long run. Specifically, a 1% increase in institutional quality causes a 0.003% increase in economic growth in the short run and a 0.013% increase in the long run.

These results are in contrast with the findings of Muarik (2005) and Faria and Carnerauski (2001) and in favor of the results of Bhattacharjee, 2016; Vijesandiran and Vinayathan, 2015; Valeriani and Peluso, 2011; Fischer (1979); Sidrauski (1967) and Barro, 1990.

As Todaro (2002) pointed out that it is not easy to advance all other means of production in the absence of satisfactory and qualitative human capital, therefore, effective attention towards all factors of production, especially in human capital, will increase productivity, which accelerates economic growth. According to our estimation results, human capital has a positive and significant impact on the economic growth of Pakistan and these results are in favor of the studies conducted by Afridi, 2016; Nawaz, 2015; Mehrara and Musai, 2013; Lake, 2003; Stewart et

al., 1998 and Abbas, 2000 while, inconsistent with the findings of Afridi (2016) in the short run estimation period. The results of the error correction model (ECM) confirmed that 53% is the speed of adjustment from the short run to the long run in one year.

Table 3: Short Run Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGCF)	0.134121	0.057934	2.315074	0.0376**
D(LNINST)	0.003467	0.003082	1.124921	0.281
D(LNHCI)	0.69777	0.141662	4.925606	0.0003*
D(LNCPI)	-0.243686	0.104043	-2.342172	0.0357**
D(LNTRADE)	-0.0033	0.049145	-0.067158	0.9475
CointEq(-1)	-0.530574	0.232566	-2.281385	0.04**
Long Run Analysis				
LNGCF	0.244308	0.24339	1.003775	0.3338
LNINST	0.01354	0.005754	2.3532	0.035**
LNHCI	0.153367	0.069874	2.194896	0.0469**
LNCPI	-0.335989	0.097089	-3.460623	0.0042*
LNTRADE	0.460245	0.254124	1.811105	0.0933***
C	-1.987982	0.21359	-0.485688	0.0273**
R ²	0.87008			
Adj R ²	0.69019			
D.W.	2.373539			
F-Statistics	4.836747 (0.002984)			

Note: *, **, *** are 1%, 5% & 10% significant levels respectively.

Figures 1 and 2 show the stability of data by making use of the cumulative sum control chart (CUSUM) and the cumulative sum control squared chart (CUSUMsq), which confirm that data is normally distributed as the cumulative sum of the recursive residuals, represented by the blue line, is between the lower and upper bounds, both in CUSUM and CUSUMsq.

Figure 1: Cumulative Sum Control Chart

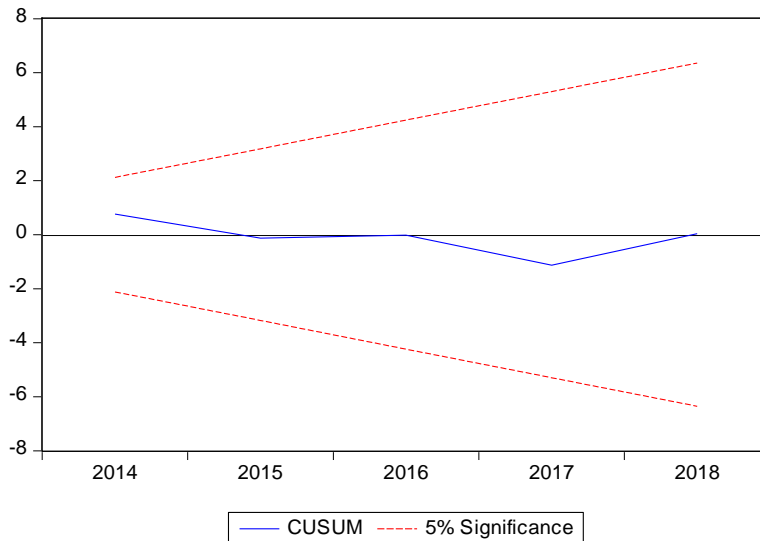
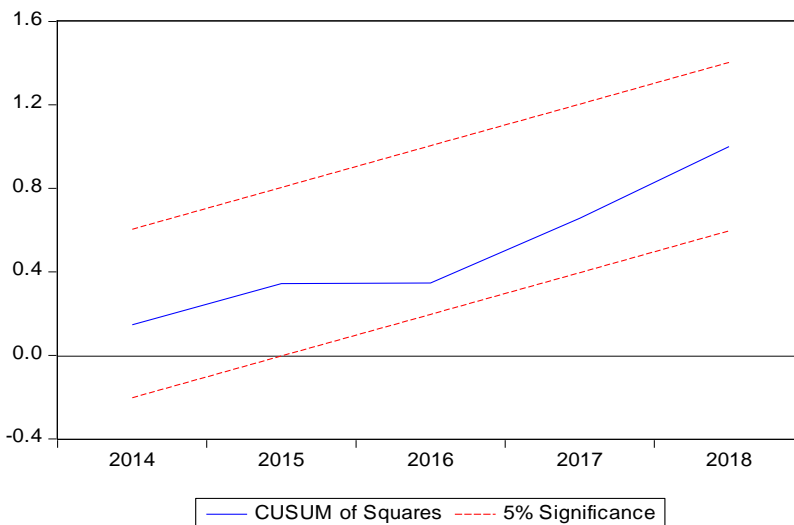


Figure 2: Cumulative Sum Control Squared Chart



Christopher A. Sims developed the variance decomposition approach in time series analysis (Sim, 1992). This method introduces shocks and then details their effect on other variables and their magnitude over time. Variance decomposition analysis finds the impact of innovative shocks on the adjustment path of the variables under investigation. To see the results of variance decomposition analysis, see appendix 2. The impulse response function, presented

in figure 3 shows the direction of innovative shock and its magnitude. This illustration shows the impulse response function of economic growth to the human capital index. The contribution of economic growth to human capital is increasing; as shown in figure 3. It shows that the direction of the shock is positive and increasing, from horizon 1 till the 4th horizon. After the 4th horizon, its direction becomes negative but the magnitude of the shock is still positive, till the 6th horizon. From the 8th horizon onward, both the magnitude and direction of the shock start to increase and become positive. This proves that the direction of the shock of economic growth to human capital is overall positive.

Figure 3: Response of LNEG to LNHCI

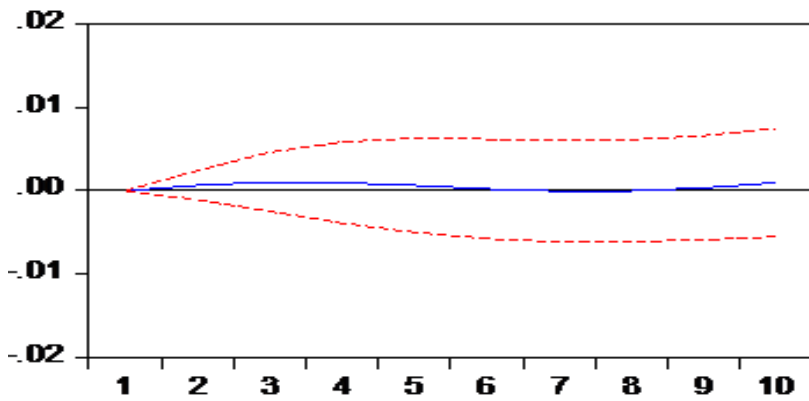


Figure 4: Response to LNHCI to LNEG

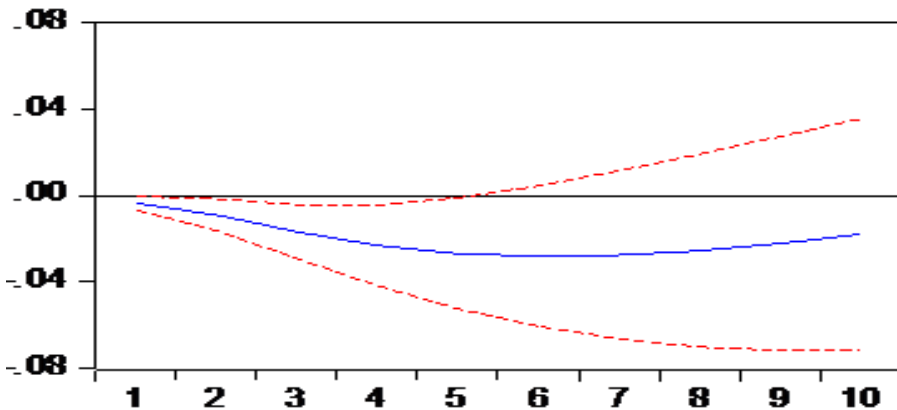


Figure 4 shows the impulse response function of the human capital index to economic growth. The contribution of human capital index to economic growth is initially decreasing and then has an increasing trend. The direction of the shock is

decreasing from the human capital index to economic growth and its magnitude is negative, till the 6th horizon. After the 6th horizon, the direction of shock increases and the magnitude remains negative from human capital to economic growth. The speed of increase in shock is less as compared to the speed of decrease in shocks from human capital to economic growth. This proves that the direction of the shock of human capital to economic growth was decreasing in the beginning, while as time passed its shock drifted towards the positive horizon.

Figure 5: Response to LNEG to LNINST

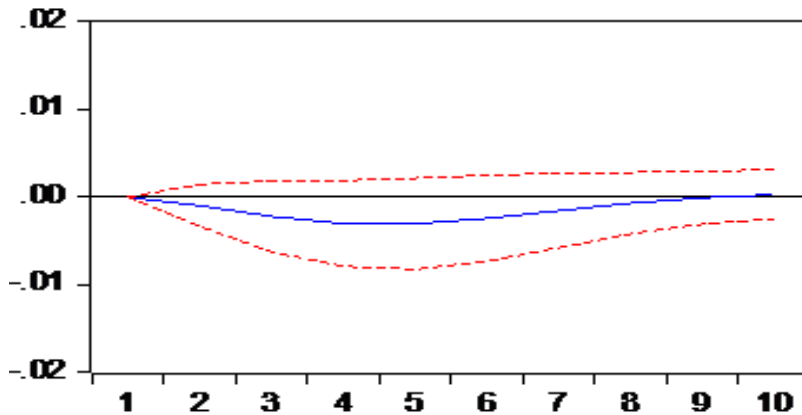
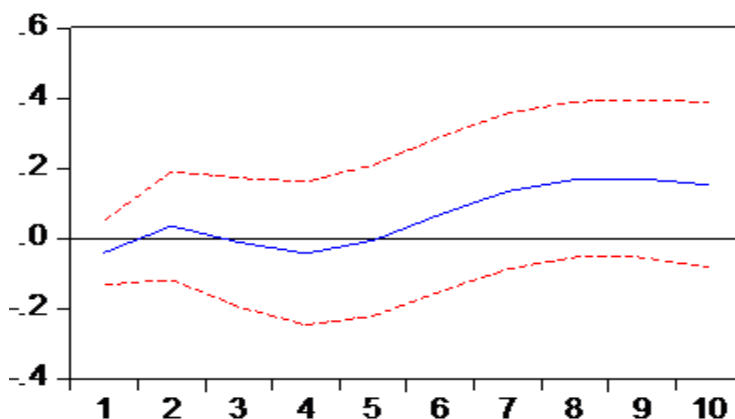


Figure 5 shows the impulse response function of economic growth to the institutional quality of Pakistan. The contribution of economic growth to institutional quality is at the beginning decreasing and then has an increasing trend. The direction of the shock is decreasing from economic growth to institutional quality and the magnitude is negative till the 4th horizon. After the 5th horizon, the direction of shock becomes increasing and the magnitude remains negative. The magnitude of shock is positive and increases right after the 8th horizon. This proves that the direction of shock of economic growth to institutional quality was initially decreasing, while as time passed its shock moved towards the positive horizon to become positive.

Figure 6 shows the impulse response function of institutional quality to the economic growth of Pakistan. In the first horizon, the direction of shock is increasing, and its magnitude is negative. After that it becomes positive and in the 3rd horizon its direction is decreasing and magnitude again becomes negative. In the 4th horizon of impulse response function, the direction of shock, from institutional quality to economic growth is increasing as it reaches the 9th horizon

and then again has a decreasing trend but with slow speed. The magnitude of the shock is negative in the 4th and 5th horizon. However, from the mid of the 5th horizon onwards, its magnitude turns positive. Overall, the impulse response function from institutional quality to economic growth is positive. The rest of the shocks for other variables studies in this research are shown in appendix 1.

Figure 6: Response of LNINST to LNEG



5. Conclusion

The present study uses time series analysis for the period from year 1984 to 2018 to investigate the impact of human capital and institutional quality on economic growth of Pakistan. By testing the variables for stationarity using unit root tests, we applied the ARDL technique for estimation of the model. The stability of our data was checked through the CUSUM and CUSUM squared approaches. Variance decomposition analysis, an innovative accounting approach, is also used to check the direction and magnitude of shocks in variables with the same variable and with the other variables to determine the overall direction of relationship that exists.

Results demonstrate that institutional quality and human capital have a positive and significant impact on economic growth of Pakistan both in the short as well as in long run. Furthermore, both variables when worked from their mathematical averages; have a positive impact on economic growth. It can be concluded that strong institutional quality and improvement in human capital are essential determinants that accelerate economic growth in developing economies, especially in the case of Pakistan. Human capital accumulation increases productivity. The strong institutional quality enhances economic growth through

the implementation of law and order. As a result, the economy moves towards a higher economic growth trajectory. The results of the study support both alternative hypotheses of the research. This paper argues that there is a dire need to develop human capital and institutional quality impressively, which helps to boost the growth of Pakistan's economy. It is also recommended that the law and order situation must be improved so that the confidence and trust of investors is restored, and they contribute positively to the economic growth of Pakistan.

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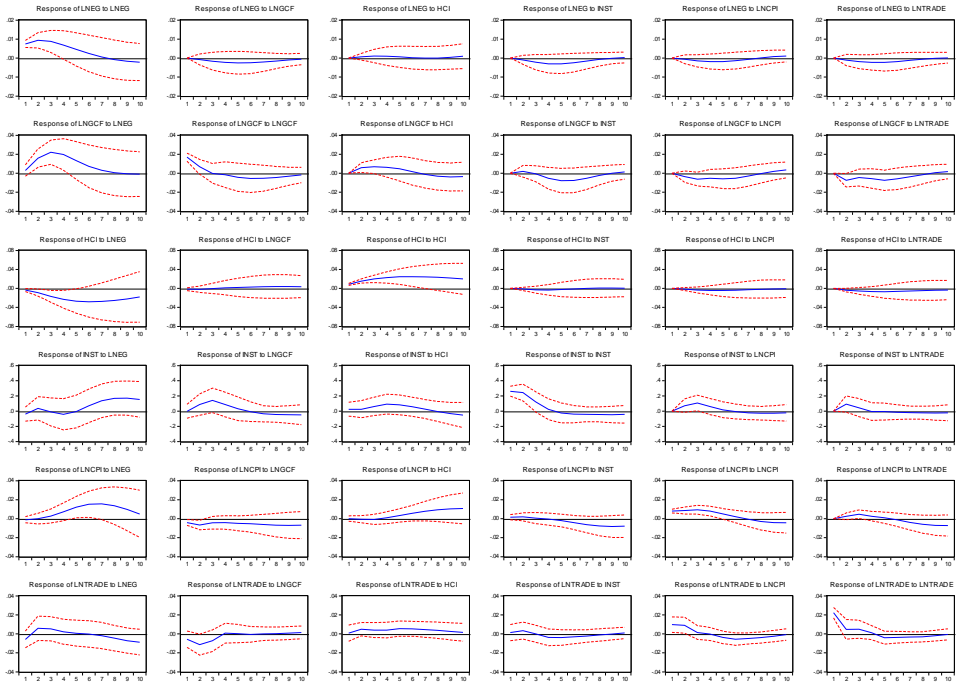
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Appendix 1

Impulse Response Function



Appendix 2

Variance Decomposition Analysis

Period	S.E.	LNEG	Variance Decomposition of LNEG:				
			LNGCF	LNHCI	LNINST	LNCPI	LNTRADE
1	0.007434	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.012101	97.64119	0.377448	0.321588	0.642159	0.271425	0.746189
3	0.015427	92.49642	1.412309	0.678599	2.427093	1.049579	1.935998
4	0.017564	86.58610	2.677220	0.837727	4.818140	1.935517	3.145298
5	0.018807	81.36842	4.105562	0.847119	6.819474	2.636332	4.223093
6	0.019417	77.87840	5.475398	0.808007	7.969509	2.986586	4.882099
7	0.019649	76.14287	6.491464	0.789561	8.399785	3.024945	5.151373
8	0.019748	75.53421	7.055438	0.781711	8.436004	2.999509	5.193133
9	0.019864	75.37700	7.234668	0.804730	8.338517	3.108068	5.137013
10	0.020044	75.17502	7.182490	1.034223	8.208927	3.350889	5.048451

Period	S.E.	LNEG	Variance Decomposition of LNGCF:				
			LNGCF	LNHCI	LNINST	LNCPI	LNTRADE
1	0.017202	2.810583	97.18942	0.000000	0.000000	0.000000	0.000000
2	0.026468	37.29001	47.64271	4.802269	0.581345	1.844453	7.839218
3	0.035995	57.85813	25.76454	6.202969	0.349524	3.959272	5.865559
4	0.042579	62.74997	18.56081	6.555652	1.838092	4.385469	5.910002
5	0.046732	60.25990	16.27983	6.467706	4.306573	5.198759	7.487231
6	0.048902	57.25417	16.15989	6.033050	6.321366	5.916891	8.314636
7	0.049818	55.56095	16.68502	5.869166	7.222177	6.066890	8.595798
8	0.050206	54.72213	17.23459	6.172494	7.323752	5.982432	8.564595
9	0.050505	54.09183	17.42808	6.720014	7.237686	6.047577	8.474821
10	0.050845	53.41092	17.32792	7.115654	7.222903	6.438233	8.484372

Period	S.E.	LNEG	Variance Decomposition of LNHCI:				
			LNGCF	LNHCI	LNINST	LNCPI	LNTRADE
1	0.009412	14.46108	3.255081	82.28384	0.000000	0.000000	0.000000
2	0.020758	22.04533	1.490748	72.21270	0.404104	0.611768	3.235343
3	0.034031	32.44483	0.560302	61.13980	0.928493	1.251509	3.675060
4	0.047871	39.72842	0.358749	53.72813	0.987803	1.396476	3.800423
5	0.060722	44.17300	0.325185	49.62446	0.787082	1.391709	3.698569
6	0.071777	46.89903	0.372298	47.44928	0.590236	1.273394	3.415768
7	0.080943	48.43126	0.473474	46.36828	0.464142	1.115353	3.147485
8	0.088259	49.09287	0.590721	46.00191	0.395742	0.980251	2.938500
9	0.093789	49.10702	0.699697	46.15889	0.357914	0.882984	2.793499
10	0.097686	48.65586	0.780021	46.69640	0.333392	0.820448	2.713876

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Period	S.E.	Variance Decomposition of LNINST:					
		LNEG	LNGCF	LNHCI	LNINST	LNCPI	LNTRADE
1	0.266477	2.226900	0.007665	0.836785	96.92865	0.000000	0.000000
2	0.392206	1.891744	4.989817	0.747297	83.45129	3.334655	5.585194
3	0.454086	1.469266	13.54135	2.426636	69.34863	8.076172	5.137949
4	0.477681	2.094698	15.52929	5.906755	62.93587	8.874684	4.658697
5	0.486819	2.026571	15.36084	8.572328	60.86590	8.672536	4.501821
6	0.497070	3.911156	14.76266	9.565554	59.03585	8.328996	4.395779
7	0.519663	10.37581	13.96563	9.018900	54.66468	7.794790	4.180190
8	0.551204	18.62714	13.04780	8.023452	49.22769	7.190601	3.883315
9	0.582878	25.28661	12.30179	7.464000	44.63290	6.657886	3.656818
10	0.609327	29.48826	11.87934	7.581246	41.33321	6.237298	3.480650

Period	S.E.	Variance Decomposition of LNCPI:					
		LNEG	LNGCF	LNHCI	LNINST	LNCPI	LNTRADE
1	0.009092	1.459291	19.47801	0.004882	2.812559	76.24526	0.000000
2	0.014508	0.573338	28.88660	0.157092	2.778946	64.66122	2.942807
3	0.018630	2.404550	22.85807	0.309951	1.803048	64.65598	7.968409
4	0.022114	12.41168	19.51810	0.425534	1.325323	59.28647	7.032900
5	0.026451	29.39002	17.10069	1.889826	1.485915	45.10317	5.030383
6	0.031850	43.00890	14.64388	4.472906	2.676310	31.59083	3.607165
7	0.037605	48.32835	13.16537	7.582550	4.607559	22.68553	3.630636
8	0.042875	47.39151	12.64877	10.66953	6.760372	17.89522	4.634589
9	0.047172	43.49020	12.66957	13.61760	8.679867	15.53028	6.012481
10	0.050469	38.96268	12.90813	16.47101	10.02823	14.28090	7.349056

Period	S.E.	Variance Decomposition of LNTRADE:					
		LNEG	LNGCF	LNHCI	LNINST	LNCPI	LNTRADE
1	0.025740	5.272125	4.937374	0.077584	0.249542	14.36056	75.10282
2	0.031095	7.145908	16.85526	2.533813	1.380949	18.31940	53.76467
3	0.032995	8.965462	19.82887	3.656979	1.226582	16.44998	49.87212
4	0.033537	9.099683	19.24592	4.915670	2.417362	15.92641	48.39495
5	0.034671	8.550605	18.01001	7.099448	3.568311	16.11027	46.66136
6	0.035860	7.996448	16.86292	8.757626	4.141196	17.58667	44.65514
7	0.036749	7.885285	16.05719	9.829331	4.348891	18.51812	43.36119
8	0.037570	9.011817	15.36628	10.37887	4.271869	18.77331	42.19785
9	0.038475	12.07882	14.69092	10.36088	4.075330	18.30987	40.48418
10	0.039560	16.40198	14.03166	9.971256	3.910644	17.36127	38.32319

Cholesky Ordering: LNEG LNGCF LNHCI LNINST LNCPI LNTRADE