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Exploring the Factors Affecting Economic Growth in Pakistan

Abstract *Economic growth varies across different countries. Various potential factors have been identified over the years, but finding relevant determinants of growth has been a real issue for empirical investigation. This paper has attempted to examine different macro-economic variables that play a significant role in accelerating economic growth from 1970 to 2019. The econometric results show that human capital, financial development, and industrial production are the encouraging factors of economic growth, while the variable trade openness shows a negative effect on economic growth in Pakistan. Government should design policies to invest in human capital and fixed assets; this will create job opportunities for the people and leads to high economic growth.*

Key Words: Exports, Economic Growth, Human Capital, Investment

JEL Code: O40, J24, P44

Introduction

A wide range of researches has analyzed the determinants of economic growth over the last decades. Various explanatory variables have been examined, employing different conceptual and logical techniques to acknowledge the importance of economic growth, especially for less developed countries. However, the results are mixed and unclear. Neoclassical school of thought was based on the Solow growth model, focusing on the importance of investment.

Later Lucas (1998) emphasized the significance of innovation capacity and human capital. The economic performance of an economy is also related to its macro-economic conditions and economic policies (Fischer 1993, Barro 1991), Easterly & Rebelo (1993). It has been found that trade openers promote high GDP growth rates and, eventually, economic growth. (Dollar 1992, Sachs & Warner 1995).

Macroeconomic variables represent the current macroeconomic performance of the economy. The trend of these macroeconomic variables tends to realize the current economic situation of the country. The analysis of economic variables helps to suggest policies and decisions, especially for the poor developing countries. The GDP of Pakistan was 314.568 billion US $ during the year 2018 that fell to 278.222 Billion US dollars during the year 2019[World Bank Database]. The GNI per capita was 1480 US $ during 2018 and fell around 1410 US $ during the year 2019[World Bank Database]. The annual GDP growth rate amount to 5.836 percent 0.989 percent during the years 2018 and 2019, respectively. The statistical data of the inflation rate in Pakistan presents that it was 5.078 percent during the year 2018 and rose to 10.578 percent during the year 2019[World Bank Database]. The labor force participation rate was 54.43 percent and 54.5 during the years 2018 and 2019 (as a percent of total population 15-64) as stated by ILO. The government expenditure on education as a percent of GDP amounted to 2.9 percent in 2017 and 2.508 percent during the year 2019 [World Bank Database]. The statistics of overall trade as a percent of GDP was 29.043 percent and 30.438 percent during the year 2018 and 2019, respectively[World Bank Database]. The total population of Pakistan was 212228288 million during the year 2018 and 216565317 million during the year 2019 [World Bank Database]. The population growth rate was 2.05 percent and 2.02 percent during 2018 and 2019,

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respectively[World Bank Database]. The personal remittance received was 6.737 percent of GDP during 2018 and rose to 7.998 percent of GDP during the year 2019, respectively[World Bank Database]. Despite enormous challenges, Pakistan's economy is trying to achieve the path of sustainable growth and development. This current study has attempted to investigate various macro-economic variables that can promote economic growth in less developed countries like Pakistan.

Literature Review

This section presents the review of literature from various past and current researches. These pieces of research are from renowned researchers and scholars across the world during different periods.

Lin &Li (1990) collected data to study the relationship between different variables that encourage growth rate in China. The authors have adopted the demand-oriented analysis and ordinary least squares (OLS) technique. The study has revealed that a 10 percent incline in exports will accelerate a 1% increase in GDP during the 1990s.

Chen & Feng (2000) had collected data from 29 provinces, autonomous regions, and municipalities during the year 1978 to 1989 in China. The study concluded that international trade, higher education, and private enterprises play a significant role in accelerating economic growth in China. Various other factors like fertility rates, inflation rates, and public enterprises are the crucial factors negatively affecting the economy.

Barro (2003) explored the factors affecting economic growth across different slow growth and high growth economies. The author had collected data from the year 1965 to 1995 from 87 countries. The study concludes that human capital, the rule of law, international openness, and term of trade is significantly influential factors. The finding also showed that a high fertility rate, a ratio of government consumption to GDP are discouraging factors for the development across different economies.

Anaman (2004) studied the determinants of economic growth in Brunei Darussalam. The author had collected data using multiple regression techniques to analyze the variant of the neoclassical growth model. The dependent Variable was real gross GDP. The study concludes that export, moderate government size promote long-run economic growth.

Durlauf et al. (2008) identified different categories by studying cross-country data. The authors stated that ethnic fractionalization, economic institutions, geographical isolation, climate, culture, and legal and political system are significantly influential factors. Ledyaeva (2008) collected both data panel and cross-sectional data from 74 Russian regions during the year from 1996 to 2005. The study concluded that domestic investment, initial conditions, and exports are of utmost significance for generating economic growth in Russia. However, natural resources and oil resources are not much-enforcing growth rates in Russian regions.

For the first time, Rao and Hassan (2012) tried the extension of Solow (1956), Mankiw et al. (1992), and Senhadji's growth models while shedding light on Bangladesh's growth rates. The authors have collected time-series data and concluded that factor accumulation is the most influential Variable, but to encourage rate, it is necessary to reduce the government expenditure to GDP and rate of Inflation by fifteen percent. It was also concluded that the ratio of M2 to GDP and ratio of Export to GDP are positively influential and should be increased by twenty percent.

Hossain & Mitra (2013) collected panel data of 33 poverty-driven African economies during the year 1974- 2009. The findings of the econometric result show that domestic investment, trade openness, and government spending can play a vital role in achieving high growth rates in poor African economies. Hussin et al. (2013) collected the data during the year 1970 to 2010 to study the factors contributing to growth rates in Malaysia. For the long-run relationship, Johansen and Juselius's cointegration approach has been employed in the present study. The findings of the study conclude that trade openness, government expenditure, foreign direct investment, and gross fixed capital formation are essential for the growth of Malaysia. However, in the short run, openness and foreign direct investment were significant statistically.

Ajide (2014) collected secondary data during the period 1980 to 2010, using a multivariate regression approach. The study concluded that life expectancy, economic freedom, and labor are accelerating growth in Nigeria.

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Yusoff (2016) collected secondary data to study the determinants of growth in Cameroon. The data for the study was analyzed by Johansen tests of co-integration. The finding of the study revealed that exports, gross domestic investment, and exchange rate play an essential role in accelerating growth rates. The results also revealed that imports are the most discouraging factor because mainly the imports are associated with secondary goods despite the capital goods. Vedia-Jerez & Chasco (2016) collected data from 1960 to 2008, using a two-equation framework growth in South American countries. The study found that physical, human capital accumulation, exports, institutions, and policy promotes economic growth. The presence of macroeconomic disturbances is the depressing factor for the prosperity of South American countries.

Nyaruirumugure et al. (2017) collected the secondary data during the year 1963 to 2014 in Kenya. The authors have examined various macroeconomic variables that accelerate economic growth in Kenya—using the purposive sampling technique and unit root test to check the stationarity of the Variable and determine the long-run relationship between various variables. Studies have revealed that exchange rates and interest rates negatively affect growth rates. Moreover, external debts and foreign direct investment are the two most significant variables for Keyna's economy.

Rao & Bedada (2017) collected secondary data during the year 1980 to 2014 for the Ethiopian economy. The authors have employed the vector error correction (VECM) model and Johansen multivariate analysis in their study. The secondary data was collected from various renowned institutions in Ethiopia and different other international institutions to pursue the. The findings of the study revealed that social welfare expenditure and agricultural development are the crucial factors for poor developing economies like Ethiopia. The mining and energy sector is not much actively productive; therefore, no return from this sector results in a negative impact on the growth rates. The majority of the population is unemployed and dependent, presenting a depressing impact on the growth rates in the country. Therefore, it is suggested for privatization, development of the infrastructure and agriculture sector so that more job opportunities would be available for the households in Ethiopia.

Simionescu et al. (2017) examined the factors relating to growth in V4 economies and Romania. Then authors had collected data during the year 2003-2016 using the Bayesian generalized ridge regression technique. The finding of the study shows that expenditure on R&D is significant for Romania, the Czech Republic, Hungary. Moreover, FDI aids in stimulating economic growth except in the Slovak Republic. However, expenditure on education is significantly influential for the Czech Republic.

Bruns & Loannidis (2020) collected cross-country data during the period of 35 years from 1960 to 2010. The finding of the study concludes that demography, trade, education, investment are important variables that promote economic growth. Ho & Lyke (2020) collected data from 1975 to 2014 in Ghana. The study concluded that human capital and foreign aid show a positive effect; however, labor, debt servicing, and financial development show a negative relationship with economic growth. Foreign aid and government expenditures play an essential and influential role in the short run. Moreover, labor, financial development, and Inflation are not many encouraging factors in stimulating growth in Ghana.

Pegkas et al. (2020) collected data from eurozone economies. The study concludes that a long-run relationship is present between human capital, investment, and trade openness with economic growth. Miah (2020) collected the data during the year 1972 to 2016 to study the factors that are imperative for better growth rates in Bangladesh, using the ARDL technique for the econometric analysis. The study concluded that inflation rate, exports, and industry value-added are crucial factors. However, the exports and industry value added may contribute to better growth rates. However, inflations show a discouraging effect on GDP growth rates. Policies should be designed to encourage export and combat the inflation rate for the prospects of the economy.

Data and Methodology

In the present study, data was collected from World Development Indicators (WDI), from the period 1970 to 2019 in Pakistan. GDP growth rate is the dependent Variable. Bound test of cointegration has been employed to check the long-run cointegration among variables, while the ARDL is exercised to estimate the long-run parameters of the variables.

$$GDPGR_i = \beta_o + \beta_1 LFPR_i + \beta_2 GFCF_i + \beta_3 HC_i + \beta_4 FDV_i + \beta_5 INF_i + \beta_6 TOP_i + \beta_7 IDP_i + u_i$$

Where:
GDPGR= Gross domestic product growth rate
LFPR= Labor force participation rate
GFCF= Gross fixed capital formation
HC= Human capital
FDV= Financial development
INF= rate of Inflation
TOP= Trade openness
IDP= Industrial production
u_i= error term

Table 1. Variables Employed in the Present Study to Determine the Factors of Economic Growth in Pakistan

Variables	Description of Variables	
Dependent Variable in the present study		
GDP	Gross domestic product growth rate	Annual
Independent Variable		
LFPR	Labor force participation rate	Total population ages 15+ (%)
GFCF	Gross fixed capital formation	% of GDP
HC	Human capital	Government expenditures on education (Percentage of GDP)
FDV	Financial development	Domestic credit to the private sector (as a % of GDP)
INF	Rate of Inflation	Consumer price index
TOP	Trade openness	Trade (Percentage of GDP)
IDP	Industrial production	Industrial value-added (Percentage of GDP)

Econometric Analysis

Table 2. Descriptive Analysis (1970-2019)

Variables	GDP	LFPR	GFCF	HC	FDV	INF	TOP	IDP
Mean	4.835	47.449	15.706	2.375	23.077	8.851	31.294	20.435
Median	4.840	49.817	16.169	2.451	24.098	7.768	32.606	20.384
Maximum	11.353	52.110	19.129	3.113	29.786	26.663	38.499	22.931
Minimum	0.468	28.540	11.330	1.494	15.386	2.529	15.821	17.548
Std. Dev.	2.339	6.951	1.827	0.398	3.747	5.160	4.889	1.448
Skewness	0.338	-2.023	-0.459	-0.237	-0.463	1.550	-1.293	-0.367
Kurtosis	3.203	5.274	2.369	2.373	2.338	5.597	4.872	2.346
J-B	1.035	44.867	2.581	1.288	2.699	34.077	21.234	2.016
Prob.	0.596	0.000	0.275	0.525	0.259	0.000	0.000	0.365

Source: Author's Calculations

Correlation Analysis

To investigate the degree of association between two variables are presented in Table 3.

Table 3. Correlation Matrix (1970-2019)

Correlation	GDP	LFPR	GFCF	HC	FDV	INF	TOP	IDP
GDP	1.000							
LFPR	0.012	1.000						
GFCF	0.213	0.385	1.000					

Correlation	GDP	LFPR	GFCF	HC	FDV	INF	TOP	IDP
HC	0.159	0.572	0.301	1.000				
FDV	0.166	-0.225	0.448	-0.147	1.000			
INF	-0.126	-0.338	-0.134	-0.182	0.048	1.000		
TOP	0.032	0.480	0.540	0.459	0.133	0.340	1.000	
IDP	0.020	-0.123	0.386	0.048	0.433	0.342	0.513	1.000

Source: Author's Calculations

Unit Root Test

To assess the level of stationarity of variables is presented in Table 4. The mix order of integration suggests that for the long-run estimation of parameters, the autoregressive distributed lag model (ARDL) is an appropriate technique.

Table 4. Unit Root Analysis (1970-2019)

Variables	Level				1st Difference				Outcomes
	Intercept		Intercept and Trend		Intercept		Intercept and Trend		
	t-stat.	Prob.	t-stat.	Prob.	t-stat.	Prob.	t-stat.	Prob.	
GDP	-6.271	0.000	--	--	--	--	--	--	I (0)
LFPR	-3.255	0.023	--	--	--	--	--	--	I (0)
GFCF	--	--	--	--	-5.267	0.000	--	--	I (1)
HC	-3.166	0.028	--	--	--	--	--	--	I (0)
FDV	--	--	--	--	-6.108	0.000			I(1)
INF	-3.404	0.016	--	--	--	--	--	--	I(0)
TOP	-3.320	0.019	--	--	--	--	--	--	I(0)
IDP	--	--	--	--	-8.019	0.000	--	--	I(1)

Source: Author's Calculations

Bound Test

Table 5 shows that the value of F-statistics in the present study.

Table 5. Bound Test Analysis (1970-2019)

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	11.9535	7
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10 percent	2.03	3.13
5 percent	2.32	3.50

Source: Author's Calculations

ARDL Long-run Analysis

Table 6 presents the long-run ARDL estimates of determinants of economic growth in Pakistan. The outcomes show that human capital, financial development, and industrial production are essential for economic growth, while the variables inflation rate and trade openness show a negative relationship with economic growth. The coefficient value of the Variable suggests that if labor force participation increases by one unit, the economic growth leads to increases by 0.2325 units.

The variable gross fixed capital formation is also positively and significantly (at 5 percent level) related to economic growth. The coefficient value of the Variable suggests that as the gross fixed capital formation increases by one unit, the economic growth leads to increases by 0.9572 units. An increase in gross fixed capital formation leads to an increased physical stock of the country. Capital

formation promotes technical advancement in an economy, encouraging the benefits of large-scale industry. Furthermore, capital formation leads to adequate usage of resources and the construction of various types of industries so that the income levels rise and serves as a barometer of economic progress (Ongo & Vukenkeng, 2014). The variable human capital is found to be positively and significantly statistically. The coefficient value of the Variable depicts that as the human capital is inclined by one unit, the economic growth leads to increases by 6.2183 units. By training and specializing the labor force of the country leads to increase productivity in economic aspects; an effective education system enhances competitiveness and contributes to the economic progress of the country (Gheraia et al., 2021; Mercan & Sezer, 2014). The variable financial development is positively and significantly statistically at the 5 percent level. Financial development in a country increases the productivity of investment projects and lowers the transaction costs, and leads to an increase in the investment level of a country (Pagano, 1993). The variable trade openness presents a negative association but is significant statistically at a 5 percent level. This exhibits the low demand for exports of a country in comparison to imports. Due to the high volume of imports, trade deficit increases slow down the economic growth in Pakistan. Similar findings are also found in the study of Shahbaz et al. (2008). The variable industrial production is found to be positively and significantly (at 1 percent level) related to economic growth. The coefficient value of the Variable suggests that as the industrial production increases by one unit, the economic growth leads to increases by 1.8008 units. These results are also found in the studies of Ndiaya & Lv (2018), Ou (2015). To assess the multicollinearity in a model, variance inflation factor (VIF) is used. The outcomes of VIF show that all the variables having values less than 10 suggest the absence of multicollinearity in a model.

Table 6. ARDL Long-Run Estimates (1970-2019)

The dependent Variable is the GDP Growth Rate for Pakistan					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
LFPR	0.2325	0.1168	1.9897	0.0665	4.6188
GFCF	0.9572	0.3764	2.5429	0.0234	8.5172
HC	6.2183	1.0265	6.0577	0.0000	4.5955
FDV	0.2967	0.1181	2.5114	0.0249	6.3398
INF	-0.1714	0.1386	-1.2366	0.2366	5.7580
TOP	-0.8181	0.3256	-2.5128	0.0248	9.8311
IDP	1.8008	0.5111	3.5231	0.0034	9.4537
C	-8.5311	8.5401	-0.9989	0.3348	---

Source: Author's Calculations

ARDL Short-Run Error Correction Model

ARDL short-estimates are presented in Table 7. The ECM term indicates that about 82.22 percent of the errors become corrected in case of any disturbances originating in the short run.

Table 7. Short-Run Error Correction Model (1970-2019)

Variables	Coefficients	Std. Error	t-Stat	Prob.
D(LFPR (-1))	-0.0004	0.0793	-0.0060	0.9953
D(GFCF (-1))	0.1769	0.3835	0.4614	0.6516
D (HC (-1))	0.0656	1.3045	0.0502	0.9606
D(FDV (-1))	-0.4539	0.1974	-2.2996	0.0374
D(INF (-1))	0.1208	0.0919	1.3146	0.2097
D(TOP (-1))	0.2150	0.1338	1.6074	0.1303
D(IDP (-1))	0.8670	0.3581	2.4209	0.0297
ECM(-1)	-0.8222	0.1491	-5.5121	0.0000

Source: Author's Calculations

Serial Correlation Test

Table 8 presents the outcome of the autocorrelation test. The value of F-statistic (0.6312) and value of Observed R^2 (0.4596) in a model.

Table 8. Autocorrelation Test (1970-2019)

Serial Correlation LM Test for Pakistan			
F-statistic	0.6312	Prob. F (2,12)	0.3570
Obs*R-squared	0.4596	Prob. Chi-Square (2)	0.3124

Source: Author's Calculations

Heteroscedasticity Test

Table 9 reports the outcomes of the heteroskedasticity test. The value of F-statistic (1.1107) and value of observed R^2 (32.7033) is statistically insignificant, so that we reject the null hypothesis and accept the alternative hypothesis that there is no heteroskedasticity in a model.

Table 9. Heteroscedasticity Test (1970-2019)

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.1107	Prob. F(31,14)	0.4330
Obs*R-squared	32.7033	Prob. Chi-Square(31)	0.3833

Source: Author's Calculations

Residuals Normality Test

To ascertain the normality of residuals in the model Jarque-Bera normality test is applied by using the histogram normality test. It is found that the Jarque-Bera test value is found to be statistically insignificant. It reveals that the residuals are normally distributed.

Stability Test

If recursive residuals lie between the two critical regions, the estimated model is considered stable It has been analyzed that the recursive residuals of both graphs CUSUM and CUSUM of squares present between the critical region significant statistically at a 5 percent.

Conclusion and Policy Implications

This study endeavors to explore the determinants of economic growth in Pakistan. Bound test of cointegration is used to check the long-run cointegration among variables, while the Auto-Regressive Distributed lag model (ARDL) is exercised to estimate the long-run parameters of the variables. Correlation analysis found that GDP growth rate is positively correlated to labor force participation rate, gross fixed capital formation, human capital, financial development, trade openness, and industrial production while negatively correlated to the inflation rate. Bound test analysis ensures that long-run cointegration exists among variables. ARDL long-run estimates show that the variables labor force participation rate, gross fixed capital formation, human capital, financial development, and industrial production are found to be the encouraging factors of economic growth, while the variable trade openness is found to be negatively affecting the growth rates of the economy. It is suggested that the investment in the capital which not only enhances the capacity for the demand for goods but also creates employment opportunities for the people. To improve the human capital, health and education facilities should be ensured. This will increase the productivity of labor and contribute to the high economic growth of a country. It is pertinent to suggest that provision of funds for the

development expenditure is very crucial for the improved growth rates of the country. The development expenditure should include investment in projects like schools, colleges, universities, and hospitals for the promotion of the human capital of the households. Another important suggestion is the provision of job opportunities for the households can improve the real GDP of the country.

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