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A Temporal Analysis of Economic Growth and Its Determinants in Pakistan

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Abstract
Economic growth is the desire of every economy. It is one of the most important variables which need to be explored in any economy, especially in economy like Pakistan which is facing low economic growth. The key objective of the study is to investigate temporal analysis of economic growth in Pakistan using the data set ranging 1978-2014. Impact of human capital, government consumption expenditure (government size), gross total investment, trade and financial development has been estimated on economic growth. For long run and short run analysis Johansen co integration and error correction model respectively have been used because the data was found stationary at its first difference. When data is found stationary at its first difference, then the technique of ordinary least square (OLS) does not work. Government consumption expenditure, human capital, gross total investment and trade have significant positive while financial development has insignificant positive impact on economic growth. The study is important for policy makers because it discusses the impact of some important economic variables on economic growth..

Key Words
Economic growth, financial development, co integration, ECM, Pakistan

1 INTRODUCTION

Economic growth is the desire of every economy. It is one of the most important variables which need to be explored in any economy especially in economy like Pakistan which is facing low economic growth. In current study impact of some important economic variables like investment, human capital ,government expenditure (government size),trade and financial development has been shown on economic growth. Researchers have tried to explore economic growth from many angles.

Many studies show that there is positive relationship between financial development and economic growth (Khan et al, 2005; Levine, 2002 and Bajonic , 2012). Similarly literature is available that confirms positive relationship between economic growth and investment (Beck and Levine, 2004;Anwar and Sun, 2011and Levine et al., 2000). Human Capital is also one of the important factors that may influence the economic growth. Studies have proved significant Positive relationship between human capital and economic growth (Barro, 1991). Government consumption expenditure (government size) must be kept in view while studying economic growth. Literature affirms positive relationship between these two variables (Barro, 1990).

Poverty level has been reduced, social and political institutions have been strengthened ,quality of life has been improved, natural environments has been preserved and political stability has been achieved in developed countries [Easterly (1999);Dollar and Kraay (2002a); Fajnzylber, Lederman, *et al.* (2002) and Barro (1996)]. Barro and Lee (1994) studied empirical association between human capital and economic growth and found that there is positive relationship between these variables. They also supported endogenous growth model by Romer (1990). This growth model highlights the role of human capital in economic activity.

Islam et al. (2013) explored co-integration among financial development, economic growth, energy demand and population in Malaysia. They used the data set covering period 1971 – 2009. Long run co-integration among the variables used found where economic growth is followed by rise in energy demand. Kakar,Khilji and Khan (2011) found from their study that financial development contribute to economic growth by decreasing the level of energy consumption in Pakistan. Omri and Kahouli (2014) analysed energy-foreign direct investment-Growth nexus for panel of 65 countries. They took a data set ranging 1990 to 2011 and followed growth model approach for strong theoretical foundation and concluded mixed results for global panel and sub panels according to income level in terms of causality.

Christopoulos and Tsionas (2003) found from their study that there exists long run relationship between financial development and economic growth. This long run relationship was estimated using fully modified OLS. The data was collected from 10 developing countries. They concluded that there exists positive relationship between financial development and economic growth. Al-Yousaf (2002) estimated the direction of the relationship between financial development and economic growth. Anwar and Sun (2011) found two channels for economic growth. First, Financial development enhances domestic and foreign capital investment by building confidence of investors over financial system. Secondly, efficient financial system promotes the use of innovative technology. This Channel is called total factor production channel (TFP) [also known as technological innovation].

Levine et al. (2000) found that the services offered by financial intermediaries promote economic growth. Gregori and Guidotti (1995) indicated long run positive effect of financial development on economic growth, but this changes with regions, time period and income level. They stressed on efficiency of capital rather on its volume. Efficiency of capital is valuable for growth particularly in low and middle income countries. Ang (2008) conducted a research on the economy of Malaysia to find the relationship between financial development and

economic growth. He found that financial sector development leads to higher economic growth through improved efficiency of investment.
King and Levine (1993) found relationship between financial development and economic growth. The study showed strong positive association between these two variables.Wolde-Rufael (2009) conducted study on the economy of Kenya to investigate causality between financial development and economic growth. He took the data covering period 1966-2005 using exports and imports as additional variables. He concluded bidirectional causal relationship between financial development and economic growth.
Some studies have found negative relationship between financial development and economic growth. Ahmad (2013) found from his studies that negative relationship is because of financial liberalization in absence of proper regulation framework. Raymond and Inessa (2004) suggested that financial development facilities the reallocation of resources to industries with good growth opportunities, regardless of their reliance on outside finance.
Peter (2002) estimated the impact of financial development on economic growth. He used the data from four economies for analysis. These four economies include Dutch Republic (1600-1794), England (1700-1850), the United States (1790-1850) and Japan (1880-1913). The evidence from these economies for the said period suggests that the emergence of financial instruments promote trade and as a result economic growth. Jeremy et al., (2010) presented a costly state verification model of financial intermediation to see the impact of financial development on economic growth. The study suggested that a country like Uganda could increase its output by 140 to 180 percent if it could adopt one of the world's best practice in the financial sector.

Wu , Hou and Cheng (2010) analyzed the dynamic impacts of financial institutions on economic growth. They used a data set for 13 countries in European union covering period of 1976-2005. They concluded existence of long run relationship among banking development, Stock market development and economic development. It has also been concluded that effect of financial development on real output may be negative in long run, but improving services provided by commercial banks result in stable economic development. Bojanic (2012) found co-integration between financial development and economic growth by using annual data over period 1994-2010 for Bolivia.

The key objective of th**e** study is to find the impact of some important economic variables on economic growth. These variables include government Consumption expenditure (government size), trade, human capital, investment and financial development. In first section of the study introduction and brief literature was discussed. In next sections data and methodology, empirical result and discussion and finally conclusion and related policy implication have been discussed.

2. DATA AND METHODOLOGY

Following model has been built to see the impact of financial development, human capital, government expenditure, gross total investment and trade on economic growth.

$$Y_t = \alpha_1 + \alpha_2 FD_t + \alpha_3 Sc_t + \alpha_4 Si_t + \alpha_5 GTI_t + \alpha_6 T_t + \mu_t$$

The variables are defined as follows,

Y_t = Economic growth

FD_t = Financial development

Sc_t = School enrollment (a measure of human capital)

Si_t = Government Size

GTI_t = Gross total investment (a measure of investment)

T_t = Trade

$\mu_{t=}$ Error term

2.1 Data Description:

Time seriesdatawas collected for period ranging 1978-2014. This is reasonable time length for time series analysis and also continuous data is available for this time period. Identification, for main variables used for estimation purpose is given as follows.For measurement of intermediary development "domestic credit to private sector" has been used. Gregorio and Guidotti (1995) used same variable for measurement of intermediary development. King and Levine (1993) analyzed that there is need of financial system that channels funds to private sector. Economic growth involves both output growth and development of financial sector. As economic growth occurs, income of country's residents improves which indicates economic development. So, present study has taken "GDP (constant LCU)" as a measure of real output of real income. Many studies have used this measure as indicator of economic growth (for instance, Ang, 2008; Anwar and Sun, 2011; Bojanic, 2012; Coban and Topcu, 2013; Khan et al., 2005; Rufeal, 2009; Sadorsky, 2010; Shahbaz and Lean, 2012).The interpretation of all the variables should be done in percentage,that is why all the data regarding all the variables has been transformed into log form.

2.2 Technique Selection:

Stationarity of all the variables used in the model was checked. All the variables were found non-stationary at level. They were found stationary at their first difference. In such a case ordinary least square (OLS) regression cannot be used because using OLS leads to inconsistent and biased parameter estimates .As all the variables were found stationary at their first difference, so co integration has been used for long run analysis whileerror correction model has been used for short run analysis.

2.3 Variables, Definition and Sources:

Variables with their definitions and sources have been presented in the following table

Table 2.1: Variables, Definition and source

Variables	Measurement	Definition	Source
Real output of (measure of economic growth)	GDP (constant LCD) [In Billion]	It shows collective gross value added by all local Manufactures in the country.	WDI (2014)
Intermediary development	Domestic credit for private sectorin %age of GDP	It means financial capital granted to private sector	WDI (2014)
Investment	Gross Total Investment (GTI)	All investments made within the country	State bank of Pakistan
Government Size	All final consumption expenditure in %age of GDP	It includes all government expenses on purchase of goods and services.	WDI (2014)
Trade	Trade as a percentage of GDP	All imports and exports of goods and services calculated as a share of GDP.	WDI (2014)
Human Capital	School enrolment, secondary	Overall enrolment in secondary education in all programmes	WDI (2014)

Source: research used different sources to construct the variables

3. EMPIRICAL RESULTS AND DISCUSSION

3.1 Estimation and Interpretation of Model and Instruments Used

First it will be discussed that how the model used and techniques selected are best fit for estimation of coefficients.

3.1.1Discussion on Model

The data regarding all the variables used in model has been found stationary at first difference. Breusch-goldfrey serial correlation LM test has been used and it is found that P> 0.05 which shows that there is no auto correlation. Heteroskedasticity has been tested through Breusch-Pagan-Goldfrey test and it is found that P (0.8002) > 0.05 which shows that there is no heteroskedasticity.

For normality test, it has been found that P (JB) > 0.05 which confirms the normality. Johanson co- integration test has been applied to test co integration. It has been found that trace statistic (116.2736) > critical value (95.75366) and Max-Eigen statistic (42.20963) > critical value (40.07757). This proves the existence of co integration. According to Granger representative theorem co integration is applied to test the long run relationship.

If there is co-integration, the long run relationship holds and short -run dynamics can be found by using ECM. All such tests show that instruments used in the model are valid and model is best fit.

Table 3.1:System Estimates for Economic growth model

Independent Variable	Dependent variable (Economic growth)	
	Long run analysis with P-Value	Short run analysis with P-Value
T	0.192290 (0.0234)	0.083756 (0.1208)
SI	0.305449 (0.0000)	0.055014 (0.2308)
SC	0.409616 (0.0000)	0.572550 (0.1098)
GTI	0.083060 (0.0511)	0.090782 (0.0492)
FD	0.051702 (0.2392)	0.046532 (0.3327)

Source: researcher's own calculations using e-views

3.2 Short Run Analysis of the Model.

1 The P-Value and trade co efficient show that trade has insignificant positive relationship with economic growth.

2 Government size and human capital have insignificant positive relationship with economic growth,

3 Gross total investment (GTI) has been used as a measure of investment. It has significant positive impact on economic growth. As the data regarding all the variables used in the model has been transformed into log form, so the results will be interpreted in percentage. The result shows that one percent rise in gross total investment will cause 0.090 percent rise in economic growth.

4 Financial development has insignificant positive impact on economic growth as level of significance is less than p-value.

3.3 Long run analysis of Economic Growth Model

1 Trade is an important variable that must have significant impact on economic growth in the long run. It is apparent from the results that P-Value (0.0234) is less than the level of significance which shows that trade has significant impact on economic growth. The co efficient shows that 1 percent rise in trade will have 0.19 percent positive impact on economic growth.

2 The P-Value (0.0000) shows that government size has significant impact on economic growth. The co efficient shows that one percent rise in government size will push economic growth 0.30 percent up.

3 Human capital (Sc) has got great importance in the context of economic growth. The P-Value (0.0000) shows that human capital (Sc) has significant impact on economic growth. The co efficient shows that 1 percent rise in human capital will cause 0.40 percent rise in economic growth.

4 Gross total investment has been used as a measure of investment. The value of coefficient indicatesthat 1 percent increase in investment willpushupequal to 0.83 percent.

5 The P-Value (0.2393) and co efficient (0.051702) show that financial development has positive and insignificant impact on economic growth.

3.4 Justification of system estimates of the model

In short run all other variables have insignificant positive impact on economic growth except investment. The investment has insignificant positive impact on economic growth. In long run variable of trade has significant positive impact on economic growth. The result is in line with Levine et al. (2000); Anwar and Sun (2011) and Beck and Levine (2004).

Government consumption expenditure (government size) has positive link with economic growth. It is in line with Barro (1990) who analyzed that consumption on utility type function would have negative impact over economic growth but the consumption on productive projects would have positive impact on economic growth. Human Capital is found to be positively linked with economic growth which is in line with Barro (1991) who analyzed that Human Capital enhances economic growth by producing new product and ideas that encourages technologies evolution in the economy. Investment has also positive and significant association with economic growth. Results are consistent with Beck and Levine (2004) ; Anwar and Sun (2011); and Levine et al (2000).

Financial development leads to build investor's confidence on financial system existing in the country. As a result Investor saves more and invests that money in productive projects. Consequently, incomes of the domestic people improve that causes aggregate demand to rise, which leads an economy to flourish.

4 .CONCLUSION AND POLICY IMPLICATIONS

4.1 Conclusion

Economic growth is one of the most important variables which need to be addressed in any economy. The present study investigates temporal analysis of economic growth using the data set ranging from 1978 to 2014 in Pakistan. The study discusses temporal investigation of economic growth. The impact of human capital, government consumption expenditure (government size), gross total investment, trade and financial development has been shown on the economic growth. Government consumption expenditure, human capital, gross total

investment and trade have positive and significant positive impact while financial development has insignificant impact on economic growth. These results are also supported by the literature available. For analysis, the data regarding all the available was investigated for stationary. It was found that data was non stationary which was found stationary at its first difference. When the data is found stationary at first difference, the simple ordinary least square (OLS) does not work. Therefore Johansen co integration and error correction model (ECM) were used for long run and sort run analysis. The study is important because it has used the latest data available. The data was transformed into long form. That is why the interpretation of the variables has been made in percentage.

All the important tests like heteroskedasticity, Jarque-Bera test of normality and Breusch-Godfrey Serial Correlation LM tests have been used to ensure that data is able to be run co integration and error correction model.

4.2 Policy Implications

Present study has certain policy implications which have been discussed as follows. Financial development, government consumption expenditure, trade , gross total investment and human capital all have positive impact on economic growth. The policy makers may take steps to develop such financial system which would help in financial development. Government consumption expenditure might be enhanced. This is only possible when sufficient revenues will be generated through proper tax system. Policy makers may take steps to increase the volume of trade. Human capital is one of the important variables which has positive and significant link with economic growth. Government may allocate proper funds for the development of human capital. Investment is one of the key economic variables. The study in hand finds that investment has positive link with economic growth. Policy makers may try their best to enhance the volume of investment.

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