

# Do Economic, Institutional, or Political Variables Explain Economic Growth

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## Abstract

This study analyzed the impact of trade openness and institutional variables on GDP growth of Pakistan using annual time series data for the period 1984 to 2010. This study follows the Johansen co-integration analysis and error correction model to analyze the long run relationship among the variables. The result of Johansen co-integration indicates that there exists a long run equilibrium relationship among the variables in the model. There is a negative long-run relationship between real GDP and trade openness. The relationship between government stability (GOV\_ST) and real GDP is found to be positive whereas the association between real GDP and corruption is found to be negative. The error correction term (ECT) is statistically significant at the 5% level of significance suggests a moderate speed of convergence to equilibrium.

**Keywords:** economic growth, political variables, trade openness

## 1. Introduction

Level of international trade openness, henceforth, openness, significantly affects nations' growth potential. There is a strong theoretical support grounded in classical, neoclassical and endogenous growth theory that increased trade leads to higher growth. Pakistan has gradually liberalized its trade regime after the acceptance of the first IMF structural adjustment program in 1988. Pakistan joined the World Trade Organization(WTO) in 1995, inducing Pakistan to be a more open economy as per WTO agenda[ Siddiqui and Iqbal (2005)]. The nature of relationship between trade openness and growth is a widely debated topic among researchers in recent past decades. Ample empirical literature supports the positive roll of openness in determining the growth potential of a nation (export-led growth) [Ahmed, Yusuf and Anoruo Emmanuel (2000), Edwards, S., (1998), Edwards, S., (1992), Harrison, A., (1996), Iscan, Talan (1998), Santos Paulino (2002), Wacziarg R., (2001), Yanikkaya Halit (2003)]. A lack of consensus exists among the researchers when it comes to finding out the direction of causality, where some of the researchers support "export lead growth" while the others advocate the "growth driven export" [Bhagwati (1988), Findlay (1984), Vernon (1996) and Segerstrom et.al. (1990)]. Institutional quality has been considered another important determinant of economic growth (World bank 1993, 1997; Stiglitz 1998; Hall and Jones, 1999; Bloom and Canning 2000, Mohsen et al 2012). Institutional quality affects economic growth because it is closely related to the cost of transaction incurred in the production process which is much higher in the absence of property rights and rule of law. As a result, private firms generally operate on a small scale, and may feel better to rely on bribery and corruption to smooth the progress of production process (World Bank 2000). The contribution of this study is three fold. First, it empirically examines the relationship between openness and growth. Second, it suggests that good quality institutions are the pre-requisites to efficiently seize the window of opportunity created by openness. Finally, we show that political status of a country also plays an important role in achievement of the growth targets. Thus, in this paper we analyze the impact of trade openness and institutional variables on GDP growth of Pakistan for the period ranging from 1984 to 2010. The rest of this study consists of five sections. The next section provides the empirical literature on trade openness. Section 3 presents the model and data sources. Section 4 reports the estimation results. Finally section 5 concludes the study.

## 2. Literature Review

### 2.1 Prior Related Research

Recent literature on free trade provides controversial results about the impact of trade openness on economic growth. The studies of Freund and Bolaky (2008) and Chang, Kaltani, and Loayza (2009) show that the growth effect of trade openness is significantly positive only if accompanied by deregulations of business, financial developments, better education or rule of law, labor market flexibility, etc. Otherwise, trade is not coupled with long-run growth in such economies.

The positive impact of free trade on economic growth by using alternative measures of trade openness is documented by Dollar (1992), Sachs and Warner (1995), Edwards (1998), Frankel and Romer (1999); Dollar Kraay (2004); Little et al. (1970); Balassa (1971); Bhagwati (1978); World Bank (1987); Roubini and Sala-i-Martin (1991); Xu (1996); Shan and Sun (1998); Hwang (1998); Jin (2000) and Hye et al. (2011) whereas, Harrison (1996), Rodriguez and Rodrik (2000), Rodrik, Subramanian, and Trebbi (2004), and Wacziarg and Welch (2008) reported for supportive evidence that free trade had a negative or insignificant effect on economic growth.

Ghatak and Milner (1995) analyzed the impact of trade openness on economic growth in the case of Turkey by using the co-integration approach and found a stable long run relationship between trade openness, human capital, physical capital and real GDP. Sukar and Ramakrishna (2002) stated that those countries liberalize their international trade can grow faster relatively to close economies.

### 2.2 Prior Related Research in Case of Pakistan

Dutta et al. (2004) used co-integration and error correction approach to observe the relationship between trade openness and industrial sector growth and found a long run association between the trade policies and industrial sector growth. Khan and Qayyum (2007) used ARDL approach to investigate the association between trade openness, financial development and economic growth. They found that trade openness and financial development both has positive association with economic growth. Chaudhary et al. (2010) estimated the relationship between trade liberalization, human capital and economic growth. They concluded that trade policies and human capital both positively determines economic growth. Klasra (2011) concluded trade openness derives economic growth in the case of Pakistan.

## 3. Model and Data

### 3.1 Description of Sample Data and Variables

The main objective of this study is to find the inter-relationship among trade growth, growth of institutional variables and GDP growth of Pakistan during (1984-2010). Data for output growth and trade openness are in log form, collected from World Development Indicators. Trade variable is being used as a proxy of openness, and calculated as a sum of real exports and imports divided by real GDP. Data for government stability and corruption are also in log form, collected from International country risk guide.

### 3.2 Specification of Model

We specify an empirical growth model that introduces trade openness, government stability and corruption.

$$LNY = \alpha + \beta_1 LNOPEN + \beta_2 LNGOV\_ST + \beta_3 LNCORR + \mu_i$$

LNY, LNOPEN, LNGOV\_ST and LNCORR stands for output growth, trade openness, government stability and corruption respectively. This study makes an application of the unit root test to determine the order of integration of each time series. Further Johansen co-integration test and the error correction model are applied to test the long run and short run dynamics of the model. Error correction term (ECT) gives the rate at which the model re-equilibrates i.e. the speed at which it returns to its equilibrium level. Formally, ECT explains the proportion of the disequilibrium which is corrected with each passing period. This coefficient should be negative and less than the absolute value of one indicating re-equilibrating properties. If  $\pi = 0$ , then the process never re-equilibrates and if  $\pi = -1$ , then re-equilibration occurs in one period. However, if the Y and X deviate from the long run equilibrium, the error correction term will be non zero and each variable adjusts to partially restore the equilibrium relation. The coefficient of the ECT measures the speed of adjustment of endogenous variable towards the equilibrium.

## 4. Empirical Results

The first step in co-integration analysis is to test the stationarity properties of the variables under consideration. Table-1 presents the Augmented Dickey Fuller test. It indicates that all variables have been found stationary at

first difference. Since all variables are integrated of the same order (1), the second step is to test for co-integration among variables. As a result, this study performs the Johansen co-integration test to determine the long run equilibrium between variables as mentioned in the previous section.

Table 1. ADF unit root test

Variables	Level	Ist Difference
LNRGDP	-0.54	-2.71*
LNOPEN	-1.10	-3.52**
LNCORR	-1.41	-2.78***
LNGOV_ST	-1.56	-2.69***

\*, \*\* and \*\*\* denotes significance at 1%, 5% and 10%, respectively

Table 2. Estimates of Johansen multivariate co-integration test (trace statistics)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05Critical value
None *	0.655	50.556	47.21
At most 1	0.445	23.985	29.68
At most 2	0.264	9.262	15.41
At most 3	<b>0.063</b>	<b>1.607</b>	<b>3.76</b>

Trace test indicates 1 co-integrating eqn.(s) at the 0.05 level of significance

\* denotes rejection of the hypothesis at the 0.05 level of significance

Table 2 presents the estimates of the Johansen multivariate co-integration test. Both the trace test and maximum Eigen value given in Table 2 identifies one co-integrating equation at 5% level of significance as shown by the equation below.

$$LNRGDP = -0.66LNOPEN + 0.0078LNGOV\_ST - 0.165LNCORR - 3.73$$

(S.E)                      (0.02)                      (0.012)                      (0.03)

This indicates that there exists a long run equilibrium relationship among the variables in the model. There is a negative long-run relationship between real GDP and trade openness, the coefficient defined that the 1% increase in trade volume would decrease the trade volume by 0.66%. The relationship between government stability (GOV\_ST) and real GDP is found to be positive whereas the association between real GDP and corruption is found to be negative. The estimates of the error correction model (ECM) are presented in Table 3. In this model, growth rate of openness lagged one year, government stability lagged one year and corruption (at 5% level of significance) have emerged as a significant determinants of growth rate of real GDP. The error correction term (ECT) is statistically significant at the 5% level of significance, has the correct signs, and suggests a moderate speed of convergence to equilibrium.

Table 3. Vector error correction model

	$\Delta RGDP_t$	$\Delta OPEN_t$	$\Delta GOV\_ST_t$	$\Delta CORR_t$
ECT	-	-0.67*	0.017*	-0.07*
		(-74.15)	(3.96)	(-4.39)
$\Delta RGDP_{t-1}$	0.63*	0.617	-2.10	4.614*
	(2.35)	(1.38)	(-0.57)	(3.02)
$\Delta OPEN_{t-1}$	0.03	0.67*	0.26	0.14
	(0.25)	(3.4)	(0.16)	(0.20)
$\Delta GOV\_ST_{t-1}$	-0.004	0.04	0.02	0.06
	(-0.21)	(1.30)	(0.09)	(0.64)
$\Delta CORR_{t-1}$	-0.04	0.04	0.41	0.04
	(-1.10)	(0.57)	(0.70)	(0.17)

## 5. Conclusion

The main objective of this study is to find the inter-relationships among trade growth, growth of institutional variables and GDP growth of Pakistan during (1984-2010). This study makes an application of the unit root test to determine the order of integration of each time series. Further, Johansen co-integration test and the error correction model are applied to test the long run and short run dynamics of the model. The result of Johansen co-integration indicates that there exists a long run equilibrium relationship among the variables in the model. There is a negative long-run relationship between real GDP and trade openness. The relationship between government stability (GOV\_ST) and real GDP is found to be positive whereas the association between real GDP and corruption is found to be negative. The error correction term (ECT) is statistically significant at the 5% level of significance suggests a moderate speed of convergence to equilibrium.

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