Paradigms
Print ISSN 1996-2800, Online ISSN 2410-0854
2019, Vol. 13, No. 2 Page 10-17
DOI: 10.24312/1993130202

Triangular Nexus between Institutional Quality, Trade Liberalization, and Agricultural Growth in Pakistan

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Cite this Paper: Farooq, A., Hamid, K., Aslam, A., & Shabbir, G. (2019). Triangular nexus between institutional quality, trade liberalization, and agricultural growth in Pakistan. Paradigms, *13*(2), 10-17.

The agriculture sector is considered the mainstay of our economy since it provides food and employment to our population, and raw materials for the industrial sector but the recent growth performance of this sector is not encouraging. This study estimates the effects of trade openness, financial development, and institutional quality on the growth of the agriculture sector of Pakistan using a time series data over the period of 1984-2015. The most recently developed combined cointegration technique by Bayer and Hanck (2013) has been used to check the cointegration among the variables. The empirical results of this study show that financial development and quality of institutions positively contribute to the growth of the agricultural sector, whereas the impact of trade openness is negative. The study suggests that to enhance the growth of the agriculture sector, policymakers should frame the economic policies aiming at improving the quality of institutions, and encouraging financial development in this sector.

Keywords: Trade Liberalization, Institutional Quality, Agricultural Growth, Agricultural growth Pakistan

INTRODUCTION

The connection among trade liberalization, quality of institutions, and growth of the economies have emerged as a new avenue of research for contemporary researchers. The existing theoretical and empirical research on this issue depicts that higher is the quality of institutions better are the effects on the foreign sector, human development, and economic growth of a country (Oslon et al., 2000; North, 1993). The land is a fundamental source of agriculture production and has a major role in agricultural growth. Without land agricultural output is just an imagination. Empirical results reveal that smaller cultivated areas as compared to other capital inputs made these capital inputs underutilized and thus reduced agricultural growth (Rondhi *et al.* 2018, McArthur, 2017).

Quality of institution is the basic cause of the difference in economic growth among the countries (Acemoglu et al., 2003, 2005; Rodrik, 2008, Acemoglu et al., 2013, 2014). In the literature pertaining to this issue, it is also suggested that for developing countries to fully benefit from the trade openness, improved quality of institutions is very crucial. This is an ample body of empirical literature which depicts that quality of institutions exerts a positive impact on trade, as well as, on the economic growth of a country (Kaufmann et al., 2002; Anderson and Marcouiller, 2002; Dollar and Kraay, 2003; Acemoglu et al,2013,2014). Government effectiveness as an indicator of institutional quality impacts more on imports and exports. Another indicator of institutional quality; control of corruption negatively affects the trade. Furthermore, better technology has been discovered as an inevitable variable to enhance trade. In order to enhance the volume of trade, gradual trade liberalization and improvement in the quality of institutions is suggested (Gani and Prasad, 2008).

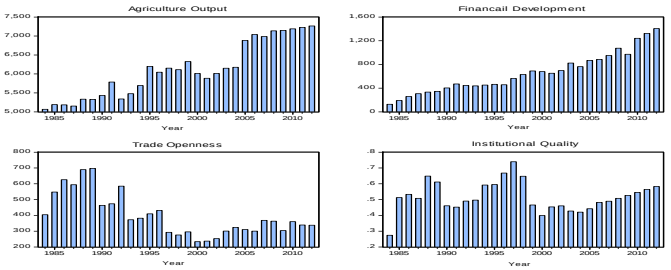
There is an ample body of literature which depicts that foreign trade is the key canal to augment the economic growth of developing countries (Nurkse, 1959; Bhagwati, 1978; Krugman, 1981; Grossman and Helpman, 1990; Krueger 1990, 1993; Edwards, 1993; Kamp and Tran-Nam, 2009; Soo, 2011; Ethier, 2011). Krueger (1998) discovered the correlation amid economic growth and free trade by focusing on the outward-oriented trade strategy and concluded that trade liberalization policy alone may not be fruitful unless government introduced supporting government policies like removal of trade restrictions and monopolies, infrastructure development, and most important is the adjustment of foreign exchange in line with the international market. Moreover, the studies of Smith (1776), Romer (1986), Lucas (1988), Edwards (1993) and Gundlach (1997) advocated that barrier-free trade has a positive association with economic growth. Declining trade barriers and the environment have an important role in improving the countries' comparative advantage (Kahouli and Omri, 2017).

Several other studies have also depicted and supported a positive association between free trade and economic growth.

A country with a liberalized trade sector has numerous advantages, such as transfer of technology, and accelerated economic growth, then a country which has not liberalized his trade sector (Bleaney, 1999; Sinha and Sinha, 2000; Rodriguez and Rodrik, 2001; Lioyd and Maclaren, 2000; Baldwin and Forslid, 2000; and Islam, 2013). Free trade would lead to efficient use of world resources, as efficient use of global resources maximizes the economic and social welfare of the people (Smith, 1776). The role of the diverse sectors of the economy cannot be disregarded in fostering economic growth. Particularly, the growth of the agricultural sector, its productivity, growth of the trade sector, and quality of institutions are vital in achieving the overall sustainable economic growth in a country. The important role of the agricultural value-added sector in accelerating the GDP growth of a country cannot be ignored. Developing countries including Pakistan greatly rely on agricultural growth to achieve substantial and sustainable economic growth.

The contribution of the agriculture sector in total export is substantial for developing countries. Trade liberalizing policies in developing countries have a positive and significant impact on the growth of the agricultural sector (Silva 2013). The relationship between non-agricultural exports to GDP and agricultural exports to GDP is measured and it clearly shows that agricultural exports to GDP have a larger share in developing countries (Lopez and Dawson, 2010). Agricultural economic growth can be achieved by bringing technological and innovational changes in the agricultural sector. The agriculture sector is considered the backbone of our economy since it provides food items to our population and raw materials for industrial units. In 1999-2000, the share of the agriculture sector was 25.9 percent which has declined to 21.0 percent of GDP. It employs 45 percent of the total labor force and earns 60 percent of the total export earnings. The growth rate of this sector was 5.2 percent, 2.4 percent, 5.4 percent, 4.4 percent, 3.2 percent during the 1960s, 1970s, 1980s, 1990s, and in the 2000s respectively. In 2009-10, it was 0.2 percent, in 2010-11 it increased to 2.0 percent, and in 2013-14 its growth rate further increased to 2.9 percent (GoP, 2014-15).

There is hardly any comprehensive study for Pakistan which may have investigated the connections of economic growth through the lens of trade liberalization, financial development and quality of institutions for the agriculture sector of Pakistan. Therefore, the current empirical study has analyzed the impact of trade liberalization, financial development, and quality of institutions for the agricultural sector of Pakistan to bridge the existing research gap in the literature.



Data Sources

Our empirical study is based upon secondary datasets published at national and international levels. To carry out the empirical analysis the present study has used time-series data set for the industrial sector of Pakistan covering the period of 1984-2015 to investigate the impact of trade openness and quality of institutions on the industrial growth of Pakistan. The selection of the time period is based on the logic that trade policies were introduced during the 1980s. *World Development Indicators* (2015), *International Country Risk Guide* (ICRG), and various issues of *Pakistan Economic Survey* have been consulted for the collection of secondary data for this study.

Methodology

Since the 1980s, economists and researchers have been analyzing the impact of trade liberalization on economic growth by extending the existing growth models (e.g. Krueger 1990, 1998; Grossman and Helpman, 1991; Edward, 1993, 1998; Yanikkaya, 2003). For Asian economies, Das and Paul (2011) have employed the neoclassical Solow-growth model. Similarly, the endogenous-growth model developed by Robert Lucas has been used by Ghatak et al. (1995) for Turkey; followed by Dutta and Ahmed (2004), and Chaudhary et al. (2010) for Pakistan. But, developing countries realized the fact that trade liberalization alone did not provide them fruitful results (Kemal et al., 2002; Greenaway et al., 2002). This, possibly, might be due to ignoring other important linkages like financial development, quality of institutions, or, as well as, the use of weak proxies (to capture the impact of trade liberalization) in these models. Thus, there are many developing countries that failed to reap the benefits of trade liberalization.

Recent research focused on the above and point out that without improving the quality of institutions, gains from trade liberalization cannot be reaped (Dollar and Kraay, 2003; Rodrik et al., 2004; Borrmann et al., 2006). Linear stage growth models, structural change growth models, endogenous and exogenous growth theories exhibit saving, investment, labor, physical and human capital, technological progress, as the potential sources of economic growth.

Empirical Model

The Cobb- Douglas production function has an attribute that gives direct elasticities. Therefore, this study has used the Cobb- Douglas production function due to this advantage by

incorporating the variables for the quality of institutions and trade openness. To discover the connection among trade liberalization, quality of institutions, financial development, and economic growth, following augmented Cobb-Douglas production function has been used: Following Mankiw et al., 1992, it may be represented as;

$$Y = AK^{\beta_1}L^{\beta_2}T^{\beta_3}F^{\beta_4}IQ^{\beta_5}e^{u_t} \quad (1)$$

We covert the augmented Cobb Douglas productions function into the log-linear model due to its various advantages. It yields more efficient results and gives direct elasticities. Transforming equation 4.1 into logarithmic form, it may be written as;

$$\ln Y_t = \ln A + \beta_1 \ln K_t + \beta_2 \ln L_t + \beta_3 \ln T_t + \beta_4 \ln F_t + \beta_5 \ln IQ_t + u_t \quad (2)$$

By Putting ln A =β_0 in equation 4.2 we get

$$\ln Y_t = \beta_0 + \beta_1 \ln K_t + \beta_2 \ln L_t + \beta_3 \ln T_t + \beta_4 \ln F_t + \beta_5 \ln IQ_t + u_t \quad (3)$$

Where $lnY, lnK, lnL, lnT, lnF, lnIQ,$ stands for log transform of, real GDP per capita (proxy for economic growth), real capital stock, employed labor force, real trade openness, real financial development, an index for quality of institutions, respectively, and a random error $u_t the$ term having a normal distribution with zero mean and finite (constant) variance, at a time "t".

Equation 3 has been converted to equation 4 with little chance for the agricultural sector of Pakistan to attain the main aim of the study. Equation 3 can be rewritten as for industrial sector.

$$\ln Y_{at} = \beta_0 + \beta_1 \ln K_{at} + \beta_2 \ln L_{at} + \beta_3 \ln T_{at} + \beta_4 \ln F_{at} + \beta_5 \ln IQ_{at} + u_{It} \quad (4)$$

Where $lnY, lnK, lnL, lnT, lnF, lnIQ,$ and u_{at} stands for log transform of, real agricultural value-added per capita, real agricultural capital stock, employed labor force of agricultural sector, real agricultural trade openness, real financial development of agricultural sector, an index for institutional quality and a random error $u_{It} the$ term, contains normal distribution with zero mean and finite (constant) variance, at time "t" for the industrial sector, respectively. Equation 4 has been employed for empirical analysis.

Estimation Strategy

Engle and Granger (1987) argued that time-series data sets are not stationary; therefore, we need to check the stationarity of the series included in the model to avoid the spurious results obtained from the application of OLS method. Datasets of time series have been checked through unit root tests. We have employed Augmented Dickey-Fuller (ADF) and Phillips and Perron unit root tests to investigate the unit root properties of the variables.

The latest combined cointegration test, developed by Bayer and Hanck (2013) has been used to investigate whether there exists or not cointegration among the variables. The long-run relationship between the variables is obtained by using the Ordinary Least Square Method (OLS), similarly, to examine the short-run impact of independent variables on the dependent variable, the Error Correction Method (ECM) has been employed.

The Augmented Dickey-Fuller (ADF) test, which was produced by Dickey and Fuller (1981) to check the stationarity in the time series data is applied to our data.

When we apply these econometric cointegration techniques different outcomes might be possible. To augment the authority of cointegration test, with the exclusive aspect of producing a joint test-statistic for the null hypothesis of no cointegration based on Engle and Granger, Johansen, Peter Boswijk, and Banerjee tests, Bayer and Hanck developed a new cointegration test in 2013 and known as *Bayer-Hanck* cointegration test. In view of the fact that this new test permits us to merge various individual cointegration test outcomes to offer more convincing results. Following Bayer and Hank (2013), the blend of computed significance level (*p*-value) of individual cointegration test in Fisher's formulas as follows:

$$EG - JOH = -2[ln(\rho_{EG}) + (\rho_{JOH})]$$

$$EG - JOH - BO - BDM = -2[ln(\rho_{EG}) + (\rho_{JOH}) + (\rho_{BO}) + (\rho_{BDM})]$$

Where,$\rho_{EG}, \rho_{JOH}, \rho_{BO},$ and ρ_{BDM} are the *p*-values of various individual cointegration tests respectively. It is assumed that if the estimated Fisher statistics exceed the critical values provided by Bayer and Hank (2013), the null hypothesis of no cointegration is rejected.

EMPIRICAL RESULTS AND DISCUSSIONS

Descriptive Analysis

Table 1 deals with the explanation of descriptive statistics and pairwise correlation computed for the agricultural sector of Pakistan. The Jarque-Bera test shows that all the series such as financial development, trade openness, quality of institutions, capital stock, and employed labor force are normally distributed.

This is an initial step to move for further empirical analysis. When the series is normally distributed, we can investigate the connections between trade liberalization, quality of institutions and agricultural economic growth.

The results of the pairwise correlation are also shown in the lower segment of the above Table 1.

Table 1: Descriptive Statistics and Correlation Matrix

Var	*lnY*	*lnFD*	*lnTR*	*lnINS*	*lnK*	*lnL*
Mean	8.70	6.33	5.94	-0.67	7.25	2.55
Med	8.70	6.44	5.89	-0.67	7.26	2.54
Max	8.89	7.24	6.54	-0.30	7.98	2.69
Min	8.53	4.84	5.45	-1.29	6.65	2.40
S.D..	0.11	0.57	0.31	0.19	0.32	0.08
Skew	0.15	-0.56	0.46	-0.76	0.29	-0.04
Kurt	1.77	3.07	2.28	5.03	2.45	1.89
J.B	1.94	1.57	1.68	7.85	0.78	1.48
Prob	0.37	0.45	0.43	0.01	0.67	0.47
lnY	1.00					

$lnFD$	0.91	1.00				
$lnTR$	-0.59	0.61	1.00			
$lnINS$	0.15	0.18	0.21	1.00		
lnK	0.67	0.34	0.58	0.04	1.00	
lnL	0.18	0.29	0.51	0.03	-0.55	1.00

All the explanatory variables have expected sign when our regress and is sectoral real GDP (value-added per capita by the agricultural sector) except trade openness. The association between the quality of institutions and economic growth is positive.

The value of the correlation coefficient between these two variables is 0.1514 which means that there is a weak positive correlation between them. Moreover, a positive correlation indicates that by improving the quality of institutions, economic growth can be increased.

The correlation between agricultural economic growth and financial development is positive. The value of the simple correlation coefficient between financial development and the growth of the agricultural sector is 0.9187 which suggests that financial development is also a major determinant of the growth of the agricultural sector of Pakistan. This value reveals that economic growth and financial development are strongly and positively correlated. Economic growth increases with more financial development in the agricultural sector of Pakistan. Trade openness and GDP growth of the agricultural sector have a negative association in this sector. Similarly, capital stock and employed labor force are positively correlated with the growth of the agricultural sector and have correlation coefficients 0.6775, and 0.1835 respectively.

Trade openness, quality of institutions, capital stock, and employed labor force are positively associated with financial development. Similarly, the quality of institutions, capital stock, and employed labor force are positively correlated with trade openness. Capital stock and employed labor force have a positive correlation with the quality of institutions.

Order of Integration (Unit Root Analysis)

Appropriate information about the stationary properties of the variables included in the econometric model is a pre-requisite for applying any cointegration test in a time series empirical analysis. The reason behind checking the stationary properties is that results of non-stationary time series are unreliable, so by checking the stationary properties we can get reliable results. In order to check the stationary properties, we have used Augmented Dickey-Fuller (1979) and Phillips and Perron (1988) unit root tests for each of the six-time series real GDP, financial development, trade openness, quality of institutions, and capital stock as well as for employed labor force.

The results of both stationary tests with intercept and trend are presented in Table-2. This table exhibits that the variables of the series are not stationary at level with intercept and time trend by the ADF test. All the variables of the series are found stationary at first difference. This shows that integrating the order of the variables is 1, i.e. they are integrated at I(1). The same inference can be drawn for other PP unit root test. So we find that variables of the time series have a unique integrating order. The unique order of integration of the variables leads us to apply the Bayer-Hanck (2013) combined cointegration tests such as EG-JOH and EG-JOH-BO-BDM tests to examine the cointegration among the variables.

Table 2: Unit Root Analysis

Var.	ADF Unit Root Test		PP Unit Root Test	
	t-stat	Prob.	t-stat	Prob.
lnY_t	-2.657 (2)	0.258	-2.169 (3)	0.488
$lnFD_t$	-1.825 (1)	0.672	-2.163 (3)	0.496
$lnTR_t$	-2.113 (3)	0.522	-3.061 (3)	0.129
$lnINS_t$	-2.448 (1)	0.154	-2.436 (3)	0.370
lnK_t	-2.819 (3)	0.199	-2.907 (3)	0.191
lnL_t	-0.063 (2)	0.993	-0.241 (3)	0.989
ΔlnY_t	-4.458 (1)*	0.005	-9.558 (3) *	0.000
$\Delta lnFD_t$	-4.595 (3)*	0.003	-6.101 (6) *	0.000
$\Delta lnTR_t$	-6.472 (1)*	0.000	-8.162 (3) *	0.000
$\Delta lnINS_t$	-4.328 (1)*	0.010	-6.072 (3) *	0.000
ΔlnK_t	-4.973 (3)*	0.001	-9.145 (3)*	0.000
ΔlnL_t	-4.368 (1)*	0.006	-7.661 (3)*	0.000

Note: * and ** represent significant at 1% and 5% levels respectively. Lag order is shown in parenthesis.

Lag Length Selection

Necessary information about the appropriate lag length using unrestricted VAR (vector autoregression) is required to apply the Bayer-Hanck (2013) combined cointegration approach to computing Fisher–statistics to examine whether cointegration exists or not between the variables of the series. The Fisher - statistics are sensitive with lag length vary selection (Table 3). We have chosen lag length selection following Akaike Information Criterion (AIC) which performs better than another criterion such as sequential modified LR test, Final Prediction Error (FPE), Schwarz Information Criterion (SC) and Hannan-Quinn information criterion (HQ) respectively.

AIC provides consistent and reliable results regarding lag length selection. Since the data of our study is of annual frequency empirical results suggest that serial correlation is not a problem when we take the order of the VAR at suggested lags (Chaudhary et.al, 2007). The results reported in Table-3 show that lag order 2 is suitable for our cointegration analysis.

Table 3: VAR Lag Order Selection Criteria

Lag	LR	AIC	SC	HQ
0	NA	-6.52	-6.23	-6.43
1	138.63*	-10.78	-8.77*	-10.18
2	49.92	-11.68*	-7.94	-10.57*

* indicates lag order selected by the criterion

The Bayer and Hanck Cointegration Results

Table 4 displays the combined cointegration test results including the EG-JOH, and EG-JOH-BO-BDM. We found that Fisher-statistics for both EG-JOH and EG-JOH-BO-BDM tests exceed the critical values at a 1% level of significance when we

use economic growth, trade openness and capital stock as dependent variables for respective models. The test rejects the null hypothesis of no cointegration among the variables in these models.

Table 4: The Results of Bayer and Hanck Cointegration Analysis

Estimated Models	EG-JOH	EG-JOH-BO-BDM	Lag	Coint.
$Y = f(FD, TR, INS, K, L)$	16.6*	30.2*	2	Exists
$FD = f(Y, TR, INS, K, L)$	9.3	30.9	2	Not Exist
$TR = f(Y, FD, INS, K, L)$	19.0*	31.0*	2	Exists
$INS = f(Y, FD, TR, K, L)$	9.0	68.8	2	Not Exists
$K = f(Y, FD, TR, INS, L)$	21.4*	35.8*	2	Exists
$L = f(Y, FD, TR, INS, K)$	14.3	23.9	2	Not Exists

Note: * represents significant at 1% level. Critical values at a 1% level are 15.701 (EG-JOH) and 29.85 (EG-JOH-BO-BDM) respectively. Lag length is based on the minimum value of AIC.

However, when financial development, quality of institutions and employed labor force are considered to be a dependent variable, the cointegration test is not consistently able to reject the null hypothesis of no cointegration. This confirms the presence of cointegration among all the variables. Thus, overall, one can conclude in Pakistan's financial development, trade liberalization, quality of institutions, capital stock, and employed labor force have a long-run association.

Long Run Empirical Results

The long-run empirical results of the agricultural sector of Pakistan have been presented in table 5. All the variables have expected sign and they are significant at 1 percent and 5 percent level of significance except the variable of trade openness which is significant but with a negative sign. These results show that the financial development of the agricultural sector has an expected positive sign and is significant at a 1 percent level of significance. It exerts a positive impact on the GDP of the agriculture sector. A one percent increase in financial development leads to an increase in agricultural sector GDP by 0.1238 percent. These results confirm the findings of Yazdi and Zadeh (2013) and Shahbaz (2011). Yazdi and Zadeh (2013) found a positive and significant relationship between financial development and agricultural GDP growth at a 5 percent level of significance. A one percent increase in financial development leads to a 0.41 percent increase in agricultural GDP growth. Similarly, Shahbaz (2011) also found a positive and significant relationship between financial development and agricultural GDP growth at a one percent level of significance. A one percent increase in financial development leads to an increase in agricultural GDP by 0.2712 percent.

Trade openness of this sector surprisingly has a negative sign and is significant at one percent level. A one percent rise in agricultural trade openness decreases the GDP of this sector by 0.1139 percent. It may be so because many developing countries are alike and export the same. Besides this, the agricultural trade of Pakistan still faces many problems at the international level like a health hazard, i.e. it's one of the most crops of fruits, Mango and Oranges, which cannot be exported to Europe, Japan, and other countries due to hygienic reasons. Similarly, fish and fish related products have not been getting acceptance in these regions. Besides, the declining contribution of the agricultural sector to the GDP could be the other reasons for its negative contribution.

These results are contradictory with the empirical findings of Balassa, *et al.* (1971) and Little, *et al.* (1970), Bashir (2003), Shahbaz (2011) and Silva (2013). The empirical findings of Balassa, *et al.* (1971) and Little, *et al.* (1970) show that by removing the trade barriers we can improve the export performance of both agricultural and non-agricultural commodities of the developing countries.

Table 5: Long Run Results

Dependent Variable = lnY_t				
Var.	**Beta**	**S.E.**	**t-Stat**	**p-value**
C	6.822*	0.639	10.667	0.000
$lnFD_t$	0.123*	0.017	7.144	0.000
$lnTR_t$	-0.113*	0.039	-2.889	0.008
$lnINS_t$	0.111**	0.043	2.551	0.017
lnK_t	0.106**	0.045	2.347	0.028
lnL_t	0.423*	0.108	3.884	0.000
R^2		0.908		
Adj. R^2		0.889		
F-stat		45.87		
D.W.		1.304		

Note: * and ** significant at 1% and 5% levels of significance respectively

The empirical study of Bashir (2003) suggested that trade liberalization policies in Pakistan have improved the agricultural export performance of Pakistan. He attributed this improved export performance to domestic economic and trade reforms introduced by the government of Pakistan during the 1980s and 1990s. Similarly, the empirical study conducted by Shahbaz (2011) found that trade openness accelerates the pace of economic growth of agricultural GDP. Silva (2013) found that after trade liberalization one percent increase in trade openness leads to an increase in the agricultural GDP growth by 0.075 percent at a 10 percent level of significance.

The quality of the institution variable shows a positive and significant impact on the agricultural sector GDP. A one percent increase in the quality of institutions increases the GDP of the agricultural sector by 0.1116 percent. It means that by improving the quality of institutions we can enhance the level

of agricultural GDP. Other Variables of this sector capital stock and employed labor force have also been empirically found positively associated with agricultural GDP and are significant at 5 percent, and 1 percent, respectively. A one percent increase in capital stock increases the agricultural GDP by 0.1065 percent and a one percent increase in employed force labor increases the agricultural sector's GDP by 0.4231 percent.

Short Run Empirical Results

The short-run empirical results of the agricultural sector of Pakistan are presented in table 6. At a one percent level of significance, financial development exerts a positive and significant impact on the growth of the agriculture sector of Pakistan. A one percent increase in financial development increases the economic growth of this sector by 0.1469 percent. Trade openness variable and the variable of quality of institutions have positive signs but are insignificant.

Table 6: Short Run Results

Dependent Variable = ΔlnY_t				
Var.	**Beta**	**S.E.**	**t-Stat**	**p-value**
C	0.003	0.044	0.088	0.930
$\Delta lnFD_t$	0.146*	0.040	3.586	0.002
$\Delta lnTR_t$	0.005	0.001	0.241	0.811
$\Delta lnINS_t$	0.022	0.068	0.324	0.749
ΔlnK_t	0.057*	0.010	5.719	0.000
ΔlnL_t	-0.008	0.111	-0.07	0.940
ECM_{t-1}	-0.116*	0.028	-4.11	0.000
R^2		0.540		
Adj. R^2		0.336		
F-stat		2.647		
D.W.		1.910		
Diagnostic Tests		**F-stat**	**p-value**	
$\chi^2 NORMAL$		1.267	0.530	
$\chi^2 SERIAL$		0.429	0.658	
$\chi^2 ARCH$		2.169	0.158	
$\chi^2 WHITE$		0.510	0.793	
$\chi^2 REMSAY$		0.279	0.782	

Note: * significant at 1% level of significance. Normality of error term, serial correlation, autoregressive conditional heteroskedasticity, white heteroskedasticity and functional of the short-run model is indicated by $\chi^2 NORMAL$, $\chi^2 SERIAL$, $\chi^2 ARCH$, $\chi^2 WHITE$ and $\chi^2 REMSAY$ respectively.

The capital stock is negatively linked with agricultural economic growth and is significant at one percent level. A one percent increase in capital stock decreases the agricultural GDP by 0.0579 percent. The employed labor force has a positive and statistically significant impact on agricultural economic growth. A one percent increase in the employed labor force increases the GDP of the agricultural sector by 0.0084 percent.

The sign of the lagged error term is negative and significant at one percent level. This confirms our established cointegration association among the variables. The statistical significance of the lagged error term with negative sign indicates the short-run convergence to the equilibrium path in the long run. The estimate ECM_{t-1} is equal to -0.1169 and it is significant at one percent level. We found that any short-run shock stems in agricultural GDP are corrected by 11.69 percent in each year to achieve the stable long-run equilibrium path.

The results of diagnostic tests are reported in this table-7.6 (lower segment). The results show no problem with the non-normality of the residual term. This exposes that the error term has a normal distribution with constant variance and the mean value is zero. The serial correlation does not exist and no problem of autoregressive conditional heteroskedasticity is found. We find no evidence of white heteroskedasticity. The findings by Ramsey reset show that the short-run model is well constructed. Finally, we find that the short-run model fulfills the assumptions of the classical linear regression model (CLRM).

CONCLUSIONS

The major objective of this study was to explore the relationship between trade liberalization, quality of institutions, and economic growth. This trio has emerged as a new avenue of research in Economics. Better quality of institutions, in particular, is considered to play a vital role in accelerating economic growth.

To achieve the above-cited objectives of the study, time-series datasets over the time period of 1984-2013, in annual frequency, were utilized. The study has applied the augmented Cobb- Douglas production function to analyze the impact of the trade liberalization quality of institutions and financial development on economic growth. To check the stationarity of the data not only Augmented Dickey-Fuller (ADF), but also Phillips and Perron (PP) unit root tests have been applied. The most recently developed combined cointegration technique by Bayer and Hanck (2013) has been used to check the cointegration among the variables. Being a better technique than earlier approaches, it added to the quality of research.

Long run empirical results have been obtained by applying the Ordinary Least Square Method (OLS), whereas, for short-run empirical results, Error Correction Method (ECM) has been used. Moreover, the direction of causality among the variables has also been examined by employing the Vector Error Correction Method (VECM) Granger causality technique. The empirical pieces of evidence have supported that trade liberalization, and better quality of an institution is indispensable for economic growth because they exert a positive and significant impact on the economic growth of Pakistan. Trade liberalization exerts a positive and significant impact on the growth of the industrial, and services sectors of Pakistan but contributes negatively to the agricultural sector. The negative impact of trade liberalization on agricultural

growth may be owing to the fact that many developing countries are alike and export the same. Moreover, the agricultural trade in Pakistan still faces many problems at the international level. One of these is a health hazard as its fruit crops like Mangoes and Oranges cannot be exported to Europe, Japan, and other countries due to hygienic reasons and sanitary rules of WTO. Similarly, due to some reasons fish and fish related products have not been getting acceptance in these regions. Pakistan's textile exporters are still facing restrictions of access to the world markets.

The study suggests that to enhance the growth of the agriculture sector, policymakers should frame the economic policies aiming at improving the quality of institutions and encouraging financial development in this sector.

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