

# **Financial Sector Reforms and International Trade Competitiveness: A Case Study of Pakistan**

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This paper attempts to explore the relationship between the financial development and international trade competitiveness in the case of Pakistan. The earlier study on this issue, Hanif and Jafri (2008) has severe empirical limitations as it is based on Engle-Granger (1987) two step procedure while dealing with multiple variables regressions. In this study we have used AutoRegressive Distributed Lagged (ARDL) model by Pesaran, Shin and Smith (1999). We have also applied Johansen maximum likelihood method of testing for cointegration and checked the robustness of our results established by use of ARDL model. We have estimated the cointegration vector using Stock and Watson (1993) Dynamic OLS.

Our findings suggest that there is a stable long run positive relationship between international trade competitiveness of Pakistan and her level of financial sector development. The estimated external finance elasticity of international trade competitiveness of textile sector in Pakistan is found to be 0.26 which is significantly higher than the one estimated around 0.17 by Hanif and Jafri (2008) indicating that they have under estimated the elasticity. We do not have, however, different view than that of Hanif and Jafri (2008) regarding policy implications. Thus it is important for Pakistan to not only continue with the ongoing financial reforms but also to strengthen the same by implementation of the second generation reforms as this would further lead to accelerate the comparative advantages of Pakistan textiles exports in a highly competitive global external environment.

## **1. Introduction**

Financial system of a country includes the Central bank, other banks, financial markets, non bank financial institutions like pension funds and insurance companies, etc. It is a sector in the economy that utilizes country's productive resources to facilitate capital formation through the provision of a wide range of financial services to meet the different requirements of savers and savings users. Thus, the financial system plays a crucial role in mobilizing and intermediating saving, and ensuring these resources are allocated efficiently to productive sectors [Ang (2008)].

The literature on financial aspects of development and growth dates back to the early work by Gurley and Shaw (1955). The intellectual basis for restructuring of the financial sector was provided by McKinnon (1973) and Shaw (1973). Over the last few decades researchers have shown that financial sector development plays significant role in economic growth. At the backdrop of McKinnon (1973) and Shaw (1973), results of empirical studies in favour of financial liberalization, process of financial reforms was started in 1980s by most of the developing countries including Pakistan.

Reforming the financial sector may have implications for the structure of international trade if the level of financial development is a determinant of a country's comparative advantage as Kletzer and Bardhan (1987) highlighted. Conventional theories of international trade focus on comparative advantage based on factor endowments concepts. The investigation of the association between financial sector and international trade competitiveness is a recent phenomenon in international economics literature. Kletzer and Bardhan (1987) highlight the contribution of some aspects of credit market imperfections to inter-country difference in patterns of specialization and

trade even when technology and endowments are identical between countries and economies of scale are absent. They show that these are the differences between countries in the domestic institutions of credit contract enforcement (under incomplete market information) which may lead to one country facing a higher interest rate or rationed credit compared to other countries and these differences may lead to differences in comparative advantages in processed goods which require more finance. Kletzer and Bardhan based their argument on a conjecture that more sophisticated manufactured finished products require more credit to cover selling and distribution costs than primary or intermediate products. They show that countries with a relatively better developed financial sector have comparative advantage in industries and sectors that need more on external finance. Recent study by Fanelli and Medhora (2002) vindicates the argument of Kletzer and Bardhan (1987) by finding that comparative advantage is positively affected by the financial sector development.

Pakistan opted for exports promotion in 1970s and 1980s over past import substitution policies. After signing a Structural Adjustment Programme with the IMF in 1988 Pakistan liberalized both imports and exports which it continued during 1990s and later. It was almost the same time when Pakistan also started financial sector reforms as mentioned above.

There has been only one attempt so far to analyze the association between the financial sector and international trade competitiveness for the case of Pakistan. Hanif and Jafri (2008), constructing Revealed Comparative Advantage index for the textile sector and using ratio of credit extended to the textile sector to the total non-government credit of the banking system as proxy for external finance, estimated the long run

relationship between index and external finance while controlling for other determinants of the international trade competitiveness of textile sector of Pakistan. However the study has severe empirical limitations as this has used Engle-Granger (1987) two step procedure on multiple variables regressions. In this study we have used recently developed test based on autoregressive distributed lagged (ARDL) model by Pesaran, Shin and Smith (1999) for the existence of a long run relationship between international trade competitiveness of Pakistan and its level of financial sector development while considering the other determinants of competitiveness. We have also applied Johansen maximum likelihood method of testing for cointegration and checked the robustness of our results established by use of Pesaran, Shin and Smith (1999) test based on ARDL model. We have estimated the cointegration vector using Stock and Watson (1993) Dynamic OLS or DOLS. While Engle-Granger (1987) may reveal substantial bias and suffers from a non-standard asymptotic distribution, DOLS estimator provides valid and efficient inference on the parameters of a cointegrating vector.

Our findings suggest that there is stable long run positive relationship between international trade competitiveness of Pakistan and her level of financial sector development. The estimated external finance elasticity of international trade competitiveness of textile sector in Pakistan is found to be 0.26 which is significantly higher than the one estimated around 0.17 by Hanif and Jafri (2008) using Engle and Granger approach indicating that they have under estimated the elasticity of international trade competitiveness of textile sector of Pakistan.

The rest of the study is structured as follows. In Section 2, we review some of the theoretical and empirical research already conducted relating financial development and

international trade competitiveness. In Section 3, we discuss the methodology we utilize for analyzing the finance-competitiveness nexus for Pakistan. In Section 4 we have presented our empirical findings and concluding remarks are given in the last Section.

## **2. Review of Literature**

The emergence of financial sector is the result of time and space inconsistency of supply and demand of loanable funds, costs of acquiring information, and making transactions in an uncertain environment. Financial markets may arise to ameliorate the problems created by information and transactions frictions. Among the macroeconomic variables that the empirical growth literature has identified as being highly correlated with growth performance is financial development [Detragiache and Ueda (2004), Khan and Senhaji (2000) and Levine (1997)]. Another such variable which is highly correlated with economic growth is the degree of openness [Frankel and Romer (1999), for example]. The development economists have rarely explored the area of relationship between financial development and trade patterns. However, Kletzer and Bardhan (1987), in their seminal work in this area, show that countries with relatively well-developed financial sector have a comparative advantage in industries that depend more on external finance. In Kletzer and Bardhan (1987) model, even when technology and endowments are identical between the countries and economies of scale are absent, credit market frictions lead to one country facing a higher (real) interest rate or rationed credit compared to other countries. This may happen amongst the different sectors in the same economy. As a result there may be differences in comparative advantages in processed goods which require more working capital, marketing cost, or trade finance. Kletzer and

Bardhan (1987) presumed that more sophisticated manufactured finished products require more (external) finance to cover selling and distribution costs than primary or intermediate products.

After the seminal work by Kletzer and Bardhan (1987) it was Rajan and Zingales (1998) who while establishing the link between financial development and economic growth concluded that in countries with well-developed financial systems industries that require more of external finance grow faster. They argue that their result has implications for patterns of international trade as well-developed financial sector is a source of comparative advantage for industries that require more external finance.

Beck (2002) reexamines the link between level of financial development and the level and structure of international trade. He analyses theoretically a channel through which economy-wide level of external finance determines the (commodity) structure of trade balance. Beck model focuses on the role of finance in mobilizing saving and facilitating large scale and high return projects. He also finds empirical evidence supporting his model that a well-developed financial sector translate into a comparative advantage in the production of manufactured goods, thus the level of financial development translates into comparative advantage in industries that are more dependent on external finance.

According to most recent empirical endeavor, Fanelli and Medhora (2002) suggest that the competitiveness of a country depends both on the price and non-price factors. For improving the price competitiveness devaluation can prove helpful in the short run. However the non-price competitiveness can be induced in industries by enhancing the level of productivity. They explain that in an environment of efficient

financial markets the financial intermediaries are in a position of impacting the level of innovation by identifying and channeling funds to most efficient users. The imperfections in the financial market, on the other hand, reduce the ability of the financial sector to efficiently channel funds from lenders to the borrowers that negatively impacts the productivity growth. Hence higher level of financial development impacts comparative advantage of a country by enhancing the level of productivity by identifying entrepreneurs with the best chances of successfully implementing innovative production processes.

There has been only one attempt so far to analyze the association between the financial sector and international trade competitiveness for the case of Pakistan. Hanif and Jafri (2008) suggest that dependence on external finance has a positive impact on the Pakistan's textile sector competitiveness both in the short and the long run. The study has, however, severe empirical limitations as this has used Engle-Granger (1987) two step procedure on multiple variables regressions. Despite the attractive asymptotic properties of the Engle-Granger two step procedure of cointegration, it does have a number of important weaknesses; like the biased parameter estimates in finite samples and too low power of the test if applied to more than two variable regressions.

In this study we have used recently developed test based on AutoRegressive Distributed Lagged (ARDL) model by Pesaran, Shin and Smith (1999) for the existence of a long run relationship between international trade competitiveness of Pakistan and its level of financial sector development while considering the other determinants of competitiveness. This tests for a long run relationship between the variables and is applicable irrespective of whether the regressors are  $I(0)$ ,  $I(1)$  or mutually cointegrated.

Whilst the key element of Pesaran, Shin and Smith (1999) test based on ARDL model is that it is applicable irrespective of whether the regressors are I(0), I(1); it requires that the maximum order of integration is one. Thus we have checked whether the series used in this study are I(1) or otherwise. We found them integrated of order 1. While it fulfils one of the assumptions of ARDL approach to test for cointegration, it also allows us to apply Johansen maximum likelihood method of testing for cointegration and check the robustness of our results established by use of Pesaran, Shin and Smith (1999) test based on ARDL model. Once we are sure of cointegration between international trade competitiveness of Pakistan and Pakistan's level of financial sector development and other determinants of competitiveness, we have estimated the cointegration vector using Stock and Watson (1993) Dynamic OLS or DOLS. While Engle-Granger (1987) used by Hanif and Jafri (2008) may reveal substantial bias and suffers from a non-standard asymptotic distribution, DOLS estimator provides valid and efficient inference on the parameters of a cointegrating vector.

### **3. Data and Methodology**

Time span of this study is 1974 to 2004 and we will be using annual data series. In order to measure competitiveness we have used Balassa (1965) index of Revealed Comparative Advantage for textile sector (RCAT) of Pakistan (being the largest manufactures export contributor). It is given by

$$RCAT_p = \frac{X_{PT}/X_P}{X_{wT}/X_w} \quad (3.1)$$

where  $X_{pT}$  is [P]akistan's exports of textile sector (T),  $X_p$  is total exports of [P]akistan,  $X_{wT}$  is world's exports of textile sector (T), and  $X_w$  is the overall exports in the world. If  $RCAT_p$  is greater than unity it means that [P]akistan has comparative advantage in production in her textile sector (T). Comtrade (United Nations, Statistics Division Database) data has been used to for compiling RCAT index for textile sector of Pakistan.

Defining appropriate proxy for the role of financial sector in the providing external finance to the textile sector of Pakistan is surely a challenge. King and Levine (1993) has used ratio of claims on the nonfinancial private sector to total domestic credit as one of the proxies of financial development. Since our focus is on textile sector of Pakistan, in order to measure the role of financial sector in (providing external finance i.e. EXTF) international trade competitiveness we use the ratio of credit extended to the textile sector by deposit money banks to the total credit extended by suck banks (excluding credit to government).

If we assume bi-variate relationship between the textile sector competitiveness (RCAT) and financial sector development (EXTF) and assume that rest of the variable explaining textile sector comparative advantage are showing in error term  $\eta_t$  then we can have the following model for estimating the relationship between RCAT and EXTF.

$$\text{Log} (RCAT_t) = \beta_0 + \beta_1 \text{Log} (EXTF_t) + \eta_t \quad (3.2)$$

If the estimate of the slope parameters  $\beta_1$  turns out to be positively significant, it means more dependence of a textile sector on external finance helps a Pakistan achieve international trade competitiveness in textile sector.

However, external finance is not the only determinant of the Pakistan's competitiveness in textile sector. In order to assess the impact of financial sector development on the comparative advantage of the Pakistan's competitiveness in textile sector we have to control for other determinants as well. In the following we discuss other potential determinants of Pakistan's textile sector competitiveness.

The relative strength of a country's currency vis-a vis its competitors along with its domestic price level is an important source of comparative advantage to a country. We take this fact into account by inclusion of country's real effective exchange rate (REER) in our model.

Another very strong theoretical determinant of trade competitiveness is the terms of trade (TERT). It is measured by ratio of unit value of exports to the unit value of imports. It may be the case that both the REER and TERT are price variable and this may have some statistical implications. We will keep one of both of the two on the basis of their long run (statistical) significance as a determinant of Pakistan's international trade competitiveness.

Furthermore, Pakistan is amongst top five cotton producing countries and this natural edge gives our country a comparative advantage over her competitors. To capture the effect of this factor endowment, we would like to include cotton production (COTN) as an explanatory variable in the model.

The definition and sources of all the variables to be used in this study are explained in Table 1.

**Table 1: Definition and Sources of the Data Used**

Variable	Description	Source
RCAT	RCA index for Textile Sector of Pakistan	Calculated using “Comtrade” data of UN Statistics Division
EXTF	Amount of External Finance availed by Textile Sector from Banking System as proportion of overall non-government assets of the banking sector.	SBP
REER	Real Effective Exchange Rate	SBP
COTN	Cotton Production in Pakistan	“Handbook of Statistics on Pakistan Economy” by SBP
TERT	Terms of Trade	Measured by ratio of unit value of exports to unit value of imports. We use Federal Bureau of Statistics data on unit value indices to construct this variable.

On the basis of the above discussion we would like to estimate the following econometric model:

$$\begin{aligned} \text{Log} (RCAT_t) = & \beta_0 + \beta_1 \text{Log} (EXTF_t) + \beta_2 \text{Log} (REER_t) + \beta_3 \text{Log} (COTN_t) \\ & + \beta_4 \text{Log}(TERT_t) + \varepsilon_t \end{aligned} \quad (3.3)$$

We have used test based on AutoRegressive Distributed Lagged (ARDL) model by Pesaran, Shin and Smith (1999) for the existence of a long run relationship between international trade competitiveness of Pakistan and its level of financial sector development while considering the other determinants of competitiveness. This tests for a long run relationship between the variables and is applicable irrespective of whether the regressors are I(0), I(1) or mutually cointegrated. The test is based upon estimation of the underlying VAR model, re-parameterized as an Error Correction Model (ECM).

The VAR(p) model

$$z_t = b + ct + \sum_{i=1}^p \Phi_i z_{t-i} + \varepsilon_t \quad (3.4)$$

where  $z$  represents a vector of variables. Under the assumption that the individual elements of  $z$  are at the most I(1), or do not have explosive roots, equation (3.4) can be written as a simple Vector ECM.

$$\Delta z_t = b + ct + \Pi z_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta z_{t-i} + \varepsilon_t \quad (3.5)$$

where  $\Pi = -\left(I_{k+1} - \sum_{i=1}^p \Phi_i\right)$  and  $\Gamma_i = -\sum_{j=i+1}^p \Phi_j, i=1, \dots, p-1$  are the  $(k+1) \times (k+1)$

matrices of the long run multipliers and the short run dynamic coefficients. By making the assumption that there is only one long run relationship amongst the variables, Pesaran, Shin and Smith (1999) focus on the first equation in (3.5) and partition  $z_t$  into a dependant variable  $y_t$  and a set of forcing variables  $x$ . This is one of the key assumptions of their work. Under such conditions the matrices  $b, c, \Gamma$  and, most importantly,  $\Pi$ , the long run multiplier matrix can also be partitioned conformably with the partitioning of  $z$ .

$$\Pi = \begin{bmatrix} \pi_{11} & \pi_{12} \\ \pi_{21} & \Pi_{22} \end{bmatrix} \quad b = \begin{bmatrix} b_1 \\ b_2 \end{bmatrix} \quad c = \begin{bmatrix} c_1 \\ c_2 \end{bmatrix} \quad \Gamma_i = \begin{bmatrix} \gamma_{11,i} & \gamma_{12,i} \\ \gamma_{21,i} & \gamma_{22,i} \end{bmatrix}$$

$x$  is long run forcing for  $y$  implies that the vector  $\pi_{21} = 0$ , i.e. there is no feedback from the level of  $y$  on  $\Delta x$ . As a result the conditional model for  $\Delta y$  and  $\Delta x$  can be written as

$$\Delta y_t = b_1 + c_1 t + \pi_{11} y_{t-1} + \pi_{12} x_{t-1} + \sum_{i=1}^{p-1} \gamma_{11,i} \Delta y_{t-i} + \sum_{i=0}^{p-1} \gamma_{12,i} \Delta x_{t-i} + \varepsilon_{1t} \quad (3.6)$$

$$\Delta x_t = b_2 + c_2 t + \pi_{22} x_{t-1} + \sum_{i=1}^{p-1} \gamma_{21,i} \Delta y_{t-i} + \sum_{i=1}^{p-1} \Gamma_{22,i} \Delta x_{t-i} + \varepsilon_{2t} \quad (3.7)$$

Under standard assumptions about the error terms in (3.6) and (3.7) Pesaran, Shin and Smith (1999) re-write (3.6) as

$$\Delta y_t = a_0 + a_1 t + \phi y_{t-1} + \delta x_{t-1} + \sum_{i=1}^{p-1} \nu_i \Delta y_{t-i} + \sum_{i=0}^{p-1} \varphi_i \Delta x_{t-i} + \varpi_t \quad (3.8)$$

which they call an unrestricted error correction model. Note that in (3.8) a long run relationship exists among the levels of variables if the two parameters  $\phi$  and  $\delta$  are both non zero in which case, for the long run solution of (3.8) we obtain

$$y_t = -\frac{a_0}{\phi} - \frac{a_1}{\phi} t - \frac{\delta}{\phi} x_t \quad (3.9)$$

Pesaran, Shin and Smith (1999) suggest to test the hypothesis of no long run relationship between  $y$  and  $x$  by testing the joint hypothesis that  $\phi = \delta = 0$  in the context of equation (3.8).

Whilst the key element of Pesaran, Shin and Smith (1999) test based on ARDL model is that it is applicable irrespective of whether the regressors are I(0), I(1); it requires that the maximum order of integration is one. Thus we have checked whether the series used in this study are I(1) or otherwise. We found the series used in this study to be integrated of order 1. While it fulfils one of the assumptions of ARDL approach to test

for cointegration, it also allows us to apply Johansen maximum likelihood method of testing for cointegration and check the robustness of our results established by use of Pesaran, Shin and Smith (1999) test based on ARDL model.

Once we are sure of cointegration between international trade competitiveness of Pakistan and Pakistan's level of financial sector development and other determinants of competitiveness, we have estimated the cointegration vector using Stock and Watson (1993) Dynamic OLS or DOLS. While Engle-Granger (1987) used by Hanif and Jafri (2008) may reveal substantial bias and suffers from a non-standard asymptotic distribution, DOLS estimator provides valid and efficient inference on the parameters of a cointegrating vector. The dynamic regression is estimated by OLS equation with the RHS endogenous variable(s), a constant and current, leads and lags of the differenced RHS endogenous variable(s) as explanatory variables.

#### **4. Empirical Findings**

Before involving into econometric exercise we have also given below the graphical view of the two series we are interested in. Figure 1 shows the behaviour of revealed comparative advantage of textile sector of Pakistan (RCAT) and the share of credit extended to the textile sector in the total non-government credit of the banking system of Pakistan which we have used as a measure of external finance (EXTF).



The coefficient of correlation between revealed comparative advantage of textile sector of Pakistan and the share of credit extended to the textile sector in the total non-government credit of the banking system of Pakistan is 0.66 as shown in the Table 2 on descriptive statistics and correlation matrix. The signs of other correlation coefficients are also in line with those expected according the received wisdom.

**Table 2: Descriptive Statistics and Correlation Matrix**

	RCAT	EXTF	REER	COTN	TERT
Mean	9.97	17.7	129.89	7.27	116.68
Median	9.51	16.48	112.84	8.39	115.19
Maximum	13.09	28.68	197.72	12.8	199.52
Minimum	7.21	13.38	81.06	2.56	78.68
Standard Dev.	1.72	3.78	42.41	3.04	25.16
RCAT	1.00				
EXTF	0.66	1.00			
REER	-0.81	-0.37	1.00		
COTN	0.73	0.31	-0.94	1.00	
TERT	-0.76	-0.33	0.70	-0.76	1.00

As discussed in Section 3 we will be using recently developed test based on ARDL model for the existence of a long run relationship between international trade competitiveness of Pakistan and its level of financial sector development while considering the other determinants of competitiveness. This tests for a long run relationship between the variables and is applicable irrespective of whether the regressors are I(0), I(1). For the application of the said approach we need to estimate a model in (3.8) based on our variables of interest. This requires specifying the lag order which we have found to be 1 and this is unanimous results of various lag selection tests like sequential modified likelihood ratio test (LR), Akaike information criterion (AIC),

Schwartz information criterion (SC), final predication error (FPE) and Hannan Quinn information criterion (HQ) approaches. Thus we estimate the following model.

$$\begin{aligned} \Delta \text{Log} (RCAT_t) = & \alpha_0 + \alpha_1 t + \phi \text{Log} (RCAT_{t-1}) + \delta_1 \text{Log} (EXTF_{t-1}) + \delta_2 \text{Log} (REER_{t-1}) \\ & + \delta_3 \text{Log}(COTN_{t-1}) + \delta_4 \text{Log}(TERT_{t-1}) + \nu_1 \Delta \text{Log}(RCAT_{t-1}) + \varphi_1 \Delta \text{Log}(EXTF_t) + \varphi_2 \Delta \text{Log}(REER_t) \\ & + \varphi_3 \Delta \text{Log}(COTN_t) + \varphi_4 \Delta \text{Log}(TERT_t) + \varphi_5 \Delta \text{Log}(EXTF_{t-1}) + \varphi_6 \Delta \text{Log}(REER_{t-1}) \\ & + \varphi_7 \Delta \text{Log}(COTN_{t-1}) + \varphi_8 \Delta \text{Log}(TERT_{t-1}) + \varepsilon_t \end{aligned} \quad (4.1)$$

After estimation of the above equation we test the joint hypothesis that all the coefficients of the lagged (level) regressors are jointly zero as a test of ‘no long run relationship’ between international trade competitiveness of Pakistan and its determinants including the level of financial sector development. The results of the hypothesis testing are presented in the Table 3.

**Table 3: Result of Test of No Long Run Relationship between International Trade Competitiveness and its Determinants**

Test Statistic	Value	Probability
F-Statistic	5.31	0.0059
Chi-Square	37.18	0.0000

From Table 3 we can see that we reject the null of no long run relationship between international trade competitiveness of Pakistan and its determinants including the level of financial sector development.

As we mentioned in above section the key element of ARDL testing procedure is to test for the existence of a long run relationship without pre-testing whether the series in the model are I(1) or I(0). However, it requires that the maximum order of integration is one. We have checked for the maximum order of integration of the series used in this

study which found to be 1. We have used Dickey Fuller (DF) unit root test to test the time series properties of the series used. We use zero lag as suggested by ‘Schwartz Information Criteria’ for lag selection. Intercept and/or trend has been included on the basis of their statistical significance in the DF equation. The results of DF test are presented in the Table 4 (with MacKinnon’s one-sided p-values in the parentheses).

**Table 4: Test for order of Integration**

Variable	DF* Test Value(p-value)	
	At Levels	At First Differences
RCAT	-2.85 (0.19)	-5.33 (0.00)
EXTF	-1.46 (0.82)	-4.57 (0.00)
REER	-2.24 (0.44)	-3.75 (0.00)
COTN	-2.83 (0.20)	-7.18 (0.00)
TERT	-3.31 (0.08)	-5.23 (0.00)

The results of the DF unit root test show that all the series used in this study are integrated of order 1 as are stationary after first difference. While it fulfils one of the assumptions of ARDL approach to test for cointegration, it also allows us to apply Johansen maximum likelihood method of testing for cointegration and check the robustness of our results established above by using Pesaran, Shin and Smith (1999) test for long run relationship.

Thus we reexamine the relationship using the Johansen maximum likelihood method of testing for cointegration. This also requires specifying the lag order which we have found to be 1 and this is unanimous results of various lag selection tests as we discussed above.

In Table 5 the results of the Johansen maximum likelihood method of testing for cointegration have been presented.

**Table 5: Johansen's Test for Cointegration**

No. of Cointegrating Vector	Trace Statistic	P-Value	Maximum Eigen Value Statistic	P-Value
None	112.65	0.0004	56.48	0.0002
At Most One	56.17	0.1874	26.74	0.1970

Both the Trace test and Maximum Eigen Value test indicate existence of one cointegrating equation. Thus using both the ARDL and Johansen's cointegration testing approached we have established that there exists a long run relationship between international trade competitiveness of Pakistan and its determinants including the level of financial sector development.

We now estimate the cointegration vector using Stock and Watson (1993) Dynamic OLS or DOLS. While Engle-Granger (1987) used by Hanif and Jafri (2008) may reveal substantial bias and suffers from a non-standard asymptotic distribution, DOLS estimator provides valid and efficient inference on the parameters of a cointegrating vector. This method is superior to a number of other estimators as it can be applied to a system of variables with different orders of integration. The dynamic regression is estimated by OLS equation with the RHS endogenous variable(s), a constant and current, leads and lags of the differenced RHS endogenous variable(s) as explanatory variables. By inclusion of leads and lags of the differenced explanatory variables corrects for simultaneity bias and small sample bias. For calculation of standard errors we have used Newey-West Heteroscedasticity and Autocorrelation Consistent Covariance estimator.

In Table 6 we have presented the estimated external finance elasticity of international trade competitiveness of textile sector in Pakistan. The final model includes only the significant variables from amongst the RHS endogenous variable(s), and the current, leads and lags of the differenced RHS endogenous variable. The estimated coefficients and hence their standard errors and t-statistics the (significant) leads and lags differenced variables are not reported only because these estimated coefficients need not necessarily have some economic interpretation. We have given in the lower part of the table some results related to diagnostic tests applied upon the residual series of the estimated model for RCAT using Stock and Watson DOLS method. All these results show that the estimated model does not suffer from any econometric problem. Figures 3 and 4 also exhibit about the stability of the estimated model.

**Table 6: The Estimated Stock and Watson DOLS Model for RCAT**

Variable	Coefficient	Standard Error	t-statistic (p-value)
Constant	4.06	0.21	19.62 (0.00)
EXTF	0.26	0.06	4.41 (0.00)
REER	-0.27	0.04	-6.49 (0.00)
Diagnostic Statistics			
R-squared Adjusted			0.90
S.E of Regression			0.05
F-statistic			47.79
Ramsey RESET (F) statistic			1.63 (0.21)
Jarque Bera Test for Normality			0.63 (0.73)
Breush Godfrey LM Test for Serial Correlation			0.69 (0.51)

Figure 3

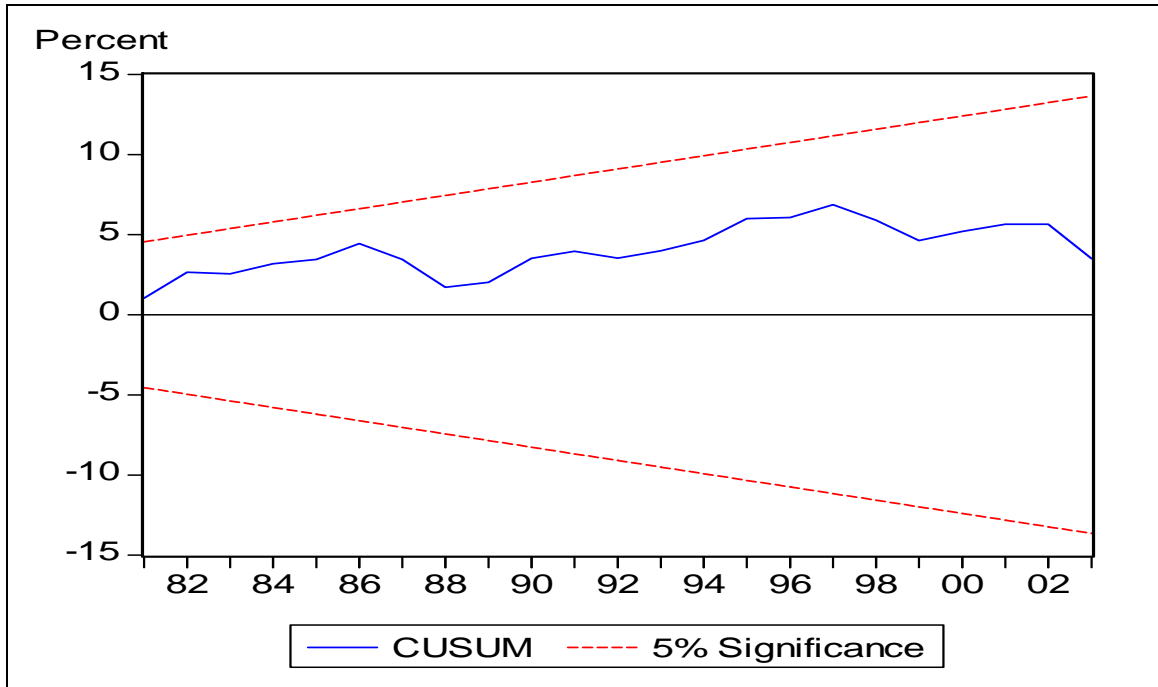
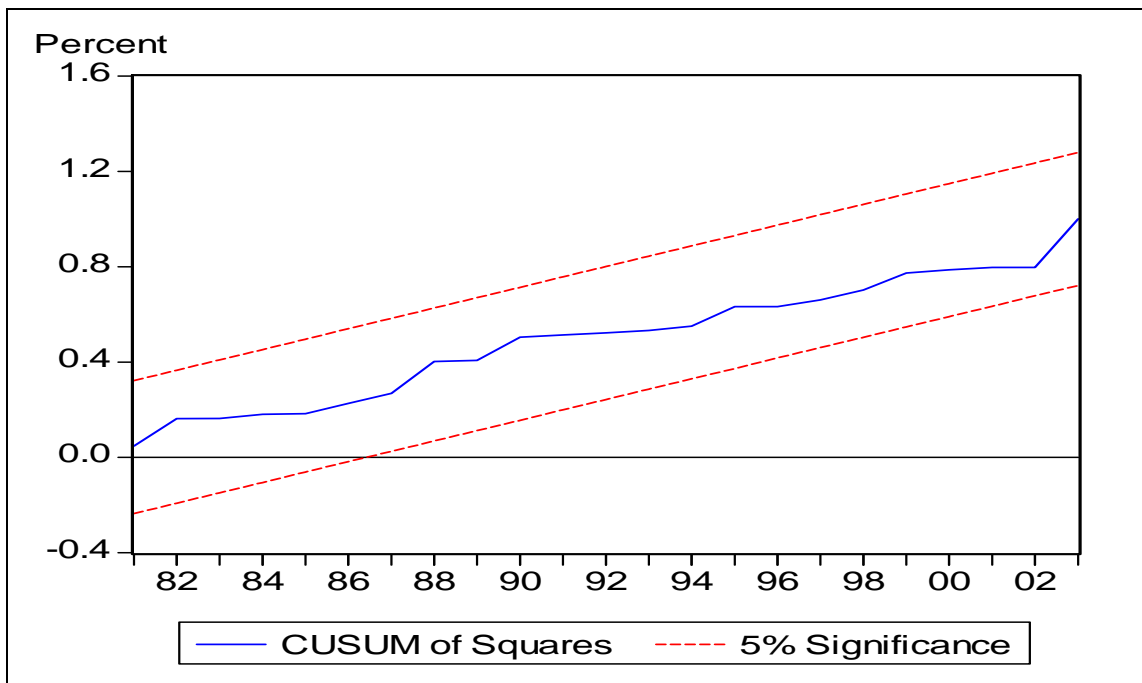


Figure 4



The estimated external finance elasticity of international trade competitiveness of textile sector in Pakistan is found to be 0.26. This is significantly higher than the same estimated around 0.17 by Hanif and Jafri (2008) using Engle and Granger approach. It shows that they have under estimated the elasticity of international trade competitiveness of textile sector in Pakistan.

In the final model estimated we do not find TERT to be significant this may be because we have used the terms of trade of overall international trade of Pakistan rather than that only related to textile sector of Pakistan. We understand that this is a limitation of this study. Thus the results suggested by this need to be interpreted with caution.

One may argue that variables like wage inflation, (domestic industrial) electricity prices and (high speed) diesel prices may also affect the textile sector competitiveness through cost of production channel. We tested these variables and could not find these variables to have statistically significant impact on textile sector competitiveness in the long run.

## **5. Conclusion**

Financial sector of a country comprises entities engaged in transactions involving financial instruments in money, capital, and foreign exchange markets. This sector has strong linkages with other sectors of the economy like external, fiscal and real sectors. Reforming the financial sector may have implications for other sector of the economy and particularly for the structure of international trade if the level of financial development is a determinant of a country's comparative advantage as Kletzer and

Bardhan (1987) highlighted. They show that countries with a relatively better developed financial sector have comparative advantage in industries and sectors that need more on external finance. Recent study by Fanelli and Medhora (2002) vindicates the argument of Kletzer and Bardhan (1987) by finding that comparative advantage is positively affected by the financial sector development.

Hanif and Jafri (2008) analyzed the association between the financial sector and international trade competitiveness for the case of Pakistan but this study has severe empirical limitations as this has used Engle-Granger (1987) two step procedure on multiple variables regressions. In this study we have used recently developed test based on AutoRegressive Distributed Lagged (ARDL) model by Pesaran, Shin and Smith (1999) for the existence of a long run relationship between international trade competitiveness of Pakistan and its level of financial sector development while considering the other determinants of competitiveness. We have also applied Johansen maximum likelihood method of testing for cointegration and checked the robustness of our results established by use of Pesaran, Shin and Smith (1999) test based on ARDL model. We have estimated the cointegration vector using Stock and Watson (1993) Dynamic OLS or DOLS. While Engle-Granger method (1987) may reveal substantial bias and suffers from a non-standard asymptotic distribution, DOLS estimator provides valid and efficient inference on the parameters of a cointegrating vector.

Our findings suggest that there is stable long run positive relationship between international trade competitiveness of Pakistan and her level of financial sector development. The estimated external finance elasticity of international trade competitiveness of textile sector in Pakistan is found to be 0.26 which is significantly

higher than the one estimated around 0.17 by Hanif and Jafri (2008) using Engle and Granger approach indicating that they have under estimated the elasticity of international trade competitiveness of textile sector of Pakistan.

We do not have, however, different view than that of Hanif and Jafri (2008) on policy implications of the findings of our research that emphasize the importance of financial sector development for strengthening of comparative advantage in the largest exporting sector of Pakistan. Thus it is important for Pakistan to not only continue with the ongoing financial reforms but to strengthen the same by implementation of the second generation reforms as this would further lead to accelerate the comparative advantages of Pakistan textiles exports in a highly competitive global external environment.

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