

Linkage between Financial Development, Trade Openness and Economic Growth: Evidence from Saudi Arabia

Mohammed Ziaur Rehman¹, Nasir Ali² and Najeeb Muhammad Nasir²

Abstract

The study investigate the relationship between the financial development, trade openness and economic growth in the Saudi Arabian economy from 1971 to 2012. The paper employed unit root tests, the co-integration test, the Granger Causality Test and the Vector Error Correction Model (VECM). The results from Johansen and Juselius co integration test underpins for the existence of long run relationship among the purported variables. Granger causality test exhibits unidirectional causality running from the trade openness to the economic growth in Saudi Arabia. The economic growth also causes financial development. The results manifest that combined causality exists among the variables. The study advocates for the acceleration of financial development in tandem with enhancing the ambit of trade openness for stimulating the economic growth in the country.

JEL classification numbers: F43, O16, C32

Keywords: Financial development, trade openness, economic growth, Saudi Arabia

1 Introduction

To date, an overwhelming body of theoretical and empirical literature has concentrated to examine threadbare the linkage between financial development, trade openness and economic growth. Numerous studies have centered on different economies, varied time span, modelling different econometric methodologies and different alternatives variables for financial development, trade openness and economic growth. In *toto*, the empirical studies revealed varied outcomes. The importance of the trade openness on the financial development and economic growth comes to fore on account of the significant role of openness on the macro level of the economy. Studies have revealed that trade openness

¹Corresponding Author, Assistant Professor, Finance Department, King Saud University, Riyadh, Saudi Arabia.

²Lecturer, Finance Department, King Saud University, Riyadh, Saudi Arabia.

may have favorable and unfavorable impact on the financial development–economic growth linkage. It is revealed that trade openness has positive impact on the finance–economic growth nexus (Yanikkaya, 2003). On the contrary, trade openness may cause macro level uncertainty and thereby lead to unfavorable influence on the financial development–economic growth linkage (Rodrik, 1992; Yilmazkuday, 2011). Studies reveals that the trade opening through unlocking innovative product development shall lead to economic growth (Blackburn and Hung, 1998). Notwithstanding the fact that numerous studies have investigated on the thematic theme of trade–economic growth and financial development–economic growth, studies coupling the three variables, hand in hand, are sparse. Further the casual linkages among the purported variables for a country specific or set of countries exhibits indecisive results in the contemporary literature on account of fact that development level and financial milieu are country variant (Rahman, Shahbaz, & Farooq, 2015). In this perspective, it can be considered that country wise study is pertinent on account of the unique attribute of each country. Therefore this paper employs trivariate structure in which the trade openness is incorporated, in addition to financial development and economic growth in Saudi economy. Through the employment of econometric modelling, the study makes an endeavor to investigate the linkage between financial development, trade openness and economic growth in the case of Saudi Arabia.

The motivation for delving in oil rich country is on account of the fact that this economy holds unique natural attributes. Saudi Arabia's economy hinges substantially on the oil sector under the strict control of the government. The economy occupy a dominant position in the OPEC, as it is blessed with 16 percent of the global proven oil reserves and is second to none in term of the oil exporter worldwide. Oil production has brought in substantial external and fiscal surpluses. The country has witnessed high growth rates in tandem with low inflation. The country's unwavering macroeconomic ambience and the advancement in the direction of streamlining the regulations have been acknowledged in the global economic milieu. The energy subsidies have been instrumental in lessening the macroeconomic vagaries in the country. In recent years, the financial ambience in the country has remained sound and has sustained the economic growth. The fabric of the Saudi financial system has undergone considerable regulatory advancement in line to global norms. Further the central bank of the country has kicked off the implementation of the Basel III capital and liquidity requirements. SAMA has employed an array of macro prudential tools. In regard to Capital and financial accounts, the country has no immediate risks or vulnerabilities associated with capital flows. Pertaining to foreign asset and liability position, it is revealed that the country has considerable accumulated assets covering both savings of the oil revenues for posterity and shield against fragility from oil price fluctuations. In term of trade openness, the composition of the country's exports is primarily led by oil. Oil contributes to the tune of 85 percent of the total exports. The non-oil exports, mainly, consists of chemicals and plastics. The direction of the Saudi exports reveals that the three leading markets are United States, China and Japan. The country is the member of WTO since December 2005. From the economic standpoint of view, the Saudi Arabia is expected to manoeuvre successfully the economy in the long time span, albeit the real growth is predicted to contract in the short range.

The paper is structured as follows. Section 2 put forward a review of literature on the financial sector, economic growth and trade openness. Section 3 encompasses the data and the methodology framework. Finally section 4 provides the concluding remarks.

2 A Review of Literature on the Financial Sector, Trade Openness and Economic Growth

2.1 Financial Development and Economic Growth

The literature on the linkage between financial development and economic growth is grouped into four strands of research hypotheses: The first is referred as supply leading hypothesis, which state that the financial development has a favorable influence on the economic growth of the economy. Relatedly, many empirical studies support the supply leading hypothesis (King and Levine, 1993; Arestis and Demetriades, 1997; Christopoulos and Tsionas, 2004; Hassan et al., 2011; Nasir, Ali & Khokhar, 2014). Secondly there are a set of studies advocating for demand-following hypothesis. These studies report that the economic growth induce the financial development in the economy (Robinson, 1952; Odhiambo, 2009). The third set of studies, christened, as feedback hypothesis states that financial development and economic growth reveals a bi directional causality between the purported variables (Lewis, 1955; Pradhan, 2011; Odhiambo, 2011; Levine, 1999). Lastly there are selected studies reporting no relationship between the stipulated variables (Eng and Habibullah, 2011; Ram, 1999; Stern, 1989). Studies favoring the supply leading hypothesis report that enhancement in financial development foster better allocation of capital and stimulate the technological advancement, which successively, galvanize the economic growth in the economy (Pagano, 1993; De Gregorio, 1996; Cooley and Smith, 1995).

2.2 Financial development – Trade openness

The linkage between financial development and trade openness has been focus of attention as multiple studies demonstrate that trade openness is central to strengthen the financial development in a specific economy or set of economies. In the backdrop of the global financial crisis, the trade opening and financial deepening has witnessed far reaching economic fallouts (Griffith-Jones, Ocampo and Stiglitz, 2010; Chandrasekhar and Ghosh, 2010; Alcalá and Ciccone, 2004; Dollar and Kraay, 2003). Rajan and Zingales (2003) reveals a theoretical framework combining contemporaneous openness of trade and capital flows as indispensable for the financial development of the economy. The trade openness would positively affect the financial development through the escalation in the scale of the financial markets and enhancing the financial services products & instruments in the economies (Svaleryd and Vlachos, 2002). Further studies have revealed the well-developed financial landscape leads to better trade opening, thereby garnering increased exports revenues (Beck, 2002; Svaleryd and Vlachos, 2005). Likewise, there are studies that revealed that the financial development witness more progression as the trade openness gets kicked off in the economies (Law and Demetriades, 2006; Baltagi et al. 2009). On the contrary, trade openness on the higher scale leads to internal uncertainty in the economy and is subjected to international shocks (Arora and Vamvakidis, 2004; Rodrik, 1998; Loayza and Raddatz, 2007).

2.3 Trade openness – Economic growth

The trade openness–economic growth linkage is substantially deliberated in the development and growth literature. In order to gauge the linkage and direction of

causality, between trade openness and economic growth, a considerable spectrum of research have covered cross country and country specific area. While the cross country studies reveals hurdles in gauging the trade openness and in recognizing the causation effects, the resultants of country specific studies cannot be extrapolated. A compendious view of trade openness –economic growth studies reveals two set of results; one set of studies have cogently revealed favorable influence of openness on growth ,whereas other strand of studies have raised doubt on the potent of linkage between the stipulated variables. Selected theoretical and empirical studies reveals that trade openness have favorable influence on the economic growth of the economies (Feder, 1983; Balassa, 1985; Edwards, 1998; Harrison, 1996).Likewise, (Billmeier and Nannicini, 2008; Lee et al., 2004; Lucas, 2007; Wacziarg and Welch, 2008) reveal results supporting the positive contribution of trade openness on the economic growth. (Harrison, 1996) studies reveals that trade openness and economic growth cause each other in both the direction. Selected studies have also revealed that the trade openness stimulate the research & development in the economy and further lead to escalation in the economic growth (Grossman and Helpman 1991; Romer, 1990). Multiple studies have encompassed substantial countries to unearth the linkage between trade openness and economic growth. Erich (1996) put forward that openness in tandem with other variables stimulated the process of economic growth in forty seven developing countries, during the time spanning from 1980 to 1992.Encapsulating more than hundred countries, Sinha and Sinha (1996) unfolded that openness plays substantial role to the growth of the economies.

At the other end of the gamut, (Jung and Marshall, 1985) was among the pioneer to raise doubt regarding the conclusion derived from the OLS regressions, covering from 1950 to 1981, the study revealed indecisive results pertaining to the casualty direction between export and growth. Rodriguez and Rodrik (1999) revealed there is paucity of evidence that trade openness foster to economic growth. Later studies unfolds unsteady feature for the casual linkage between trade openness and economic growth for the developed and developing economies(Ahmad, 2001; Yanikkaya, 2003).Encapsulating the cross – sectional data for time spanning from 1920 to 1990,(Vamvakidis,2002) studied the linkage between trade openness and economic growth in the developed & developing economies and reports negative correlation in 1930s,further no positive linkage till 1970, thereby bringing to fore that trace of positive linkage is a current phenomenon.

Islam, Shahbaz and Rahman (2014) reveals bidirectional causality between energy consumption and economic growth; financial development and energy consumption; trade openness and economic growth; economic growth and financial development; energy consumption and trade openness; and finally financial development and trade openness in Australia during the time span of 1965 to 2009.Rahman, Shahbaz & Farooq (2015) examined the linkage between financial development, international trade and economic growth for Australia from 1965 to 2010. Using the autoregressive distributed lag (ARDL) bounds testing approach to cointegration, the study manifest long-run relationship among the variables. The study reports the existence of feedback effect between international trade & economic growth and the financial development granger leads to economic growth corroborating the supply-side hypothesis. Arouri et al (2014)investigates the linkage between financial development, economic growth and trade openness in Bangladesh for the time period 1975 to 2011.Through the ARDL bounds testing approach to cointegration and the innovative accounting approach for causality ,the study reports that financial development, trade openness and economic growth have long term relationship. Shaheen, Awan, Waqas & Aslam (2011) revealed long run relationship

between international trade, financial development and economic growth for the Pakistan economy through the employment of the autoregressive-distributed lag (ARDL) approach for cointegration and Granger causality test. Further, unidirectional causality is revealed from international trade to economic growth and from financial development to international trade. Chimobi (2010) investigated the causal relationship among financial development, trade openness and economic growth in Nigeria over the period 1970 to 2005. Through the Johansen multivariate approach to cointegration, the study uncovers no cointegrating relationship between the purported variables. By the Granger causality, the study reports growth-led trade but not trade-led growth. Katircioglu, Kahyalar & Benar (2007) examined the viable co-integration and the direction of causality between financial development, international trade and economic growth in India. Through the usage of the co-integration and Granger causality tests, the study reports long-run equilibrium relationship between financial development, international trade and real income growth. Yucel (2009) delves in to the causality relations between financial development, trade openness and economic growth (GDP) for the Turkish economy. Through the utilization of ADF test for unit root, Johansen and Juselius (JJ) for cointegration and Granger causality test for causal relationships, the study manifests the trade openness has a positive effect and financial development has a negative effect on growth.

There are selected studies that have concentrated on the financial development, trade openness and economic growth in the Middle East and North Africa (MENA) and in Gulf Cooperation Council (GCC) countries. Utilizing the multivariate VAR framework, Altaee, Saied, Esmael & Adam (2014) reveals nonexistence of long run relationship between financial development, trade openness and economic growth in Oman during the period 1972-2012. The Granger causality test confirmed presence of unidirectional causality from economic growth to financial development, while VDCs show that trade openness shock is the most important ingredient of shock to GDP and financial development. Menyah Nazlioglu & Wolde-Rufael (2014) investigates the linkage between financial development and economic growth for 21 African countries encompassing international trade. Through the employment of panel bootstrapped approach to Granger causality, the empirical manifest unsatisfactory result for finance led growth and the trade led growth thesis. Omri, Daly, Rault, & Chaibi (2015) investigates the linkage between financial development, CO₂ emissions, trade and economic growth, employing simultaneous-equation panel data models for a group of 12 MENA countries over the period 1990-2011. The study reports indication of bidirectional causality between CO₂ emissions and economic growth. Economic growth and trade openness are interrelated i.e. bidirectional causality. Feedback hypothesis is confirmed between trade openness and financial development. Neutrality hypothesis is identified between CO₂ emissions and financial development. Unidirectional causality running from financial development to economic growth and from trade openness to CO₂ emissions is detected. Altaee, & Al-Jafari (2014) manifests the linkages between trade openness, financial development and economic growth for the Kingdom of Bahrain. The study covers the time series data from 1980 to 2012. Through the employment of Vector Error Correction Model (VECM) and variance decomposition and impulse response function, the study examines the causal relationship between the variables. The study reports that trade openness and financial development have causal impact on economic growth. Conversely, growth is manifested to have no causal impact on trade and financial development, implying support for “trade-led growth” and “finance-led growth” hypotheses. Zghidi, & Abida (2014) examines the interplay between financial development, trade openness and

economic growth in a panel of three countries of North Africa (Tunisia, Morocco, and Egypt) over the period 1980-2012. Through the Generalized Method of Moment (GMM) panel data analysis, the study manifest substantial evidence of positive link between trade openness and economic growth. Further, the study reports that trade openness appear to be working as a complement to financial development and, moreover, that the effect of trade openness is more pronounced in the presence of the financial development variable. The conclusion that comes forth from the exhibited literature is that even though there is substantial demonstration of work on the stipulated theme but it is manifested that the studies reports conflicting empirical evidence on nature of linkage among the purported variables. Thus it is pertinent to gauge on the country basis, so as to appreciate the linkage between financial development, trade openness and economic growth.

3 Data and the Methodology Framework

3.1 Data and Variables

The data employed for the Saudi Arabia are the annual observations covering the period from 1971 to 2012. The dataset is obtained from database of World Bank. This study examines the relationship between, financial development, trade openness and economic growth in Saudi Arabia by using the following basic model.

$$Y = f(\text{FD}, \text{TO})$$

Y= Economic Growth (Real GDP per Capita): Economic growth is measured by Real GDP per capita.

FD = Financial Development: For financial development it is broad Money M2 divided by GDP.

TO=Trade Openness: That is import plus exports divided by the GDP.

This economic nexus can be written in the form of econometric equation that is under

$$Y_t = \alpha_0 + \alpha_1 \text{FD}_t + \alpha_2 \text{TO}_t + \varepsilon_t$$

Where ε_t is the error term in the model.

3.2 ADF test of Unit root

To determine the stationary trend in time series data, it is pertinent to conduct the unit root tests. If there are the issues with stationary behaviour of data, the Ordinary Least Squares (OLS) will not produce consistent estimates. This study employed two tests of unit root on the time series data which are, namely, the Augmented Dickey-Fuller test (ADF) and the Phillips- Perron (PP) tests.

ADF equation with trend and intercept is as under.

$$\Delta X_t = \lambda_0 + \lambda_1 t + \lambda_2 X_{t-1} + \sum_{i=1}^{k-1} \lambda_i \Delta X_{t-1} + \varepsilon_t \quad i=1, 2, 3, \dots, k$$

In the above equations ΔX_t is a macroeconomic variable in a time period t and λ_0 is a Constant term while $\Delta X_t = X_t - X_{t-1}$ "t" is a trend variable and ε_t is error term in the model.

Null and Alternative hypothesis are given as under:

$H_0: \lambda_2 = 0$ Data is Non Stationary

$H_1: \lambda_2 < 0$ Data is Stationary

Table 1 below demonstrates the outcomes of unit root test signifying that at level, null hypothesis of no unit root cannot be rejected because the value of t-statistics is less than the critical value and p-value is insignificant in ADF test. But for the first difference, the t-statistic is higher than the critical values and the p-values are statistically significant. That means the null hypothesis is rejected at the first difference and all the variables are stationary at this level which means they are of the integrated order I (1).

Table 1: ADF UNIT ROOT TEST

VARIABLES	At level				At first difference			
	With constant		With constant linear trend		CONSTANT		With COSTANT LINEAR TREND	
	t-stat	C-VALUE	t-stat	C-VALUE	t-stat	C-VALUE	t-stat	C-VALUE
Y	-2.94813	-3.605593	-2.826347	-4.827231	-4.827231	-3.605593	-4.84010	-4.205004
FD	-1.687580	-3.605593	-1.861916	-4.827231	-6.484583	-3.605593	-6.48258	-4.205004
TO	-1.777319	-3.605593	-1.407025	-4.827231	-5.499213	-3.605593	-3.60560	-4.205004

3.3 Phillip Peron Test (PP TEST)

Another unit root test which was developed by Phillip and Perrons (1988) for non-parametric analysis. The test has additional feature as it adjusts for the issues of serial correlation and heteroscedasticity. The equation for PP test is as under.

$$\Delta Z_t = \Omega Z_{t-1} + \lambda + \epsilon_t$$

Δ symbolises the first difference operator.

Table 2 for PP test indicates the same results that were generated in case of ADF test, where the time series data under consideration is non stationary at levels and stationary at first difference.

Table 2: PP UNIT ROOT TEST

VARIABLES	At level				At first difference			
	With CONSTANT		With CONSTANT AND LINEAR TREND		With CONSTANT		With CONSTANT AND LINEAR TREND	
	t-stat	C-VALUE	t-stat	C-VALUE	t-stat	C-VALUE	t-stat	C-VALUE
Y	-2.776454	-3.605593	-2.867536	-4.827231	-4.812419	-3.605593	-4.843216	-4.205004
FD	-1.645545	-3.605593	-1.672194	-4.827231	-6.666824	-3.605593	-7.192297	-4.205004
TO	-1.659568	-3.605593	-1.566023	-4.827231	-5.500989	-3.605593	-5.488454	-4.205004

Lag length selection

The model has applied the following criteria to select the optimal lag length. After getting the results as shown in the table 3, the lag length appropriate is lag order 2 as suggested by most of the lag selection criteria.

Table 3: Lag length selection criteria

Lag	LogL	LR	FPE	AIC	SC
0	82.45385	NA	3.41e-06	-4.074556	-3.946590
1	208.6188	226.4498	8.40e-09	-10.08301	-9.571148
2	236.3534	45.51335*	3.25e-09	-11.04377	-10.14800*
3	246.7231	15.42150	3.10e-09*	-11.11400*	-9.834341

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

3.4 Test for Co-integration

After the issue of unit root is addressed, the co-integration test can be functional. If the co-integration is established that indicate that there is a long run linear relationship among variables. The multivariate co-integration method by Johansen and Juselius (1990) has been applied in order to establish the long term relationship among the variables. Following table represents the two outcomes of this test.

Table 4: Johansen co-integration

Unrestricted Cointegration Rank Test (Trace)					Max-eigenvalue test				
Hypothesized		Trace	0.05		Hypothesized		trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.724839	57.59842	29.79707	0.0000	None *	0.724839	50.32560	21.13162	0.0000
At most 1	0.145577	7.272821	15.49471	0.5461	At most 1	0.145577	6.135810	14.26460	0.5958
At most 2	0.028733	1.137011	3.841466	0.2863	At most 2	0.028733	1.137011	3.841466	0.2863

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Two types of statistical results can be observed from the above mentioned table. The first one is Unrestricted Co-integration Rank Test also known as Trace test and the second is finding the Max-Eigen value. Following are the hypothesis that can be established from these tests:

H0: That there is at most “S” co-integrated equations

H1: That there is “S” or more co-integrating vectors

The equation for this test is as under:

$$\Delta \mathbf{X}_t = \lambda_1 \Delta \mathbf{X}_{t-1} + \mathbf{P} + \lambda_{t-p-1} + \lambda_p \Delta \mathbf{X}_{t-p} + \mu + \varepsilon_t$$

Where

\mathbf{X}_t : $n \times 1$ vector of variables that are integrated of order one I (1)

ε_t : is an $n \times 1$ vector of white noise with a mean of zero and a restricted variance.

Trace statistic equation is shown as under

$$\Omega_{\text{trace}}(s) = -N \sum_{s+1}^n \ln(1 - \Omega_i^*)$$

Maxeigen statistic equation is shown as $\Omega_{\text{max}}(s, s+1) = -N \ln(1 - \Omega_{s+1}^*)$

Where N represent sample size while Ω represent characteristic root

Results of co-integration test are shown in Table 4. As the results depict that there is probability of existence of co-integrating relationships among variables because if the H_0 of no co-integration is rejected at none that means there is at least one co-integrated equation in the model under consideration. At $S = 0$ the value of test statistic is 57.598 which is higher than critical value of 29.797 at 5% level. The Max- Eigen value is 50.32 which is also more than critical value of 21.13 at 5% level. The p-values of indicators recommend the same outcomes about statistical significance. According to the results shown in the above table 4, there exists at least one co-integrated equation in the model. That means there is an existence of co-integrated nexus between the economic growth, financial development and trade openness in Saudi Arabia, which establishes a long run relationship.

3.5 Granger Causality and Vector Error Correction Model (VECM)

As the co-integration exists that is evident from Johansen test, granger causality test is conducted in order to find the direction of causality. The basic equation for granger is as under

$$Y_t = \alpha_0 + \sum_{i=1}^m \alpha_{1i} Y_{t-i} + \sum_{i=1}^n \alpha_{2i} FD_{t-i} + \sum_{i=1}^n \alpha_{3i} TO_{t-i} + \alpha_4 ECT_{t-1} + \phi_t$$

$$FD_t = \beta_0 + \sum_{i=1}^m \beta_{1i} Y_{t-i} + \sum_{i=1}^n \beta_{2i} FD_{t-i} + \sum_{i=1}^n \alpha_{3i} TO_{t-i} + \beta_4 ECT_{t-1} + \theta_t$$

$$TO_t = \psi_0 + \sum_{i=1}^m \psi_{1i} Y_{t-i} + \sum_{i=1}^n \psi_{2i} FD_{t-i} + \sum_{i=1}^n \psi_{3i} TO_{t-i} + \psi_4 ECT_{t-1} + \pi_t$$

Table 5 depicts the outcomes of Granger test which determines the direction of the causality. It is evident from the results that there is a unidirectional relationship between economic growth and trade openness, where the trade openness cause the economic growth. The economic growth also causes financial development. The results show that combined causality exists among the variables when financial development is taken as a dependent variable.

Table 5: Granger Causality

Dependent variable: D(Y)		
Excluded	Chi-sq	Prob.
D(FD)	2.377614	0.3046
D(TO)	5.322218	0.0399
All	5.389526	0.2496
Dependent variable: D(FD)		
Excluded	Chi-sq	Prob.
D(Y)	12.75093	0.0017
D(TO)	2.091880	0.3514
All	15.76729	0.0033
Dependent variable: D(TO)		
Excluded	Chi-sq	Prob.
D(Y)	1.391566	0.4987
D(FD)	1.882883	0.3901
All	2.948085	0.5666

If the co integration exists in the model then the appropriate estimation method is a Vector Error Correction Model (VECM). The following is the specific equation for the VECM when Economic growth is taken as a dependant variable:

$$D(Y) = C(1) * (Y(-1) - 0.62426523695 * FD(-1) - 1.87124214456 * TO(-1) - 3.61615967907) + C(2) * D(Y(-1)) + C(3) * D(Y(-2)) + C(4) * D(FD(-1)) + C(5) * D(FD(-2)) + C(6) * D(TO(-1)) + C(7) * D(TO(-2)) + C(8)$$

Table 6: Vector Error Correction Model (VECM)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.676750	0.133990	-5.050760	0.0000
C(2)	-0.166902	0.571670	-0.291955	0.7723
C(3)	0.257793	0.586512	0.439536	0.6633
C(4)	-0.361914	0.576294	-0.628002	0.5346
C(5)	-0.194882	0.424139	-0.459478	0.6491
C(6)	-0.282684	0.298418	-0.947276	0.3508
C(7)	-0.708472	0.346338	-2.045611	0.0494
C(8)	0.034388	0.016115	2.133990	0.0409
R-squared	0.517916	Mean dependent var		0.027406
Adjusted R-squared	0.409058	S.D. dependent var		0.092650
S.E. of regression	0.071223	Akaike info criterion		-2.265333
Sum squared resid	0.157252	Schwarz criterion		-1.924090
Log likelihood	52.17400	Hannan-Quinn criter.		-2.142898
F-statistic	4.757729	Durbin-Watson stat		1.563367
Prob(F-statistic)	0.001012			

Table 6 shows the outcome of VECM. The first coefficient is in negative with a value of -0.676750 and prob. value of 0.0000, which is also the error correction term. As it is statistically significant, indicating cointegration and a long term relationship between dependent and independent variables. The constant value C (8) is significant demonstrating the presence of intercept in the VECM model. R-squared is almost 52 per cent which describes that variables included in model significantly elaborates the dependent variable, economic growth. The F- statistics is significant at 5% level of significance with the value of 4.757 and a probability value of 0.001012.

4 Conclusion

This study empirically examines the linkage between financial development, trade openness and economic growth in Saudi Arabia employing the annual data sourced from World Bank for the period 1971-2012. The study utilised the cointegration and granger causality test. The stationary properties of the data and the order of integration of the data were examined employing the Augmented Dickey-Fuller (ADF) test and the Phillip-Perron (PP) test. The study revealed that the variables were non-stationary in levels, but stationary in first differences, that is, they are integrated of order one $I(1)$. Further the study employed the Johansen multivariate approach to cointegration to investigate the relationship among the variables. It is revealed that there is an existence of co-integrated nexus among the financial development, trade openness and economic growth in Saudi Arabia, which establishes a long run relationship. As the co-integration exists that is evident from Johansen test, granger causality test is conducted in order to find the direction of causality. Granger causality test exhibits there is a unidirectional relationship between economic growth and trade openness, where the trade openness cause the economic growth. The economic growth also causes financial development. Results of VECM validates that there exists a long run relationship among the variables taken under consideration. Specifically when economic growth is taken as a dependent variable, it is manifested that economic growth is dependent on the trade openness and financial development in the long run. Thus the empirical results of the study advocate that the financial development and trade openness are cardinal ingredients to escalate the pace of economic growth of Saudi Arabia. The central bank should enhance the pace of financial development and sustain the best practices in the system. Further endeavour must be made to enhance the gamut of the international trade of the country. Accelerated liberalisation of the trade with the GCC countries in sync with reduction of trade barriers with other countries shall foster the pace of economic growth in the country.

ACKNOWLEDGEMENTS: The authors would like to thank the Deanship of Scientific Research at King Saud University represented by Research Centre at College of Business Administration for supporting this research financially.

References

- [1] Yanikkaya, H. (2003). Trade Openness and Economic Growth: A Cross-Country Empirical Investigation. *Journal of Development Economics*, 72 (1), 57-89.
- [2] Rodrik, D., 1992. The limits of trade policy reform in developing countries. *Journal of Economic Perspectives* 6 (1), 87–105.
- [3] Yilmazkuday, H., 2011. Thresholds in the finance-growth nexus: a cross-country analysis. *World Bank Economic Review* 25 (2), 278–295.
- [4] Blackburn, K. and Hung, V.T.Y., 1998. A Theory of Growth, Financial Development and Trade, *Economica*, 65, pp. 107-124.
- [5] Rahman, M. M., Shahbaz, M., & Farooq, A. (2015). Financial development, international trade, and economic growth in Australia: new evidence from multivariate framework analysis. *Journal of Asia-Pacific Business*, 16(1), 21-43.
- [6] King, R.G., and R. Levine. 1993. “Finance and Growth: Schumpeter Might be Right”. *Quarterly Journal of Economics*, 108, 717-738.
- [7] Arestis, P. and Demetriades P. (1997). “Financial Development and Economic Growth: Assessing the Evidence”, *The Economic Journal*, 107 (5): 783-799
- [8] Christopoulos, D. K. and Tsionas, E.G. (2004), “Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests”, *Journal of development Economics*, 73 (4): 55- 74.
- [9] Hassan K. M. Sanchez, B. and Yu J. K. (2011), “Financial Development and Economic Growth: New Evidence from Panel Data”, *The Quarterly Review of Economics and Finance*, 51 (1): 88-104.
- [10] Nasir, N. M., Ali, N., & Khokhar, I. (2014). Economic Growth, Financial Depth and Lending Rate Nexus: A Case of Oil Dependant Economy. *International Journal of Financial Research*, 5(2), p59.
- [11] Robinson, J. (1952). *The Generalization of the General Theory*. In Robinson, *The Rate of Interest and Other Essays*, (London: Macmillan)
- [12] Odhiambo N. M. (2009), “Finance- Growth- Poverty Nexus in South Africa: A dynamic Causality Linkage”, *The Journal of Socio-Economics*, 38 (2): 320-325.
- [13] Lewis, W.A., 1955. *The Theory of Economic Growth*. George Allen and Unwin, London
- [14] Pradhan, R. P. (2011), “Financial Development, Growth and Stock Market Development: The Trilateral Analysis in India”, *Journal of Quantitative Economics*, 9 (1): 134-145.
- [15] Odhiambo, N.M. (2011), “Financial intermediaries versus financial markets: a South African experience”, *International Business and Economics Research Journal*, Vol. 10 No. 2, pp. 77-84.
- [16] Levine, R. (1999), “Law, Finance and Economic Growth”, *Journal of Financial Intermediation*, 8: 8-35.
- [17] Eng, Y., and Habibullah M. S. (2011), “Financial Development and Economic Growth Nexus: Another look at the Panel Evidence from Different Geographical Regions”, *Bank and Bank Systems*, 6 (1): 62-71.
- [18] Ram, R., 1999. Financial development and economic growth: additional evidence. *J. Dev. Stud.* 35 (4), 164–174.
- [19] Stern, N. H. (1989), “The Economics of Development: A Survey”, *Economic Journal*, 99 (397):597- 685.

- [20] Pagano, M. 1993. "Financial Markets and Growth: An Overview". *European Economic Review*, 37, April: 613–622.
- [21] De Gregorio, Jose. 1996. "Borrowing Constraints, Human Capital Accumulation and Growth". *Journal of Monetary Economics*, 37, 49-71.
- [22] Cooley, T.F., and B.D. Smith. 1995. "Financial Market, Specialization and Learning by Doing". *Research in Economics* 52, 333-361.
- [23] Griffith-Jones, Stephany, Jose Antonio Ocampo and Joseph E. Stiglitz (eds.) 2010. *Time for a Visible Hand: Lessons from the 2008 World Financial Crisis*. New York: OUP
- [24] Chandrasekhar, C. P. and Ghosh, J. 2010. "The Asian Face of the Global Recession". *International Development Economics Associates* 15 February.
- [25] Alcalá, F. and A. Ciccone, "Trade and Productivity," *Quarterly Journal of Economics* 119 (2004):613–46.
- [26] Dollar, D. and A. Kraay, "Institutions, Trade, and Growth," *Journal of Monetary Economics* 50 (2003):133–62.
- [27] Rajan, R. G. and L. Zingales, "The Great Reversals: The Politics of Financial Development in the Twentieth Century," *Journal of Financial Economics* 69 (2003):5–50.
- [28] Svaleryd, H., and Vlachos, J., (2002). "Markets for risk and openness to trade: how they are related", *Journal of International Economics*, 57(2), 369-395.
- [29] Beck, T., (2002). "Financial development and international trade: is there a link?", *Journal of International Economics*, 57(1), 107-131.
- [30] Svaleryd, H., & Vlachos, J. (2005). *Financial markets, the pattern of industrial specialization and comparative advantage: Evidence from OECD countries*. *European Economic Review*, 49(1), 113-144.
- [31] Law, S.H., and Demetriades, P.O., (2006). "Openness, institutions and financial development", *World Economy and Finance Research Programme, Working Paper*, n0012
- [32] Baltagi, B.H., Demetriades, P.O., and Law, S.K., (2009). "Financial development and openness: evidence from panel data", *Journal of Development Economics*, 89(2), 285-296
- [33] Arora, V. and Vamvakidis, A., 2004. How much do trading partners matter for economic growth? IMF W.P. No. 04/26
- [34] Rodrik, D., 1998. Who needs capital-account convertibility? In: Fischer, S., Cooper, R.N., Dornbusch, R., Garber, P.M., Massad, C., Polak, J.J., Rodrik, D., Tarapore, S.S. (Eds.), *Should the IMF pursue capital-account convertibility?* International Finance Section, Department of Economics, Princeton University, Princeton, NJ, pp. 55–65.
- [35] Loayza, N.V., Raddatz, C., 2007. The structural determinants of external vulnerability. *World Bank Ec.Review* 21 (3), 359–387.
- [36] Feder, G. (1983). On Exports and Economic Growth. *Journal of Development Economics*, 12(1-2), 59-73
- [37] Balassa, B. (1985). Exports, Policy Choices and Economic Growth in Developing Countries after the 1973 Oil Crisis. *Journal of Development Economics*, 18(1), 23-35.
- [38] Edwards, S. (1998). Openness, productivity and growth: What do we really know? *The Eco. Journal*, 108, 383–398.

- [39] Harrison, A. (1996). Openness and growth: A time-series, cross-country analysis for developing countries. *Journal of Development Economics*, 48, 419-447.
- [40] Billmeier, Andreas, and Tommaso Nannicini (2008), Trade openness and growth: Pursuing empirical Glasnost, Working Paper 07/156, IMF.
- [41] Lee, Ha Yan, Luca Antonio Ricci, and Roberto Rigobon (2004), Once again, is openness good for growth? *Journal of Development Economics* 75: 451-472.
- [42] Lucas, Robert (2007), Trade and the diffusion of the industrial revolution, Working Paper 13286, NBER.
- [43] Wacziarg, Romain, and Karen Welch (2008), Trade liberalization and growth: New evidence, *World Bank Economic Review* 22: 187-231.
- [44] Grossman, G., and E. Helpman. 1991. "Trade, Knowledge Spillovers, and Growth". *European Eco. Review* 36, 237-67.
- [45] Romer, P.M., 1990. "Endogenous Technological Change". *Journal of Political Economy* 98, S71-S101.
- [46] Erich G. (1996) "Openness and Economic Growth in Developing Countries". ECONSTOR
- [47] Sinha, T. and D. Sinha, (1996) "The Relationship between Openness and Economic Growth: Post War Evidence from 124 Countries." *Seoul Journal of Economics*.
- [48] Jung, W. S., & Marshall, P. J. (1985). Exports, Growth and Causality in Developing Countries. *Journal of developing Development Economics*, 18, 1-12.
- [49] Rodriguez, F. and D. Rodrik, (1999) "Trade Policy and economic growth: a Skeptic's Guide to the Cross – National Evidence." NBER 27081
- [50] Ahmad, J. (2001). Causality between Exports and Economic Growth: What do the Econometric Studies tell us? *Pacific Economic Review*, 6(1), 147-167.
- [51] Vamvakidis, A. (2002). How Robust is the Growth-Openness Connection: Historical Evidence. *Journal of Economic Growth*, 7(1): 57-80
- [52] Islam, F., Shahbaz, M., & Rahman, M. M. (2013). Trade Openness, Financial Development Energy Use and Economic Growth in Australia: Evidence on Long Run Relation with Structural Breaks.
- [53] Arouri, M., Uddin, G. S., Nawaz, K., Shahbaz, M., & Teulon, F. (2014). Causal Linkages between Financial Development, Trade Openness and Economic Growth: Fresh Evidence from Innovative Accounting Approach in Case of Bangladesh. Working papers 2014-037, Department of Research, Ipag Business School.
- [54] Shaheen, S., Awan, M. S., Waqas, M., & Aslam, M. A. (2011). Financial development, international trade and economic growth: Empirical evidence from Pakistan. *Romanian Journal of Fiscal Policy (RJFP)*, 2(2), 11-19.
- [55] Chimobi, O. P. (2010). The causal relationship among financial development, trade openness and economic growth in Nigeria. *International Journal of Economics and Finance*, 2(2), 138–147.
- [56] Katircioglu, S. T., Kahyalar, N., & Benar, H. (2007). Financial development, trade and growth triangle: The case of India. *International Journal of Social Economics*, 34(9), 586–598
- [57] Yucel, F. (2009). Causal relationships between financial development, trade openness and economic growth: the case of Turkey. *Journal of Social sciences*, 5(1), 33.

- [58] Altaee, H. H. A., Saied, S. M., Esmaeel, E. S., & Adam, M. H. M. (2014). Financial Development, Trade Openness and Economic Growth: Evidence from Sultanate of Oman (1972-2012). *Journal of Economics and Sustainable Development*, 5(23), 64-75.
- [59] Menyah, K., Nazlioglu, S., & Wolde-Rufael, Y. (2014). Financial development, trade openness and economic growth in African countries: New insights from a panel causality approach. *Economic Modelling*, 37, 386-394.
- [60] Omri, A., Daly, S., Rault, C., & Chaibi, A. (2015). Financial development, environmental quality, trade and economic growth: What causes what in MENA countries. *Energy Economics*, 48, 242-252.
- [61] Altaee, H. H. A., & Al-Jafari, M. K. (2014). Financial Development, Trade Openness and Economic Growth: A Trilateral Analysis of Bahrain. *International Journal of Economics and Finance*, 7(1), p241.
- [62] Zghidi, N., & Abida, Z. (2014). Financial Development, Trade Openness and Economic Growth in North African Countries. *Romanian Economic Journal*, 17(53), 91-120.
- [63] Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 75(2), 335-346.
- [64] Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, 52(2), 169-210.