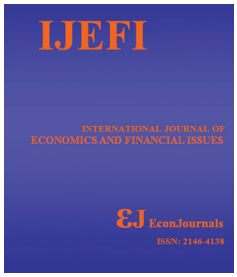

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The Effect of Trade Openness on Economic Growth in Jordan: An Analytical Investigation (1992-2015)†

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ABSTRACT

This study aims at measuring the effect of trade openness and financial development on economic growth in Jordan based on quarterly data for the period (1992-2015). Two forms were used for measuring the effect of trade openness on economic growth using the Autoregressive Distributed lag model. The results showed that there exists a long-term positive effect of trade openness (measured by the ratio of sum of exports and imports to gross domestic product [GDP]) and financial development (represented by the ratio of both credit extended to the private sector and broad money supply to GDP) on economic growth in Jordan. For the short-term impact, the effect of trade openness and financial development on economic growth was not statistically significant.

Keywords: Trade Openness, Economic Growth, Jordan
JEL Classifications: F17, F43, O47

1. INTRODUCTION

External trade plays a vital role in supporting the national economy of the country, as well as increasing consumption volume and options. Consequently, this might lead to increase in economic growth rates and sustaining the national economy, particularly in developing countries. The external trade is considered one of the main in determining the historical drivers of economic backwardness of the developing countries. As the current structure of exported goods by the developing countries is related to the economic trades undertaken by the colonizer Bairoch and Etemad (1985). Financial and trade liberalization policies leads to enhancing the efficiency of the production process that then positively affect economic growth as evident from the situation with the countries that liberalized their trade compared to the ones that imposed restrictions in their trade and financial policies ((Shaw, 1973), (Levine, 1997), Darrat (1999)). This paper aims at investigating the effect of trade openness on economic growth in Jordan during the period (1992-2015).

Jordan economy is a small open economy with scarce resources that have been exposed to several shocks because of continuous changes in oil prices during the study period, besides the political conditions and large public debt and other causes. Trade openness is considered an important path for promoting the national economy and, hence, the possibility of achieving economic growth in Jordan.

The Jordanian trade balance suffers from a persistent deficit. For example, the average ratio of this deficit to gross domestic product (GDP) during the period 2000-2010 was about 35.0%. In absolute numbers, this deficit reached JD85.5 billion in 2010 (ECOSOC, 2011).

In light of the above, the aim of this study is to measure the impact of trade openness and financial development on the economic growth in Jordan to shed the light on the positive effects of international trade.

1.1. ResearchS Problem

The study tries to highlight the vital role that the international trade plays in enhancing economic growth in Jordan. From here comes the importance of the research problem of researching the effect of trade openness on economic growth in Jordan: An analytical investigation (1992-2015).

1.2. Research Hypothesis

There exists no positive relationship between trade openness and economic growth in Jordan.

2. ECONOMIC GROWTH AND DOMESTIC ECONOMIC DEVELOPMENTS

Economic growth is the continuous increase in the production of a country during a long time period. Hence, growth differs from the increase in production over a short period of time.

Adam Smith indicated that labor is a primary source for growth. Other classical economists, however, thought that growth always stops when the economy's returns start to diminish. In this case, the case, the economy enters into the steady state. The classical economists did not pay great attention to technological development. They believed capital accumulation would eventually lead to steady state since the profits keep increasing until they reach zero. After which the capital accumulation stops meaning reaching a maximum and the population stabilize. Wages reach to the low subsistence levels. According to Adam Smith, the scarcity of natural resources halts economic growth and leads to steady state. Ricardo and Malthus looked at population growth and the decline in capital growth though the law of diminishing returns to scale that itself represents a barrier to growth.

Regarding the view on economic growth in the neoclassical school of economic thought that prevailed during 1870s, whose leader economists are Alfred Marshal (26 July 1842 - 13 July 1924) and John Bates Clark (January 26, 1847 - March 21, 1938), it claims the possibility of continued economic growth without an occurrence of recession. Perhaps the most important idea of neoclassicals is that economic growth is a coherent and integrated process of mutual positive influence; where the growth of a particular sector motivates the growth of the other sectors.[1] In addition, the growth of national product leads to a growth in various income categories of wage and profit.

Keynesians, however, stated that national income growth laws are linked with the multiplier theory. Per this theory, the national income increases in multiples of investment expenditures through the marginal propensity to consume. Per this theory, there are three types of economic growth:

1. Actual rate of growth: Is the real rate increase in a country's GDP per year.
2. Warranted rate of growth: Is the growth rate at which all saving is absorbed into investment. If, for example, people save 10% of their income, and the economy's ratio of capital to output is four, the economy's warranted growth rate is 2.5% (ten divided by four).
3. Natural rate of growth: The growth an economy requires in order to maintain full employment. For example, if the labor force grows at 2% per year, then to maintain full employment, the economy's annual growth rate must be 2% (assuming no growth in productivity).

An example of classic Keynesian growth model is Harrod-Domar growth model that was developed by Harrod (1939) and Domar (1946). It is used in development economics to explain an economy's growth rate in terms of the level of saving and productivity of capital. It suggests that there is no natural reason for an economy to have balanced growth ((Harrod, 1939; (Domar, 1946)).

The model suggested by Solow (1956) explains the production and growth using a Cobb-Douglas production function (Solow, 1956). The form of the function is:

$$Y(t)=K(t)^{\alpha}\left(A(t)L(t)\right)^{1-\alpha}$$

Where t denotes time, $0<\alpha<1$ the elasticity of output with respect to capital, and Y(t) represents total production, A refers to labor-augmenting technology or knowledge, thus AL represents effective labor. All factors of production are fully employed and initial values A(0), K(0) and L(0) are given. The number of workers, i.e., labor, as well as the level of technology grow exogenously at rates n and g respectively. Based on the model, the increase in factors of production always leads to weaker growth. Therefore, only technological progress is able to move the economy to higher path of long-term economic growth.

The modern school of economic thought focused on long-term economic growth as a result of the continuing development gap between developed and developing countries, example works are of ((Lucas, 1988) and Romer (1986; 1994) who focused on developing the historical framework for achieving a qualitative endogenous transition in knowledge and technological progress (Lucas, 1988), (Romer, 1986), (Romer, 1994)). Mankiw et al. (1992) based their work on to a new formulation of the production function with time series and growth statistics in developing countries that are based on the importance of technological progress in economic growth through discoveries and otherwise innovations and inventions. At the same time, this function does not allow human capital to expand its contribution to the production process since the sum of the elasticity coefficients of the three factors is equal to one. Therefore, these theories divide the capital into physical capital and human capital. The implications of this theory is applies to the promotion of growth rates for the poor segments of population. The basic implications of population development, especially the poor living below the poverty line, are discussed. This development cannot be accomplished without improving the quality of education, health and basic services, as well as any other aspects that enhances the contribution of the human capital to the production process (Mankiw et al., 1992).

The Middle East region is facing several political and economic problems that affected the Jordanian economy as a small open

1 This is the essence of the so-called Marshall Plan.

oil-importing emerging economy. It has faced since several years a series of shocks that resulted from the repercussions of the political turbulences in the region, especially in Syria and Iraq and the accompanied consequences at all levels.

Despite these challenges, the Jordanian economy continued its satisfactory performance through the appropriate monetary and fiscal policies actions and measures that helped maintain economic and monetary stability relatively through maintaining positive economic growth rates and high levels of foreign reserves despite the continuous decline in price levels that is attributed mainly to the decline in oil prices. The year 2015 realized unfavorable trends in some economic indicators compared to 2014 due to the exacerbation of the regional circumstances and the closure of borders with Iraq and Syria. The main developments are:

1. A decrease in the growth rate of real GDP to 2.5% in 2015 from 3.1% in 2014.
2. An increase in the budget deficit to 3.4% of GDP in 2015 from 2.3% in 2014.
3. An increase in the current account deficit to 9.0% of GDP in 2015 from 7.3% in 2014.
4. A decrease in total merchandize exports (domestic exports plus re-exports) to 14.5% of GDP in 2015 from 20.3% in 2014.
5. A price deflation by 0.9% in 2015 from 2014. This deflation is attributed mainly to the decline in oil and commodity prices and the services related to them (Table 1).

Table 1: Jordan's exports and imports (1992-2015) (000s JD)

Year	Exports	Imports	Year	Exports	Imports
1992	633,755	2,214,002	2004	2,306,626	5,799,241
1993	691,281	2,453,625	2005	2,570,222	7,442,864
1994	793,919	2,362,583	2006	2,929,310	8,187,725
1995	1,004,534	2,590,250	2007	3,183,707	9,722,194
1996	1,039,801	3,043,556	2008	4,431,113	12,060,895
1997	1,067,164	2,908,085	2009	3,579,166	10,107,696
1998	1,046,382	2,714,374	2010	4,216,948	11,050,126
1999	1,051,353	2,635,207	2011	4,805,873	13,440,215
2000	1,080,817	3,259,404	2012	4,749,570	14,733,749
2001	1,352,370	3,453,729	2013	4,805,234	15,667,344
2002	1,556,748	3,599,160	2014	5,163,029	16,280,189
2003	1,675,075	4,072,008	2015	4,797,583	14,537,182

3. LITERATURE SURVEY

There are several studies that investigated the relationship between trade openness and economic growth. For example, a study by Al-Sawai and Al-Azzam (2015) investigated the short-term and the long-term relationships of trade liberalization and financial development (domestic credit, private credit and money supply) with economic growth in Jordan using quarterly data covering the period (1975-2010) using autoregressive distributed lag (ARDL) model and bound testing approach to cointegration.[2] The study showed the existence of long-term relationship between the growth rate of real GDP and trade liberalization and financial development. It also showed that there is a negative effect of trade openness on economic growth in both short and long terms. The study concluded consequently that trade liberalization does not enhance economic growth. In addition, the liberalization of financial sector has a negative impact on GDP growth in the long run - like trade liberalization Al-Sawai and Al-Azzam (2015).

Another study by Ansari (2002) found that financial liberalization might contribute to economic growth by: (1) Encouraging small savers to accumulate savings by the financial markets, (2) encouraging saving, (3) increasing saving rate via financial development that consequently increases the capital allocation efficiency, (4) redirecting credit from the slowly growing and low efficiency sector to the accelerated efficiently growing sector, (5) enabling the financial institutions, via financial development, in dealing with poor selection problem in the credit market, (6) enhancing specialization and technological development in the production process, and promoting entrepreneurship Ansari (2002).

Waqas et al. (2011) used the conintegration ARDL model to test for Granger causality to explore the long-term equilibrium relationship and the direction of causality between international trade, financial development and economic growth for the Pakistani economy. They used imports and exports of goods and services as a proxy for international trade. Whereas broad defintion of money supply (M2) and GDP represented financial development and economic growth respectively. They concluded to the exitence of a causal relationship from international trade to economic growth and from financial development to international trade (Waqas et al. 2011).

Kar et al. (2008) researched the direction of causality between trade liberalization and economic growth in Turkey using monthly data for the period (January 1989 - November 2007). The linear and nonlinear caulaity testing showed that there is a bi-directional causal relationship between economic growth and trade openness. It also found that economic growth causes financial development. Whereas financial development leads to trade liberalization. The methodology stressed on the strong causal relationships among financial development, trade openness and economic growth in Turkey. Consequently, the results revealed that economic growth depends partially on trade liberalization through external financing as Turkey lieberalized its capital account in 1989 (Kar et al., 2008).

4. ECONOMETRIC METHODOLOGY, ECONOMETRIC MODEL AND RESULTS

This study uses the ARDL approach for cointegration. This approach combines autoregressive models and distributed lag

2 The main difference between ARDL and ARDL bound test is that ARDL model is applied only when the series are stationary, integrated of the same order and are co-integrated, or with appropriate differencing when they are integrated of the same order but not co-integrated, and cannot be used when the series are integrated of different orders (some being stationary, some I(1) or fractionally integrated). The ARDL bound model, however, can be used for all the cases provided none of the series is beyond I(1) (Pesaran et al., 1999). The bound test is actually a test for co-integration between/among series integrated of different orders less than I(2).

models together. Moreover, the approach is implementable regardless of the whether the independent variables are I(0) or I(1). It requires, however, that the dependent variable be level stationary and the independent variables are not I(2) or higher. The model can be used to investigate the long-term and short-term relationships of trade liberalization and financial development with economic growth. The following two models in equation and equation are used to quantify the effect of financial development and trade openness on economic growth:

$$\Delta GR_t = \beta_0 + \beta_1 GR_{t-1} + \beta_2 TO_{t-1} + \beta_3 PC_{t-1} + \sum_{t=1}^{p} \beta_4 \Delta GR_{t-1} + \sum_{t=0}^{q} \beta_5 \Delta TO_{t-1} + \sum_{t=0}^{r} \beta_6 \Delta PC_{t-1} + \varepsilon_{1t} \quad (1)$$

$$\Delta GR_t = \beta_0 + \beta_1 GR_{t-1} + \beta_2 TO_{t-1} + \beta_3 M2_{t-1} + \sum_{t=1}^{p} \beta_4 \Delta GR_{t-1} + \sum_{t=0}^{q} \beta_5 \Delta TO_{t-1} + \sum_{t=0}^{r} \beta_6 \Delta M2_{t-1} + \varepsilon_{1t} \quad (2)$$

Where:

- Δ: First difference
- GR: Growth rate of GDP.
- TO: Trade openness calculated as the sum of exports and imports divided by GDP.
- PC: Private credit as a ratio of GDP.
- M2: Broad money supply.
- (p,q,r): Rank of ARDL model.

Given that all variables are in logarithmic form. This implies that the parameters represent elasticities. Where β2/β1 and β3/β1 are the growth elasticities of trade liberalization and financial development respectively. The ratio of private credit to GDP and the ratio of broad money supply to GDP are used to indicate financial development. Whereas the ratio of the sum of exports and imports to GDP and GDP growth represent trade openness and economic growth.

The parameters β1/β2 and β3 signify the long-term relationships. While the parameters β4, β5 and β6 signify the short-term relationships. The error correction model is used in this study to describe the short-term relationship and the speed of adjustment (correction) as follows:

$$\Delta GR_t = \beta_0 + \sum_{t=1}^{p} \beta_4 \Delta GR_{t-1} + \sum_{t=0}^{q} \beta_5 \Delta TO_{t-1} - \sum_{t=0}^{r} \beta_6 \Delta PC_{t-1} + \psi ECT_{t-1} + \varepsilon_{1t} \quad (3)$$

$$\Delta GR_t = \beta_0 + \sum_{t=1}^{p} \beta_4 \Delta GR_{t-1} + \sum_{t=0}^{q} \beta_5 \Delta TO_{t-1} + \sum_{t=0}^{r} \beta_6 \Delta M2_{t-1} + \psi ECT_{t-1} + \varepsilon_{1t} \quad (4)$$

Where ECT represents the error correction term and ψ the speed of adjustment.

Regarding the ratio of private credit to GDP, the higher number indicates an increase in domestic investment. Hence, the increase in financial development is expected to reflect positively on economic growth. The same applies to the ratio of M2 to GDP, where the bigger the figure, the more the financing available to investors and the more the financial depth. Therefore, the relationship between this variable and economic growth is expected to be positive.

4.1. Stationarity of the Time Series

Before analyzing the results of the econometric model, the stationarity of time series must be tested to examine the presence of unit root problem in any of the model variables. ADF and PP test were conducted to test for stationarity and degree of cointegration. Table 2 shows the results of the two tests. As appears from the table, there are varying degrees of integration in the dependent variables of I(0) and I(1). The dependent variable is level stationary using ADF and PP tests except for the ADF level test without intercept and without trend, where it was nonstationary.

4.2. Cointegration Test

To test for the existence of cointegration for both models of the study, Wald test was used. The test results for both models are shown in Tables 3 and 4 for Models I and II respectively.

For the first model, the calculated F-statistic is greater than the tabulated one in the table used by (Pesaran et al., 2001). The values approached 6.81 and 6.59 for both models respectively as shown in the relevant tables above. Which are higher than the lower-bound value and higher-bound values of 3.79 and 3.85 respectively. This signifies that there exists a cointegration among the variables of both models.

Regarding the calculation of the optimal number of lags (lag length selection), Table 5 shows that the optimal number of lags for both models and using both Schwarz-Bayes criterion and Hannan-Quinn criterion is four. This result was taken into account in estimating the study models. It is worth mentioning that the selection of optimal lag periods depends on the frequency of the used data. The number of lag periods is usually small for the annual data, and it gets bigger the more the data frequency.

Regarding Model I, Table 6 shows that there is a positive effect of trade openness and private credit on the long-term economic growth. However, the effect of trade openness was not statistically significant while it was statistically significant for the credit extended to the private sector at 10% level of significance. In the short term, the effect of trade openness in most periods on economic growth was negative, but not statistically significant. This might be attributed to the competitive disadvantage of domestic products relative to foreign products and thus increasing pressures on the balance of payments that eventually lead to slowdown in economic growth. The evident positive effect of the credit granted to the private sector was not statistically significant in the short term. This is contrary to that in the long term that was statistically significant as credit extended to the private sector encourages the flow of investments through the provision of necessary liquidity for investment, which eventually promotes economic growth in Jordan.

Table 2: Stationarity testing using ADF and PP tests for the study variables

ADF test												
	Level						First-differences					
Test	C		C+T		None		C		C+T		None	
GR	−3.33	***	−3.37	*	−1.58		−8	***	−7.99	***	−8.05	***
M2	−1.66		−1.78		0.01		−2.97	**	−2.93		−2.98	***
PC	−2.56		−2.46		0.17		−3.58	***	−3.7	**	−3.59	***
TO	−2.17		−2		−0.45		−3.92	***	−3.98	**	−3.94	***
Test PP												
L	C		C+T		None		C		C+T		None	
GR	−12.71	***	−13.23	***	−10.73	***	−20.76	***	−20.57	***	−20.94	***
M2	−6.02	***	−6.17	***	−0.29		−15.85	***	−15.91	***	−15.91	***
PC	−4.83	***	−5.18	***	0.04		−16.13	***	−15.43	***	−16.03	***
TO	−2.9	**	−2.87		−0.35		−14.2	***	−14.46	***	−14.29	***

Significant at *1.0%, *5.0% and *10.0%

Table 3: Results of Wald test for Model I

Test statistic	Value	Df	P
F-statistic	6.812982	(3.74)	0.0004
Chi-square	20.43895	3	0.0001
Null hypothesis: C(2)=C(3)=C(4)=0			
Null hypothesis summary			
Normalized restriction (=0)		**Value**	**SE**
C(2)		−1.723456	0.423751
C(3)		0.070822	0.052111
C(4)		0.042987	0.022661

Restrictions are linear in coefficients. SE: Standard error

Table 4: Results of Wald test for Model II

Test statistic	Value	Df	P
F-statistic	6.589959	(3.74)	0.0005
Chi-square	19.76988	3	0.0002
Null hypothesis: C(2)=C(3)=C(4)=0			
Null hypothesis summary			
Normalized restriction (=0)		**Value**	**SE**
C(2)		−2.069641	0.526310
C(3)		0.070733	0.050442
C(4)		0.048509	0.023131

Restrictions are linear in coefficients. SE: Standard error

Model II did not differ significantly from Model I for trade openness in the short-term. However, the positive effect of long-term trade openness is statistically significant at 5.0% level of significance. The effect of money supply in the long term was positive at 10.0% level of significance. Whereas it was not statistically significant in the short term for most of the periods (Table 7).

Table 8 shows the results of error correction model for Model I. As evident from the results, the value of error margin was 56.3%, implying that 56.3% of shocks in the long term can be explained.

Table 9 shows the results of error correction model for Model II. As evident from the results, the value of error margin was 56.3%, implying that 56.3% of shocks in the long term can be explained.

Finally, the study examined the stability of the long-term parameters together with the short-term movements of the

Table 5: Results of optimal lag length selection using SBC and HQC

Lag	Model I		Model II	
	SBC	HQC	SBC	HQC
0	−3.61	−3.66	−2.7	−2.75
1	−7.5	−7.7	−7.03	−7.24
2	−8.11	−8.47	−7.33	−7.68
3	−8.37	−8.88	−7.54	−8.05
4	−8.39*	−9.05*	−7.67*	−8.33*
5	−8.22	−9.03	−7.38	−8.19
6	−7.88	−8.84	−7.13	−8.1
7	−7.71	−8.83	−6.96	−8.08
8	−7.49	−8.76	−6.7	−7.97

SBC: Schwarz-Bayes criterion, HQC: Hannan-Quinn criterion

Table 6: ARDL results for Model I

Variable	Coefficient	SE	t-statistic	P
C	−0.133497	0.044215	−3.019229	0.0035
GR(-1)	−1.723456	0.423751	−4.067147	0.0001
TO(-1)	0.070822	0.052111	1.359055	0.1783
PC(-1)	0.042987	0.022661	1.896961	0.0617
D(GR(-1))	0.725623	0.381999	1.899543	0.0614
D(GR(-2))	0.315646	0.318508	0.991016	0.3249
D(GR(-3))	−0.388797	0.239044	−1.626465	0.1081
D(GR(-4))	0.149217	0.113855	1.310580	0.1941
D(TO(-1))	−0.024014	0.068698	−0.349552	0.7277
D(TO(-2))	−0.028136	0.060063	−0.468448	0.6408
D(TO(-3))	−0.027048	0.054527	−0.496045	0.6213
D(TO(-4))	0.035719	0.051387	0.695098	0.4892
D(PC(-1))	0.070736	0.071248	0.992822	0.3240
D(PC(-2))	0.002915	0.072638	0.040130	0.9681
D(PC(-3))	−0.106034	0.070907	−1.495381	0.1391
D(PC(-4))	0.038055	0.069406	0.548297	0.5851
R-squared	0.942581	Mean dependent variable		−0.000970
Adjusted R-squared	0.930942	SD dependent variable		0.118642
SE of regression	0.031178	Akaike info criterion		−3.938403
Sum of squared residuals	0.071933	Schwarz criterion		−3.493993
Log likelihood	193.2281	HQC		−3.759191
F-statistic	80.98463	Durbin-Watson statistics		2.008234
P (F-statistic)	0.000000			

ARDL: Autoregressive distributed lag, SD: Standard deviation, SE: Standard error, HQC: Hannan-Quinn criterion

Table 7: ARDL results for Model II

Variable	Coefficient	SE	t-statistic	P
C	−0.168318	0.065557	−2.567488	0.0123
GR(-1)	−2.152522	0.542343	−3.968930	0.0002
TO(-1)	0.106066	0.043756	2.424034	0.0178
M2(-1)	0.028650	0.017064	1.678954	0.0974
D(GR(-1))	0.909171	0.487701	1.864197	0.0663
D(GR(-2))	0.105152	0.406748	0.258520	0.7967
D(GR(-3))	−0.565122	0.282206	−2.002520	0.0489
D(GR(-4))	0.077920	0.114862	0.678375	0.4996
D(TO(-1))	−0.031282	0.061236	−0.510838	0.6110
D(TO(-2))	−0.070254	0.054533	−1.288277	0.2017
D(TO(-3))	−0.061769	0.051097	−1.208870	0.2306
D(TO(-4))	0.033102	0.049385	0.670272	0.5048
D(M2(-1))	−0.020796	0.053376	−0.389617	0.6979
D(M2(-2))	−0.104894	0.052222	−2.008605	0.0482
D(M2(-3))	-0.076066	0.052199	−1.457234	0.1493
D(M2(-4))	0.025988	0.051329	0.506308	0.6141
R-squared	0.941569	Mean dependent variable		−0.000970
Adjusted R-squared	0.929724	SD dependent variable		0.118642
SE of regression	0.031452	Akaike info criterion		−3.920925
Sum of squared residuals	0.073201	Schwarz criterion		−3.476515
Log likelihood	192.4416	HQC		−3.741713
F-statistic	79.49603	Durbin-Watson stat		1.999262
P (F-statistic)	0.000000			

ARDL: Autoregressive distributed lag, SE: Standard error, SD: Standard deviation, HQC: Hannan-Quinn criterion

Table 8: Results of error correction model for Model I

Variable	Coefficient	SE	t-statistic	P
C	−0.000190	0.003379	−0.056254	0.9553
ECT(-1)	−0.562598	0.148292	−3.793857	0.0003
D(GR(-1))	−0.092630	0.232067	−0.399154	0.6909
D(GR(-2))	−0.234593	0.228437	−1.026945	0.3077
D(GR(-3))	−0.547228	0.225498	−2.426749	0.0176
D(GR(-4))	0.514367	0.165895	3.100553	0.0027
D(TO(-1))	0.018113	0.053499	0.338572	0.7359
D(TO(-2))	−0.012153	0.052150	−0.233049	0.8164
D(TO(-3))	0.005040	0.049683	0.101444	0.9195
D(TO(-4))	0.069116	0.050323	1.373438	0.1737
D(PC(-1))	0.113197	0.070783	1.599202	0.1140
D(PC(-2))	−0.013005	0.074067	−0.175588	0.8611
D(PC(-3))	−0.118188	0.072320	−1.634234	0.1064
D(PC(-4))	0.083636	0.068526	1.220503	0.2261
R-squared	0.940604	Mean dependent variables		−0.000806
Adjusted R-squared	0.930309	SD dependent variables		0.119304
SE of regression	0.031495	Akaike info criterion		−3.934507
Sum of squared residuals	0.074396	Schwarz criterion		−3.543036
Log likelihood	189.0856	HQC		−3.776717
F-statistic	91.36291	Durbin-Watson stat		1.948813
P (F-statistic)	0.000000			

SE: Standard error, SD: Standard deviation, HQC: Hannan-Quinn criterion

two models. For test, we relied on cumulative sum (CUSUM) and cumulative sum squares (CUSUMSQ) tests proposed by Borensztein et al. (1998). These tests show any structural change in the data, in addition to clarifying stability and harmony between the

Table 9: Results of error correction model for Model II

Variable	Coefficient	SE	t-statistic	P
C	−5.73E-05	0.003329	−0.017226	0.9863
ECT(-1)	−0.562598	0.148292	−3.793857	0.0003
D(GR(-1))	−0.344361	0.237314	−1.451077	0.1509
D(GR(-2))	−0.838534	0.259269	−3.234226	0.0018
D(GR(-3))	−0.744648	0.254735	−2.923229	0.0046
D(GR(-4))	0.549569	0.161905	3.394390	0.0011
D(TO(-1))	0.056443	0.050660	1.114137	0.2688
D(TO(-2))	−0.033474	0.050478	−0.663141	0.5093
D(TO(-3))	0.004762	0.047199	0.100888	0.9199
D(TO(-4))	0.097227	0.046583	2.087174	0.0403
D(M2(-1))	0.009544	0.047783	0.199744	0.8422
D(M2(-2))	−0.076466	0.047338	−1.615315	0.1104
D(M2(-3))	0.030305	0.044136	0.686638	0.4944
D(M2(-4))	0.108084	0.043955	2.458994	0.0162
R-squared	0.941067	Mean dependent variable		-0.000806
Adjusted R-squared	0.930852	SD dependent variable		0.119304
SE of regression	0.031372	Akaike info criterion		−3.942332
Sum of squared residuals	0.073816	Schwarz criterion		−3.550861
Log likelihood	189.4338	HQC		−3.784542
F-statistic	92.12596	Durbin-Watson stat		1.996584
P (F-statistic)	0.000000			

SE: Standard error, SD: Standard deviation, HQC: Hannan-Quinn criterion

long term and short-term parameters. We can verify the existence of structural stability for the estimated parameters if the plot of both tests CUSUM and CUSUM of Squares stay within the critical 5% level bounds Borensztein et al. (1998).

From Figure 1, it can be seen that the plot of CUSUM stays within the critical bounds, thus we can confirm the long-term relationships among variables of Model I and, hence, the coefficient is stable. Figure 2 shows that CUSUMSQ exceeded the critical 5% bounds during the period in 2009 and was on borderline during the period (2010-2011). Obeid and Awad (2017) stated that this reflects notably the repercussions of the global financial crisis that affected the Jordanian economy heavily during the period 2009-2011. In addition, Jordan has been affected since the beginning of 2011 with other shocks that have negatively affected the national economy, mainly political and economic conditions in the Middle East and their consequences. Furthermore, the National Electricity Company losses, hosting refugees and the increasing in the budget deficits have formed a pressure and burden on Jordan's economy. In addition, the decline in the national exports especially to neighboring countries at the beginning of 2011 was due to the closure of border with Syria and Iraq, as the closing of borders with Syria and Iraq adversely affected Jordan's external trade with these two countries (Financial Stability Report, (Different Years), (Obeid and Awad, 2017).

Similarly, Figure 3 shows that that the plot of CUSUM stays within the critical bounds, thus we can confirm the long-term relationships among variables of Model II. Therefore, the coefficient is stable as well. Figure 4 shows that CUSUMSQ exceeded the critical 5% bounds during the period in 2009. Given the structure of the two models, the same interpretation of the movements in CUSUMSQ

Figure 1: Plots of residuals (CUSUM) for Model I

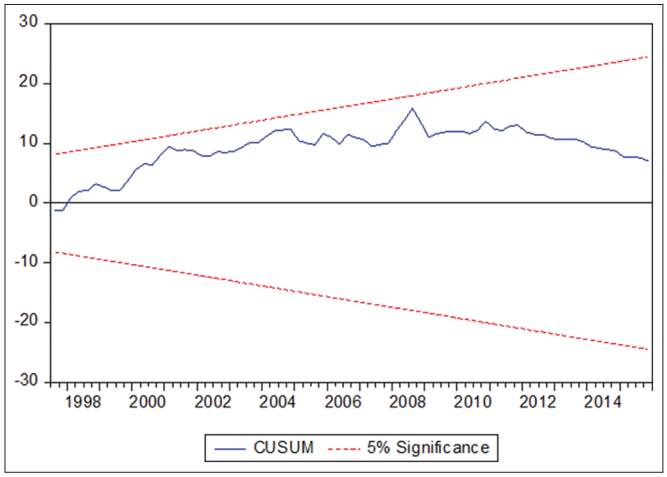
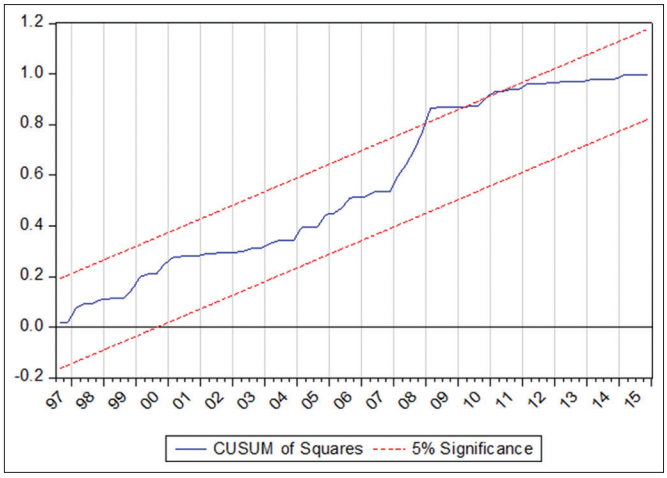


Figure 2: Plots of residuals (CUSUMSQ) for Model I



for Model I apply to Model II as well, though the impact of the shock sounds be lesser in Model II.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

This study investigated the effect of trade openness and financial development on the performance of the Jordanian economy (GDP growth). Using quarterly data covering the period (1992-2015), an econometric model was examined using the ARDL bound test. The results showed the existence of positive long-term relationship between each of trade openness and financial development with economic growth. However, there was no statistically significant relationship. The results proved the importance of providing the private sector with necessary credit and liquidity to enhance investment for its positive effect on economic growth.

5.2. Recommendations

The study recommends the following:

1. Adopting government policies that protect exporting and encourage domestic industries learning from the relevant best country practices.

Figure 3: Plots of residuals (CUSUM) for Model II

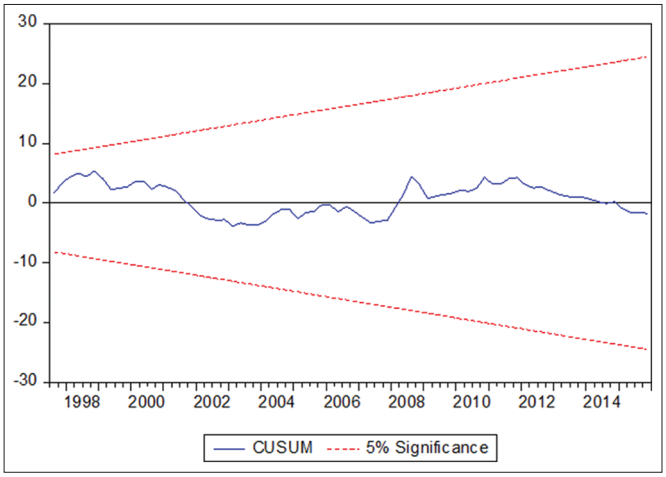
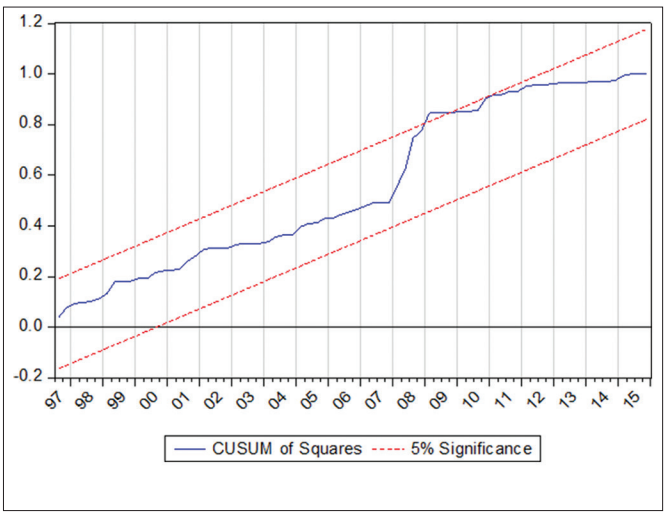


Figure 4: Plots of residuals (CUSUMSQ) for Model II



2. Promoting and encouraging foreign investment for its vital role in enhancing economic growth.
3. Undertaking the necessary measures to create an investment-attracting and stimulating environment by the government and other public entities (such as the Central Bank of Jordan and Jordan Investment Commission).
4. Attracting the necessary funding and technical assistance by the Ministry of Planning and the Central Bank of Jordan to support the productive sectors, especially the MSMEs (micro, small and medium-size enterprises) to promote economic growth in Jordan.

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