



ISSN NO. 2320-5407

Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/3781
DOI URL: <http://dx.doi.org/10.21474/IJAR01/3781>



INTERNATIONAL JOURNAL OF
ADVANCED RESEARCH (IJAR)
ISSN 2320-5407
Journal homepage: <http://www.journalijar.com>
Journal DOI: 10.21474/IJAR01

RESEARCH ARTICLE

THE IMPACT OF TRADE OPENNESS ON ECONOMIC GROTH IN THE MIDDLE EAST AND NORTH AFRICAN COUNTRIES: AN APPLICATION OF THE AUTOREGRESSIVE DISTRIBUTED LAG MODEL.

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Manuscript Info

Manuscript History

Received: 08 February 2017
Final Accepted: 01 March 2017
Published: April 2017

Key words:-

Economic growth, Trade, IMP, Exports, ARDL model, Middle East and North African countries.

Abstract

Trade and economic growth in the developing countries has been debated among researchers and economists with the expectation of growth being stimulated; up to date the evidence on its growth enhancing effects is mixed. This study investigates and evaluates changes in economic growth that are likely to result from changes in trade openness such as GDP per capita, import, export and gross capital formation, in the Middle East and North Africa. By using an application of the autoregressive distributed lag model (ARDL). Our results have indicated that trade openness, and exports have a various impact on economic growth in the case of Middle East and North African countries. This suggests that it is possible to stimulate economic growth through an outward-looking strategy of trade expansion. More significantly, the results suggest the importance as well as the need for the Middle East and North African countries to embark on trade policies in order to improve economic growth in the current world economy.

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Introduction:-

Over the last 60 years, trade openness has contributed to raising the standard of living of billions of people around the world by creating new economic opportunities and lower prices level to consumers. Trade openness is defined as significant element of globalization which has been mainly described as the increasing interaction or integration of national economic systems with the growth of international trade and other socio-economic variables. It is linked with growing internationalization of production, marketing of goods and services, and the connected growing production and commercial activities. Trade openness includes the dismantling of all forms of tariff structures like export and import duties, tariffs and quotas and other restrictions to the free flow of goods and services across countries (Umer, 2014).

Ali and Abdullah (2015) explain that international trade has a very important role to the development of any economy and it is assumed that trade liberalization works as an engine for the economic growth. The belief, that trade openness has a positive impact on economic growth, has helped the trade liberalization to be a necessary part of the developing countries policy advice. Trade openness means the decrease or complete removal of trade barriers and this idea has become very popular in the policy making of both the developed and developing countries. There

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are many types of trade like the transfer of technology, education flow and ideas sharing besides the trade in terms of commodities.

Some studies confirm that trade openness has a significant effect on economy in general and economic growth specifically. In this regard, the aim of current study analyses the impact of trade openness on economic growth in the Middle East and north African countries, using time series data for the period (1970-2013). This study assumes that trade openness has a positive impact on economic growth in the Middle East and North African countries. Here, it examines this assumption using econometrical tools. To the best of our knowledge, there are only few studies that deal with the case for the Middle East and North African countries. Thus, the current study aims to fill up this gap by adding at least one more empirical study to the existing number of articles. The expected empirical results enable policy makers to find out how much the economic growth is influenced by trade openness in the Middle East and North African countries.

The rest of the paper is going to be structured in the following way, beginning with Section I which focuses on the theoretical framework. Section 2 deals with the contextual empirical literature review, while Section 3 represents methodology and data collection. Section 4 presented the empirical results for the impact of trade openness on economic growth and discussion based on economic theory and statistical indicators. Finally, Section 5 shows Summary and Conclusion.

Theoretical Framework:-

The current section focuses on theoretical framework by present some conceptual which related trade openness .Hence,Ozoh, et. al. (2016) show that trade openness has to do with the extent to which a country and other countries engage in commercial or trade without any barrier. "It has to do with country's decision to design programs and policies to avoid the inhibition of inflow and outflow of goods and services across its boundary with other nations. It enhances international competitiveness (Ozoh, et. al., 2016). Moreover, Pilinkiene (2016) shows that internationally active countries are much more productive and competitive in comparison to those producing and acting exceptionally in the local market. International trade has a positive effect on the efficiency of resource allocation and determines faster the growth of economy, which might transform into a greater factor accumulation, in particular in the countries with technology diffusion and knowledge spill overs.

Trade openness usually indicate to a unit of country's economic policy measurement, also expressed as trade openness index, which is estimated as a sum of exports and imports to gross domestic production. Moreover, trade openness defined as reduction of policy barriers to international trade rather than trade intensity (Ulasan, 2012). Although trade openness is affected by such factors as the size of country, duty level, the cost of transportation or distance to trade partners, export and import volumes remain the key constituents that most precisely depict the trade openness (Pilinkiene, 2016)

The classical economists view that capital movement liberalization and trade openness will increase the growth of economy and welfare after 1980s. According to Classical and Neoclassical economists, foreign trade has important contributions to the development and the foreign trade is not only an effective productivity instrument but also it is the engine of the growth. Since the sources are limited in developing countries, the production on the scale of a high and sustainable growth cannot be done and new sources can be wanted for production. With the openness, local markets will encounter with the competition, the local industries which may not compete with international prices will transfer their production factor to the other productive factors and the welfare increase will occur as a result of more effective allocation of the sources. So, for this type of economies it might be useful to make production under free trade. The condition of providing growth under free trade is to apply a foreign trade policy which the national economies might combine with the international structure and to direct the allocation of the sources for production to the sectors determined by the international demand. The main aim of this kind of economy is the industrialization and the availability of the growth and it is suggested that the required dynamism for this will be realized by a structuring coming from external demand instead of internal demand (Celebi, 1991 cited in Mercan, et. al2013).

Literature Review:-

For better understanding, this section provides an overview of the study of trade openness; there are several empirical studies on the impact of trade openness on economic growth in developing and developed countries. Nevertheless, these studies show some conflicting results in their conclusions on the impact of trade openness on

economic growth. For instance, according to Mercan, et. al (2013) examined the relationship between trade openness and economic growth for the most rapidly developing countries (emerging markets; Russia, Brazil, India, Turkey and China, BRIC-T) for the period (1989-2010). The results confirm economic theory that the effect of openness on economic growth was positive, and statistically significant. This result is in line with the results of Chatterji, et. al (2014) examined the impact of trade openness on economic growth of India for the time period 1970-2010. The estimation results from Vector Autoregressive method suggest that growth in trade volumes accelerated economic growth of India

Harrison (1996) analyzed the impact of trade openness on growth only in developing countries during the period of 1960 to 1987. The result showed that increase in trade openness raises economic growth rapidly. Furthermore,

Masoud.A.Khalid, et. al. (2016) analyzed the impact of trade openness on economic growth in the case of Jordan, and his result illustrated that increase in trade openness raises economic growth rapidly. Similar result investigated by Osei-Yeboah, et. al. (2012) used a Cobb-Douglas production function to estimate the effect of FDI, exchange rate, capital-labor ratio and trade openness on GDP for 38 African countries during 1980 to 2008. The outcome illustrated the positive relationship between trade openness and GDP. Moreover, Yanikkaya (2003) found the effect of trade liberalization on per capita income growth for 120 countries using GMM (Generalized Method of Moments) estimator for the period of 1970 to 1997. The outcome of study illustrated that openness based on trade volumes were significant and positively related with per capita output growth. However, for developing countries openness depends on trade restrictions were significant and positively related with per capita output growth.

Another study is conducted by Arif and Ahmad (2012) investigated the long run relationship between trade openness and output growth for Pakistan using granger causality for 1972-2010. The results of granger causality test illustrate that there is a bi-directional significant relationship between trade openness and the growth of economy. Masoud. A.K (2016) & Hassan and Kamrul (2005) found the casual relationship between trade openness and the growth of economy and the structure of international trade for Turkey and Bangladesh. The result illustrates that there was long-run unidirectional equilibrium relationship between trade openness and the growth of economy.

Hence, Habibi, F. (2015) determined the impacts of trade openness on economic growth for 120 countries over the period 2000-2013. The long run relationship can be fine between these two variables. We segment the data set into four subpanels according to per capita income classification that make a difference between low-income, lower-middle-income, upper-middle income and high-income economies. The outcome shows that bidirectional causalities in the study were observed from real GDP growth to trade openness in all panels except low income groups. Second, unidirectional causation from trade openness to the growth of economy was obtained in the study for low income economies. The desired growth-led openness and openness-led growth hypothesis can only be supported for Upper middle and high income countries.

Chang, et. al. (2009) examined the impact of trade openness on economic growth, among 82 countries (22 developed and 60 developing) during the period of 1960 to 2000; the result showed that trade openness has a positive impact on economic growth, especially in developing countries rather than developed ones. Similarly, Sachs and Warner (1995) found the positive impact of trade openness on economic growth between developing and developed countries. They investigated that open developing economies have grown at a higher rate (4.49%) per year while at the same time developed economies (2.29%). In contrast, closed developing and developed economies have grown at 0.69 and 0.74 percent per year respectively. In addition, Manteli (2015) finds the casual relationship between trade openness and the growth of economy in a sample of 87 countries (developing & developed) for the period of 1970 to 2013. The relationship between openness and growth is positive for all countries. More specific, for developing countries trade openness has a negative impact on income per capita and a positive one on income growth. Conversely, a negative relationship between openness and income per capita and income growth presented in our results for developed countries.

Thus, it could be said that the relationship between trade openness and economic growth is positive with only a few studies that did not find conclusive evidence supporting these hypotheses.

Data Sources And Econometric Methodology:-**The Data:-**

The five variables are used in this study such as Gross domestic product per Capita, Trade (export-import), and gross capital formation by using time-series data for over the span 1970–2013 as illustrated in table1. The data are collected from World Development Indicator (WDI 2017).

Table1:-

Variable	Description	Source
GDPC	Gross domestic product per Capita	WDI (2017)
GCF	Gross Capital Formation	WDI (2017)
IMP	Import as a share of GDP	WDI (2017)
EXP	Export	WDI (2017)

Econometric Methodology:-

To analyze time series data in different order I(1) and I(0) together, Pesaran et al. (2001) suggested, the Autoregressive distributed lag approach (ARDL) to test for co-integration as an alternative to co-integration model for Engle-Granger (1989). The study uses the ARDL model to investigate the long run and the short run relationship between variables. The ARDL bound testing approach for co-integration can be written as following:

$$\Delta \text{GDPC}_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \Delta \text{GDPC}_{t-i} + \sum_{i=0}^p \alpha_2 \Delta \text{GCF}_{t-i} + \sum_{i=0}^p \alpha_3 \Delta \text{IMP}_{t-i} + \sum_{i=0}^p \alpha_4 \Delta \text{EXP}_{t-i} + b_1 \text{GDPC}_{t-1} + b_2 \text{GCF}_{t-1} + b_3 \text{IMP}_{t-1} + b_4 \text{EX}_{t-1} + \mu_t$$

Here Δ is the first difference operator; ΔGDPC_t refers for the natural log of Gross domestic product per capital, ΔGCF_t refers for the gross capital formation, ΔIMP_t refers for the natural log of Import, ΔEXP_t refers for the natural log of export, and μ_t refers for the error correction term.

The F test is used to determine whether the long-run relationship exists between the variables through testing the significance of the lagged levels of the variables. When the long-run relationship exists, the F test will illustrate which variable should be normalized.

The null hypotheses of no co-integration amongst the variables are

$$H_0: b_{1i} = b_{2i} = b_{3i} = b_{4i} = 0$$

Against the alternative hypothesis

$$H_1: b_{1i} \neq b_{2i} \neq b_{3i} \neq b_{4i} = 0$$

For $i=1, 2, 3, 4$.

The F test has a standard distribution which depends on; (1) whether the variables are included in the ARDL model are I(0) or I(1); (2) the number of independent variables; (3) whether the ARDL model contains an intercept and a trend; and (4) the sample size of the variables. According to Narayan (2005), the rejection of the null depends on the F -test and the critical bound tabulated value for small sample size.

The long run relationship among the variables exists if the calculated value of F - statistic is greater than the upper critical bound (UCB), and if the calculated value of F - statistic is less than the lower critical bound (LCB), the long run relationship does not exist. If the calculated value of the F -statistic comes in between the range of LCB and UCB, then the long run relationship is inconclusive, Mintz (1990) Hassan & Kalim, (2012). The optimal lag can be selected using the model selection criteria like Akaike Information Criterion (AIC). Narayan (2005) stated the maximum lags for small sample size is two lags.

Results And Discussions:-

We begin the empirical analysis with examine of the unit root test for the variables and we assumed that, the data used in this estimation are stationary. If the results of stationary are violated, this might lead to spurious results. In

examining the time-series data properties, there are several models to test the stationary, but the most important one are the Augmented Dickey–Fuller (ADF) (Dickey and Fuller, 1979, 1981) and the Phillips–Peron (PP) (Phillips and Peron, 1988) unit root tests.

Table 2 explains the result of the stationary test for ADF and PP unit root test respectively for our investigation. Both tests have shown that GDPC has a unit root at level, but it becomes stationary at first difference, which implies that GDPC is I (1). However, all other variables are found to be significant at first difference and thus it indicates the variables are I (1) as we have illustrated at table 3. As the results point out, the variables are either I(0) or I(1), therefore implying that we can confidently apply the ARDL approach to this model as using ARDL requires the data to be stationary at the level I(0) and first difference I(1) see (Narayan, 2005).

Table 2:- ADF and PP unit root tests on log levels of variables.

Variables	ADF test		PP test	
	Intercept	Intercept and trend	Intercept	Intercept and trend
ln(GDPC)	-0.422751	-1.033838	-0.796117	1.416381
ln(GCF)	-2.866900 ^c	-2.971760	-3.066681	-7.453085
ln(EXP)	-1.749296	-1.929602	-1.831608	-1.861371
ln(IMP)	-3.570018 ^b	-3.499979 ^c	-2.507649	-2.394726 ^a

^aDenotes significant at 1%, ^bDenotes significant at 5%, ^cDenotes significant at 10%,

Table 3:- ADF and PP unit root tests on first differences of log levels of variables.

Variables	ADF test		PP test	
	Intercept	Intercept and trend	Intercept	Intercept and trend
ln(GDPC)	-4.555055 ^a	-4.550866 ^a	-4.509808 ^a	-4.490298 ^a
ln(GCF)	-3.676110^a	-3.619244 ^b	-7.300110 ^a	-10.06525 ^a
ln(EXP)	-6.539060 ^a	-4.183972 ^b	-6.539049 ^a	-6.466020 ^a
ln(IMP)	-3.884510 ^a	-3.789806 ^b	-4.681202 ^a	-4.613007 ^a

^aDenotes significant at 1%, ^bDenotes significant at 5%, ^cDenotes significant at 10%,

Moreover, Table 4 represents the co-integration test analysis, and the existence of a long run relationship has been established among the model’s variables. Results illustrate that the computed F-statistics are 4.20 the relevant critical value bounds at ten percent level (with unrestricted intercept and no trend) are 4.20 and for the lower and upper bounds respectively. Then, the computed F-statistics is higher than the critical value of the upper bound, the null hypothesis of no long run co-integration correlation among the variables can be simply rejected.

Table 4:- Results from bound tests.

Lag Structure:				ARDL(1,1,2,0)		
F-statistics	1% Critical value		5% Critical value		10% Critical value	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
4.2022 ^{**}	4.134	5.761	2.910	4.193	2.407	3.517
K=5, N=31						
The critical value according to Narayan (2005) (Case III: Unrestricted intercept and no trend)						
(**) Significant at 5%						

Table 5 shows the estimated coefficients of the long-run association which are significant for all variables. In addition; export, import and gross capital formation have a positive and significant impact on GDPC at the 1% level. This is illustrating that the growing correlation between unemployment issue and economic growth in the Middle East and North African countries, which will motivate the inflow of trade openness. The high level of unemployment and other economic issues in these countries, which is associated with non-qualified workers characterized by low output, encourages foreign investors around the globe to enter the Middle East and North African countries. Furthermore, the degree of trade openness to exterior does motivate economic activity, which creates new jobs which might lead to economic growth. Additionally, Meschi, E.(2006) found that the way in which trade openness affects economic growth is likely to depend on the economic and technological conditions in the host country.

Moreover, we have found that, exports have positive and lasting impacts on economic growth; our finding is similar to Michaely (1977), Bhagwati (1988)

Table 5:- Long Run Relationships.

ARDL(1,1,2,0) selected based on Schwarz Bayesian Criterion			
Dependent Variable: GDPC			
Variable	Coefficient	t-Statistic	Probability
Constant	1.1943	3.1557	.003
$\ln(GDPC_t)$.88756 ^a	16.070	.000
$\ln(GCF_t)$	-.13364 ^a	.17661	.054
$\ln(EXP_t)$.12008 ^a	3.7616	.001
$\ln(IMP_t)$.47101 ^a	3.1557	.000
R-squared	.95986		
F-statistic	4.2022		
DW-statistic	1.7961		

^(a) Significant at 1%.

Moreover, all variables are also passes all diagnostic tests against serial correlation (Durbin Watson test and Breusch– Godfrey test), heteroskedasticity (White heteroskedasticity test), and normality of errors (Jarque–Bera test). The Ramsey RESET test also suggests that the model is well specified as shown in table 6.

Table 6:- Results of diagnostic tests.

Test statistics:	χ^2 statistic	Probability
Jarque-Bera(normality)	.301	n/a
LM test (1) correlation	.077	.115
ARCH test	.526	.542
Ramsey RESET test	.712	.748
CUSUM test	Stable	Stable
CUSUMQ test	Stable	Stable

Finally, when analyzing the stability of the long-run coefficients together with the the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ) which are applied Following as Pesaran cited in Bahmani-Oskooee (2001), the stability of the regression coefficients is evaluated by stability tests and they can explain whether or not the model equation is stable over time. This stability test is appropriate in time series data, especially when we are unsure about when structural change may be have taken place. CUSUM and CUSUMQ statistics are plotted against the critical bound of 5% significance. According to Bahmani-Oskooee and Wing NG (2002), if the plot of these statistics remains within the critical bound of the 5% significance level, the null hypothesis (i.e. That all coefficients in the error correction model are stable) cannot be rejected. The plot of the cumulative sum of the recursive residual is presented in graph 1-2. As shown, the plot of both the CUSUM and the CUSUMQ residual are within the boundaries. That is to say that the stability of the parameters has remained within its critical bounds of parameter stability. It is clear from both the graphs presented in Figure (1-2) that both the CUSUM and the CUSUMQ tests confirm the stability of the long-run coefficients.

Conclusions:-

In this paper, we have tested the autoregressive distributed lag (ARDL) model of trade openness and economic growth in the case of the Middle East and North African countries. Our results suggest that trade openness has a strong impact favourably on growth of real GDP per capita. On the other hand, the impact would appear to be lagged and relatively modest. It means that trade openness different in their intensity and depth, or never amount to an immediate shift to free trade.

In addition, the trade openness, which are picked up, are often first rather than final steps. Through time of course economies become more open, partly as a consequence of incremental trade reforms but also due to other factors such as reductions in communication costs transportation, and technological change. The pay-off to this increased openness may be greater, as manifested in consistently higher coefficients from the Sachs–Warner proxy. Our results suggest that four factors might be at work in explaining why the previous literature on the trade-growth

relationship is so inconsistent. Firstly, there is a sample sizes and composition differ as do methodological approaches. Secondly, different analysts have been used various measures; some are ex ante indicators of trade openness, some are ex post and others are clearly indicators of openness. Finally, it is obvious that many econometrics models which have been estimated are miss-specified.

Figure 1:- Cumulative Sum Of Recursive Residuals.

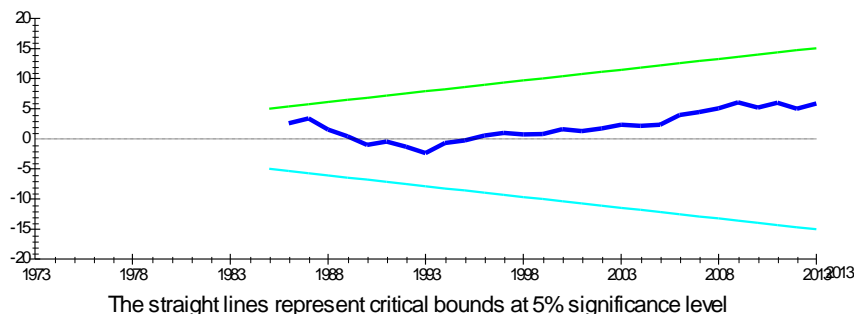
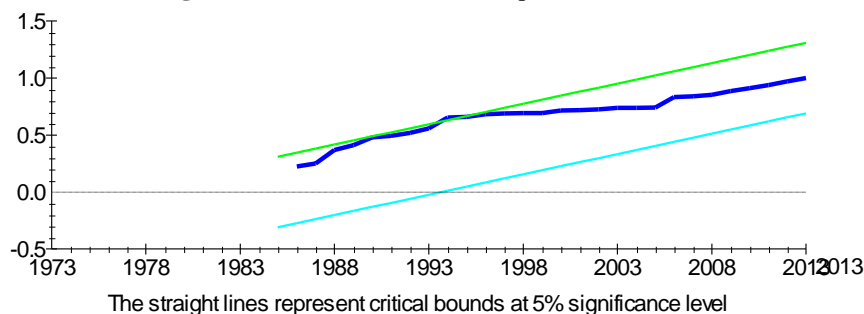


Figure 2:- Cumulative Sum Of Squares Of Recursive Residuals.



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