

**Research Article**

**International Trade and Economic Growth in Middle East Countries: A Panel Data Analysis**

*Ortadoğu Ülkelerinde Uluslararası Ticaret ve İktisadi Büyüme: Bir Panel Veri Analizi*

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**Abstract**

*In this study, the relationships between export (EXP), import (IMP) and economic growth (GDP) in Middle East Countries were examined by using yearly data consist of 312 observations between 1993 – 2016. In the empirical analyses, Dumitrescu & Hurlin Causality Test, Westerlund ECM Panel Co-integration and PGM Estimator were employed. The short-term analyses indicated; (a) a bi-directional causality between GDP and IMP, (b) a bi-directional causality between GDP and EXP, (c) a unidirectional causality from EXP to IMP (d) a 1% raise in IMP cause to a 0.19 % increase in GDP, (e) a 1% raise in EXP cause to a 0,34 % increase in GDP. The long-term results revealed (a) a 1% raise in IMP cause to a 0.35 % increase in GDP (b) a 1% raise in EXP cause to a 0,60 % increase in GDP. 28% of the imbalances in a period can be recovered in the next period. The country-level outcomes confirmed a long-term relationship for Cyprus, Egypt, Iran, Israel, Jordan, Oman, Qatar, S. Arabia, Turkey and Yemen, but not for Bahrain, Kuwait and Lebanon. These findings support the feedback hypothesis, which argues bi-directional causality. International trade may seem necessary for sustainable growth in the long-term based on outcomes of PMG Estimator, it can be said that a structural transformation is necessary to eliminate import dependency in the short term.*

**Keywords:** Economic Growth, Import, Export, International Trade, Panel Data Analysis

**JEL CODES:** O47, O40, E21

**Öz**

*Bu çalışmada, Orta Doğu ülkelerinde ihracat (EXP), ithalat (IMP) ve iktisadi büyüme (GDP) arasındaki uzun ve kısa dönem ilişkiler, 1993 - 2016 yılları arasında 312 gözlemden oluşan yıllık veriler kullanılarak incelenmiştir. Analizlerde Dumitrescu & Hurlin Nedensellik Testi,*

<sup>1</sup> A brief summary of this research was presented on 17 April 2019 at the 3rd International Conference on Economics, Finance and Management.

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*Westerlund ECM Eş-bütünleşme Testi ve PGM Tahmincisi kullanılmıştır. Kısa dönem analizleri; (a) GDP ve IMP arasında iki yönlü, (b) GDP ve EXP arasında iki yönlü, (c) EXP'den IMP'ye tek yönlü nedensellik ilişkisi olduğunu tespit etmiş ve ayrıca (d) IMP'de % 1 artış, GSYİH'da % 0,19 artışa, (e) EXP'de % 1 artışın, GSYİH'da % 0,34 artışa neden olduğunu bulgulamıştır. Uzun dönemli sonuçlar (a) IMP'de % 1'lik bir artışın GSYİH'da % 0,35'lik bir artışa (b) EXP'de % 1'lik bir artışın GSYİH'da % 0,60'lık bir artışa neden olduğunu göstermektedir. Ayrıca bir dönemde oluşan dengesizliklerin % 28'inin bir sonraki dönemde sistem tarafında telafi edildiği görülmüştür. Ülke düzeyindeki sonuçlar Kıbrıs, Mısır, İran, İsrail, Ürdün, Umman, Katar, S. Arabistan, Türkiye ve Yemen için uzun ilişki olduğunu doğrularken, Bahreyn, Kuveyt ve Lübnan doğrulamamıştır. Bu bulgular geri bildirim hipotezini desteklemektedir. PMG Tahmincisi sonuçlarına dayanarak uluslararası ticaretin uzun vadede sürdürülebilir büyüme için gerekli görülse de kısa dönemde ithalat bağımlılığını ortadan kaldırmak için yapısal bir dönüşümün gerekli olduğu söylenebilir.*

**Anahtar Kelimeler:** İktisadi Bütüme, İthalat, İhracat, Uluslararası Ticaret, Panel Veri Analizi

**JEL CODU: O47, O40, E21**

## 1. Introduction

Numerous studies have been conducted in the literature to explain the relationship between export, import and economic growth. In this context, it is seen that different hypotheses have been developed and countless empirical studies have been conducted to test them. However, it is hard to say that a clear consensus has been reached.

When the empirical literature on the last decade is analyzed, it is seen that the relationship between international trade and economic growth is examined in terms of (i) Export-Led Growth Hypothesis (ELG), (ii) Growth-Led Export Hypothesis (GLE) and (iii) Import-Led Growth Hypothesis (ILG), (iv) Feedback Hypothesis (FB) and (v) Neutrality Hypothesis (NH)

According to the ELG, an increase in exports of manufacturing goods leads to growth by positive externalities and spillover effects. In the recent studies on endogenous growth theories, economic growth is expected to increase by means of the necessary intermediate goods and technology in production and access to knowledge (Gossel, and Biekpe, 2014). Based on ELG, export affects growth as follows (Felipe, 2010): (a) Exports increase efficiency through competition. The factors such as cost decrease due to economies of scale, diffusing the technology and spillover the knowledge used in the production of export goods enable boosting economic growth. (b) Exports allow the importation of capital and intermediate goods, which provides economic growth by reducing the need for foreign exchange. Higher export growth means a higher growth rate. Moreover, it provides more employment opportunities and contributes to the income distribution compared to the import substitution strategy. In this context, it is argued that there is a unidirectional causality from export to economic growth.

GLE Hypothesis argued that economic growth facilitates the enhancement and adoption of new technologies, improvement of skills, and leading to efficiency gains, and ultimately increasing the exports of the country by achieving a comparative advantage in international markets (Krugman, 1984).

On the other hand, imports can also play an essential role in the relationship between exports and economic growth. In endogenous growth theories, importation is one of the most important channels for providing new technology transfers and accessing higher quality capital goods and intermediate goods. Thus, according to "import-led economic growth hypothesis, it could be a unidirectional causality from import to economic growth. (Tastan, 2010).

Feedback Hypothesis suggests that there is a bidirectional relationship between exports and economic growth. It is argued that exports could be increased due to the increase in productivity caused by economies of scale. On the other hand, the increase in exports leads to a decrease in costs and hence boosts the gains from output-growth. In addition, an increase in trade will

generate more income and this increase in income will boost international trade. (Giles and Williams, 2000)

In the empirical literature, it is seen the results which reveal “neutrality (NR Hypothesis)” that means no relationships between trade and economic growth. In this study, the long-term and the short-term causality between exports, imports and economic growth will be investigated for Middle East Countries. Before implementing the econometric analysis, the empirical literature review will be summarized.

## 2. Literature Review

As it is seen in Table 1, which presents an empirical literature review, the results of the relationships between import (IMP), export (EXP) and economic growth (GDP) are different due to selected methods, countries and period.

**Table 1. Empirical Literature Review**

Researcher	Data Span and Method	Findings
Ağayev (2011)	Granger Panel Causality Pedroni Cointegration, 12 transition countries	EXP $\Rightarrow$ GDP (ELG – hypothesis)
Bourdon et al. (2013)	GMM Method, 157 Countries, 1995- 2009,	EXP $\Rightarrow$ GDP (ELG – hypothesis) IMP $\Rightarrow$ GDP (ILG – hypothesis)
Busse and Koniger (2012)	GMM, 108 Countries, 1971- 2005	IMP $\Rightarrow$ (ILG – hypothesis) EXP $\Rightarrow$ GDP (ELG – hypothesis)
Hye et al. (2013)	ARDL, 5 Asian countries 1960 - 2009	(a) EXP $\Leftrightarrow$ IMP in Bhutan, India, Pakistan (b) GDP $\Leftrightarrow$ IMP in Bangladesh, India, Sri Lanka, (c) GDP $\Leftarrow$ EXP in Bangladesh, Nepal, (ELG – hypothesis) (d) GDP $\Rightarrow$ EXP in Pakistan, (GLE hypothesis) (e) GDP $\Leftrightarrow$ EXP in Bhutan, India, Pakistan, Sri Lanka, (FB hypothesis)
Mehrara et al. (2013)	Ordinary Least Square, 19 Oil Exporter Countries, 1991 - 2006	Trade has a negative impact on GDP.
Sharma and Kaur (2013)	Granger Causality Tests, 1976 -2011, India and China	EXP $\Leftrightarrow$ IMP
Zeren and Ari (2013)	Granger Causality Tests G7 countries, 1970 – 2011	Trade $\Leftrightarrow$ GDP (FB-hypothesis)
Gossel and Biekpe (2014)	Toda Yamamoto Granger Causality, South Africa, 1995 - 2011	IMP $\Leftrightarrow$ GDP and EXP $\Rightarrow$ GDP (ELG – hypothesis)
Kristjanpoller and Olson (2014)	VECM, Latin American Count. 1970-2010	EXP $\Rightarrow$ GDP (ELG – hypothesis) IMP $\Rightarrow$ GDP (ILG – hypothesis)
Omri and Kahouli (2014)	GMM 13 MENA countries,1990 - 2010	Trade $\Rightarrow$ GDP (ELG – hypothesis)
Gokmenoglu et al. (2015)	GMM, 10 S.E. European Countries 1996 - 2012	Trade $\Rightarrow$ GDP (ELG – hypothesis)

Tahir et al (2015)	ARDL, ECM, Pakistan, 1977 - 2013	EXP $\Rightarrow$ (-) GDP (ELG – hypothesis)
Omri et al (2015)	GMM, 12 MENA countries 1990 – 2011	Trade $\Leftrightarrow$ GDP (FB– hypothesis)
Hamdan (2016)	Fixed Effect Model Random Effect Model 17 Arabic countries	EXP $\Rightarrow$ GDP (ELG – hypothesis) IMP $\Rightarrow$ GDP (ILG – hypothesis)
Leitão and Shahbaz (2016)	OLS, FEM, REM, 27 European Union Countries, 1999 - 2009	Trade $\Rightarrow$ GDP (ELG – hypothesis)
Pilinkiene (2016)	VAR Granger Panel Data Analysis, CEE Countries, 2000 - 2014	Trade $\Leftrightarrow$ GDP (FB – hypothesis)
Silberberger and Königer, (2016)	Granger Causality Tests, VECM, BRICS Countries, 1991 – 2015	Trade $\Rightarrow$ GDP in the long-term (ELG – hypothesis) Trade $\Leftrightarrow$ GDP in the short-term (FB – hypothesis)
Şerefli (2016)	Granger Causality Test Turkey, 1975-2014	EXP $\Leftrightarrow$ GDP and IMP $\Leftrightarrow$ GDP (NR - hypothesis)
Yüksel and Zengin (2016)	Granger Causality Tests, VECM, 6 Developing Countries, 1961 - 2014	(a) EXP $\Leftrightarrow$ GDP in Brazil, China, Malaysia, Mexico and Turkey, (NR - hypothesis) IMP $\Leftrightarrow$ GDP in Brazil, Argentina, China, Malaysia, Mexico and Turkey. (NR - hypothesis) (b) EXP $\Rightarrow$ IMP in Malaysia, (c) EXP $\Rightarrow$ GDP in Argentina, (ELG – hypothesis)
Ayad & Belmokaddem (2017)	TYDL Granger Causality 16 MENA countries, 1980 – 2014	GDP $\Leftrightarrow$ Trade (neutrality hypothesis)
Iyke (2017)	GMM, 17 CEE countries, 1994 – 2014	Trade $\Rightarrow$ GDP (ELG – hypothesis)
Kılıç and Beşer (2017)	VAR Granger Causality Five selected Countries, 1992 – 2015	(a) IMP $\Leftrightarrow$ GDP (ILG – hypothesis) (b) GDP $\Rightarrow$ EXP (GLE – hypothesis) (c) IMP $\Rightarrow$ EXP
Pradhan et al. (2017)	VAR Granger Causality VECM, G-20 Countries, 1988 – 2013	Trade $\Leftrightarrow$ GDP in the short-term (FB – hypothesis) Trade $\Rightarrow$ GDP in the long-term (GLE – hypothesis)
Özcan et al. (2018)	1992-2015, 18 Emerging Market Economies, Panel Data Analysis	GDP $\Rightarrow$ Trade (GLE – hypothesis)

The empirical literature presented Table 1 supports 14 ELG Hypothesis, 5 ILG Hypothesis, 4 GLE Hypothesis, 6 FB Hypothesis and 3 NR Hypothesis. Under the title of Econometric Analysis, the validity of the hypotheses will be evaluated by examining the relationship between EXP, IMP and GDP in the Middle East countries.

### 3. Econometric Analysis

#### 3.1. Data Sets, Variables, Methodology

The data set covers 312 observations composed of GDP, EXP and IMP of 14 Middle East countries, between 1993-2016. Data set was compiled from the web based statistical sources of “World Bank”.

Primarily the functional and econometric models will be established. In order to produce correct results, stationery and homogeneity of the series will be discovered. Then, “Granger Panel Causality Analysis” will be employed to reveal the short-term causality among the variables. Panel Co-integration test will be implemented to determine the long-term relationship between variables.

### 3.2. Modelling

In the model, economic growth is the predicated variable; export and import are the predictor variables. Accordingly, the model can be functionally described as in Eq. (1)

$$\begin{aligned} \text{Economic Growth} &= f(\text{Exports, Imports}) \\ \text{GDP} &= f(\text{EXP, IMP}) \end{aligned} \quad (1)$$

- GDP: GDP (constant 2010 US\$)
- EXP : Export goods and services (current US\$),
- IMP : Import goods and services (current US\$),

The functional model that is given in Eq. (1) should be converted to statistical form to carry on econometric analyses. Eq. (2) is the statistical form of the functional expression of the model which is presented in Eq. (1)

$$\text{GDP}_{it} = a + \beta_1 \text{EXP}_{it} + \beta_2 \text{IMP}_{it} + u_{it} \quad (2)$$

In equation (2),  $a$  represents fixed term and the  $\beta$  coefficients indicate the relationship between the predicated and the predictor variables.  $u_{it}$  is the error term of the equation, while  $i$  ( $i = 1 \dots N$ ) displays countries. Considering the Eq. (2) is “a static model”, by taking the delayed values of the series (i), the dynamic equations of the VAR system can be described as follows.

$$d\text{GDP}_t = a_1 + \sum_{l=1}^n \beta_{1l} d\text{GDP}_{it-l} + \sum_{l=1}^n \beta_{2l} d\text{EXP}_{it-l} + \sum_{l=1}^n \beta_{3l} d\text{IMP}_{it-l} + u_{1t} \quad (3)$$

$$d\text{EXP}_t = a_2 + \sum_{l=1}^n \beta_{4l} d\text{EXP}_{it-l} + \sum_{l=1}^n \beta_{5l} d\text{GDP}_{it-l} + \sum_{l=1}^n \beta_{6l} d\text{IMP}_{it-l} + u_{2t} \quad (4)$$

$$d\text{IMP}_t = a_3 + \sum_{l=1}^n \beta_{7l} d\text{IMP}_{it-l} + \sum_{l=1}^n \beta_{8l} d\text{EXP}_{it-l} + \sum_{l=1}^n \beta_{9l} d\text{GDP}_{it-l} + u_{3t} \quad (5)$$

Where  $d$  displays “the first difference”,  $u_1, u_2$  and  $u_3$  indicates the “error terms” and  $n$ , is “the number of lag-lengths”.

### 3.3. Findings

Table 1 displays the results of “Pooled Least Squares (PLS Test)”. According to the outcomes of PLS, t-tests and F test probability values ( $P > |t|$  and  $\text{Prob} > F$  respectively) are less than 0.05. The values of “ $R^2$  and Adjusted  $R^2$ ” are significantly high. The values of the coefficients are meaningful. Accordingly, it can be said that the model is meaningful.

**Table 2. Outcomes of Pooled Least Squares**

$\text{LnGDP}_{it} = a + \beta_1 \text{LnEXP}_{it} + \beta_2 \text{LnIMP}_{it} + u_{it}$				Number of obs	=	312
Source	SS	df	MS	F (2, 309)	=	2187.06
Model	563.699605	2	281.849803	Prob > F	=	0.0000
Residual	39.821358	309	0.128872	R-squared	=	0.9340
Total	603.520963	311	1.940582	Adj R-squared	=	0.9336

				Root MSE	=	0.3590
LnGDP	Cof.	Std. Err.	t	P> t	[95% Conf. Interval]	
LnIMP	0.9308127	0.0490135	18.99	0.000	0.8343702	1.027255
LnEXP	0.2139808	0.0423985	5.05	0.000	0.1305599	0.297402
_cons	-2.4545190	0.4261418	-5.76	0.000	-3.2930260	-1.616012

Stationary of the series is crucial to perform the causality and VAR analyses. Therefore, firstly stationary of the series will be investigated. However, it is necessary to determine whether there is a correlation between the series so as to choose the right unit root test to be used in the determination of stationary. Under the next title, “Pesaran CD Test” will be performed for this purpose.

### 3.3.1 Cross-Sectional Dependence

Table 3 reports the outcomes of “Pesaran (2004) and Pesaran (2015 CD Test” employed to determine the correlation between series.

**Table 3. Pesaran (2004) and Pesaran (2015) CD-Test**

Variable	CD-test	p-value	Avr. joint T	mean $\rho$	mean abs( $\rho$ )
LnGDP	41.355	0.000*	24.00	0.96	0.96
LnIMP	41.301	0.000*	24.00	0.95	0.95
LnEXP	39.944	0.000*	24.00	0.92	0.93

Notes: \* stand for cross-sectional dependence at the level of 1%.

Table 3 shows the outcomes of the CD test statistic, probability value, mean correlation coefficient and the mean absolute correlation values.  $H_0$  hypothesis that represents “there is no correlation between the units”, has been tested. Because of the p-values are lower than 0.05, “ $H_0$  hypothesis is rejected”, and it was induced that there is a correlation between the units.

### 3.3.2 Stationary Test

When there is a correlation between the units, it is necessary to choose “the second-generation panel unit root test”. For this reason, it is decided to employ “Pesaran CADF Test” for stationary analysis.

**Table 4. Pesaran's CADF Test Outcomes**

Variables	t-bar	CV10	CV5	CV1	Z[t-bar]	P-value
LnGDP	-2.857	-2.140	-2.250	-2.450	-4.039	0.000*
LnIMP	-2.552	-2.140	-2.250	-2.450	-2.908	0.002*
LnEXP	-2.702	-2.140	-2.250	-2.450	-3.463	0.000*

Notes: \* denotes stationary at the significance level of 1%.

Table 4 displays the outcomes of the CIPS test, which determine the stationary of the LnGDP, LnIMP and LnEXP. According to the results, it was made an interference that all series are stationary at the level. After deciding that the series are stationary at the level, causality analysis can be performed. However, the lag-length to be used in the analysis should be decided before. For this purpose, “Hansen J Test” was implemented to determine the proper lag-length and the outcomes of the report were presented in Table 5.

**Table 5. Hansen J Test Outcomes**

lag	CD	J	J p-value	MBIC	MAIC	MQIC
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1	.9999404	26.24265	.883671	-161.1016*	-45.75735*	-92.51622*
2	.9999455	27.61901	.4308113	-112.8892	-26.38099	-61.45014
3	.9996979	.6858598	1	-108.8983	-41.31414	-68.59015
4	.9993787	.9204433	.9999999	-77.13966	-29.07986	-48.56242

The value of the lag-length, which performed the minimum of the selection criteria of MBIC, MAIC and MBIC is 1. Therefore, the appropriate lag-length is selected as one.

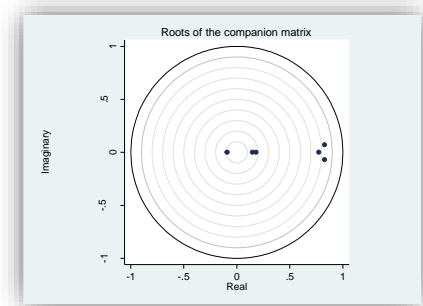
**3.3.3 Homogeneity Tests**

“Swamy S Homogeneity Test” will be performed to determine whether homogeneous Panel VAR models or heterogeneous panel VAR model should be employed. The results are summarized in Table 5.

**Table 6. The Homogeneity Test Outcomes**

Reg.	$\chi^2$	Prob > $\chi^2$
$LnGDP_t = a_1 + \beta_{1i}LnGDP_{t-1} + \beta_{2i}LnIMP_{t-1} + \beta_{3i}LnEXP_{t-1} + u_1$	1196.21	0.0000*
$LnIMP_t = a_2 + \beta_{4i}LnIMP_{t-1} + \beta_{5i}LnGDP_{t-1} + \beta_{6i}LnEXP_{t-1} + u_2$	568.31	0.0000*
$LnEXP_t = a_3 + \beta_{7i}LnEXP_{t-1} + \beta_{8i}LnIMP_{t-1} + \beta_{9i}LnGDP_{t-1} + u_3$	1017.94	0.0000*

According to the “Swamy S Test” results, the probability values of  $\chi^2$  are less than 0.05 for all variables. Therefore, “H<sub>0</sub> hypothesis, which represents the parameters are homogenous, is rejected”, and it is decided that the parameters are heterogeneous.



To robust the stability of the VAR, “the outcomes of the roots of the companion matrix” were depicted in Graph 1. The eigenvalues and the unit circle appear in the graph. All eigenvalues are smaller than one and within the unit circle that confirmed the VAR is asymptotical stable.

**Graph 1. Stability of VAR**

**3.3.4 VAR Panel Causality Analysis**

It is adjudicated to employ the heterogeneous VAR model in the causality analysis on the strength of the outcomes of the Swamy S the homogeneity test. Accordingly, “Dumitrescu & Hurlin (2012) Granger Panel Causality Test”, which considers the heterogeneity, will be employed. The outcomes of the report are presented in Table 7.

**Table 7. VAR Panel Causality Test Results**

H <sub>0</sub> :	W-bar Stat.	Z-bar Stat. (p-value)	Z-bar tilde (p-value)
IMP $\nRightarrow$ GDP	7.8069	6.3817 (0.0000)*	14.0989 (0.0000)*
GDP $\nRightarrow$ IMP	3.8657	2.5115 (0.0120)**	5.8003 (0.0000)*
EXP $\nRightarrow$ GDP	5.8163	4.8800 (0.0000)*	9.9073 (0.0000)*
GDP $\nRightarrow$ EXP	2.3954	-0.9901 (0.3221)	2.7043 (0.0068)*
IMP $\nRightarrow$ EXP	1.8296	8.4118 (0.0000)*	1.5128 (0.1303)
EXP $\nRightarrow$ IMP	5.4859	23.4929 (0.0000)*	9.2116 (0.0000)*

Note: “\* and \*\* indicate the Granger causality at %1 and 5% significance level respectively”.

( $\nRightarrow$ ) refers “does not Granger-cause”

The outcomes of the analysis, which is seen in Table 7 indicated

- (a) IMP is the granger cause of GDP
- (b) GDP is the granger cause of IMP,
- (c) EXP is the granger cause of GDP,
- (d) GDP is not the granger cause of EXP,
- (e) EXP is the granger cause of IMP,
- (f) IMP is not the granger cause of EXP.

As a result, there is

- (i) a bidirectional causality between GDP and IMP,
- (ii) a bidirectional causality between GDP and EXP, and
- (iii) a unidirectional causality from EXP to IMP.

The causality relationships among the variables are depicted in Table 8. below.

**Table 8. The Short-term Relationships**

Variable	The direction of The Causality	Variable
GDP	$\Leftrightarrow$	EXP
GDP	$\Leftrightarrow$	IMP
IMP	$\Leftarrow$	EXP

**3.3.5 Panel Co-integration Analysis**

Panel cointegration analysis will be employed to reveal the relationship between the series in the long-term. For this purpose, “Westerlund ECM Panel Cointegration Test” was preferred. The null hypothesis, which represents that “there is no cointegration”, was tested and the outcomes were presented in Table 9.

**Table 9. Westerlund ECM Panel Co-integration Test**

GDP IMP EXP, lags(0 1) Leads (0 1) bootstrap(100) <sup>(a)</sup>				
Statistics	Value	Z-value	P-value	Robust p-value
G <sub>t</sub>	-2.938	-5.356	0.000	0.000*
G <sub>a</sub>	-6.518	-0.458	0.324	0.010*
P <sub>t</sub>	-10.697	-5.508	0.000	0.000*
P <sub>a</sub>	-6.279	-2.781	0.003	0.010*

Notes: \* indicates cointegration at the significance level of 1%.

(a) The number of Bootstraps can be taken smaller than 800, where 100 was found to be sufficient.

The lag-length is determined as 0.08 and lead length as 0.15 based on average AIC. Table 9 consist of values of statistics, calculated z, probability, robust probability of G<sub>t</sub>, G<sub>a</sub>, P<sub>t</sub> and P<sub>a</sub>. The bootstrap critical values were calculated and presented in the “Robust p-value” column. When the results are examined, the robust p-values which are considered for heterogeneous panel cointegration, are less than 0.05. Therefore, “there is no cointegration the null hypothesis is rejected” and It was concluded that there is co-integration between GDP, IMP and EXP.

**3.3.6. PMG Estimator**

Because of Westerlund Cointegration Test confirmed a long-term relationship, PMG Estimator was employed and the outcomes were reported in Table 10.

**Table 10. PMG Estimator Outcomes**

D.LnGDP	Coef.	Std.Err.	z	P> z	[95% Conf. Interval]
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<b>_ec</b>						
L.LnIMP	0.3495073	0.0495754	7.05	0.000	0.2523413	0.4466733
L.LnEXP	0.5969636	0.0418079	14.28	0.000	0.5150217	0.6789056
<b>SR</b>						
_ec	-0.2786743	0.0658578	-4.23	0.000	-0.4077531	-0.1495955
D.LnIMP	0.1915077	0.0600120	3.19	0.001	0.0738864	0.3091290
D.LnEXP	0.3413237	0.0666152	5.12	0.000	0.2107638	0.4718908
D.L.LnIMP	7.87e-12	3.23e-12	2.44	0.015	1.54e-12	1.42e-11
D.L.LnEXP	9.86e-13	3.78e-12	0.26	0.794	-6.43e-12	8.40e-12
D.L.LnIMP	-1.05e-11	5.88e-12	-1.79	0.073	-2.21e-11	9.88e-13
_cons	0.6835209	0.1864569	3.67	0.000	0.3180722	1.0489700

Table 8 covers the coefficients, standard error, z-statistics and p-values. Because of the p-values are lower than 5%, it's concluded that long-term coefficients are significant. By taking the value of the coefficients it is concluded in the long-term that

- (i) a 1% rise in IMPORT cause to a 0,35 % increase in GDP, vice versa.
- (ii) a 1% rise in EXPORT cause to a 0,60 % increase in GDP, vice versa.

The bottom part of the table represents the short-term relationship. P-values of error correction coefficients are lower than 5% and significant. Therefore,

- (iii) a 1% raise in IMPORT cause to a 0,19 % increase in GDP, vice versa.
- (iv) a 1% raise in EXPORT cause to a 0,34 % increase in GDP, vice versa.
- (v) \_ec coefficient shows that a 28% of the imbalances in a period, because of a shock, can be recovered in the next period.

Once it is considered the coefficients of the IMP and EXP it is seen that both IMP and EXP have more impact on GDP in the long-term compare to the short term. Table 11 presents the error correction coefficients, standard errors, z and z Prob. values at the country level.

**Table 11. PMG Estimator Outcomes at Country Level**

Countries	Coef.	Std.Err.	z	P> z	[ 95% Conf. Interval ]	
Bahrain	-0.153552	0.126400	-1.21	0.224	-0.4012903	0.0941866
Cyprus	-0.176003**	0.080061	-2.20	0.028	-0.3329192	-0.0190872
Egypt	-0.217378*	0.066539	-3.27	0.001	-0.3477925	-0.0869639
Iran	-0.323676*	0.963105	-3.36	0.001	-0.5124412	-0.1349109
Israel	-0.189923***	0.102644	-1.85	0.064	-0.3911016	0.0112554
Jordan	-0.172375*	0.066024	-2.61	0.009	-0.3017796	-0.0429698
Kuwait	-0.385987**	0.185885	-2.08	0.038	-0.7503155	-0.0216588
Lebanon	0.017857	0.051964	0.34	0.731	-0.0839900	0.1197040
Oman	-0.151510	0.128793	-1.18	0.239	-0.4039406	0.1009203
Qatar	-0.448151*	0.142559	-3.14	0.002	-0.7275614	-0.1687400
S. Arabia	-0.209149*	0.067507	-3.10	0.002	-0.3414604	-0.0768376
Turkey	-0.967920*	0.251004	-3.86	0.000	-1.4599400	-0.4760209
Yemen	-0.244939*	0.045943	-5.33	0.000	-0.3349852	-0.1548920

Notes: \* P < 0.001; \*\* P < 0.05 and \*\*\* P < 0.10

The results presented in Table 11 indicated that except Bahrain, Kuwait and Lebanon, the \_ec coefficients of the rest of the countries are negative and significant, and therefore concluded long-term relationships between IMP, EXP and GDP. These countries are Cyprus, Egypt, Iran, Israel, Jordan, Oman, Qatar, S. Arabia, Turkey and Yemen.

#### 4. Conclusion

In this study, the relationship between export (EXP), import (IMP) and economic growth (GDP) in the Middle East countries were examined by using annual data for the years between 1993 - 2016. The indicators are EXP (current S\$), IMP (current US\$) and GDP (constant 2010 US\$).

Primarily, the “cross-section dependence of the series” was examined by the “Pesaran (2004) CD Test”. The results showed that there is a correlation between the series. When there is a correlation between series, it is necessary to choose “the second-generation panel unit root tests”. For this reason, “Pesaran CIPS Test” was employed for the stationary analysis. The outcomes of Pesaran CIPS Test indicated that all series are stationary at the level. “Hansen J Test” was implemented to define the proper lag-length. “Swamy S Homogeneity Test” was employed to determine the right panel causality method. Accordingly, “Dumitrescu and Hurlin (2012) Granger VAR Panel Causality Test”, which considers the heterogeneity was implemented to reveal the short-term causality in short-term. As a result of the short-term causality test: there is (a) a bi-directional causality between GDP and IMP, (b) a bi-directional causality between GDP and EXP, and (c) a uni-directional causality from EXP to IMP.

“Westerlund ECM Panel Co-integration Test” was conducted so as to determine whether a long-term relationship. The outcomes indicated a long-term relationship between IMP, EXP and GDP. After indicating the existence of a long-term relationship between the series, PMG Estimator was employed for further investigation of the long-term and short-term relationship. The short-term results of PMG Estimator revealed (i) a 1% raise in IMP cause to a 0.19 % increase in GDP, (ii) a 1% raise in EXP cause to a 0,34 % increase in GDP. The long-term results indicated (a) a 1% raise in IMP cause to a 0.35 % increase in GDP, (b) a 1% raise in EXP cause to a 0,60 % increase in GDP. Moreover, 28% of the imbalances in a period can be recovered in the next period.

The country-level outcomes confirmed a long-term relationship for Cyprus, Egypt, Iran, Israel, Jordan, Oman, Qatar, S. Arabia, Turkey and Yemen, but not for Bahrain, Kuwait and Lebanon.

These findings support the feedback hypothesis which argues bi-directional causality. In the short-term, a raising of exportation is possible by increasing importation based on the outcomes of the short-term causality analysis which indicated a relationship form EXP to IMP. Because of this reason, even though the trade deficit is not a matter in this research, it can be said that growth can be achieved by the cost of probable foreign trade deficits. Therefore, although international trade may seem necessary for sustainable growth in the long-term based on outcomes of PMG Estimator, it can be said that a structural transformation is necessary to eliminate import dependency in the short term.

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**Araştırma Makalesi**

**International Trade and Economic Growth in Middle East Countries: A Panel Data Analysis**

*Ortadoğu Ülkelerinde Uluslararası Ticaret ve İktisadi Büyüme: Bir Panel Veri Analizi*

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**Genişletilmiş Özet**

Literatürde ihracat (EXP), ithalat (IMP) veya uluslararası ticaret ile ekonomik büyüme (GDP) arasındaki ilişkiyi açıklamak için çok sayıda teorik ve ampirik çalışma yapıldığı görülmektedir. Bu bağlamda, farklı hipotezlerin geliştirildiği ve bunları test etmek için sayısız ampirik çalışmalar yapılmış olmasına karşın kesin bir fikir birliğine varıldığını söylemek zordur. Son on yıldaki ampirik literatür incelendiğinde, uluslararası ticaret ile ekonomik büyüme arasındaki ilişkinin (i) İhracata Dayalı Büyüme Hipotezi (ELG), (ii) Büyüme Dayalı İhracat Hipotezi (GLE) (iii) İthalata Dayalı Büyüme Hipotezi (ILG), (iv) Geribildirim Hipotezi (FB) ve (v) Tarafsızlık Hipotezi (NH) bağlamında incelendiği görülmektedir.

ELG'ye göre, sanayi malı ihracatındaki artışlar, olumlu dışsalıklar ve yayılma etkileri nedeniyle iktisadi büyüme yol açmaktadır. Endojen büyüme teorileri temeline dayalı son araştırmalarda, bilgiye erişim, teknoloji ve aramalı üretimindeki artışlar, iktisadi büyümeyi olumlu yönde etkilemektedir (Gossel ve Biekpe, 2014). Buna göre ihracat, büyümeyi şu şekilde etkiler: (Felipe, 2010): (a) İhracat, rekabet yoluyla verimliliği artırır. Ölçek ekonomileri nedeniyle maliyetler düşürür. İhracat malı üretiminde kullanılan bilginin ve teknolojinin yaygınlaşması iktisadi büyümenin kaynakları olarak görülür. (b) İhracat, döviz ihtiyacını azaltarak iktisadi büyüme için gerekli sermaye ve ara malları ithalatına imkân verir. Buna göre daha fazla ihracat, daha yüksek büyüme anlamına gelmektedir. Buna ilave olarak, ihracata dayalı üretim artışı daha fazla istihdam olanağı sağlar ve ithal ikame stratejisine kıyasla gelir dağılımı adaletine daha fazla katkıda bulunur. Bu bağlamda, ELG Hipotezi'nde ihracattan ekonomik büyümeye doğru tek yönlü bir nedensellik ilişkisi olduğu iddia edilmektedir. GLE Hipotezi ise iktisadi büyümenin, yeni teknolojilerin geliştirilmesini ve içselleştirilmesini, becerilerin iyileştirilmesiyle de verimlilik kazanımlarına yol açtığını ve nihayetinde uluslararası pazarlarda karşılaştırmalı rekabet avantajı sağlayarak ülkenin ihracatını artırdığını savunmaktadır (Krugman, 1984). Buna göre iktisadi büyümeden ihracata doğru tek yönlü bir nedensellik ilişkisinin olduğu öne sürülmektedir. Diğer yandan, ILG Hipotezi, ithalatın iktisadi büyümede önemli bir rol oynayabileceğini iddia eder. Bu bağlamda, İçsel büyüme teorilerinde ithalat, yeni teknoloji transferi, yüksek kalitede sermaye malı ve ara mallarına erişimde önemli bir kanal olduğu, bunun da büyümeyi arttırdığı ileri sürülmektedir. Dolayısıyla ILG Hipotezi, ithalattan iktisadi büyümeye doğru tek yönlü bir nedensellik olabileceğini ileri sürer (Tastan, 2010). FB Hipotezi, ihracat ve ekonomik büyüme arasında iki yönlü bir ilişki olduğunu görüşündedir. Ölçek ekonomilerinden kaynaklanan verimlilik artışına bağlı olarak ihracatın artacağı düşünülmektedir. Öte yandan, ihracattaki artış maliyetlerde düşüşe yol açmakta ve dolayısıyla üretim artışından elde edilen kazancı artırmaktadır. Ayrıca, uluslararası ticaretteki artış daha fazla gelir yaratacak ve gelirdeki bu artış

uluslararası ticareti artıracaktır (Giles ve Williams, 2000). Buna göre FB Hipotezi ihracat ile iktisadi büyüme arasında çift yönlü bir ilişki olduğu savına dayanır. Diğer yandan, uluslararası ticaret ile iktisadi büyüme arasında ilişki olmadığı sonucunu üreten ve NR Hipotezi (tarafsızlık) gelişmesine neden olan ampirik çalışmaların olduğu da görülmektedir.

Bu çalışmada, Orta Doğu ülkelerinde ihracat (EXP), ithalat (IMP) ve iktisadi büyüme (GDP) arasındaki uzun ve kısa dönem ilişkiler, 1993 - 2016 yılları arasında 312 gözlemden oluşan yıllık veriler kullanılarak incelenmiştir. Ekonometrik analize, fonksiyonel, istatistiki ve VAR modelleri kurularak başlanmıştır. Modelin, değişkenlerin ve katsayıların anlamlılığı, “PLS (Havuzlanmış En Küçük Karalar)” yöntemi ile incelenmiş, modelin, değişkenleri ve katsayıların anlamlı olduğu sonucuna varıldıktan sonra analize devam edilmiştir. Nedensellik analizlerinde uygun yöntemlerin seçilebilmesi için öncelikle, birimler arası korelasyonun varlığı, Pesaran (2004) ve Pesaran (2015) yatay kesit bağımlılığı testi ile sınanmış ve birimler arası korelasyon olduğu tespit edilmiştir. Nedensellik analizlerinde önemli bir konu olan serilerin durağanlığı sınamasında Pesaran (2007) CADF panel birim kök testi kullanılmış ve tüm serilerin seviyede durağan oldukları görülmüştür. Parametrelerin homojen veya heterojen olmaları uygun yöntemin seçilmesinde önem arz etmektedir. Bu nedenle Swamy S homojenlik testi kullanılarak parametrelerin heterojen oldukları sonucuna ulaşılmıştır. Hansen J Testi ile analizlerde kullanılacak uygun zaman gecikmesi 1 olarak belirlenmiştir.

Seriler arasında kısa dönem nedensellik ilişkisinin tespitinde Dumitrescu & Hurlin (2012) nedensellik testi kullanılmış ve sonucunda; a) GDP ve IMP arasında iki yönlü, (b) GDP ve EXP arasında iki yönlü, (c) EXP’den IMP’ye tek yönlü nedensellik ilişkisi olduğu tespit edilmiştir.

Westerlund ECM Eş-bütünleşme Testi ile seriler arasında uzun dönemli bir ilişki olduğu tespit edildikten sonra kısa ve uzun döneme ilişkin daha fazla sonuç üretmek için PMG Tahmincisi kullanılmış ve sonuç olarak kısa dönemde; (i) IMP’de % 1 artış, GSYİH’da % 0,19 artışa, (ii) EXP’de % 1 artışın, GSYİH’da % 0,34 artışa neden olduğu bulgulamıştır. Uzun dönem sonuçları ise (a) IMP’de % 1’lik bir artışın GSYİH’da % 0,35’lik bir artışa (b) EXP’de % 1’lik bir artışın GSYİH’da % 0,60’lık bir artışa neden olduğunu göstermektedir. Ayrıca bir dönemde oluşan dengesizliklerin % 28’inin bir sonraki dönemde sistem tarafında telafi edildiği görülmüştür. Ülke düzeyindeki sonuçlar Kıbrıs, Mısır, İran, İsrail, Ürdün, Umman, Katar, S. Arabistan, Türkiye ve Yemen için uzun ilişki olduğunu doğrularken, Bahreyn, Kuveyt ve Lübnan doğrulamamıştır. Bu bulgular geri FB hipotezini desteklemektedir. PMG Tahmincisi sonuçlarına dayanarak uluslararası ticaretin uzun vadede sürdürülebilir büyüme için gerekli görülse de, panel nedensellik ortaya koyduğu kısa dönemde ithalat bağımlılığını ortadan kaldırmak için yapısal bir dönüşümün gerekli olduğu söylenebilir.