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The Relationship between Military Expenditures and Economic Freedom in the Middle East and North Africa Region

(Research Article)

Ortadoğu ve Kuzey Afrika Bölgesinde Askeri Harcamalar ve Ekonomik Özgürlük Arasındaki İlişki

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ABSTRACT

The relationship between military expenditures and economic growth has been widely studied in the literature. However, there are no studies focusing on the relationship between military expenditures and economic freedom in the literature. In countries with high levels of economic freedom, democratic regime transitions are more comfortable. Therefore, military expenditures are expected to decrease as potential internal turmoil, and external threats will be reduced in countries with high economic freedom. This study examines the relationship between military expenditures and economic freedom in 13 MENA countries (Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia, Tunisia, and Turkey) during the period 1996-2018 by using panel data analysis. It was found that economic growth, tax burden, and trade freedom had a positive impact on military expenditures. It was also concluded that property rights, monetary freedom, government integrity, and investment freedom negatively affected military expenditures. Besides, it is understood that there is a bidirectional causal relationship between military expenditures and tax burden, property rights, monetary freedom, government integrity, investment freedom, and business freedom. On the other hand, there is a unidirectional causality relationship from economic growth to military expenditures and from military expenditures to trade freedom.

1. INTRODUCTION

Current researches have examined various determinants of military expenditure. In the literature on military expenditures, empirical studies are carried out with many different independent variables such as economic growth, democratic or non-democratic regimes, and strategic variables (population, ethnicity, conflict zone, country age, country border length). The theoretical basis of the empirical studies is the democratic peace theory advocated by the liberal view and the demanding state advocated by the Keynesian view.

Especially in the literature, as a result of empirical studies where the relationship between military expenditures and growth is negative, it is argued that democratic regimes spend less on military expenditures than non-democratic regimes. Accountability in democratic regimes, politicians' avoidance of war because of their motivation to be elected, and no use of violence against domestic opposition support empirical studies of Democratic Peace Theory. (Fordham and Walker 2005, James et al. 1999, Russet 1993)

There are many different interpretations of the positive relationship between military expenditures and other dependent variables. The main reason for this difference is that non-democratic regimes have different scales, such as democratic regimes. In the literature, non-democratic regimes are generalized as military regimes, single-party regimes, and single man regimes. Military expenditures in military regimes are considered to be higher than those in other autocracy regimes (Kim, Kim and Lee 2013). Another unexpected situation in a positive relationship is that high military expense encourages the coup in autocratic regimes (Acemoglu et al. 2010). The reasons for the increase in military expenditures in autocratic regimes are the establishment of post-coup order, the arms race in neighboring states, the presence of internal and external conflicts, and sudden imbalances in population changes. (Bove and Brauner 2016, Kim, Kim and Lee 2013, Mulligan, Gil and Sala-i-Martin 2004)

There are also different types of democratic regimes. While social democratic regimes have the least military expenditure, it is observed that the presidential system spends more than the parliamentary systems. (Töngür et.al. 2015, Albate et.al. 2012) There are also empirical conclusions that military spending is higher than autocratic regimes as it decreases the level of democracy or during the transition to democratic regimes. (Baliga et al. 2011)

Because of these different views in the literature, the question is whether the military expenditures should be considered as a necessity or luxury item. Wall (1996) found that military expenditures were necessity goods in his study. Military spending is deemed necessary as it supports economic development and the transition of regimes to democracy and also ensures the existence of states in conflict environments. According to the liberal view, because of the thesis that "democratic regimes do not fight each other" military expenditures are luxury goods and have negative effects on economic growth. (Doyle 1986, Russet 1993)

2. LITERATURE RELATED TO MILITARY EXPENDITURES

There is no study in the literature on the relationship between military expenditures and economic freedom, but the relationship between military expenditures and economic growth is the most empirically tested. While a positive correlation was found between two variables (Abdellfettah v.d. 2014, Alptekin ve Levine 2012, etc.) in some studies, a negative correlation was found between two variables in many other studies. Dunne and Tian (2013) summarized a total of 168 studies published until 2013 on these two variables. It was found that 23 percent

of the studies examined were positive, 38 percent negative, and 39 percent found no relationship between the two variables.

Demand-side Keynesian or supply-side liberal economic understanding cannot explain the exact reasons for the changes in military spending because many different socio-economic factors and strategic factors are effective in explaining the changes in military expenditures. For these reasons, other political economy variables such as regime type and level of democracy have been used in the empirical tests in the literature. In the majority of studies, POLITY (Polity98, Polity2, Polity III, Polity IV) data were used to determine the level of democracy and type of regime, while Freedom House's Political Right and Civil Liberties Indexes were used in several studies.

In the published papers, it was investigated that democratic administrations reduced military expenditure by testing similar variables but using different empirical models. In many publications, similar results were obtained using different methods of the panel. Kimenyi and Mbanku (1995), Lebovic (2001), Mulligian, Gil and Sala-i-Martin (2004), Fordham and Walker (2005), Yıldırım and Sezgin (2005), Dunne, Perlo-Freeman and Smith (2008) found the negative relationship between democracy and military expenditures by the cross-section method in their work. The studies reaching similar results with the dynamic panel are; Dunne, Perlo-Freeman (2003), Lskavian (2011), Töngür, Hsu and Elveren (2015), Collier and Hoeffler (2007), Nordhaus, Oneal and Russet (2009, 2012), Albate, Bel and Elias (2012), Seiglie (2016) obtained similar results with the pooled data method with Polity IV data. Goldsmith (2007) and Blum (2018) showed a negative relationship with the Spatial method in their studies. In his 2015 study, Brauner tested the negative correlation with the OLS / 2SLS model and Granger causality tests.

The positive relationship between democratic regimes and military expenditures have been proved by different models (ARDL, VAR, etc.) than the panel method. Polity IV data were used in the majority of studies with a positive correlation. Dunne, Perlo-Freeman and Smith (2011) proved the existence of high military spending during the war in democratic regimes, besides Baliga, Lucca and Sjöström (2011) have argued that low-level democracies make higher military expenditures than autocratic regimes in order to sustain those regimes. Rota (2011) found a positive relationship before World War I and a negative relationship after the war. However, Rota (2016) stated a significant relationship between military expenditure and democratic regimes between the two world wars.

Solarin (2018), Brauner (2015), Rosh (1988) showed that trade openness, which contributed to the development of democracy, had a negative impact on military spending, on the contrary, Seiglie (2016) stated that it had a positive impact. Most of the countries in the MENA region are oil-exporting renting countries. Increases in trade openness or freedom of trade may have an impact on the changes in regional country regimes. (Gylafason et al. 2015)

The MENA region is defined as a block of non-democratic countries in the literature. While there was a change in the regime of some countries after the Arab Spring, some other countries had liberal expansions. There is a general recognition that military spending is less in the democratic regime style. Polity or Freedom House indexes control democratic developments in the literature. In this study, the economic freedom index was used in order to test the relationship between military expenditures and the freedom of a non-democratic region. This study aims to reveal the relationship between the economic freedom indexes of military expenditures in the Middle East and North Africa (MENA) countries, many of which

are ruled by non-democratic regimes and considered as the most conflicting region in the world.

3. CHARACTERISTICS OF THE MIDDLE EAST AND NORTH AFRICA

Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Yemen, and Turkey are the countries in the MENA region. The situation of conflict and violence in the region has been lasting past half a century. The events that caused compulsory military expenditures in the countries of the region were Permanent Israeli-Palestinian conflict, Algerian-Moroccan conflict, Egyptian-Israeli war, Arab-Israeli war, Iran-Iraq war, Iraq Invasion, Arab Spring Revolution, Syrian Civil War, Syrian Occupation, Saudi Arabia-Yemen conflict, sect clashes, coups, imperial forces' conflicts in the region. In addition to being the most intense conflict and war zones in the MENA region, the country's military spending in the region is very high compared to the rest of the world due to excessive imbalances in population changes, domestic conflict, and terrorism problems, and the borders of the country are artificial and the length is too long.

Table 1. Military Expenditures (ME) in the MENA Region

	ME per capita			Share of GDP Ratio			Share of Total ME%		
Country	**1995-2018 (Av.)**	**2014-2018 (Av.)**	**2018 World Rank**	**1995-2018 (Av.)**	**2014-2018 (Av.)**	**2018 World Rank**	**1995-2018 (Av.)**	**2014-2018 (Av.)**	**2018 World Rank**
Saudi Arabia	1440	2302	1	9,60%	10,58%	1	3,32%	4,37%	4
Israel	1824	1999	3	6,90%	5,00%	8	1,12%	0,98%	17
Kuwait	1555	1593	5	5,90%	5,02%	4	0,40%	0,38%	27
Oman	1225	1703	6	9,10%	10,13%	2	0,33%	0,44%	29
Bahrain	726	1026	10	4,20%	4,35%	13	0,06%	0,09%	66
Lebanon	310	416	26	4,70%	4,81%	5	0,12%	0,14%	53
Turkey	189	222	46	2,80%	2,08%	28	0,99%	1,00%	14
Algeria	140	247	47	4,03%	5,90%	3	0,37%	0,60%	25
Jordan	147	187	52	5,40%	4,55%	7	0,09%	0,10%	61
Iran	124	149	57	2,60%	2,76%	25	0,72%	0,72%	19
Iraq	132	196	58	1,70%	3,67%	24	0,22%	0,43%	32
Morocco	76	101	69	3,39%	3,30%	19	0,18%	0,20%	47
Tunisia	54	80	78	1,72%	2,10%	41	0,04%	0,05%	73
Egypt	41	44	102	2,30%	1,55%	92	0,22%	0,18%	54
UAE	1761	….	…	4,10%	…	…	0,74%	….	…
Qatar	1186	…	…	0,90%	…	…	0,05%	…	…
Libya	242	…	….	3,79%	…..	…	0,11%	…	….
Yemen	44	….	…	4,40%	…	…	0,13%	….	…
Syria	…	…	…	…	…	…	…	…	…

Source: SIPRI 2019

As can be seen in Table 1, the countries in the MENA region are the ones that make the highest expenditures worldwide, both at the level of military per capita and the level of GDP. After the Arab Spring in Saudi Arabia, Bahrain, and Oman, high-rated increases were remarkable in the 2014-2018 period. Increases in military spending in countries such as Algeria, Lebanon, and Tunisia, which are trying to transition to a democratic regime confirm the studies (Baliga et al. 2011, Mulligian et al. 2004) in the literature.

Freedom House considers a country's political and civil rights rating as the Freedom Rating. On the scale, they indicate Free (1.0 to 2.5), Partially Free (3.0 to 5.0), or Not Free (5.5 to 7.0). According to Freedom House data in the period of 1996-2018; Algeria, Bahrain, Egypt, Iran, Oman, Saudi Arabia, and the United Arab Emirates are non-free countries. Bahrain and Egypt became partial free countries in the interim period. Jordan, Kuwait, Lebanon, Morocco, Tunisia, and Turkey are considered to be partial free countries. Jordan, Lebanon, and Tunisia have changed. (Freedom House, 2019) Israel is considered to be the only free country in the region. In the MENA region, the regime of most countries is the military regime, the one-man regime, and the royal regime. Therefore, this makes military expenditures the main source in the national economy. As can be seen in Table 1, one of the reasons for the extremely high rates of military spending in Saudi Arabia is to expand its economy by increasing employment opportunities within the military.

It is obvious that high military expenditures are realized due to problems such as coups, civil wars, arms races of neighboring countries, internal conflicts, and population movements in the MENA region. This study, unlike the literature, examines the effect of economic freedom indices on military spending in the countries of the region, as changes in the regime emerge with the development of economic freedom. Also, it might have tested the change in the region after the Arab Spring.

4. DATA AND METHOD

4.1. Dataset

In this study, the relationship between military expenditures per capita and gross domestic product per capita and economic freedom was examined in 13 MENA countries (Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia, Tunisia, and Turkey) for the period 1996-2018. In the model, property rights, government integrity, tax burden, business freedom, monetary freedom, trade freedom, and investment freedom are used as the main determinants of economic freedom. Due to the lack of other economic freedom indices and data from other countries, these 13 countries and economic freedom indices were used. The GDP per capita was obtained from the World Bank and the economic freedom indices from the Heritage Foundation (WB 2019, HF 2019). The variables used in the analysis and explanations of the variables are shown in Table 2.

Table 2. Variables and Definitions of Variables

Variables	Definitions
lMILEXPER	The logarithm of the share of military expenditure per capita in GDP (%)
lGDP	GDP per capita (%) logarithm
PRORI	Property right index
GOVIN	Government integrity index
TAXB	Tax burden index
BUSFR	Business freedom index
MONFR	Monetary freedom index
TRAFR	Trade freedom index
INVFR	Investment freedom index

The MILEXPER and GDP series vary widely between countries in the analysis. Therefore, the logarithm of MILEXPER and GDP variables was taken to reduce the effects of outliers and to convert the series to linear. In this context, the following regression equation was estimated;

$$lMILEXPER_{it-1} = \alpha_i + \beta_1\, lGDP_{it-1} + \beta_2\, TAXB_{it-1} + \beta_3\, PRORI_{it-1} + \beta_4\, MONFR_{it-1} + \beta_5\, TRAFR_{it-1} + \beta_6\, GOVIN_{it-1} + \beta_7\, INVFR_{it-1} + \beta_8\, BUSFR_{it-1} + \varepsilon_{it}$$

4.2. Method

In order to determine the tests to be applied in the model, homogeneity and cross-sectional dependence should be tested first. In this context, the homogeneity of the model was tested by Swamy S test.

Table 3. Swamy S Homogeneity Test Results

Test of Parameter Constancy	
Chi2(72)	**Prob.**
3558.69	0.0000

When Table 3 is examined, it is concluded that the probability value of the test statistics for the model to be estimated as less than 0.05 significance level, and hence, the parameters are heterogeneous.

The cross-sectional dependence of units forming the panel is important in panel unit root tests. In the absence of cross-sectional dependence, first-generation panel unit root tests can be applied, and in the case of cross-sectional dependence, second-generation panel unit root tests are performed. Cross-sectional dependence can be tested with the help of the tests derived for this purpose. In case T> N, Breusch Pagan (1980) LM test; in the case of T <N, Pesaran (2004) CD test; while N and T are large, it is appropriate to use the Pesaran, Ullah and Yamagata (2008) NLM test. LM test statistics are calculated as follows;

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{p}^2_{ij}$$

$$CD = \sqrt{\frac{2T}{N(N-1)}} \left[\sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{p}_{ij}\right] \square N(0,1)$$

$$NLM = \sqrt{\frac{1}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (T\, \hat{p}^2_{ij} - 1) \square N(0,1)$$

$\hat{p}_{ij}$ in the statistics indicates the correlation coefficient between OLS and the residues obtained from each regression. Hypothesis of the test;

H_0: There is no dependence between cross-sections.

H_1: There is dependence between cross-sections.

Table 4. Cross-Sectional Dependence Test Results

Test	Statistic
LM	107.4 ***
LM adj*	1.697 *
LM CD*	-1.445

The existence of cross-sectional dependence in the series in the model was tested with all three tests and is presented in Table 4. However, as the time dimension was larger than the individual dimension (T> N) in the study, the Breusch Pagan LM test results were more consistent to test for the presence of cross-sectional dependence. According to the results in

Table 4, the zero hypothesis is firmly rejected because the probability values of Breusch Pagan LM statistics are less than 0.05. It is concluded that military expenditures in one of these countries affect other countries as well.

4.2.1. Panel Unit Root Test

In order to reveal a good relationship between the variables, the stationary of the series used in the model should be tested. When the variables in the regression model are not stationary, the standard assumptions valid for asymptotic analysis become invalid, and the estimation results can be misleading. If the series includes cross-sectional dependence, second-generation panel unit root tests are used, which take into account cross-sectional dependence. The second-generation tests are divided into three groups. In the first group, the first-generation tests are corrected to take into account the cross-sectional dependence with various transformations. These transformations reduce the cross-sectional dependence but do not eliminate it. The second group includes panel unit root tests based on system estimates such as Multivariate Augmented Dickey-Fuller (MADF). The other group includes tests such as PANIC, which model cross-sectional dependence using common factors.

Table 5. First-Generation Panel Unit Root Test Results

Variables	LLC	HT	IPS
lMILEXPER	-3.3252***	0.7356***	-2.1571**
lGDP	-1.1789*	0.9734	1.2670
PRORI	-2.4952***	0.7784***	-2.0664**
GOVIN	-4.2540***	0.7411***	-3.7903***
TAXB	-7.6013***	0.7778***	-5.1272***
BUSFR	-2.9888***	0.7379***	-1.7338**
MONFR	-3.1202***	0.8575	-3.1084***
TRAFR	-4.0033***	0.6788***	-2.7183***
INVFR	-1.9503**	0.8292	-0.7051

Notes: Levels of significance are indicated by asterisks: ***1%, **5%, * 10%. The appropriate lag lengths have been selected according to the Akaike information criterion. The Bartlett Kernel method was used in the LLC test, and the bandwidth was determined by the Newey-West method. Variables were tested with constant and level values.

When Table 5 is examined, it is understood that IGDP and INVFR variables are stationary according to the LLC test and not stationary according to HT and IPS tests. MONFR variable is stationary according to LLC and IPS tests, and it is not stationary according to the HT test. All other variables are stationary according to all test results.

The fact that the cross-sectional dependence does not entirely disappear with the difference from the average process decreases the power of the first-generation panel unit root tests. Therefore, the second and third generation panel unit root tests can be more reliable in terms of the robustness of the unit root tests. These tests allow different integration levels (MADF) and can model cross-sectional dependence with the help of factors (PANIC).

Table 6. Second-Generation and Third-Generation Panel Unit Root Test Results

	MADF		PANIC				
Variables	MADF	%5 CV	MQ_c	MQ_f	p_a	p_b	PMSB
lMILEXPER	82.353*	34.737	-10.948*	-9.354*	-0.968	-0.768	-0.82
lGDP	40.150*	34.737	-4.328*	-11.833*	-2.049*	-1.386*	-1.203
PRORI	69.638*	34.737	-11.427*	-6.567*	-0.297	-0.268	-0.303
GOVIN	196.923*	34.737	-11.377*	-11.663*	-0.227	-0.244	0.446
TAXB	181.671*	34.737	-14.752*	-6.153*	-0.373	-0.402	0.42
BUSFR	206.583*	34.737	-13.152*	-15.607*	0.005	0.005	0.133
MONFR	72.646*	34.737	-6.744*	-3.951*	-0.532	-0.508	-0.062
TRAFR	111.980*	34.737	-15.714*	-7.342*	-0.944	-0.817	-0.478
INVFR	77.895*	34.737	-4.588*	-11.907*	-2.121*	-1.53*	-1.245*

Notes: Levels of significance are indicated by asterisks: * 5%. The lag length was 1 in the MADF test, and the Akaike information criterion was selected in the PANIC test, and factor-based decomposition was determined as 2. Variables were tested with constant and level values.

Table 6 shows the MADF and PANIC unit root test results. The basic hypothesis of the MADF test was established that all 13 time series of the panel were I(1). According to the MADF test results, it is understood that all variables are stationary at a 95% confidence level. In the PANIC test, the stationary of both the common factors (MQ_c and MQ_f) and the residuals (p_a, p_b, and PMSB) were tested separately. Accordingly, it is seen that common factors are stationary in all variables.

4.2.2. Estimation of Panel Regression Coefficients

After the homogeneity test, cross-sectional dependence test, and unit root tests were performed, the model panel was estimated with the OLS estimator. Then, heteroskedasticity and autocorrelation analyses were performed to test the regression assumptions. Next, the Hausman test was conducted to determine which estimator (fixed effect or random effect) was appropriate, and the fixed effects estimators were found to be appropriate. Driscoll-Kraay Robust Standard Errors (DK) estimator was used to solve these heteroskedasticity and autocorrelation problems. The estimation results of the model are shown in Table 7.

Table 7. Panel Regression Test Results

Dependent Variable: lMILEXPER	**FE (1)**	**RE (2)**	**DK (3)**	**DK (4)**
Constant	-1.477421	-4.812364***	-1.477421	-1.304893
lGDP	0.8125201***	1.179718***	0.8125201***	0.7639563***
TAXB	0.0132171***	0.0109648***	0.0132171***	0.0130199***
PRORI	-0.0022442	-0.0001039	-0.0022442	-0.0032016*
MONFR	-0.0079008***	-0.0074617***	-0.0079008**	-0.0072865**
TRAFR	0.0031468*	0.0023516	0.0031468*	0.0035269*
GOVIN	-0.0085777***	-0.0078307***	-0.0085777***	-0.0087635***
INVFR	-0.0036103***	-0.0014292	-0.0036103**	-0.0034352**
BUSFR	-0.0037213*	-0.0040918*	-0.0037213	
Number of observations	299	299	299	299
Number of countries	13	13	13	13
R^2	0.5744	0.5623	0.5744	0.5693
Hausman Test				44.12*

Note: Column (1) presents the fixed effects (FE), and column (2) presents the random effects (RE). Column (3) and (4) report the estimate with Driscoll-Kraay (DK) estimator. Levels of significance are indicated by asterisks: ***1%, **5%, * 10%.

As stressed by the economic literature, the estimated coefficient of lGDP is significant. Concerning the economic freedom variables, the estimated coefficients of TAXB, PRORI, MONFR, TRAFR, GOVIN, and INVFR are statistically significant and have the expected sign for DK estimator. There is a positive relationship between lMILEXPER and lGDP, TAXB, TRAFR. Furthermore, there is a negative relationship between lMILEXPER and PRORI, MONFR, GOVIN, INVFR. BUSFR has the expected sign with a DK estimator but is not significant. It can be seen that results are robust to various econometric specifications in terms of statistical significance and size of coefficients. Moreover, while the Hausman test suggests the fixed effects model to be the preferred specification, it is seen that there are very few differences between fixed effects and DK models, which lead to very similar coefficients and statistically significance levels. Therefore, test results are not sensitive to the estimation technique and show the robustness of the relation between lMILEXPER and economic freedom.

4.2.3. Panel Causality Test

The causality analysis, first developed by Granger (1969), allows us to investigate whether variables other than that provide useful information in predicting the future value of a variable. In recent years, several tests have been developed to examine the panel causality relationship. In this study, the causality relationship between the series was investigated with the method developed by Dumitrescu and Hurlin (2012). The main advantage of the Dumitrescu and Hurlin (2012) test is that it considers cross-sectional dependence between the countries in the panel. The other advantage of the test is that it is insensitive to the size difference between the time dimension and the cross-sectional dimension. Dumitrescu and Hurlin (2012) investigated the causality relationship between variables with the help of the linear model mentioned below (Dumitrescu, Hurlin, 2012).

$$Y_{i,t} = \alpha_i + \sum_{k=1}^{K} \gamma_i^{(k)} \gamma_{i,t-k} + \sum_{k=1}^{K} \beta_i^{(k)} \chi_{i,t-k} + \varepsilon_{i,t}$$

K represents the lag length that is identical for all cross-sections, β_i represent $(\beta^{(1)}{}_i, \ldots, \beta^{(K)}{}_i)$. The null and alternative hypotheses established for the equation above are as follows (Dumitrescu, Hurlin, 2012):

$H_0: \beta_i = 0$

$H_1: \beta_i = 0 \quad \forall_i = 1,\ldots,N$

$\beta_i \neq 0 \quad \forall_i = N_1+1, N_1+2,\ldots,N$

Dumitrescu and Hurlin (2012) calculated individual Wald statistics ($W_{i,T}$) for cross-sections in order to test the null and alternative hypotheses and obtained the panel's Wald statistics ($W_{N,T}^{HNC}$) by averaging these statistics. Dumitrescu and Hurlin (2012) recommend the use of the $Z_{N,T}^{HNC}$ Statistic with asymptotic distribution when the time dimension is greater than the cross-sectional dimension. If the cross-sectional dimension is larger than the time dimension, Z_N^{HNC} statistic is used.

Table 8. Panel Causality Test Results

Null Hypothesis	W-statistic	Z-bar tilde statistic	Prob.	Result
lGDP does not granger-cause lMILEXPER	4.0001	6.0023	0.0000	lGDP=>lMILEXPER
lMILEXPER does not granger-cause lGDP	2.3573	0.0979	0.9220	lMILEXPER≠>lGDP
TAXB does not granger-cause lMILEXPER	14.5990	3.3897	0.0007	TAXB=>lMILEXPER
lMILEXPER does not granger-cause TAXB	19.0729	5.3854	0.0000	lMILEXPER=>TAXB
PRORI does not granger-cause lMILEXPER	3.6775	5.3306	0.0000	PRORI=>lMILEXPER
lMILEXPER does not granger-cause PRORI	28.5730	9.6231	0.0000	lMILEXPER=>PRORI
MONFR does not granger-cause lMILEXPER	4.9542	3.6454	0.0003	MONFR=>lMILEXPER
lMILEXPER does not granger-cause MONFR	11.1183	1.8371	0.0662	lMILEXPER=>MONFR
TRAFR does not granger-cause lMILEXPER	1.1259	0.0172	0.9863	TRAFR≠>lMILEXPER
lMILEXPER does not granger-cause TRAFR	12.8130	2.5930	0.0095	lMILEXPER=>TRAFR
GOVIN does not granger-cause lMILEXPER	4.0120	6.0271	0.0000	GOVIN=>lMILEXPER
lMILEXPER does not granger-cause GOVIN	12.9066	2.6348	0.0084	lMILEXPER=>GOVIN
INVFR does not granger-cause lMILEXPER	3.2898	4.5234	0.0000	INVFR=>lMILEXPER
lMILEXPER does not granger-cause INVFR	13.9806	3.1139	0.0018	lMILEXPER=>INVFR
BUSFR does not granger-cause lMILEXPER	15.5007	3.7919	0.0001	BUSFR=>lMILEXPER
lMILEXPER does not granger-cause BUSFR	12.5110	2.4583	0.0140	lMILEXPER=>BUSFR

In this study, Dumitrescu and Hurlin (2012) panel causality test was applied, and the obtained results are presented in Table 8. In this study, the results of $Z_{N,T}^{HNC}$ (Z-bar tilde) Test statistics suggested by Dumitrescu and Hurlin (2012) are used because the time dimension is larger than the horizontal cross-sectional dimension. Table 8 shows that there is a bidirectional causal relationship between lMILEXPER and TAXB, PRORI, MONFR, GOVIN, INVFR, and BUSFR. On the other hand, there is a unidirectional causality relationship from IGDP to lMILEXPER and from lMILEXPER to TRAFR.

5. CONCLUSION

In this study, the relationship between military expenditures and economic freedom was investigated by using panel data analysis during the period 1996-2018 in 13 MENA countries (Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia, Tunisia, and Turkey). As a result of the regression, it is seen that there is a relationship between military expenditures, economic growth, and economic freedom in 13

MENA countries. It was determined that economic growth, tax burden, and trade freedom had a positive impact on military expenditures. Furthermore, it was concluded that property rights, monetary freedom, government integrity, and investment freedom negatively affected military expenditures. These negative effects on military expenditures are similar to the results of other studies in the literature.

The positive impact of trade freedom on military expenditures stems from the regional characteristics of MENA countries. Especially in the light of the experience of countries such as Iran, Libya, and Syria, it is expected that trade freedom and consequently the import of arms will be reduced in the embargoed countries, and therefore, the military expenditures will decrease. While there is a bidirectional causal relationship between military expenditures and tax burden, property rights, monetary freedom, government integrity, investment freedom, and business freedom, there is a unidirectional causality relationship from economic growth to military expenditures and from military expenditures to trade freedom.

The policy implications of these results are clear. The consolidation of the democratic regime transitions and thus the increase in the level of economic freedom leads to a decrease in military expenditures. Especially in MENA countries, which are more exposed to internal turmoil and external threats, the reduction of military expenditures is possible by increasing the level of economic freedom. This rise will also improve the standards and the quality of individuals' lives, and thus help to reduce internal turmoil. Reducing internal turmoil will also decrease external threats; therefore, military expenditures.

REFERENCES

ABDELFATTAH, Y. M., ABU-QARN, A. S., DUNNE J. P., and ZAHER S. (2014). "The Demand for Military Spending in Egypt." Defence and Peace Economics, 25 (3): 231–245.

ACEMOGLU, D., TICCHI, D., and VINDIGNI, A. (2010). "A Theory of Military Dictatorships". American Economic Journal: Macroeconomics, 2 (1): 1–42.

ALBALATE, D., BEL, G., and ELIAS, F. (2012). "Institutional Determinants of Military Spending". Journal of Comparative Economics, 40: 279–290.

ALPTEKIN, A., and P. L. LEVINE. (2012). "Military Expenditure and Economic Growth: A Meta-Analysis". European Journal of Political Economy, 28 (4): 636–650.

BAI, J and NG, S. (2004). "A Panic Attack on Unit Roots and Cointegration". Econometrica, 72(4): 1127-1177.

BALIGA, S., LUCCA, D. O., and SJOSTROM, T. (2011). "Domestic political survival and international conflict: is democracy good for peace?". Review of Economic Studies, 78, 458–486.

BLUM, J. (2018). "Defense Burden and the Effect of Democracy:

Evidence from a Spatial Panel Analysis". Defence and Peace Economics, 29:6, 614-641.

BOVE, V., and J. BRAUNER. (2016). "The Demand for Military Expenditure in Authoritarian Regimes". Defence and Peace Economics, 27 (5): 609–625.

BRAUNER, J. (2015). "Military Spending and Democracy". Defence and Peace Economics, 26 (4): 409–423.

BREUSCH, T., and PAGAN, A. (1980). "The Lagrange Multiplier Test and Its Applications to Model Specification in Econometrics". Review of Economic Studies, 47: 239-253.

COLLIER, P., and HOEFFLER, A. (2007). "Unintended consequences: does aid promote arms races?". Oxford Bulletin of Economics and Statistics, 69(1), 1-27.

DIZAJI, S. F. (2014). "The Effects of Oil Shocks on Government Expenditures and Government Revenues Nexus (With an Application to Iran's Sanctions)." Economic Modelling, 40: 299–313.

DOYLE, M. W. (1986). "Liberalism and World Politics". American Political Science Review, 80 (4): 1151–1169.

DRISCOLL, J. C, and KRAAY, A. C. (1998). "Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data". Review of Economics and Statistics, 80: 549-560.

DUMITRESCU, E. I., and HURLIN, C. (2012). "Testing for Granger Non-Causality in Heterogeneous Panels". Economic Modelling, 29(4): 1450-1460.

DUNNE, J. P., and PERLO-FREEMAN, S. (2003). "The Demand for Military Spending in Developing Countries". International Review of Applied Economics, 17 (1): 23–48.

DUNNE, J. P., and TIAN, N. (2013). "Military expenditure and economic growth: A survey". The Economics of Peace and Security Journal, 8(1):5-11.

DUNNE, J. P., PERLO-FREEMAN, S., and SMITH. R. P. (2008). "The Demand for Military Spending in Developing Countries: Hostility versus Capability". Defence and Peace Economics, 19 (4): 293–302.

DUNNE, J. P., PERLO-FREEMAN, S., and SMITH. R. P. (2011). "Determining Military Expenditures: Dynamics, Spillovers and Heterogeneity in Panel Data". Paper Prepared for the Economic Society South Africa Conference at the University of Stellenbosch, 1-21.

FARZANEGAN, M. R. (2014). "Military Spending and Economic Growth: The Case of Iran". Defence and Peace Economics, 25 (3): 247–269.

FORDHAM, B. O., and WALKER, T. C. (2005). "Kantian liberalism, regime type, and military resource allocation: Do democracies spend less?". International Studies Quarterly, 49(1), 141-157.

FREEDOM HOUSE, (2019). "Freedom in the World Countries", https://freedomhouse.org/report/countries-world-freedom-2019.

GOLDSMITH, B. E. (2007). "Arms Racing in 'Space': Spatial Modelling of

Military Spending around the World". Australian Journal of Political Science, 42:3, 419-440.

GYLFASON, T., MARTINEZ-ZARZOSO, I., and WIJKMAN P.M. (2015.) "Can free trade help convert the 'Arab Spring' into permanent peace and democracy?". Defence and Peace Economics, 26:3, 247-270.

HF, Heritage Foundation, 2019, Economic Freedom Index.

JAMES, P., SOLBERG, E., and WOLFSON, M. (1999). "An identified systemic model of the democracy peace nexus". Defence and Peace Economics, 10: 1-38.

KIM, H. C., KIM, H. M., and LEE, J. (2013). "The Post-Coup Military Spending Question Revisited, 1960–2000". International Interactions, 39 (3): 367–385.

KIMENYI, M. S., and MBAKU, J. M. (1995). "Rents, military elites, and political democracy". European Journal of Political Economy, 11(4), 699-708.

LEBOVIC, J. H. (2001). "Spending Priorities and Democratic Rule in Latin America." Journal of Peace Research, 45 (4): 427–452.

LSKAVYAN, V. (2011). "Democracy levels and the income–military expenditure relationship", Applied Economics Letters, 18:15, 1485-1489.

MULLIGAN, C., GIL, R. and SALA-I-MARTİN, X. (2004). "Do democracies have different public policies than nondemocracies?". Journal of Economic Perspectives, 18, 51–74.

NORDHAUS, W., ONEAL, J. R., and RUSSETT, B. (2009). "The Effects of the security environment on military expenditures: Pooled analyses of 165 Countries, 1950-2000". Cowles Foundation Discussion Papers 1707, Cowles Foundation for Research in Economics, Yale University, revised Oct 2009.

NORDHAUS, W., ONEAL, J. R., and RUSSETT, B. (2012). "The Effects of the International Security Environment on National Military Expenditures: A Multicountry Study." International Organization 66 (3): 491–513.

PESARAN, M. H. (2004). "General Diagnostic Tests for Cross Section Dependence in Panels." The University of Cambridge, Faculty of Economics, Cambridge WP 0435 in Economics, 1-43.

PESARAN, M. H., ULLAH, A., and YAMAGATA, T. (2008). "A Bias-Adjusted LM Test of Error Cross-Section Independence". Econometrics Journal, 11: 105-127.

ROSH, R. M. (1988). "Third World Militarization: Security Webs and the States They Ensnare". Journal of Conflict Resolution, 32 (4): 671–698.

ROTA, M. (2011). "Military Burden and the Democracy Puzzle." MPRA Paper No. 35254, 1-31.

ROTA, M. (2016). "Military spending, fiscal capacity, and the democracy puzzle". Explorations in Economic History, 60, 41-51.

RUSSETT, B. M. (1993). Grasping the Democratic Peace: Principles for a Post-cold War World. Princeton: Princeton University Press.

SEIGLIE, C. (2016). "Openness of the Economy, Terms of Trade, and Arms". Southern Economic Journal, 82(3): 748-759.

SIPRI. (2019). "SIPRI Military Expenditure Database". Solna: Stockholm International Peace Research Institute.

SOLARIN, S. A. (2018). "Determinants of Military Expenditure and the Role of Globalisation in a Cross-Country Analysis", Defence and Peace Economics, 29:7, 853-870.

TATOGLU, F. Y. (2017). Panel Zaman Serileri Analizi, Beta Yayınevi, İstanbul.

TAYLOR, M. P., and SARNO, L. (1998). "The Behaviour of Real Exchange Rates During the Post-Bretton Words Period". Journal of Internal Economics, 46(2): 281-312.

TONGUR, U., HSU, S., and ELVEREN, A. Y. (2015). "Military Expenditures and Political Regimes: Evidence from Global Data, 1963– 2000". Economic Modelling, 44 (C): 68–79.

WALL, H. (1996). "Is a military really a luxury good? An international panel study of LDCs". Applied Economics, 28: 41–4.

WB, World Bank, 2019 World Development Indicators.

YILDIRIM, J., and SEZGIN, S. (2005). "Democracy and Military Expenditure: Cross-Country Evidence". Transition Studies Review, 12 (1): 93–100.