

# Testing the Relationship between Economic Freedoms and Growth by Panel Causality Application: Case of Middle East Countries

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**Abstract**—Economic freedoms, most emphasized issue in the recent years, are considered to affect economic growth and performance via institutional structure.

In this context, a model that includes Turkey and Middle East Countries, and where the effects of economic freedom on growth are examined, was formed. For the groups of countries determined, in the study carried out by using the dataset belonging the period of 2004 - 2009, between economic freedoms and growth, a negative relationship was observed as group. In the sense of individual effects, it was identified that there was a positive relationship in terms of some Middle East Countries and Turkey.

**Keywords**—Economic Freedoms, Economic Growth, Freedoms.

## I. INTRODUCTION

THE Economic freedom can essentially be defined as the possibility that human beings can be involved in economic activities and give a direction to their own resources [1]. The main elements of economic freedom are the freely choice of individuals, their rights of private properties, and their freedom of exchange on the properties they have. What is meant about economic freedom in liberalism is to be involved in economic activities and, as generally expressed, to have the right of economic entrepreneurship. Entrepreneurship is not only economic activities executed by businessmen, but also the behavior of an individual who does not have any factory or business enterprise, and makes a living by selling his/her labor and this should be considered in the concept of economic freedom [2]. Almost all of liberal thinker emphasize the importance and indispensability of economic freedom.

The thought of socialism, collapsed together with Berlin Wall, and failure of implementations in the former Soviet Union - Eastern Bloc Countries revealed liberalism and market economy as emerging values with a broad and common consensus [3]. As a natural result of these developments, many countries entered a process, in which market economy works, liberal economic policies are

followed, and economic freedoms are enlarged. In this context, the policies such as reducing the commercial barriers; eliminating price controls, including price and foreign currency controls; and privatizing the public enterprises stood out. The number of theoretical and empirical studies, based on the thought that economic freedoms should be enlarged, and in direction of that a liberalism based change and development increase economic growth, increases in passing days. This situation increases further the importance of the relationship between economic freedoms and growth -development. In providing a stable growth for the developed countries, development for the developing countries, it is argued that there is a need for economic freedoms [4].

Providing and sustaining economic development and growth and take place among the major targets for the developed and developing countries. The counties that realized their economic developments and growths, in order to provide the continuity of this situation, continuously make some arrangements in their economies and generate policies while the developing countries, in order to realize their developments, On this issue, particularly after 1980s, the rise of liberating policies is remarkable.

That economic freedom is not a countable magnitude i.e. is a qualitative concept, not quantitative makes unavoidable a certain amount of subjectivity and lack of clarity. This situation particularly becomes marked in the indices on perception of economic freedom based on the surveys through individuals. No matter how healthy the sample is selected, while perception index is formed, some biases may emerge, depending on the factors drawn for assessment and their weighing [5].

Because of this, most of efforts to measure economic freedoms prefer to put it in order according to the existing economic freedom instead of stating it as a numerical magnitude. In other words, economic freedom is an ordinal magnitude, not cardinal [6]. When regarding from this point of view, for Hong Kong taking place in the first order with 8.7 points compared to Myanmar taking place in the last order with 2.8 points in terms of freedoms, it is possible to say that Honk Kong is freer than Myanmar in terms of economic freedoms. However, saying that "Hong Kong is three times freer than Myanmar" "will be wrong" [7].

Today, in measuring and assessing economic freedom, various indices are used. Among these indices the most commonly used one is Economic Freedom of the World – EFW Index, published by Fraser Institute, while the other one

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is Index of Economic Freedom. Index of Economic Freedom that has published by Heritage Waqf and Wall StreetJournal since 1995 is a study aiming to measure the economic independency in countries in the frame of 10 subcategories.

In this study, Index of Economic Freedom will be used. In index, in the production, consumption, and distribution stages of goods and services, economic independency that is defined as freedom of property ownership, labor force, free circulation of capital and goods, and lack of governmental constraints consists of the following components:

- Freedom of job
- Freedom of trade
- Tax freedom
- Independency from government
- Independency in terms of monetary policy
- Freedom of investment
- Financial freedoms
- Rights of Property
- Exemption from bribery
- Freedom of labor force

In index, the headings of interest are assessed by using scale of "0-100" with equal weighing, with each category representing maximum value of 100. The scale of countries can have all values in the range of 0–100. High scores represent the high level of freedom. Each category has components specific to it and while the points are assigned to these countries on the basis of these components, different calculation methods are utilized [8].

Does freedom lead to growth; is there more freedom due to growth; or are they both defined together, as a third factor? If freedom is a normal good, economic growth raising the living standards in a country causes the freedom given by government to be at very high level [9].

In providing the stability and growth simultaneously, the impotence of freedoms is an issue considerably highlighted in the recent years. Although only economic freedom is not enough in providing economic growth, the freedoms are also necessary. A number of empirical studies, among countries, show that there is a positive correlation between the various parameters of economic growth and economic freedom. Whatever the main theoretical structure is, economic freedom is an important factor in economic growth [10].

## II. LITERATURE

It is seen that Kurzman et al., in their studies, concluded that average lifetime had a positive effect on economic performance. The study carried out show that, in the societies, in which the individual rights and freedoms were provided, significant increases were experienced in average lifetime; and that this also had a positive effect on economic crisis [11].

According to Vega-Gordillo and Alvarez-Arce, it is put forward that democracy provided gender equality and increased the education of women and thus providing human capital, a rise in economic performance was realized [12].

Berggren, in his study, in order to examine the relationship between inflation rate and economic growth, suggests that that inflation rate is above threshold level has a negative effect on

economic growth in middle and long term. The fact that there is a triple combination between the variation in inflation rate and freedoms and economic performance becomes significant, because it takes place in economic freedoms [13].

Heckelman and Stroup exposed 14 elements of economic freedom to regression and found that 4 of them affected the growth positively and significantly. LSM model encompassed 49 countries for the period 1980-1990 [14].

Ayal and Karras investigated how 13 economic freedom elements affected the economic growth based on 58 countries and time interval between 1975-1990. They found that only 7 elements out of 13 economic freedom elements affected the economic growth significantly. Low average growth rate of money supply, low fluctuation in inflation, low share of public economic enterprises within the whole economy, exceptional negative real interest rate, low difference between official exchange rate and black market exchange rate, high role of the commercial sector in the whole economy and free transfer of capital between the households and the foreigners increase the economic growth. Ayal and Karras used LSM and Fraser index methods in their analysis [15].

Weede and Kampf investigated both economic freedom general rating and also its first degree difference together and separately in the models. The dependent variable was growth rate of per capita GNP. Data set includes values for 70 countries for the period 1975-1995. Economic freedom general score affects the growth positively and significantly when it is entered into the model along with its first degree difference. When both of them are entered into the model separately, only the first degree difference of the economic freedom affects the growth positively and significantly. Fraser index was used in the study [16].

Easton and Walker found positive and significant effect of economic freedom on per capita GNP. One attribute of this study that draws attention is the fact that the dependent variable is the per capita GNP rather than growth rate. Values for years 1975-1985 pertaining to 57 countries were used in the panel data set and Fraser Index general rating and LSM were applied [17].

Carlsson and Lundström exposed 7 economic freedom categories within Fraser index to the regression and found that only one category affected the growth positively and one category affected it negatively. Free commerce with foreigners by households decreased the growth. Other categories were found to be insignificant [18].

Norton investigated the effect of economic freedom general score on poverty and development indices by LSM method. In both regressions economic freedom is significant and affected the development positively and poverty negatively [19].

Doucoulagos and Ulubaşoğlu considered 82 countries in 5 year intervals for years 1970 – 1999. As a result of LSM and panel analyses, they found that Fraser index overall score and its first order difference had a significant and positive effect on the growth. But when capital stock was removed from the model, the effect of index overall score became insignificant [20].

Berggren and Jordahl examined the conclusion that "free

trade by households with foreigners reduces the growth.” Carlsson and Lundström [18] found and they concluded that the taxes imposed on international trade led to this result, when the tax influence is removed, that trade by households with foreigners increased the growth [21].

Gwartney et al. examined the effect of Fraser index overall score and its first order difference on the growth and investments, considering 94 countries for years 1980–2000. In the results they obtained from LSM method, economic freedom overall score and its first order differences affected the growth and investments significantly and positively [22].

Beşkaya and Manan, in their studies, in which they suggested that economic freedoms and democracy determined the institutional structure and thus affected the economic performance, asserted that the relationship between democracy and economic performance was controversial. In the study they carried out by using time series between years 1970–2005 for Turkey, they found that there was a positive relationship between economic freedoms and economic performance, although they could not come to an exact conclusion regarding the effect of democracy on economic performance [23].

Justesen carried out Granger causality tests and found that only 2 of 5 economic freedom elements affected economic growth and investments. Increase in the government’s size and heavy economic regulation policies reduce economic growth and investments. Others have no effect. Panel study includes 30 years between 1970–1999 and uses Fraser index [24].

Sarıbaş, in its study, carried out in 2009, examined the relationship between economic freedoms and economic growth with 10 year general data of 49 countries. He found that economic freedoms were in a negative relationship with economic growth. Beside this, it was concluded that some elements forming economic liberalization climate did not have any relationship with the growth [25].

Noyan Yalman et al. built an econometric model, where the effects of freedoms on development were examined including Latin America countries. In analysis results obtained, it was concluded that the freedom to acquire property (FAP), freedom of trade (FT), and freedom of not bribing (FNB) positively affected the development and that freedom of capital (FC) and freedom of investment negatively affected it [26].

Empirical studies use Fraser index as indicators of economic freedom. Economic freedom overall score and its first order difference generally affect the growth positively. There is no general agreement on which of economic freedom elements is more important and in what direction it affects the economic growth.

### III. SUBJECT OF THE STUDY AND DATASET

In the study, the effects of economic freedoms on growth will be measured. In this scope, of Middle East countries, a country group of Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia, Syria, United Arab Emirates, Yemen, Turkey, and Turkey, and beside this, as another group of countries, some transition

economies in east block are considered as a separate group.

The data used were obtained from databases of World Bank and The Heritage Foundation. In the application, GDP growth rates and as a value of economic freedom, economic freedoms index will be used. This index totally consists of 10 indexes such as index of freedom to acquire property, index of trade freedom, indices of investment freedom and bribery, fiscal freedom, job freedom, monetary freedoms. The data cover the period 2004-2009. Index data of the countries, subject of study, were taken from The Heritage Foundation and index values range between 0–100. Higher index value, higher the economic freedom. For example, economic index in 2009 was measured as 61.6 for Turkey; 60.3 for Poland; 44.6 for Iran; 76.4 for Estonia, and 70 for Lithuania.

### IV. MODEL

Referring to the studies examining the effect of economic freedoms on growth (performance), it is observed that a model was formed, generally utilizing growth models. In addition to this, also in some studies, it was investigated whether economic freedoms have direct relationship with economic growth (performance).

In this study, the relationship between economic freedoms and economic growth (performance) will be examined, using neoclassical growth model. Neoclassical growth model forms a suitable framework for examining political and civil freedoms and economic freedoms for especially developing countries [27]. The reason why this study uses this growth model is that Turkey is included within the category of developing countries as well.

This study will attempt to explain the effect on economic growth with the other control variables (financial and fiscal variables, human capital variables), not with economic freedoms.

In Solow growth model, economic output varies depending on labor and capital. L denotes labor and, K denotes capital stock;

$$Y = F(K, L)$$

In modern version of this model, capital is divided into physical capital (K) and human capital (H).

$$Y = F(K, H, L)$$

Under the assumption of constant returns to Y scale, model can be formulated as

$$Y = AK^a H^p L^{1-a-p}$$

A in the model is a constant coefficient and expresses the factor productivity.

In Solow growth model, as the investments play important role in realization of economic growth (performance), and institutional quality is effective on the productivity of investments, it is meaningful that variables such as economic freedom playing an effective role in measurement of

institutional quality are included [28].

The main factors effective on economic growth (performance) are put in order as: 1) growth in labor, 2) capital sums, 3) growth in export, 4) effects of institutional and economic regimes on total factor productivity [29]. Based on Solow model developed in the light of this information, the relationship between economic freedoms and growth (performance) is formulated as follows:

$$Y = a_0 + a_1 EF + \mu_1 t$$

In recent years, in order to investigate the relationship between economic freedom and growth, several studies using the techniques of panel data have been carried out.

In this section, we examined Granger causality between economic freedoms and growth variables in 15 Middle East countries. Dataset covers annual economic freedoms (EF) and real gross domestic product (GDP) between the years 2004 – 2009. All data were drawn from database of World Bank and from database of Heritage Foundation.

## V. UNIT ROOT TESTS

The researchers making econometric prediction, using software packages in their studies and with the possibilities provided by these software packages, have happened to conduct increasingly more unit root tests. The new tests developed generally become ready in the next versions of software. As known, before making model prediction in time series, unit root tests of variables are carried out and it's controlled whether they are stationary or not. A similar situation is also applicable for panel datasets. The unit root tests such as standard ADF, and PP used in time series remains insufficient in catching the stability when panel data test is under consideration. Because of this reason, standard ADF and unit root tests are not preferred in panel datasets [30].

The tests of Im, Paseran and Shin (IPS), Maddala and Wu (MW), Levin and Lin (LL), and Hadri formed to control whether the variables in panel datasets are stationary or not are the most commonly used tests. In test procedures, all of the tests IPS, MW, and LL assert that there is unit root as null hypothesis, while Hadri test asserts the stability of series as null hypothesis [31]. In this study, Fisher ADF test will be based on.

Panel unit tests are shown in Table I. All series within in our model becomes stationary in their first differences. The variables of only two countries pass unit root tests in their second differences.

TABLE I  
ADF TEST RESULTS (INTERCEPT)

Countries	EF			GDP		
	At level	At first difference	At second difference	At level	At first difference	d max
Algeria	0.1050	0.0012 <sup>c</sup>	-	0.0954 <sup>c</sup>	-	1
Bahrain	0.3123	0.1928	0.0048 <sup>c</sup>	0.3427	0.0001 <sup>c</sup>	2
Egypt	0.2476	0.0366 <sup>c</sup>	-	0.4537	0.0582 <sup>c</sup>	1
Iran	0.5844	0.0022 <sup>c</sup>	-	0.0558 <sup>c</sup>	-	1
Israel	0.0899 <sup>c</sup>	-	-	0.0278 <sup>c</sup>	-	0
Jordan	0.0362 <sup>c</sup>	-	-	0.3446	0.0129 <sup>c</sup>	1
Kuwait	0.1810	0.0095 <sup>c</sup>	-	0.1295	0.0022 <sup>c</sup>	1
Lebanon	0.0696 <sup>c</sup>	-	-	0.1491	0.0224 <sup>c</sup>	1
Morocco	0.5039	0.0210 <sup>c</sup>	-	0.0000 <sup>c</sup>	-	1
Oman	0.0567 <sup>c</sup>	-	-	0.0282 <sup>c</sup>	-	0
Saudi Arabia	0.2819	0.0009 <sup>c</sup>	-	0.0139 <sup>c</sup>	-	1
Syria	0.7995	0.0418 <sup>c</sup>	-	0.0125 <sup>c</sup>	-	1
Tunisia	0.3818	0.0158 <sup>c</sup>	-	0.0207 <sup>c</sup>	-	1
United Arab Emirian	0.1728	0.2188	0.0008 <sup>c</sup>	0.1414	0.0113 <sup>c</sup>	2
Yemen	0.8236	0.0285 <sup>c</sup>	-	0.0112 <sup>c</sup>	-	1
Turkey	0.6379	0.0367 <sup>c</sup>	-	0.0208 <sup>c</sup>	-	1

c at 10% significance, rejects null hypothesis of unit root.

## VI. CAUSALITY TEST RESULTS

TABLE II  
RESULTS OF PANEL CAUSALITY TEST

Countries	Growth hypothesis depending on economic freedoms		Economic freedoms hypothesis depending on growth	
	Wi	Pi	Wi	Pi
Algeria	20.528	0.000 <sup>*</sup>	5.491	0.064 <sup>*</sup>
Bahrain	0.180	0.914	39.356	0.000 <sup>*</sup>
Egypt	1.066	0.302	0.157	0.692
Iran	0.001	0.982	1.761	0.184
Israel	0.328	0.849	7.706	0.021 <sup>*</sup>
Jordan	0.671	0.715	17.860	0.000 <sup>*</sup>
Kuwait	1.438	0.230	6.595	0.010 <sup>*</sup>
Lebanon	0.660	0.719	1.503	0.472
Morocco	2.657	0.103	0.936	0.333
Oman	0.103	0.748	0.320	0.571
Saudi Arabia	0.443	0.505	1.830	0.176
Syria	1.057	0.304	2.422	0.120
Tunisia	0.061	0.805	0.386	0.534
United Arab Emirians	21.326	0.000 <sup>*</sup>	1.307	0.253
Yemen	1.650	0.438	9.419	0.009 <sup>*</sup>
Turkey	7.469	0.006 <sup>*</sup>	0.717	0.397
Fisher Test Statistics Value	73.754		111.503	
Bootstrap Critical Values	93.37 for 5%		94.80 for 5%	
	72.41 for 10%		74.28 for 10%	

Emirmahmutoglu and Kose (2011) [32].

ki lagging degrees are chosen by minimizing Schwarz Bayesian criteria

\*shows 1% significance level.

\*\*shows 5% significance level.

\*\*\*shows 10 % significance level.

Finally, in the context of growth hypothesis in the leadership of economic freedoms, for the balanced panel of 16 Middle East countries and Turkey covering 2004 -2009, in terms of Granger causality, we present this application on the

relationship between economic freedoms and growth. When referring to our empirical findings for 16 Middle East countries, it is concluded that the causality relationship between economic freedom and GDP growth is not significant in terms of many countries. For Algeria, Kuwait, United Arab Emirates, and Turkey, it was concluded that economic freedoms caused economic growth.

On the other hand, when referring to the hypothesis, where the assumption that economic growth causes economic freedoms is supported, it is concluded that Algeria, Egypt, and Israel are all countries supporting this hypothesis.

TABLE III  
GRANGER CAUSALITY TEST: RESULTS OF GROUP EFFECT

Emirmahmutoglu and Kose Panel Granger Non-Causality		
Null Hypothesis:	Statistic	P
X does not Granger Cause Y	46.62107	0.045842**
Y does not Granger Cause X	46.59530	0.046084**

X: symbolizes economic freedoms

Y: symbolizes economic growth

In terms of Middle East Countries, when we refer to results of Granger causality results as a group, we come to the conclusion that economic freedoms do not cause economic growth. Similarly, according to Granger causality result where Middle East Countries are considered, economic growth does not also Granger cause economic freedoms.

## VII. CONCLUSION

In the study carried out, it was attempted to interpret the quality of the relationship between economic freedoms and economic performance indicator. From the perspective of models established, it is observed that an exact conclusion cannot be given about this relationship. This thought is supported by the fact that some established models revealed a positive relationship while others revealed negative relationship.

In terms of Middle East Countries, when we refer to results of Granger causality results as a group, we come to the conclusion that economic freedoms do not cause economic growth. Similarly, according to Granger causality result where Middle East Countries are considered, economic growth does not also Granger cause economic freedoms.

When referring to the findings of empirical study, where individual effects were also monitored for 16 Middle East countries, it is concluded that the causality relationship between economic freedom and GDP growth is not significant in terms of most countries. It is observed that it is significant for 4 countries. It is concluded that economic freedoms cause economic growth in Algeria, Kuwait, United Arab Emirates, and Turkey.

On the other hand, when referring to the hypothesis, where the assumption that economic growth causes economic freedoms is supported, it is concluded that Algeria, Egypt, and Israel are all countries supporting this hypothesis.

In the study, the data pertaining to the years 2004 – 2009 were examined. The study was tested by an original method in terms of making contribution to the literature. The study was

assessed in terms of a country group including Middle East countries. In the same way, by enlarging the country groups, it is possible to test them in other country groups. The points we have mentioned above form the limitation of study.

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