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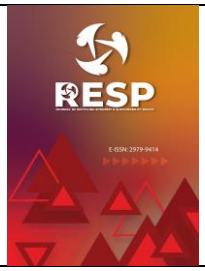

RESP

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The Effect of Economic Freedom and Human Development on Economic Growth: Panel Data Analysis for G7 Countries

Ekonomik Özgürlük ve İnsani Gelişmenin Ekonomik Büyümeye Etkisi: G7 Ülkeleri İçin Panel Veri Analizi

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ANAHTAR KELİMELER

Ekonomik büyüme
Ekonomik özgürlük
İnsani gelişimi

ÖZ

Ülkelerin daha iyi ekonomik koşullara ulaştığının önemli bir göstergesi ekonomik büyümedir. Ekonomik büyüme, makroekonomik bir olgu olması nedeniyle birçok durum ve faktörden etkilenebilmektedir. Bu çalışmada bu faktörlerden ekonomik özgürlük ve insani gelişmenin ekonomik büyümeye etkisi ele alınmaktadır. Analizde, Heritage Foundation tarafından her yıl yayınlanan Ekonomik Özgürlük Endeksi verileri ile Birleşmiş Milletler Kalkınma Programı tarafından yayınlanan İnsani Gelişme Endeksi verileri ve Dünya Bankası veri tabanından elde edilen kişi başına Gayri Safi Yurtiçi Hasıla verileri kullanılmıştır. 1995-2021 döneminde G7 ülkeleri için panel veri regresyon yöntemi uygulanmıştır. Ekonomik Özgürlük Endeksi ve İnsani Gelişme endeksleri ekonomik büyümeyi istatistiksel olarak anlamlı ve pozitif şekilde etkilediği sonucuna varılmıştır.

KEYWORDS

Economic Growth
Economic Freedom
Human Development

ABSTRACT

An important indicator of countries achieving better economic conditions is economic growth. Economic growth can be affected by many situations and factors due to the fact that it is a macroeconomic phenomenon. In the study, the effect of economic freedoms and human development on economic growth were examined from these factors. In the analysis, the Index of Economic Freedom data published every year by the Heritage Foundation and the Human Development Index data published by the United Nations Development Program and the Gross Domestic Product per capita data obtained from the World Bank's database were used. In the period of 1995-2021, panel data regression method was applied with the data of G7 countries. It was concluded that there is a statistically significant and positive relationship between the independent variables of the Economic Freedom Index and the Human Development Index and the dependent variable of economic growth expressed by GDP per capita.

1. Introduction

Economic growth is defined as a continuous increase in real income per capita. For its requirement for continuity, growth is a long-term phenomenon. The increase in the amount of production or real output depends on the combination rates and efficiency of the factors of production. The combination of factors of production forms the production function. According to Rostow (1990), economic growth theories from the 18th century to the present are based on the production function, which is a general formulation.

Undoubtedly, factors of production constitute the dynamics of economic growth; however, studies have shown that institutions and public policies also have influence in economic growth. In many studies on the subject, it has been revealed that money and price stability, secure property rights and openness to international trade have independent effects on economic growth (Gwartney et al., 1999). At this point, rights and freedoms comes to the spotlight within the institutional structure. Under the heading of freedoms, economic freedoms refer to an individual's ability to form their own decisions regarding labor and property. The

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concept of economic freedoms has become one of the main axes of neo-liberal economic policies implemented since the 1980s (Akıncı et al., 2013). The ability of economic agents operating in free market conditions to make decisions freely is necessary for efficiency in production processes and consumption. Efficiency in production and consumption shows that resources are used effectively. Effective use of resources also positively affects the processes of economic growth and income distribution. The findings of the studies show that there is a strong correlation between economic freedom and its sub-components and the variability in economic growth (Heckelman, 2000).

On the other hand, the concept of human development is defined as the process of increasing the options for people (Ranis et al., 2006). The increase in the interaction between countries in the world due to developments in the field of communication and technology has shown that the development of a country cannot be evaluated only with economic growth, and it is necessary to develop human-oriented methods (Uçan & Koçak, 2018). At this point, the Human Development Index (HDI), published every year since 1990 by the United Nations Development Program (UNDP), presents a brief measurement of the average success in basic dimensions of human development. These dimensions can be listed as a healthy life, being knowledgeable and having good living conditions. The Human Development Index is the geometric mean of the indices created for each of these three dimensions (UNDP, 2023).

Economic freedoms and human development are among the focal points of global development policies. While the increase in economic freedoms allows a country to increase its economic growth potential; human development also contributes to facilitating people's access to basic needs such as health and education, and to creating an environment of welfare.

The study examines the correlation between the Index of Economic Freedom and the Human Development Index and the real Gross Domestic Product per capita as an indicator of economic growth. The period between 1995 and 2021 and the G7 countries constitute the scope of the analysis. It is aimed to reveal the effect of economic freedoms and human development on economic growth.

The study consists of four parts, including the introduction. After the introduction, in the second part, the studies in the literature on the subject are examined; In the third section, information about the data set and the method is given. In the fourth chapter, the empirical findings obtained as a result of the analysis are explained. In the last part, there is the conclusion section where the evaluation of the estimation results is included.

2. Literature Survey

When the relevant literature is examined, there are many studies in which the relationship between human development and economic freedoms on economic growth are evaluated separately. There are few studies on the relationship between both concepts and economic growth, and no study examining G7 countries has been found.

Gwartney et al. (1999) researched the effect of economic freedoms on economic growth. Their results show that economic freedom is an important determinant of growth, even when considering human capital, physical capital and demographic characteristics.

De Haan and Sturm (2000) researched the effect of economic freedoms on economic growth with data from 80 countries between 1975 and 1990. In the model which is established, both the level of economic freedom and the change in economic freedom over time were used as explanatory variables. Finally, it was concluded that economic freedoms feed economic growth, but there is no relation between the level of economic freedom and growth.

Carlsson and Lundström (2002) examined the effect of economic freedoms on economic growth with data from 74 countries between the years 1970-1990 in their study. In the study, the effects of the changes in the economic freedom index on growth were estimated and the results were found to be statistically significant. The relationship between them is positive and the increase in economic freedoms increases economic growth. However, the fact that some categories in the index are unimportant and that some of the important variables have negative effects does not mean that the increase in economic freedom in general is good for economic growth.

Justesen (2008) examined the causality relationship between economic freedoms and economic growth in their study. The results indicate that some aspects of economic freedom affect economic growth as well as investment. However, there is no strong evidence that growth affects economic freedom.

Compton et al. (2011) examined the nature of the correlation between economic freedoms and economic growth. All 50 US states in the period from 1981 to 2004 were included in the analysis. It has been determined that there is a positive and statistically significant relationship between economic freedoms and economic growth; however, the effects of the sub-components of economic freedoms differ.

Akinci et al. (2013) examined the relationship between economic freedoms and economic growth with panel data analysis. 144 countries for the period from 1995 to 2012 were included in the analysis. The results of the applied cointegration analysis reveal the existence of a long-term relationship between economic freedoms and economic

growth. The causality analysis results applied afterwards show that economic freedoms are the cause of economic growth. According to the results obtained, it can be easily determined that economic freedom accelerates the economic growth process.

Tunçsiper and Biçen (2014), in their study, examined the relationship between economic freedoms and economic growth in the framework of nine emerging market economies, including Turkey. Data between 2000 and 2012 were used in the study and panel data analysis was applied. As a result of the analysis, it was concluded that there is a negative relationship between the property rights index and the freedom to invest index and economic growth, as well as a positive relationship between the freedom to work index and the freedom to trade index and economic growth. No significant relationship was found between the general economic freedom index and economic growth.

Çetenak and Işık (2016) analyzed the causal relationship between economic growth and economic freedoms in their studies. Along with the effect of economic freedoms on growth, the effect of growth on economic freedoms has also been examined. For the period between 1995 and 2014, panel VAR method was applied with ten sub-components and growth data representing the economic freedom index of 32 OECD member countries. The results show that all the components of economic freedom are effective on economic growth. In addition, it was concluded that economic growth is the Granger cause of financial freedoms, monetary freedoms and commercial freedoms, which are the sub-components of economic freedoms.

Uçan and Koçak (2018) conducted panel data analysis between Turkey and Germany, USA, Norway and Italy, which are countries with high human development index, for the period between 1990 and 2015. In this context, the relationship between economic growth and economic growth was examined by using human development index data. According to the results of the applied cointegration analysis, a long-term relationship was determined between the sub-components of economic growth and human development.

Çoban (2020) examined the period between 1995 and 2014 for the countries of Czechia, Hungary, Slovakia and Poland, which are described as the Visegrad quartet. The Human Development Index and the Index of Economic Freedom and its sub-components the Monetary Freedom Index and the Property Rights Index were included in the analysis. The share of public health expenditures in national income, the share of public education expenditures in national income and the inflation rate were also used as control variables. According to the results obtained, it was found that economic freedoms affect the level of human development positively.

Göcen (2021) examined the relationship between economic freedoms and economic growth in the period between 1996 and 2019 and within the scope of D8 countries. The causality test was applied and it was concluded that economic freedom was the cause of economic growth in seven countries. Expanding economic freedoms plays a critical role in achieving higher levels of economic prosperity in these countries. In Bangladesh, a bidirectional causality relationship was determined. These results reveal the importance of improving economic freedoms for better economic performance.

Türkmen and Tıraş (2022), in their study, examined the correlation between human development and urbanization and economic growth for BRICS-T countries. Panel cointegration analysis was performed with the data of the period between 1990 and 2019. According to the results obtained, the human development index variable is statistically significant in the long run; It was concluded that the urbanization rate was not significant.

Ahmed et al. (2023) examined the effect of the Index of Economic Freedom and its sub-components on economic growth for the period between 1995 and 2021. The analysis covers four South Asian countries: Bangladesh, India, Pakistan and Sri Lanka. The results show that economic freedoms have a strong impact on growth. In addition, most of the sub-components of economic freedoms were found to be statistically significant.

3. Data and Methodology

The data included in the analysis consists of Index of Economic Freedom, Human Development Index and GDP per capita. The abbreviations of the variables, their definitions and the sources from which the data are accessed are shown in Table 1.

Table 1. Definitions and Sources of Variables

Abbreviations	Definitions	Sources
gdp	Real Gross Domestic Product adjusted by Puchasing Power Parity	https.//databank.worldbank.org/
hdi	Human Development Index	https://hdr.undp.org/
efi	Economic Freedom Index	https://www.heritage.org/

The GDP per capita dependent variable representing economic growth is shown by "gdp", and the independent variables of the Economic Freedoms Index and the Human Development Index are shown by "hdi" and "efi", respectively. The values taken by the GDP dependent variable are logarithed because they are high quantitative

quantities relative to the index values. The index values that make up the independent variables are included as is. Thus, the established regression model becomes a semi-logarithmic model. The regression equation established for analysis is given below:

$lngdp_{it} = ß_0 + ß_1 hdi_{it} + ß_2 efi_{it} + u_{it}$ (i: 1,2,….,N; t: 1,2,….,T)

In the model, i represents the cross-section dimension and t represents the time dimension. The dependent variable is the logarithmic equivalent of the Gross Domestic Product (GDP) of country i in year t. The independent variable "hdi" denotes the Human Development Index value of country i in year t, and "efi" denotes the Economic Freedom Index value of country i in year t. The error term is represented by u.

The model was tried to be estimated by panel data regression analysis. Panel data regression analysis can be estimated by three methods: classical, fixed effects and random effects. The classical (pooled) model ignores unit and time effects. However, unit and time effects may occur with the use of panel data. "Random effects" if the resulting effects cannot be observed and are assumed to be a random variable; "fixed effects" occur if they are assumed to be the estimated parameter for each observation (Yerdelen Tatoğlu, 2020). The Hausman test is frequently used to select the appropriate one between fixed effects and random effects models. After selecting the appropriate method and performing the analysis, diagnostic tests are applied. Diagnostic tests are used to detect problems such as cross-section dependence, heteroscedasticity and autocorrelation. In the presence of these problems, estimators that produce resistant standard errors are resorted to, since the estimation results cannot be trusted.

4. Empirical Results

In the analysis part, descriptive statistics of the variables in the regression established first are included. In the first column of Table 2, the logarithm of the GDP per capita adjusted by Purchasing Power Parity, respectively, as the dependent variable, the abbreviations "lngdp", the Human Development Index "hdi", and the Economic Freedom Index, "efi".

Table 2. Summary of Statistics

Variables	Mean	Std.Dev.	Min.	Max.
lngdp	10.688	0.130	10.426	11.061
hdi	0.894	0.029	0.810	0.948
efi	70.968	6.693	57.4	81.2

The Human Development Index (hdi) takes values between 0 and 1. From 0 to 1, the level of human development increases. The Economic Freedom Index, on the other hand, takes a value between 0 and 100, and the level of economic freedom increases from 0 to 100. As seen in the table, the average values of the human development and economic freedom indexes are closer to the maximum point than the minimum point. This is because the countries in the sample are developed countries. Based on the data we have, it can be said that there is a relationship between high human development and economic freedoms.

Before the analysis phase, the validity of the classical (pooled) model was tested. At this point, the existence of unit and time effects is examined. The existence of the unit effect was found, but it was seen that there was no time effect. For this reason, the classical model is not suitable and it is necessary to choose between fixed or random effects models. The appropriate model was decided by the Hausman test.

Table 3. Hausman Test

	Test stat.	P-value
Hausman Test	0.140	0.9304

According to the Hausman test result in Table 3, the null hypothesis stating that the variability in the coefficients is not systematic could not be rejected. Therefore, the appropriate model is the random effects model. After selecting the appropriate model, diagnostic tests were started. First, the heteroscedasticity test was applied.

Table 4. Heteroscedasticity Test Results

	df(6, 180)	P-value
W0	16.030	0.000
W50	11.845	0.000
W10	15.676	0.000

According to Levene, Brown and Forsythe varying variance test results, the constant variance null hypothesis was rejected. It was found that the variance of the error terms in the estimated model differed. There is a problem of heteroscedasticity in the model.

Then, the existence of autocorrelation was tested. The applied test is a modified version of the test statistic developed by Baltagi and Wu (1999) and the test statistic of Bhargava, Franzini, and Narendranathan (1982).

Table 5. Autocorrelation Test Results

	Test statistics value
Bhargava et.al. Durbin-Watson Test	0.250
Baltagi-Wu LBI Test	0.461

Looking at the results in Table 5, it was found that the test values were less than 2. The null hypothesis indicating the existence of autocorrelation could not be rejected. There is also an autocorrelation problem in the model. Finally, the

cross-section dependency test was applied.

Table 6. Cross-Section Dependence Test

	Test stat.	P-value
Pesaran CSD Test	5.087	0.000

The test can be applied for balanced and unbalanced panels in the existence of standard normally distributed error terms developed by Pesaran (2004). The null hypothesis of "cross-section independence" is rejected. It is seen that there is a cross-section dependency in the model.

In the diagnostic tests, heteroscedasticity, autocorrelation and cross-sectional dependence were tested and it was concluded that each of them is present in the model. In the presence of these problems, it will be necessary to apply estimators that produce robust standard errors. In the presence of all three problems together, the Driscoll-Kraay estimator can be used. The method produces robust estimators even when the time dimension has bigger value than the cross section (T>N) (Driscoll & Kraay, 1998).

Table 7. Driscoll-Kraay Random-Effects Estimator (Robust Standart Errors)

Variables	Coeff.	Std.Err.	t-value
hdi	2.600 *	0.203	12.790
efi	0.004 **	0.002	2.620
constant	8.074 *	0.194	41.540
$R^2 = 0.40$		Wald chi2 = 254.00	
corr(u_i, Xb) = 0		Prob > chi2 = 0.0001	

Note: (*), (**), (***) denote 1%, 5% and 10% significance levels, respectively.

According to the estimation results, it is seen that there is a positive and statistically significant relationship between the human development and economic freedom indices and economic growth. Independent variables are significant both individually and as a whole. The power of the independent variables to explain the variability in the dependent variable was 40%. The increase in human development and economic freedom in G7 countries contributes positively to economic growth.

5. Conclusion

Efficiency of the markets is possible with conditions of full competition and full employment. The creation of a competitive environment will lead to the sprouting of new enterprises and expand employment opportunities. The view advocated in mainstream economics that the role of the state in the economy should be minimal and that it should play a role in allocating the competitive environment instead of intervening in the economy is related to the efficient functioning of the markets. Optimisation in the markets will lead to efficient use of resources; Thus, production will be positively affected and an increase in economic growth will be experienced.

A competitive environment can be created when economic agents can carry out their activities freely. A high level of economic freedom will contribute positively to the economy. At this point, it was possible to make quantitative analyzes with the measurable level of economic freedom. On the other hand, human development consisting of sub-components such as health and education will be high in economies with employment opportunities and easy access to basic rights and needs. The Human Development Index is a measure of the well-being of individuals in society.

The expectation in the study is that the increase in economic freedoms and human development levels will contribute positively to economic growth. In this direction, panel data regression method was applied between the Index of Economic Freedom published by the Heritage Foundation and the Human Development Index data published by the United Nations Development Program (UNDP) and GDP per capita data obtained from the World Bank database. The analysis includes the G7 countries for the period between 1995 and 2021. According to the results obtained, a positive and statistically significant relationship was found between economic freedoms and human development and economic growth. These results seem to be compatible with similar studies in the literature.

Achieving economic growth is seen as one of the most important conditions for the improvement of living conditions and the creation of a welfare environment in countries. In societies where economic freedoms are ensured and human development is aimed, both economic growth and welfare will be created. In the welfare environment, individuals will strive for the continuity of good economic conditions. It can easily be said that these processes feed each other. It is essential for growth to be sustainable that states invest in human development and create an environment in which economic agents can act freely. Developing policies to increase economic freedoms and human development levels will be beneficial for states.

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