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The Impact of Various Socio-Economic Indicators on Democracy: The Case of OECD Countries with Multiple Regression Analysis

Çeşitli Sosyo-Ekonomik Göstergelerin Demokrasi Üzerindeki Etkisi: Çoklu Regresyon Analizi ile OECD Ülkeleri Örneği

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Abstract: Democracy is not merely a political preference but a fundamental ecosystem that sustains long-term economic stability and societal welfare, especially in times of global uncertainty. A fundamental objective of societies is the progressive augmentation of their welfare, seeking to attain superior standards of living by expanding the consumption of goods and services. The realization of countries' economic growth targets also depends on many socio-cultural factors. Thus, the concept of democracy represents one of these socio-cultural factors. An examination of the global landscape reveals that nations are systematically categorized by international economic organizations based on their economic standing. This categorization typically delineates three primary strata: underdeveloped, developing, and developed countries. This study aims to empirically analyze the determinants of democracy in 37 OECD countries using cross-sectional data from the post-pandemic normalization period of 2021. In this study a cross-sectional analysis covering the year 2021 was conducted. We specifically employed the multiple regression method to isolate the individual impact of each socioeconomic factor, allowing us to see clearly which variable pulls the strings of democracy the hardest while keeping others constant. In 37 OECD countries, the effects of inflation rate, share of education expenditures in GDP, national income per capita and corruption perception index on democracy index are analyzed. Multiple regression analysis was employed to isolate and quantify the specific contribution of each socioeconomic indicator while controlling for others. When the findings obtained from the study are analyzed, the variable that contributes the most to democracy and improves democracy with a change of 1% is the corruption indicator with a contribution of 5.208 points. In other words, the solution of the corruption problem feeds democracy to a significant extent. The variable that contributes second is education expenditures with a contribution of 2.164 points. The higher the expenditure on education, the higher the level of democracy. The third variable is economic growth with a contribution of 0.006 points. Democracy improves as economic growth increases. Finally, increases in the inflation rate worsen democracy by creating a disadvantage of 0.431 points. The empirical analysis of the countries studied was conducted using the multiple regression method. A review of the literature reveals that democracy and its determinants are frequently studied topics. However, what distinguishes this study from others is its simultaneous analysis of the impact of global economic fluctuations and institutional transparency on these variables following the pandemic. This adds originality to the study. The findings suggest that combating corruption, i.e., transparency, positively impacts democracy. Furthermore, education spending also positively influences democracy. Conversely, rising inflation suppresses democracy. Changes in perception and positive developments in the fight against corruption also affect democracy. This highlights the priority of institutional quality. In OECD countries, ensuring and maintaining institutional quality is vital for the sustainability of their democracies.
Keywords: Democracy, Economic Growth, Inflation, Corruption, Education Expenditures, Multiple regression analysis

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Öz: Toplumların temel hedeflerinden biri, mal ve hizmet tüketimini artırarak refah seviyelerini zaman içinde aşamalı olarak yükseltmek ve daha yüksek yaşam standartlarına ulaşmaktır. Ülkelerin ekonomik büyüme hedeflerinin gerçekleşmesi de birçok sosyo-kültürel faktöre bağlıdır. Bu bağlamda, demokrasi kavramı bu sosyo-kültürel faktörlerden birini temsil etmektedir. Küresel tablo incelendiğinde, ulusların uluslararası ekonomik kuruluşlar tarafından ekonomik konumlarına göre sistematik olarak sınıflandırıldığı görülmektedir. Bu sınıflandırma tipik olarak üç ana katmanı belirlemektedir: az gelişmiş, gelişmekte olan ve gelişmiş ülkeler. Bu çalışmada, 2021 yılını kapsayan bir yatay kesit analizi yapılmıştır. 37 OECD ülkesinde, enflasyon oranı, eğitim harcamalarının GSYİH içindeki payı, kişi başına milli gelir ve yolsuzluk algı endeksinin demokrasi endeksi üzerindeki etkileri analiz edilmiştir. Çalışmadan elde edilen bulgular incelendiğinde, demokrasiye en çok katkıda bulunan ve %1'lik bir değişimle demokrasiyi iyileştiren değişkenin, 5.208 puanlık katkı ile yolsuzluk göstergesi olduğu görülmüştür. Diğer bir deyişle, yolsuzluk sorununun çözümü demokrasiyi önemli ölçüde beslemektedir. İkinci en çok katkıda bulunan değişken, 2.164 puanlık katkı ile eğitim harcamalarıdır. Eğitime yapılan harcamalar ne kadar yüksek olursa, demokrasi seviyesi de o kadar yüksek olmaktadır. Üçüncü değişken ise 0.006 puanlık katkı ile ekonomik büyümedir. Ekonomik büyüme arttıkça demokrasi de iyileşmektedir. Son olarak, enflasyon oranındaki artışlar 0.431 puanlık bir dezavantaj yaratarak demokrasiyi kötüleştirmektedir. Çalışmaya konu olan ülkelerin ampirik analizi çoklu regresyon yöntemi ile yapılmıştır. Literatüre bakıldığında demokrasi ve belirleyicilerinin sık çalışılan bir konu olduğu görülmektedir. Fakat bu çalışmayı diğerlerinden ayıran özelliği ise pandemi sonrasında yaşanan küresel düzeyde ekonomik dalgalanmaların ve kurumların şeffaflığının değişkenler üzerindeki etkisini eşanlı olarak analiz etmesidir. Bu nedenle çalışmaya özgünlük katılmıştır. Elde edilen bulgular yolsuzlukla mücadelenin yani şeffaflığın demokrasiyi pozitif şekilde etkilediği şeklinde yorumlanabilmektedir. Ayrıca eğitim harcamaları da demokrasiyi pozitif yönde olumlu etkilemektedir. Enflasyonun artışı ise tersine demokrasiyi baskılamaktadır. Yolsuzlukla mücadelede algının değişmesi ve pozitif yönde gelişmeler yaşanması beraberinde demokrasiyi de etkilemektedir. Bu durum kurumsal kalitenin önceliğine vurgu yapmaktadır. OECD ülkeleri bazında kurumsal kalitenin sağlanması ve sürdürülmesi demokrasilerinin sürdürülebilirliği açısından hayati öneme sahiptir.
Anahtar Kelimeler: Demokrasi, Ekonomik Büyüme, Enflasyon, Yolsuzluk, Eğitim Harcamaları, Çoklu regresyon analizi

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1. Introduction

One of the most fundamental macroeconomic objectives of countries is to achieve economic growth. Economic growth is an economic phenomenon that supports the increase in the level of welfare, which is the most fundamental goal of societies. Societies want to increase their welfare level over time and reach higher levels of welfare than in the past by consuming more goods and services. The realization of countries' economic growth targets also depends on many socio-cultural factors. The concept of democracy represents one of these socio-cultural factors.

When the countries in the world are examined, it is seen that countries are classified by international economic organizations in economic terms. This classification is generally expressed in three categories as underdeveloped countries, developing countries and developed countries. When the developed countries, which are at the top of this group of countries, are examined in general, it will be seen that progress has been made in terms of democracy. The level of democracy of countries and the quality of their institutions accordingly affect the increase pertaining to welfare metrics, which is the main economic objective of countries.

One of the important issues to be considered when analyzing the economic problems of underdeveloped and developing countries is their democratic structures. Policymakers often presume that resolving the inflation issue will consequently mitigate other economic challenges. They hypothesize that rectifying high inflation can lead to an amelioration of adverse economic parameters such as unemployment rates, elevated exchange rates, trade deficits, and budget shortfalls (Dasdemir, 2024: 89). In such countries, there may be autocratic structures disguised as democracy as well as direct autocratic regimes. While advanced democracies in developed countries may lead to an increase in wealth and welfare, democratic progress in autocratic regimes masquerading as democracies may lead to unexpected results under certain conditions. In theory, there are various views on whether democracy will increase the welfare of a country or not. In the following sections of the study, these views will be discussed.

While the link between wealth and democracy is a well-trodden path in the literature, the post-pandemic landscape of 2021 offers a unique 'stress test' for these dynamics. It is crucial to understand whether established democracies in OECD countries are driven more by their wallets (GDP) or by their values (institutional transparency) during such recovery periods. This study seeks to settle this debate by quantifying exactly how much weight policymakers should give to fighting corruption versus merely boosting economic output. The aim of this study is to analyze OECD countries and to reveal how various socio-economic indicators affect the level of democracy. In the study, the data of OECD countries in 2021 are used to examine the effect of inflation rate, share of education expenditures in GDP, national income per capita and corruption perception index on democracy index. The paper is anticipated to make a contribution to the literature both in terms of the period chosen and the variety of independent variables included in the model.

One of the most debated topics in recent years from a democratic perspective is the state of democratic decline. This study empirically examines this topic, which has been discussed in recent years, along with its socioeconomic dimensions, in OECD countries. This study is particularly important because it reveals which factors—such as corruption (corporate integrity), income distribution fairness, and education—are more effective in protecting and sustaining democratic structures, especially during crisis periods like 2021. Unlike some studies in the economic literature, it argues that economic growth alone does not bring democracy, and that institutional and social investments can be quite decisive for democracy.

2. Literature Review

In this section of the research, relevant studies examining the relationship between the phenomenon of democracy and various macroeconomic indicators are included. First, Barış and Erdoğmuş (2018) examined the relationship between democratization and economic growth in the 21st century from the perspective of Türkiye. As a result of the study, they found a positive relationship between democracy and economic growth.

Doğan (2005) analyzed the relationship between democracy and economic development from a general perspective on developed and developing countries. Accordingly, he concluded that democracy contributes to economic development and helps countries to progress.

In his study, Erdoğan (2020) conducted an empirical analysis amongst democracy and economic expansion in Türkiye using data for the term amongst 1985-2017. As a result of the paper, contrary to the general judgment in the literature, it was concluded that democracy negatively affects economic growth.

Acaravcı and Erdoğan (2015) conducted an empirical analysis by using democracy, real income and openness data for Türkiye between 1984 and 2012. According to the findings of the study, economic growth positively affects democracy. However, when openness to foreign trade increases, this affects democracy negatively.

Karış (2020) conceptually investigated the relation amongst democracy and economic growth. While including democracy approaches in his study, he also analyzed the literature. As a result of the study, he concluded that there is a strong relationship between democracy and economic growth.

Heshmati and Kim (2017) examined the relationship between economic growth and democracy. Using data between 1980 and 2014, they made observations on 144 countries. According to the results of the study, democracy has a strong positive effect on economic growth.

Daşdemir (2025a) examined the relationship between inflation and consumption inequality in the Turkish economy. Whereas a unitary increment in a category's inflation rate leads to a 0.12% rise in consumption inequality, a commensurate increase in that category's price elevates it by 4.48%.

Doucouliagos and Ulubaşoğlu (2008) examined the relationship between democracy and economic growth. Contrary to other researchers, they did not find a straight relation amongst democracy and economic growth. The researchers, who also included other variables such as human capital, inflation and political stability in their study, found significant and strong relationships between these variables and democracy.

Acemoglu et al. (2019) investigated the relationship between democracy and economic growth. The findings of their study are that democracy positively affects national income per capita. They concluded that democratization increases per capita income by around 20% in the long run. Building on Acemoglu's long-term perspective, our study zooms in to see if this relationship holds firm specifically during the volatility of the post-pandemic normalization period.

Rachdi and Saidi (2015) tested the relationship between democracy and economic growth for the MENA group of 17 countries using data from 1983-2012. According to the study, democracy has a strong but negative impact on this group of countries.

Fenira (2014) analyzed the relationship between democracy and inflation. Using data between 1996 and 2012, he studied Tunisia. The study concluded that democracy is important and effective in reducing inflation. While these studies focus on how democracy heals the economy, we flip the coin to investigate the reverse: how economic sickness, specifically high inflation, erodes the very foundations of democratic institutions.

Desai et al. (2003) examined the interplay between democracy, inequality and inflation in 140 countries using data from 1960 to 1999. The findings of the study show that democracy reduces inflation in countries where income is more equally distributed, while democracy increases inflation in countries where income is more unequally distributed.

Mobarak (2005) examined the relationship between democracy, volatility and economic growth. The study concludes that volatility reduces economic growth and democratic developments reduce volatility. In other words, democratic progress indirectly affects economic growth positively.

Daşdemir (2025b) examined the relationship between the impact of wealth inequality on inflation. According to the results of the analysis, increases in the wealth of high-wealth groups increase the inflation rate more.

Acemoglu et al. (2008) have focused their research on the relationship between income and democracy. The study concludes that increased income does not necessarily bring democracy. It appears that countries that are both wealthy and democratic today have historically laid the groundwork for achieving this.

The impact of institutional structure on economic growth in 55 countries was examined using data from 2000 to 2017. Demirgil and Şenol (2019) reveals that a significant portion of the variables representing institutional structure contributed to increased economic growth.

A review of current literature reveals that Acemoglu et al. (2019), while emphasizing the importance of institutional quality, also did not neglect the potential of economic growth to support democracy. The findings of their study support the theoretical background regarding corruption. Studies such as Gründler, and Krieger (2021) and Paglayan, (2021) which focused on the similar sample group, 186 countries, showed how education spending increases awareness of participation in policy processes and elections and supports democratic institutions. The findings obtained from such research regarding education spending also show that they align with policies such as the OECD's "Education 2030 Goals". From these perspectives, the strategic importance of the link between education and democratic processes can be seen.

3. Main Approaches to Democracy and Growth

One of the most fundamental macroeconomic objectives of countries is to realize economic growth. This situation occupies an important place in increasing the welfare level of societies, which is one of the most fundamental objectives of economics. For this reason, the impact of various social and economic indicators on growth is one of the most studied topics. Democracy, which is also the subject of macroeconomic research, is an important concept whose relationship with growth has been investigated by economists. One of the most important studies is Sirowy and Inkeles' theoretical analysis of democracy and economic growth, in which they put forward 3 fundamental approaches. Accordingly, the concepts of democracy and economic growth are analyzed at three main levels: approaches of conflict, compatibility and skeptical (Sirowy and Inkeles,1990: 126).

3.1. Conflict Approach

The conflict approach is the type of approach that states that there is a negative relation amongst democracy and economic growth. According to this approach, there will be a struggle between democracy and economic growth and it will not be possible for both phenomena to increase positively together (Öz, 2021: 140).

According to the conflict approach, democracy and growth are concepts that cannot positively affect each other, especially in underdeveloped and developing countries with lower levels of income and democracy. In countries with underdeveloped democracy, the current administration may use democracy to direct resources to areas that maximize its own interests rather than directing them to effective areas. For this reason, resources can be distributed for rent-seeking rather than for the general benefit of the people, and democracy can be used as a tool to achieve this goal. For these reasons, developments in democracy in such economies may not increase economic growth, but on the contrary may decrease it (Arslan and

Doğan, 2004: 2).

3.2. Compatibility Approach

The compatibility approach argues that democracy positively affects economic growth. For the development of democracy and the realization of economic growth, these two concepts complement each other and contribute positively to each other. With the development of democracy and democratic institutions, the existence of institutions that will direct resources to productive areas and work effectively will also improve. In this case, economic growth will indirectly be positively affected by the development of democracy. In order to achieve economic progress, economic freedoms must be improved, law must be developed, and progress must be made in rights and freedoms. Savings and investments should be stimulated. The strengthening of democracy will also support these phenomena. The innovative and competitive environment that will ensure economic growth in a free market economy can only be achieved in an environment of strong democracy (Doğan, 2021: 9).

3.3. Skeptical Approach

The skeptical approach states that there is no consistent positive or negative relation amongst democracy and economic growth. This approach states that the source of economic growth may be other factors. Sometimes economies with high levels of democracy may fail to achieve their growth target by moving away from policies that will realize economic growth. Similarly, some economies with relatively lower levels of democracy and autocratic regimes may be more successful in implementing the right policies to realize economic growth targets in some periods. Economic growth can be achieved due to developments in a number of concepts that will affect the phenomenon of economic growth, such as strategies carried out independently of the level of democracy, the success of economic policies implemented, socio-cultural phenomena, and indebtedness status. In such a case, positive developments in the economy may not be due to developments in democracy but may be caused by other factors (Doğan, 2021: 10).

4. Data Set and Methodology

This study aims to determine the socioeconomic factors determining the level of democracy in OECD countries. Democracy index is used as the dependent variable in the study. Data on the democracy index is taken from the Economist Intelligence Unit (EIU) website. The independent variables are inflation rate, share of education expenditures in GDP, national income per capita and corruption perception index. Among the independent variables, data other than the corruption perception index were obtained from the World Bank, while the corruption perception index was obtained from Transparency International. The model of the study was determined as a multiple regression model. The most significant limitation of the study is the lack of data that could form a time series. In this context, the study, which uses cross-sectional data from 2021, analyzes 37 OECD countries. The model for the study is constructed as follows. Since the inflation data does not follow a normal distribution, a cube root transformation was applied. Using 2021 cross-sectional data, the analysis was conducted for 37 OECD countries. The reason for using 2021 in the study is that 2021 is considered as the normalization year when the pandemic effect is eliminated. We didn't choose the cross-sectional analysis randomly; it was essential to capture a structural snapshot of OECD countries at a specific moment of global normalization (2021), rather than getting lost in the noise of time-series fluctuations. Furthermore, we relied on the Ordinary Least Squares (OLS) estimator because it remains the most robust and straightforward tool for gauging the direct 'elasticity' or sensitivity of democracy to changes in income and corruption levels without unnecessary complexity. The model for the study is constructed as follows;

$$DE_i = \beta_0 + \beta_1 LOGYAE_i + \beta_2 \sqrt[3]{ENF_i} + \beta_3 LOGKBG_i + \beta_4 LOGE_i + \varepsilon_i \quad (1)$$

The variables used in the above model are explained in Table 1.

Table 1: Variables Used in the Model

Variable	Presentation	Sign Expectation
Democracy Index	DE	
Corruption Perception Index	YAE	+
Inflation Rate	ENF	-
Per Capita Income	KBG	+
Education Expenditures/GDP	E	+

It is expected that the corruption perception index will have a positive effect on the democracy index of countries. While higher values in the democracy index indicate a higher level of democracy, higher values in the perception of corruption index indicate a lower level of corruption. The expectation of a positive relationship stems from this evaluation criterion. By including the inflation rate variable in the model, macroeconomic factors such as interest rates and unemployment, which are thought to affect the inflation rate, are indirectly taken into consideration. Differences in the inflation rate are expected to have a negative impact on the democracy index. The effect of per capita income on the democracy index is expected to be positive. The last independent variable, the share of education expenditures in GDP, is anticipated to have an affirmative influence on the democracy index. In order to make the variables in the model suitable for the linear regression model with interrogative data analysis techniques, various transformations were tried. For the purpose of this analysis, the education expenditures' share in GDP, per capita income, and the corruption index variables were integrated into the model following logarithmic conversion. Since inflation rates are negative in some countries, it was not possible to take logarithms and cube root transformation was used for this variable. For the democracy index, which is the dependent variable of the regression model, the model became suitable for analysis without any transformation. In the regression equation (1), the parameter β_0 represents the constant term of the model. The other β coefficients show the effect of the relevant independent variable on the dependent variable (under the assumption that other independent variables are constant). ε_t, is included in the model as the main population error term.

In order for the regression model to be valid, some assumptions must be met. The first assumption is that the mean of the population error term is zero. This assumption states that the model estimation shows the average relationship between the dependent variable and the independent variables (Çil, 2018: 110). The second assumption is that the variance of the error term is constant for all observation values of the independent variables. If the variance of the error term varies, this is called changing variance (Hill et. all., 2011: 173). The third assumption is that the error terms are uncorrelated (Gujarati and Porter, 2018: 66). The fourth assumption is that error terms and independent variables are uncorrelated. This assumption ensures that the effects of independent variables and the error term on the dependent variable can be decomposed (Çil, 2018: 111). In other words, this assumption means that the covariances of each of the independent variables and the error term are zero (Stock and Watson, 2012: 164). The fifth assumption is that the values of the independent variables are constant across replicate samples. The sixth assumption is that the independent variables are non-probabilistic and not all observation values are the same (Gujarati and Porter, 2018: 68). The seventh assumption is that the number of observations is greater than the number of parameters. The eighth and final assumption is that there is no complete multicollinearity between independent variables. If this assumption is not met, it becomes impossible to estimate the parameters of the model (Green, 2012: 16). Apart from these assumptions, it is also important that the error terms conform to the normal distribution when working with small samples. The assumption that the error term is normally distributed means that the effects of the omitted variables in the error term on the dependent variable are small and random. In large samples, the normality assumption loses its importance due to the central limit theorem. Within the scope of this study, whether the normality assumption is met is also tested. For the normality test, the Jarque-Bera test statistic calculated as follows is used.

$$JB = n[\frac{S^2}{6} + \frac{(K-3)^2}{24}] \quad (2)$$

In the above equation, S denotes the skewness coefficient, K denotes the kurtosis coefficient and n denotes the number of observations. The main hypothesis of the normality test suggests that the observation values of the variable are normally distributed. The alternative hypothesis states that normal distribution is not realized. The Jarque-Bera test statistic conforms to the Chi-Square distribution. If the calculated test statistic is greater than the critical value at the relevant significance level, the null hypothesis of normal distribution is rejected. In other words, the assumption of normal distribution is not met. For a normal distribution, the skewness coefficient takes the value zero and the kurtosis coefficient takes the value three (Feibel Bruce, 2003: 150).

Breusch-Pagan-Godfrey test is used to test the constant variance assumption for the model (Godfrey, 1978a: 227, Breusch and Pagan, 1979: 1287). The test is based on the following multiple regression model.

$$Y_i = \beta_0 + \beta_1 X_{1i} + \cdots + \beta_k X_{ki} + \varepsilon_i \quad (3)$$

The variance of the error term is assumed to be as follows.

$$\sigma_i^2 = f(\alpha_0 + \alpha_1 Z_{1i} + \cdots + \alpha_m Z_{mi}) \quad (4)$$

In this case, $\sigma_i^2$is a function of non-probabilistic Z variables. In this context, it is possible to write the following equation (Gujarati and Porter, 2018: 385).

$$\sigma_i^2 = \alpha_0 + \alpha_1 Z_{1i} + \cdots + \alpha_m Z_{mi} \quad (5)$$

Within the framework of the above equation, the hypothesis $\alpha_1 = \alpha_2 = \cdots = \alpha_m = 0$ can be tested. If this hypothesis holds, then $\sigma_i^2 = \alpha_0$.. Since α_0 is constant, it can be said that there is no problem of changing variance. The test statistic calculated in the testing process conforms to the Chi-Square distribution. If the test statistic calculated at the decision stage is greater than the critical value at the selected significance level, the above null hypothesis of constant variance is rejected. Otherwise, the constant variance assumption is satisfied.

In this study, Breusch-Godfrey test is applied to analyze whether the autocorrelation assumption is met (Godfrey, 1978b: 1293, Breusch, 1978: 334). Since the autocorrelation problem is generally seen in time series, the following regression model is considered.

$$Y_t = \beta_0 + \beta_1 X_{1t} + \cdots + \beta_k X_{kt} + \varepsilon_t \quad (6)$$

The error term in the above equation can be expressed as an autoregressive model as follows.

$$\varepsilon_t = \rho_1 \varepsilon_{t-1} + \rho_2 \varepsilon_{t-2} + \cdots + \rho_p \varepsilon_{t-p} + u_t \quad (7)$$

Equation (7) above tests the following null hypothesis in the Breusch-Godfrey test.

$$H_0: \rho_1 = \rho_2 = \cdots = \rho_p = 0 \quad (8)$$

This null hypothesis asserts the absence of a sequential relationship. The test statistic calculated in the testing process fits the Chi-Square distribution. At the decision stage, a calculated test statistic surpassing the critical value leads to the rejection of the null hypothesis. In other words, it is concluded that there is an autocorrelation issue in the model.

Finally, whether there is a multicollinearity problem in the model is examined with the variance inflation multiplier defined as follows (Gujarati and Porter, 2018: 328).

$$VIM = \frac{1}{(1-r_{12}^2)} \quad (9)$$

In the above equation, r12 indicates the correlation coefficient between any two variables. A variance inflation multiplier greater than 10 indicates a multicollinearity problem.

The other assumptions described above are not tested separately as they are satisfied by the nature of the data.

The Least Squares Method is used to estimate the parameters of the econometric model (1). The following regression model can be used to explain the Least Squares Method.

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + \varepsilon_i \quad (10)$$

It is possible to estimate the above regression model using sample data. In this context, the sample regression model can be expressed as follows.

$$y_i = \widehat{\beta_0} + \widehat{\beta_1} x_{1i} + \widehat{\beta_2} x_{2i} + \cdots + \widehat{\beta_k} x_{ki} + e_i \quad (11)$$

If the expected value of the above sample regression equation is taken, the following sample regression model is obtained.

$$\widehat{y_i} = \widehat{\beta_0} + \widehat{\beta_1} x_{1i} + \widehat{\beta_2} x_{2i} + \cdots + \widehat{\beta_k} x_{ki} \quad (12)$$

Based on this information, the following equation can be written.

$$y_i = \widehat{y_i} + e_i \quad (13)$$

The basic principle of the Least Squares Method is that the $\widehat{y_i}$ values from the sample model and the observed y_i values should be as close as possible to each other. In this framework, β values that minimize the sum of squares of residuals, which is the difference between these two values, should be found. The β coefficients that minimize $\sum e_i^2$, defined as the sum of squares of residuals, are linear, trend-free, best estimators according to the Least Squares Method (Çil, 2018: 114). The term best estimator means the parameter with the smallest variance (Koutsoyiannis, 1989: 114). In other words, the estimation method in question is an optimization problem (Kılıçbay, 1986: 25). In this framework, it is possible to write the sum of residual squares function as a function as follows.

$$\sum_{i=1}^{n} e_i^2 = \sum_{i=1}^{n} (y_i - \widehat{\beta_0} - \widehat{\beta_1} x_{1i} - \cdots - \widehat{\beta_k} x_{ki})^2 \quad (14)$$

When the partial derivatives of the above residual squares function with respect to the β parameters are taken and set equal to zero, the parameters that minimize the function are found (Wooldridge, 2009: 31). The parameters found by this method are called Least Squares Estimators. The t-test is used to test the significance of the estimated parameters and the F-test is used to test the significance of the model as a whole (Çil, 2018: 138).

5. Findings

First of all, parameter estimates for the regression equation (1), which constitutes the model of this study, were made by the Least Squares Method. Table 2 showcases the findings from these estimations.

Table 2: Model Estimation Results

	Dependent Variable: Democracy Index			
Variable	**Coefficient**	**Standard Error**	**t statistics**	**Probability**
C	-6,936255	1,473050	-4,708772	0.0000
Perception of Poverty.	5,208300	1,475233	3,530492	0.0013
$\sqrt[3]{Inflation\ rate}$	-0,431309	0,198546	-2,172336	0.0373
LogGDP Per Capita	1,006052	0,477156	2,108435	0.0429
LogEducationE./GDP	2,163864	0,954836	2,266027	0.0303
R^2	0.848308			
Adjusted R^2	0,829346			
F statistics	44,73832			
Probability (F statistics.)	0.0000			

As seen in Table 2, the salience coefficient was found to be 0.84. The salience coefficient can be expressed as the explanatory power of the model. In this context, 84% of the change in the democracy index can be explained by the independent variables in the model. Each variable entering the model, whether significant or not, increases the coefficient of determination and may cause misleading results. For this reason, the adjusted salience coefficient, which takes into account the number of parameters, can also be calculated separately. As seen in Table 2, the adjusted coefficient of determination is 0.83. Both coefficients indicate a high explanatory power for the cross-sectional model.

The joint significance of the estimated parameters of the model is tested with the F test. The null hypothesis of the F test is that all coefficients are equal to zero. The alternative hypothesis is that at least one of the coefficients is different from zero. When the calculated test statistic surpasses the F-distribution's critical value at the chosen significance level, it implies that, the null hypothesis is rejected and it is concluded that the model as a whole is significant. For this study, the F statistic is found to be 44.74. Since the probability value is less than 0.01, the model is statistically significant even at 1% significance level.

The significance of the individual parameters is tested with the t-test. Table 1 shows that all probability values are less than 0.05. In other words, all estimated coefficients are statistically significant at the 5% significance level. The sign of the coefficients is also consistent with the expectations shown in Table 1. It is important to interpret the coefficients in Table 2. The analysis incorporated the logarithmic values of per capita income, the share of education expenditures in GDP, and the corruption perception index variables. In this framework, it can be said that a 1% increase in per capita income increases the democracy index by 1.006 points under the assumption that other variables remain constant. Similarly, a 1% increase in the share of education expenditures in GDP increases the democracy index by 2.164 points under the assumption that other variables remain constant. A 1% increase in the corruption perception index increases the democracy index by 5.208 points, assuming that other variables remain constant. The interpretation of the coefficient of the inflation variable may seem more complicated since it is cube root transformed. Table 2 illustrates that a unitary increment in the cube root of the calculated inflation rate results in a 0.431-unit reduction in the democracy index.

Following the significance and parameter interpretations of the model, it is investigated whether the

assumptions of regression analysis are met. First of all, changing variance, which is frequently encountered in cross-sectional data, is tested. In this context, Breusch-Pagan-Godfrey (BG) test was applied and the test results are presented in Table 3.

Table 3: BG Variable Variance Test Result

F statistic	Probability (F)	Probability (Chi-Square)
0,489332	0,7435	0,7114

The null hypothesis of the test assumes constant variance. From Table 3, it is evident that the probability values surpass 0.05. In this case, the null hypothesis of homoscedasticity remains unrefuted. In other words, there is no problem of changing variance in the model.

The presence of autocorrelation problem in the residuals obtained from the model of the study is examined with the BG test and the test result is explained in Table 4.

Table 4: (BG) Autocorrelation Test Result

F statistic	Probability (F)	Probability (Chi-Square)
0,545751	0,5851	0,5223

The null hypothesis for this test contends that no autocorrelation issue is present. Table 4 demonstrates that the probability values surpass 0.05. In this context, the null hypothesis cannot be rejected and it is concluded that there is no autocorrelation problem among the residual values.

The postulate that the residuals conform to a normal distribution is assessed via the JB test, and the resulting statistics are detailed in Table 5.

Table 5: Normality Test Results

Jarque-Bera statistic	Probability
5,667926	0,058779

The main hypothesis of the test suggests that the residuals are normally distributed. Table 5 shows that the probability value is greater than 0.05. The null hypothesis cannot be rejected and it is concluded that the residuals are normally distributed.

Finally, Variance Inflation Factor values are used to examine whether there is a multicollinearity problem. These values are shown in Table 6.

Table 6: Variance Inflation Factor (VIF) Values

Variable	VIF
Corruption Perception Index (Logarithmic)	4,590075
Per Capita Income (Logarithmic)	3,662711
Education Expenditures (Logarithmic)	1,488670
Inflation (Cube Root)	1,349358

As can be seen from Table 6, all VIF values are less than. In this context, it is concluded that there is no multicollinearity problem in the model.

Thus, the econometric model used in the study has passed all the tests and has become valid. It is also revealed that the explanatory power of the model is high.

6. Conclusions and Policy Recommendations

One of the most fundamental macroeconomic objectives of countries is to achieve economic growth. Economic growth is an economic phenomenon that supports the increase in the level of welfare, which is the most fundamental goal of societies. Societies want to increase their welfare level over time and reach higher levels of welfare than in the past by consuming more goods and services. The realization of countries' economic growth targets also depends on many socio-cultural factors. The concept of democracy represents one of these socio-cultural factors.

When the countries in the world are examined, it is seen that countries are classified by international economic organizations in economic terms. This classification is generally expressed in three categories as underdeveloped countries, developing countries and developed countries. When the developed countries, which are at the top of this group of countries, are examined in general, it will be seen that progress has been made in terms of democracy. The level of democracy of countries and the quality of their institutions accordingly affect the increase at the juncture of welfare, which is the main economic objective of countries.

The present work seeks to analyze the consequences stemming from the inflation rate, share of education expenditures in GDP, national income per capita and corruption perception index on democracy index in OECD countries in 2021. According to the findings obtained from the study, it can be said that a 1% increase in per capita income increases the democracy index by 1.006 points under the assumption that other variables remain constant. In other words, economic growth improves democracy in OECD countries. Similarly, a 1% increase in the share of education expenditures in GDP increases the democracy index by 2.164 points assuming that other variables remain constant. In other words, when education expenditures are increased, this improves democracy. A 1% increase in the corruption perception index increases the democracy index by 5.208 points, assuming that other variables remain constant. It may be useful to remind here that the corruption perception index takes a value between 0 and 100, with 100 being the least corruption indicator. In other words, an increase in the corruption perception index means a decrease in corruption. Therefore, an increase in the corruption perception index improves democracy. Since the inflation variable is cube root transformed, the interpretation of its coefficient may seem more complicated. It is evident that a unitary rise in the cube root of the derived inflation rate results in a decline of 0.431 units in the democracy index. In other words, an increase in inflation worsens democracy.

When the findings of the study are analyzed, the variable that contributes the most to democracy and improves democracy with a change of 1% is the corruption indicator with a contribution of 5.208 points. In other words, the solution of the corruption problem feeds democracy to a significant extent. The variable that contributes second is education expenditures with a contribution of 2.164 points. The higher the expenditure on education, the higher the level of democracy. The third variable is economic growth with a contribution of 0.006 points. As economic growth increases, democracy improves. Moreover, when this relationship between economic growth and democracy is analyzed within the framework of the conflict approach, the compatibility approach and the skeptical approach, it should be stated that the relation amongst economic growth and democracy in OECD countries has developed within the framework of the compatibility approach. Finally, increases in the inflation rate worsen democracy by creating a disadvantage of 0.431 points. Therefore, the inflation problem is an important macroeconomic problem that needs to be solved. Perhaps the most striking takeaway from our findings, which distinguishes this work from standard growth theories, is the sheer magnitude of the 'corruption effect.' We found that institutional cleanliness is roughly five times more effective in boosting democracy than economic growth alone. This empirically challenges the modernization theory for developed economies, suggesting that for

OECD nations, the quality of institutions has become a far more critical predictor of democratic health than the quantity of money produced.

As a result, it is not a coincidence that economically developed countries in the world also have high levels of democracy. In these processes that feed each other, improving economic indicators leads to social gains such as democracy. For this reason, it is important for socio-economically underdeveloped and developing countries to have a strong economy and make economic progress in order to exhibit development and to be included in the category of developed countries such as OECD countries in the world in this sense. Based on the variables analyzed in the study, it is recommended that countries that want to progress in democracy should first solve corruption problems and develop effective policies in this direction within the scope of policy recommendations. Another important factor is quality education. Expenditures on education should be increased. Investments should be made in quality, effective and internationalized education models. The income level of the society should be supported by increasing economic growth levels. Finally, the problem of inflation, which is deteriorating democracy, should be resolved in a stable manner, and the existing problems that because inflation should be solved.

The analysis results show that the perception of corruption contributes most to democracy. Therefore, it is important for countries like Turkeys and Mexico, which are among the OECD countries and score low on the corruption index compared to developed countries, to implement reforms in this area. For example, technology-based applications should be adopted in the public sector to ensure transparency. Applications such as e-government and E-Systems should be used extensively in all areas and institutions. Reforms should be made in areas where there are doubts, such as judicial independence, and the processes in these areas should be improved. Perspectives on education should be changed. Education reform cannot be explained simply by allocating more budget to education. Education should be aligned with international goals such as PISA targets, and media literacy should be improved. A critical perspective should be the main focus. The study showed that high inflation negatively affects democracy. Therefore, another macroeconomic problem that needs to be solved with innovative policies is high inflation. High inflation also leads to a deterioration in income distribution. These processes also harm democracy.

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