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# ECONOMIC POLICY UNCERTAINTY AND RENEWABLE ENERGY- IS THERE A RELATION? CASE - STUDY G7

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## Abstract

Economic uncertainty significantly affects the macroeconomic performances of countries and many sectors. In this context, one of the sectors affected by economic uncertainty is the renewable energy sector. Since the industry in question is a relatively new sector, it is a capital and technology-intensive sector with high costs. For this reason, in addition to domestic savings, foreign capital flows from abroad are needed in renewable energy investments, as in most investment items, especially in developing countries. Capital flow from abroad depends on the economic stability of the country and the applied economic policy. In this context, in this study, the relationship between economic policy uncertainty and renewable energy investments has been empirically examined for the 1997-2021 period, with the help of the Han and Phillips (2010) method in the case of G7 countries. The results show that increases in economic policy uncertainty reduce renewable energy investments in the countries selected as the sample group and throughout the study period.

**Keywords**: Economic policy uncertainty, Renewable energy investments, Panel data, Economic stability

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# Ekonomi Politikası Belirsizliği ve Yenilenebilir Enerji Yatırımları İlişkisi, G7 Örneği


## Öz

Ekonomik belirsizlik, ülkelerin makroekonomik performansı ile birlikte birçok sektörü de etkileyebilmektedir. Bu kapsamda ekonomik belirsizliğin etkilediği sektörlerden birisi de yenilenebilir enerji sektörüdür. Söz konusu sektör nispeten yeni bir sektör olduğu için yüksek maliyetlere sahip ve aynı zamanda sermaye ve teknoloji yoğun bir sektördür. Bu nedenle özellikle gelişmekte olan ülkelerde çoğu yatırım kaleminde olduğu gibi yenilenebilir enerji yatırımlarında da yurt içi tasarrufların yanı sıra yurt dışından yabancı sermaye akımlarına ihtiyaç duyulmaktadır. Yurt dışından sermaye akışı, ülkenin ekonomik istikrarına ve uygulanan ekonomi politikasına bağlıdır. Bu kapsamda çalışmada ekonomi politikası belirsizliği ve yenilenebilir enerji yatırımları arasındaki ilişki G7 ülke örneği özelinde Han ve Phillips (2010) metodu yardımı ile, 1997-2021 dönemi için ampirik olarak incelenmiştir. Elde edilen sonuçlar, örneklem grubu olarak seçilen ülkelerde ve çalışma periyodu boyunca ekonomi politikası belirsizliğindeki artışların yenilenebilir enerji yatırımlarını azalttığını göstermektedir.


**Anahtar Kelimeler:** Ekonomi Politikası Belirsizliği, Yenilenebilir Enerji Yatırımları, Panel Veri, Ekonomik İstikrar

## Introduction

Economic policy uncertainty has become a significant concern for the economic and energy sectors in recent years. This uncertainty can result from various factors, including changes in tax policies, regulations, and political instability (Bloom & van Reenen, 2013). Economic policy uncertainty can significantly impact investment decisions, as it creates uncertainty about the future and makes it more difficult for businesses and investors to make informed decisions (Baker et al. 2016). In addition to its impact on investment decisions, economic policy uncertainty can lead to increased risk aversion, causing businesses and investors to delay investment decisions and limit their exposure to new projects (Baker et al., 2016). In the energy sector, economic policy uncertainty can affect the development of new energy projects and the deployment of renewable energy technologies (Kammen & Baer, 2012). This can have a negative impact on the growth of renewable energy, as it reduces the flow of investment into the sector and slows the deployment of new technologies (Kammen & Baer, 2012).

The relationship between economic policy uncertainty and renewable energy is complex and has important implications for the future of the energy sector. Understanding this relationship is crucial for policymakers, businesses, and investors looking to promote a more sustainable and secure energy system. The growth of renewable energy has been driven by several factors, including declining costs, increased public support, and government policies promoting new technologies (International Renewable Energy Agency, 2021). However, this growth has been accompanied by increased economic policy uncertainty, which can affect investment decisions and slow the deployment of new technologies (Baker et al. 2016). Economic policy uncertainty can create a hostile investment environment and make it more difficult for businesses and investors to make informed decisions (Kammen & Baer, 2012). This can have a negative impact on the growth of renewable energy, as it reduces the flow of investment into the sector and slows the deployment of new technologies (Baker et al., 2016). Understanding the relationship between economic policy uncertainty and renewable energy is vital to address these challenges. This can help policymakers, businesses, and investors to identify the factors that drive investment decisions and develop strategies to reduce uncertainty and promote the growth of renewable energy.

The Group of Seven (G7) countries are a group of seven of the largest and most economically advanced countries, including Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States (G7, n.d.). These countries play a significant role in shaping the global economy and energy landscape, making it crucial to understand the impact of economic policy uncertainty on renewable energy in this context. The G7 countries are major energy consumers, accounting for a significant share of global energy consumption (International Energy Agency, 2019). As such, their energy policies and investment decisions significantly impact renewable energy development and the sector's growth. The G7 countries have a leadership role in promoting sustainable and secure energy systems and addressing the challenges of climate change (Jacobs & Zoi, 2016). The G7 countries have committed to

promoting the deployment of renewable energy technologies and reducing their greenhouse gas emissions to address the impacts of climate change (G7, n.d.). However, economic policy uncertainty can pose a significant challenge to achieving these goals, as it affects investment decisions and slows the growth of renewable energy (Rana & Lahiri, 2018).

Previous studies have explored this relationship in various contexts, including at the local, regional, and universal levels, and have produced mixed results. One of the earliest studies in this area was conducted by Sathaye et al. (2007), who found that policy uncertainty had an adverse effect on investment in renewable energy technologies in the United States. Similarly, a study by Gillingham et al. (2009) found that policy uncertainty had an adverse effect on renewable energy investment in Germany. However, other studies have found no significant relationship between economic policy uncertainty and renewable energy investment. For example, a study by Sterner & Persson (2008) found that policy uncertainty had no significant impact on renewable energy investment in Sweden. Meanwhile, Gelber and Paltsev (2010) found that policy uncertainty did not significantly affect European renewable energy investment.

More recent studies have focused on the relationship between economic policy uncertainty and renewable energy investment in the context of the G7 countries. Rana & Lahiri (2018) found that economic policy uncertainty had a negative impact on renewable energy investment in the G7 countries. Greacen et al. (2015) found that economic policy uncertainty had a negative effect on the deployment of renewable energy technologies in the G7 countries, leading to decreased investment and slowed growth in the sector. Kaffine and Godbold (2017) found that the deployment of renewable energy technologies was significantly influenced by economic policy uncertainty in the G7 countries, highlighting the importance of stable and predictable economic policies to promote the growth of renewable energy.

**Literature Review**

In recent years, several studies have investigated the effect of economic policy uncertainty on renewable energy investment. According to Lozano et al. (2020), economic policy uncertainty affects investment decisions in various sectors, including renewable energy. The authors found that uncertainty about government policies, regulations, and subsidy programs affects the decision of investors to invest in renewable energy projects. Moreover, uncertainty about future political and economic conditions can also impact the level of investment in renewable energy. Li et al. (2021) reported similar findings and found that economic policy uncertainty negatively affects renewable energy investment in China. The authors concluded that government policies and regulations play a significant role in shaping renewable energy investment decisions. Uncertainty about these policies and regulations can create a challenging investment environment, leading to decreased investment in renewable energy. Lee and Kim (2019) also found that economic policy uncertainty significantly negatively impacts renewable energy investment in South Korea. The authors found that renewable energy investment is sensitive to policy changes, making investors wary of the potential risks associated with an investment in the sector. The study results suggest that reducing policy uncertainty is critical in promoting renewable energy investment.

Previous studies suggest that economic policy uncertainty has a negative impact on renewable energy investment. The findings of these studies highlight the need for stable and predictable policies to create a favorable investment environment for renewable energy. Renewable energy investment and economic growth have been shown to have a positive relationship, with increased investment in renewable energy leading to economic growth and vice versa (Böhringer & Rohner, 2015). This relationship is driven by various factors, including creating new jobs in the renewable energy sector, reducing energy costs for households and businesses, and increasing overall energy security (Schmitz & Holz, 2017). However, economic policy uncertainty has been found to have a negative impact on renewable energy investment,

hindering the positive relationship between renewable energy investment and economic growth. Economic policy uncertainty can cause investors to become cautious and delay or even withdraw their investments in the renewable energy sector (Creti & Gallegati, 2017). This can result in reduced investment in renewable energy, slowing down the sector's growth and, in turn, the overall economy's growth (Foster & Ramírez, 2017). The relationship between renewable energy investment and economic growth is complex, with economic policy uncertainty playing a significant role. To mitigate the negative impact of economic policy uncertainty on renewable energy investment, governments need to implement stable and predictable policies that provide long-term certainty for investors (Görg & Strobl, 2017). This can include establishing long-term goals for renewable energy use, the implementation of feed-in tariffs, renewable energy mandates, and other regulations, and the provision of transparent and predictable rules and standards for renewable energy (Schumacher & Smit, 2019). By reducing economic policy uncertainty through stable and predictable policies, governments can help to promote renewable energy investment and support economic growth.

Ahmed and Raza (2020) analyzed the impact of economic policy uncertainty on renewable energy investment in Pakistan. Using time-series data from 2008 to 2018, they found that economic policy uncertainty significantly negatively impacts renewable energy investment in Pakistan. The authors also found that economic policy stability, economic growth, and energy prices are crucial in renewable energy investment decisions. Eichner and Kroeger (2018) investigated the impact of economic policy uncertainty on renewable energy investment in Germany. The study found that economic policy uncertainty had a negative effect on investment in renewable energy, with investors delaying investments until policy and regulatory conditions became more favorable. Foster and Ramírez (2017) analyzed the impact of economic policy uncertainty on renewable energy investment in the United King-

dom. The study found that economic policy uncertainty had a negative effect on investment in renewable energy, with investors delaying investments until policy and regulatory conditions became more favorable.

Görg and Strobl (2017) analyzed the impact of economic policy uncertainty on renewable energy investment in the European Union. The study found that economic policy uncertainty harmed investment in renewable energy, with investors delaying investments until policy and regulatory conditions became more favorable. Kholodilin and Marx (2021) analyzed the impact of economic policy uncertainty on renewable energy investment in Europe. The authors used data from 25 European countries from 2005 to 2016 and found that economic policy uncertainty significantly negatively impacts European renewable energy investment. The results also showed that the impact of economic policy uncertainty is more substantial in countries with lower levels of economic freedom and higher levels of corruption. Kim and Lee (2019) studied the relationship between economic policy uncertainty and renewable energy investment in South Korea. The study found that economic policy uncertainty had an adverse effect on renewable energy investment in the country, with investors delaying investments until policy and regulatory conditions became more favorable. Liu and Zhang (2019) studied the impact of economic policy uncertainty on renewable energy investment in China. The study found that economic policy uncertainty had a negative effect on investment in renewable energy, with investors delaying investments until policy and regulatory conditions became more favorable. Pinto and Alves (2019) analyzed the impact of economic policy uncertainty on the renewable energy sector in Portugal. Using time-series data from 2008 to 2016, they found that economic policy uncertainty has a negative impact on renewable energy investment in Portugal. The authors also found that other factors, such as economic growth, oil prices, and environmental policies, positively affect renewable energy investment. Schumacher and Smit (2019) analyzed the impact of economic policy uncertainty on renewable energy investment in the Netherlands. The study

found that economic policy uncertainty had an adverse effect on investment in renewable energy, with investors delaying investments until policy and regulatory conditions became more favorable. Wang et al. (2020) conducted a study to explore the relationship between economic policy uncertainty and renewable energy investment in China. The study analyzed the data of the Chinese National Bureau of Statistics and the National Energy Administration. The results showed that economic policy uncertainty significantly negatively impacts renewable energy investment in China. The authors suggested that the Chinese government should provide more stable and predictable policies to support renewable energy development.

Wu et al. (2021) analyzed the relationship between economic policy uncertainty and renewable energy investment using panel data from 20 countries from 2005 to 2016. The authors found that economic policy uncertainty significantly negatively impacts renewable energy investment. The results also showed that the impact of economic policy uncertainty is stronger in countries with higher levels of corruption and weaker governance. Zhang and Liu (2020) studied the relationship between economic policy uncertainty and renewable energy investment in China. The study used a panel data approach to examine the impact of policy uncertainty on the growth of renewable energy investment in the country. The results of the study showed that policy uncertainty had a negative effect on renewable energy investment in China. They suggested that the government should provide more stable policies and regulations to encourage renewable energy investment and mitigate the negative impact of policy uncertainty. Zhou and Fan (2020) analyzed the relationship between economic policy uncertainty and renewable energy investment in developing countries. The authors used data from 27 developing countries from 2005 to 2016 and found that economic policy uncertainty significantly negatively impacts renewable energy investment in developing countries. The results also showed that the impact of economic policy uncertainty is stronger in countries with higher levels of corruption and weaker governance. Zhou and Qiu (2016) studied the effect of economic policy uncertainty on renewable energy investment in Australia. The study found

that economic policy uncertainty had a negative impact on investment in renewable energy, with investors delaying investments until policy and regulatory conditions became more favorable. These studies provide evidence that economic policy uncertainty has a significant negative impact on renewable energy investment. These findings highlight the importance of stable and predictable government policies.

Despite the growing body of literature on the relationship between economic policy uncertainty and renewable energy, gaps in current knowledge must be addressed. One of the main gaps in the existing literature is the limited focus on the relationship between these two variables in the context of the G7 countries (Rana & Lahiri, 2018). While several studies have explored this relationship in other regions and at the global level, there is a need for more research that focuses explicitly on the G7 countries. Another gap in the current literature is the limited use of comprehensive measures of economic policy uncertainty (Kaffine & Godbold, 2017). Many previous studies have used simple proxies for economic policy uncertainty, such as the number of policy changes or the media coverage of policy uncertainty (Sathaye et al., 2007). However, these proxies may not accurately reflect economic policy uncertainty's complexity and multi-dimensional nature. They may therefore result in an incomplete understanding of the relationship between these two variables. This study aims to fill these gaps in the current literature by comprehensively examining the relationship between economic policy uncertainty and renewable energy investment in the context of the G7 countries. The study will use a multi-dimensional measure of economic policy uncertainty, incorporating various economic, political, and regulatory factors known to impact renewable energy investment (Gillingham et al., 2009).

## 1. Dataset and Method

### 1.2. Data set

In the study, a model was created as follows to determine the relationship between economic policy uncertainty and renewable energy investments for G-7 countries.

$$RE = F(EPU, INF, LABOR, GDP, FF) \quad (1)$$

When equation 1 is rewritten in the panel data form:

$$LNRE_{it} = \beta_{0i} + \beta_{1i} LNEPU_{it} + \beta_{2i} INF_{it} + \beta_{3i} LNLABOR_{it} + \beta_{4i} LNGDPit + \beta_{5i} FFit + \varepsilon it \quad (2)$$

In equation (2), i represents the panel individual (country), t represents the period, and εit defines the error term with constant variance and zero means. The variables expressed in Equation 2 and their explanations are given in Table 1.

*Table 1: Variables and Descriptions*

| Variables | Descriptions | Source of data | Expected sign |
|---|---|---|---|
| RE | Renewable energy generation (installed power capacity TWh) | https://ourworldindata.org | |
| EPU | Economic Policy Uncertainty Index | https://www.policyuncertainty.com | _ |
| INF | Inflation Rate (% change calculated as CPI) | World Bank | _ /+ |
| LABOR | Total labor force | World Bank | + |
| GDP | Real GDP (in US dollars at 2010 constant prices) | World Bank | + |
| FF | Fossil fuel consumption (% share of total consumption) | World Bank | _ |

In the study investigating the relationship between renewable energy investments and economic policy uncertainty, the 'economic policy uncertainty index (EPU)' created by Baker, Bloom, and Davis (2012) was used to measure economic uncertainty. This index was first mentioned in the articles in 10 of the leading US newspapers, two of which were "Economy" and "Uncertainty," for the USA "national assembly," "budget deficit," "central bank," "Legislative," "regulation" or It has been created monthly since 1985 to reflect the frequency of a triple term consisting of one or more words, such as "White House."

Later, Baker et al. (2016) created the economic uncertainty index for 11 countries in addition to the USA (Australia, Brazil, Canada, France, Germany, India, Italy, Mexico, South Korea, Russia, and the United Kingdom) with a method similar

to the study in 2013. The economic policy uncertainty index of other countries is calculated by Chile Cerda et al. (2016); China, Baker et al. (2013); Colombia, Gil and Silva(2018); Greece, Hardouvelis et al. (2018); Ireland, Zalla (2017); Japan, Arbatli et al. (2017); Netherlands, Kroese et al. (2015); Singapore, Davis (2016); Spain, Ghirelli et al. (2019); Sweden, Armelius et al. (2017) was created by researchers (Gemici, 2020). This study's analysis period consists of the 1997-2021 annual data and includes Germany, the USA, the United Kingdom, Italy, France, Japan, and Canada, expressed as the G-7. The reason for choosing the G7 markets in the study is the crucial role of the countries in question in the international market. The thought that the uncertainty results in these markets can show an essential behavior in global renewable energy investments.

### 1.3. Methodology

The panel data method was preferred for the analysis of economic policy uncertainty. Due to its many advantages, such as being able to examine the G-7 countries as a whole and considering the variability and unobserved heterogeneity in the countries in this integrity, reducing the deviation of the estimation, eliminating the multicollinearity problem and preventing the degree of freedom distortions caused by the short time dimension, renewable energy investments are highly valued. Panel data is preferred to cross-section data and time series in many respects and provides more efficient parameter estimations. In addition, while panel data allows the analysis of models with complex relationships, it makes it possible to control the unobservable variables more quickly because it contains the relationships in the time dimension and the specific information of the units. In addition, panel data brings together the data belonging to different units by revealing the dynamic structures of economic behaviors and enables more consistent estimates (Hsiao, 2007: 2-6; Demirci, 2018).

Dynamic Panel Data analysis developed by Han and Phillips (2010) examined the relationship between renewable energy investments and economic policy uncertainty. Among the analysis methods based on panel data, dynamic panel data

analysis is one of the most used methods. With dynamic panel data models, the effect of the dependent variable in the past period on the dependent variable in the current period is measured. Dynamic panel data models, unlike static panel data models, are models with delayed variables or variables (Küçükkaya et al., 2019: 65; Tatoğlu, 2013: 65). The inclusion of the lagged dependent variable in the model eliminates the non-stationary residual problem in static panel data models. The dynamic panel data model is expressed as follows:

$$\gamma_{it} = \delta\gamma_{it-1} + \chi'_{it-1}\beta + \varepsilon_{it} \quad (1)$$

$$\varepsilon_{it} = \mu_{it} + \upsilon_{it} \quad (2)$$

The i and t indices in equations 1 and 2 represent the country and time dimensions, respectively. In addition, μi in equation 2 is i. expresses the unit effect, and since it is constant throughout the whole time, both $\gamma_{it}$ and $\gamma_{it-1}$ are a function of this unit effect (Baltagi, 2005, p.135).

The fixed effects estimator in dynamic models is inconsistent because the first difference is required, and the short time interval is short (Han-Phillips, 2010: 119). In such cases, Arellano-Bond's (1991) Generalized Method of Moments (GMM) or Anderson-Hsiao's (1981) instrumental variables estimator are widely used. However, when the autoregressive parameter in the model approaches 1, both methods remain weak since these estimators are inherently dependent on the time dimension (T). These estimators are asymptotically random when the time dimension (T) is small and inconsistent when the time dimension (T) is large (Ulucak, 2016). Therefore, it is recommended to overcome these problems by developing a new estimator (Wooldridge, 2002; Green, 2007). Han and Phillips (2010) developed, for this purpose, developed an estimator that is better at making dynamic panel estimations. This method makes it possible to eliminate the problems of weak instrumental variables even when the parameter of the lagged variable is close to one. Due to the abovementioned advantages, the empirical relationship between renewable energy investments and economic policy uncertainty was estimated using Han and

Phillips's Dynamic Panel Data Analysis method (2010). The model created in this context is expressed in Equation 3:

$$Y_{it} = \alpha I + \beta Y_{i0} + \lambda Y_{i(t-1)} + \gamma X + \rho_1 \omega Y_{i0} + \rho_1 \omega X + \varepsilon_{it} \qquad (3)$$

$Y_{it}$ Equation 3 represents the renewable energy investments for the i region in year t. $Y_{i0}$ refers to the first renewable energy investments in different regions. According to equation 3, while I represents the unit matrix, ω represents a spatial weight matrix of order nxn. X is the impact factors matrix, ρ1, and ρ2 spatial effects; α, β, λ, and γ represent the parameters to be estimated, and finally, ε represents a random error term.

**2. Empirical Results**

In the study examining the relationship between renewable energy investments and economic policy uncertainty, it is necessary to investigate the descriptive statistics of the variables used in the model before the model estimation. In this context, the descriptive test statistics of the variables are expressed in the table.

*Table 2: Descriptive Statistics*

| Variables | RE | EPU | INF | LABOR | GDP | FF |
|---|---|---|---|---|---|---|
| Mean | 4.786689 | 4.859772 | 1.524437 | 17.52233 | 10.56546 | 44.68141 |
| Maximum | 6.782192 | 6.296677 | 4.697859 | 18.92735 | 11.03256 | 82.24 |
| Minimum | 1.94591 | 3.627084 | -1.352837 | 16.55769 | 10.28718 | 18.684 |
| Standard deviation | 1.039929 | 0.5081762 | 1.055673 | 0.6678022 | 0.1764834 | 19.12664 |
| Number of Observations | 175 | 175 | 175 | 175 | 175 | 175 |

According to the descriptive statistics given in Table 2, it is seen that the variables with the highest standard deviation are LABOR and GDP. The lowest standard deviation is observed in the INF variable. The mean values for the variables were 4.786689 for the RE variable, 4.859772 for the EPU variable, 1.524437 for the INF variable, 17.52233 for the LABOR variable, 10.56546 for the GDP variable and 44.68141 for the FF variable. Thus, it was observed that the descriptive test statistics

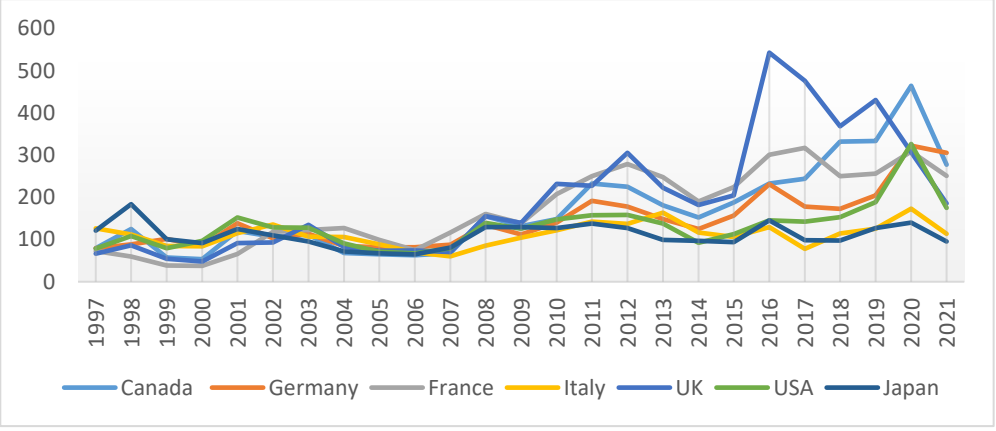
of the variables did not contain any problems regarding the panel data analysis. After the descriptive test statistics in the study, the correlation matrices of the data set used are expressed in Table 3.

*Table 3: Correlation Matrix of Variables*

| Variables | RE | EPU | INF | LABOR | GDP | FF |
|---|---|---|---|---|---|---|
| RE | 1.0000 | | | | | |
| EPU | 0.2476 | 1.0000 | | | | |
| INF | 0.0558 | 0.0247 | 1.0000 | | | |
| LABOR | 0.3653 | -0.0385 | -0.0383 | 1.0000 | | |
| GDP | 0.5231 | 0.2987 | 0.4153 | 0.5243 | 1.0000 | |
| FF | 0.6562 | -0.1522 | 0.3072 | 0.2952 | 0.5965 | 1.0000 |

The correlation matrix values in Table 3 are applied to test the multicollinearity assumption between the independent variables and are considered an essential indicator in this context. When the correlation matrix in Table 3 is examined, it is seen that there is a positive correlation between RE and EPU, INF, LABOR, GDP, and FF. Tabachnick and Fidell (2001) stated that if the correlation coefficient between the variables is above 0.90, the problem of multicollinearity may arise. Accordingly, the highest correlation coefficient among the variables used in the study was calculated as 0.65. According to this result, it can be said that there is no multicollinearity problem between the variables.

*Figure 1: EPU Index of G-7 Countries (1997-2021)*




Source: https://www.policyuncertainty.com

Figure 1 expresses the time travel of the economic policy uncertainty index calculated annually between the 1997-2021 period of the G7 countries. As can be seen from the chart, it is observed that the economic policy uncertainty index, especially for the United Kingdom, increased in 2016. The reason for this is the effect of the Brexit referendum held in the United Kingdom. On the other hand, the second noteworthy point is that as of the end of 2019, the economic policy uncertainty index has increased in all G-7 countries, especially in Japan. It can be said that this is due to the economic recession caused by the Covid-19 pandemic.

*Table 4: Han and Phillips (2010) Forecast Results*

| Dependent Variable: RE | | |
|---|---|---|
| Variables | Coefficient | Z statistic |
| RE(-1) | 1.034811 | 3.68*** |
| EPU | -0.046827 | -1.77* |
| INF | 0.014160 | 1.54 |
| LABOR | 3.178425 | 3.50*** |
| GDP | 0.739884 | 1.79* |
| FF | -0.034190 | -6.23*** |
| Wald- Test | 91.7229*** | |
| F-test | 15.2872*** | |
| Hausman Test | 65.17 (0.00) | |

Note: ***,**, and * signs in the table indicate that the relevant test statistic is statistically significant at the 1%, 5%, and 10% significance levels, respectively.

Before estimating the Han and Phillips model, it is necessary to determine which of the fixed and random effects models will be used in the study. For this purpose, the Hausman test was performed. As can be seen from Table 4, as a result of the test, it was determined that the fixed effects model was the most appropriate. When the estimation results in Table 4 are evaluated, it is seen that the 1% increase in the economic policy uncertainty decreased the renewable energy investments by 0.04. This result is also statistically significant. Renewable energy investments, like other investments, are affected by the host country's geopolitical, economic, political, etc. events. On the other hand, economic policy uncertainty harms firms' future income expectations.

In the study mentioned above, it was found that there is a negative relationship between economic policy and renewable energy in the USA. For this reason, it

prevents companies from taking more risks. This leads to a decrease in renewable energy investments. It is also compatible with 2021. These results were obtained by Shafiullah et al.

Inflation is another variable that is thought to affect renewable energy investments in the study. According to the table, although a 1% increase in inflation increased renewable energy investments by 0.01, the coefficient was statistically insignificant. Malik et al. (2014) obtained these results but did not overlap with the studies of Yıldırım and Kaya (2021). Accordingly, it is observed in the literature that there is no clear consensus on the effect of inflation on renewable energy production.

Another variable expressed in the table is the workforce. A 1% increase in the workforce increases renewable energy investments by 3.17 percent, and this result is also statistically significant. The increase in population, industrialization, and urbanization in recent years is the main reason for the rise in energy consumption. Alternative energy sources such as renewable energy are on the agenda to meet the increasing energy demand. Renewable energy investments are an area with relatively new technology and new job descriptions. In addition, countries need to create both new occupations and transformed occupations that require new skills for the economy to use renewable energy sources more intensively in the transition to a more environmentally responsible economy. This can only be achieved by increasing the workforce. These results are also compatible with Kantarmacı and Birecikli (2020).

Another variable whose effect on renewable energy investments is examined in the study is GDP. A 1% increase in GDP increases renewable energy investments by 0.73, which is statistically significant. GDP is used to measure economic development and development in a country. Renewable energy investments are costly investments in terms of initial installation costs. For this reason, a higher income level is essential in meeting the necessary costs for renewable energy generation. These results were compatible with Bakırtaş and Çetin (2016).

Finally, a 1% increase in fossil fuel consumption reduces renewable energy investments by 0.03, which is also statistically significant. Since fossil fuels and renewable energy sources are known as substitutes for each other, the results obtained are also in line with the expectation.

**Conclusion**

With the progress of globalization, the increase in the interdependence of economies is negatively affected by the uncertainty in the economy in many sectors. One of these sectors is the renewable energy sector. The industry in question has high costs as it is a new sector. On the other hand, the renewable energy sector is a capital and technology-intensive industry. For this reason, in addition to domestic savings, foreign capital flows from abroad are needed in renewable energy investments, as in most investment items, especially in developing countries. The capital flow from abroad depends on the economic stability of the country and the applied economic policy.

The future expectations of the companies that invest in an economically uncertain situation cannot be positive, which prevents companies from taking risks. In this direction, the relationship between economic policy uncertainty and renewable energy investments in G-7 countries (Germany, USA, UK, Italy, France, Japan, and Canada) has been empirically examined. In this context, the relationship between economic policy uncertainty and renewable energy investments was analyzed with the help of the Han and Phillips (2010) method and a panel data set containing the data between 1997-2021. The findings found a negative relationship between the economic policy uncertainty index and renewable energy investments. Accordingly, a 1% increase in the economic policy uncertainty index reduces renewable energy investments by 0.04. These results are also compatible with Kim and Lee (2019) and Pinto and Alves (2019).

In addition, in the study, the effects of other variables, which were examined to affect renewable energy investments and determined within the literature framework, were also controlled. According to this, first of all, a 1% increase in inflation

increased renewable energy investments by 0.014, a 1% increase in the labor force increased renewable energy investments by 3.17, and a 1% increase in GDP increased renewable energy investments by 0.73%. In comparison, the increase in fossil fuel consumption increased by 0.73%. A rise of 1 reduces renewable energy investments by 0.03. In addition, all other variables except the inflation variable were found to be statistically significant.

Renewable energy investments, like other investment types, are affected by the host country's economic, political and social policies. When evaluated in this context, renewable energy investors need to eliminate economic policy uncertainty by ensuring political stability and sustainable economic performance. Increasing investments in renewable energy in a country can also be attributed to eliminating uncertainties in economic policy. Policymakers need to make efforts to reduce economic policy uncertainty. Because in a market dominated by uncertainty, it becomes very difficult for economic actors to make sound decisions and transfer funds to suitable sources. At this point, as a part of future research, examining the role of economic policy uncertainty on different country groups and renewable energy may reveal interesting findings for investors who want to direct their investments.

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