Chapter 7

The Impact of Global Energy Uncertainty on Industrial Sector and General Index Returns in Türkiye

Erhan Daştan[1]

Mustafa Uysal[2]

Abstract

The aim of this study is to examine the relationship between global energy uncertainty and the Turkish stock market within the framework of the BIST 100 and BIST INDUSTRIAL indices. Monthly data covering the period from January 1996 to November 2023 were used in the study. According to the findings obtained using the Quantile-on-Quantile Kernel-Based Regularized Least Squares (QQKRLS), Quantile-on-Quantile Granger Causality (QQGC), and Cross-Quantilogram (CQ) methods, global energy uncertainty has nonlinear and heterogeneous negative effects on both stock market indices. Moreover, these effects vary across quantiles. In particular, the impact of energy uncertainty on the BIST INDUSTRIAL index is found to be more pronounced compared to the BIST 100 index. This situation indicates that the industrial sector is more sensitive to energy uncertainty. The causality results also reveal the existence of statistically significant causality relationships between different quantiles of energy uncertainty and stock market returns. The CQ findings confirm the validity of the QQKRLS results in terms of direction, asymmetry, and nonlinearity.

1 Asst. Prof. Dr., Artvin Çoruh University, Artvin Vocational School, Department of Accounting and Taxation, erhan@artvin.edu.tr, https://orcid.org/0000-0001-7498-8910

2 Assoc. Prof. Dr., Artvin Çoruh University, Faculty of Economics and Administrative Sciences, Department of Business Administration, muysal@artvin.edu.tr, https://orcid.org/0000-0002-6377-2644

https://doi.org/10.58830/ozgur.pub1325.c5309

1. INTRODUCTION

Today, energy is one of the most important variables of the global economy and financial world. At the macro level, it is particularly an input for industrial production, while at the micro level, it is a basic necessity for household consumption (Ullah and Riaz, 2025). In fact, in terms of economic stability, energy is the backbone and locomotive of a country (Le and Nguyen, 2019). Energy, which has both social and economic dimensions, exhibits much greater volatility in terms of prices compared to the past (Kanamura, 2009). Therefore, this volatility deeply affects the global economy. So much so that it can affect all macroeconomic parameters ranging from inflation to consumption and from national income to unemployment rates (Işık et al., 2024).

Not every country has its own energy production resources sufficient to meet its energy consumption. The imbalance between production and consumption across countries leads to the cross-border exchange of energy resources. This international energy trade network constitutes the complex structure of the global energy market (Doan and Nguyen, 2025). One or more factors such as geopolitical risks, conflicts, political and social instabilities emerging in the global system directly affect global energy transfer. This, in turn, increases volatility and fluctuations in supply and prices (Yılmazkuday, 2024). The Iran–US war is one of the clearest examples of this situation. The Iran–US war, which began with the attacks of the United States on February 28, 2026, brought oil transportation in the Strait of Hormuz almost to a standstill. Consequently, problems began to emerge in the supply of oil and natural gas. This situation increased energy prices beyond expectations (Independent, 2026). Similarly, the Russia–Ukraine war also affected energy production and supply, leading to rising prices. Europe, in particular, faced unprecedented energy prices.

The increase in energy prices determines supply and demand levels by raising both production costs and transportation expenses (Banna et al., 2023). In addition, the risk environment arising from different factors causes fluctuations in energy prices and creates uncertainty about the future. This uncertainty is not only related to energy prices, but also directly affects the decisions to be made by producers, investors, and policymakers (Qin et al., 2020).

From an economic perspective, uncertainty is a phenomenon that shapes the expectations of economic actors, especially investors and firms. It affects and determines the direction of employment, investment, and consumption decisions in their entirety (Aydoğdu, 2025). Economic uncertainty also affects corporate stocks. This effect may occur through several channels. First, firms' cash flows deteriorate and volatility occurs in asset prices. Second, during periods of high uncertainty, investors become concerned about being exposed to greater risk and therefore demand a higher risk premium to compensate for these concerns. This may lead to declines in stock prices (Salisu et al., 2024).

In this respect, measuring uncertainty in the economy has also gained importance. Baker et al. (2016) developed the Economic Policy Uncertainty (EPU) index to measure uncertainty. The EPU index attempts to measure uncertainties arising from economic policies. However, this index remains insufficient in measuring uncertainty in the energy market. At this point, the Energy Uncertainty Index (EUI), developed by Dang et al. (2023) and based on a news-based measurement approach, has filled an important gap in the literature.

Dang et al. (2023) constructed the EUI for 28 countries in three main stages. First, an uncertainty index was calculated for each country using the World Uncertainty Index methodology developed by Ahir et al. (2022). While constructing this index, the number of uncertainty-related words in the monthly country reports published by the Economist Intelligence Unit for each country was taken into consideration. This index was calculated for each country by dividing the number of uncertainty-related words by the total number of words. The average value for the 1996–2022 period was accepted as 100. This part constitutes the first stage of the calculation of the EUI. In the second stage, another energy-related index was constructed for each country using the same method and data source. In the final stage, the final monthly EUI values were calculated by taking the simple average of these two sub-indices.

The aim of this study is to examine the relationship between energy uncertainty and the Turkish stock market. Uncertainty affects firms' production and sales, investment decisions, as well as their stocks. In particular, it is natural that firms whose main production input is industrial activity are more affected by this uncertainty. In this respect, the study investigates the impact of global energy uncertainty on both the BIST 100 index, which represents general market performance, and the BIST INDUSTRIAL index, which is expected to be more directly exposed to energy shocks.

This study makes several contributions to the literature. First, the study fills an important gap in the literature by examining the relationship between the Turkish stock market and global energy uncertainty within a nonlinear framework. Second, the study not only considers the BIST 100 index, which represents the general stock market, but also includes the BIST INDUSTRIAL index, which is directly related to energy and represents the industrial sector. In this respect, the study provides an opportunity to analyze the behavior of sectors that are more sensitive to energy costs. Third, the study also contributes to the literature from a methodological perspective. The Quantile-on-Quantile Kernel-Based Regularized Least Squares (QQKRLS) and Quantile-on-Quantile Granger Causality (QQGC) methods used in the study provide more comprehensive and detailed findings compared to traditional mean-based approaches by revealing how the relationship between variables changes across different quantiles. Fourth, the findings reveal that the impact of energy uncertainty on financial markets varies depending on time and market conditions. Finally, the study provides important policy implications regarding the effects of energy uncertainty on financial stability in developing countries such as Türkiye that are dependent on energy imports.

2. LITERATURE REVIEW

There are studies in the literature examining the relationship between energy uncertainty and different macroeconomic parameters. Among these studies, Yılmazkuday (2024) tested the interaction between global geopolitical risks and global energy uncertainty for 157 countries over the period 1996–2022. The findings showed that a one-unit shock in global geopolitical risk increases global energy uncertainty by approximately 1.13 units in the long run. In another study, Doan and Nguyen (2025) examined the effect of energy uncertainty on energy trade. EUI values were used to represent energy uncertainty. According to the results obtained from the study covering energy trade among 28 countries during the period 1996–2021, energy exports decrease as energy uncertainty increases in the exporting country. This effect emerges through both supply and demand channels and varies across years and income groups of countries. Xu et al. (2021) developed an alternative global energy uncertainty measure based on the FAVAR model to measure energy uncertainty. In their study, they also examined the effect of this uncertainty on oil prices. Their findings revealed that the measure they developed differs from existing uncertainty measures. They also stated that oil prices react strongly and significantly to shocks arising from this new energy uncertainty index; in other words, when uncertainty in the energy market increases, oil prices are significantly affected.

Although there are many studies examining the relationship between energy prices and stock prices (Nandha and Faff, 2008; Aloui et al., 2012; Ramos and Veiga, 2013), studies investigating the impact of energy uncertainty on financial markets, particularly stock markets, are quite limited. One of these studies, conducted by Salisu et al. (2025), attempted to predict the daily return volatility of stock markets in 28 developed and developing countries using the

EUI. According to the results obtained from the GARCH-MIDAS model, both country-specific and global EUI indicators can significantly predict stock market volatility. More specifically, as the EUI increases, stock market volatility also increases. In another study examining the impact of EUI on stock returns, Ullah and Riaz (2025) investigated this relationship for China. In their study covering the 2005–2022 period using the QQR regression method for both the general stock market and sectoral stock indices, the findings showed that energy uncertainty has both negative and positive effects on both general and sectoral stock indices at low, medium, and high quantiles.

Studies examining the impact of energy uncertainty on financial markets in Türkiye are quite limited. Özkan et al. (2025) analyzed the effects of EUI on both the stock market and the foreign exchange market for the period 1996–2022. Their findings revealed that EUI has nonlinear, negative, and causal effects on both the BIST 100 index, representing the stock market, and the USD/TRY exchange rate. In another study examining the impact of energy uncertainty on the stock market in Türkiye, Aydoğdu (2025) investigated how EUI affects BIST 100 stock returns in the short, medium, and long term for the period 1996–2023 using the WQQR and WQQGC methods. The findings showed that EUI has heterogeneous effects on BIST 100 returns. Both negative and positive relationships were identified in the short term. However, it was also stated that the positive relationship was stronger. According to the quantile regression results, while there is generally a positive relationship between EUI and BIST 100 at low and medium quantiles, a negative relationship exists at high levels of uncertainty.

3. DATA AND METHODOLOGY

3.1. Data

This study investigates the relationship between the Turkish stock market and global energy uncertainty. In this context, the Borsa Istanbul 100 Index (BIST 100), the Borsa Istanbul Industrial Index (BIST INDUSTRIAL), and the Energy Uncertainty Index (EUI) developed by Dang et al. (2023) were used in the study to represent the Turkish stock market. Monthly data for the variables used in the study covering the period from January 1996 to November 2023 were utilized. The sample period and frequency were determined by considering the availability of EUI data. Data regarding the Turkish stock market were obtained from the https://www.investing.com website, while data regarding energy market uncertainty were obtained from the https://www.policyuncertainty.com website. The monthly values of the

BIST 100 and BIST INDUSTRIAL indices were transformed into return series using the following equation:

$$R_t = \ln\left(\frac{P_t}{P_{t-1}}\right) \tag{1}$$

In Equation 1, R_t represents the return at time t, P_t represents the index value at time t, and P_{t-1} represents the index value at time $t-1$. The logarithms of all index values used in the study were taken, and then the return series were obtained. In order to reduce the dimensional difference between the return series and the EUI, the logarithm of the EUI was also taken. Before proceeding to the quantile-based analyses of the variables, the findings regarding the descriptive statistics are presented in Table 1.

Table 1. Descriptive Statistics

Statistics	**BIST 100**	**BIST INDUST.**	**EUI**
Mean	5.851	5.815	-0.133
Median	6.292	6.008	0.040
Maximum	9.028	9.518	1.113
Minimum	1.599	1.738	-3.696
Standard Deviation	1.482	1.623	0.720
Skewness	-0.746	-0.321	-2.187
Kurtosis	3.462	2.986	8.909
Jarque-Bera	34.103***	5.763	754.739***
Probability	0.000	0.056	0.000
Number of Observations	335	335	335

Note:* *** *indicates significance at the 1% level, respectively.

The results obtained in Table 1 show that, considering the mean and standard deviation values among the indices, the BIST 100 provides higher average returns and has lower volatility compared to the BIST INDUSTRIAL index. According to the skewness values, although the EUI variable has the strongest skewness, all variables exhibit negative skewness. Based on the kurtosis values, the BIST 100 and EUI variables display a leptokurtic distribution since their values are greater than 3, whereas the BIST INDUSTRIAL index exhibits a distribution relatively close to normal since its value is lower than 3. According to the results of the Jarque-Bera (1980) normality test, the null hypothesis of normal distribution is rejected for the BIST 100 and EUI variables, while the null hypothesis of normal distribution cannot be rejected at the 5% significance level for the BIST INDUSTRIAL variable.

3.2. Methodology

In order to examine the relationship between the Turkish stock market and global energy uncertainty, the Quantile-on-Quantile Kernel-Based Regularized Least Squares (QQKRLS) method developed by Adebayo et al. (2024) was applied. This method is a modified version of the KRLS method developed by Hainmueller and Hazlett (2014). This method analyzes the marginal effects of the quantiles of an independent variable on the quantiles of a dependent variable together with statistical significance. In other words, the method calculates the average pointwise marginal effects for each quantile combination and determines the magnitude and statistical significance of the effect of the factor variable. The effect of the factor variable (X) on the affected variable (Y) can be calculated using the QQKRLS method with the following equation:

$$E_N\left[\frac{\overset{\square}{\gamma QY_\tau}}{\gamma QX_{\theta k}}\right] = \frac{-2}{\sigma^2 N}\sum_k\sum_i j_i e^{\frac{X_{\theta i}-X_{\theta k}{}^2}{\sigma^2}}\left(X_{\theta i}-X_{\theta k}\right) \tag{2}$$

Here, $E_N\left[\frac{\overset{\square}{\gamma QY_\tau}}{\gamma QX_{\theta k}}\right]$ represents the average pointwise marginal effect, θ represents the quantiles of the X variable, τ represents the quantiles of the Y variable, N denotes the number of observations, and k and i represent different observation points.

The causality relationship between the variables was investigated using the Quantile-on-Quantile Granger Causality (QQGC) method developed by Adebayo and Özkan (2024). In this method, the causal effects of the quantiles of one variable on the quantiles of another variable are examined. Since the method does not require any specific data distribution assumption, it provides reliable results for non-normally distributed, nonlinear, skewed, and extreme-valued data. The relationship between X and Y is examined using the QQGC method presented in the following equation:

$$Q_Y\left(\tau,t\right)=\gamma\left(\tau,\theta,0\right)+\sum_{i=1}^{p}\gamma_i Q_Y\left(\tau,t-i\right)+\sum_{i=1}^{p}\beta_i Q_X\left(\theta,t-i\right)+\varepsilon\left(\tau,\theta,t\right) \tag{3}$$

In Equation 3, $Q_Y(\tau,t)$ represents the τ-th quantile of the dependent variable, $Q_X(\theta,t-i)$ represents the θ-th quantile of the independent variable at time $t-i$, and ε denotes the error term. The causality relationship is evaluated according to the statistical significance of the $\beta_i(\tau,\theta)$ coefficients.

In order to determine whether the results obtained from the QQKRLS method are valid, the Cross-Quantilogram (CQ) method developed by Han et al. (2016) was employed. This method reveals how the movements of a time series at a specific quantile level affect the movements of another time series at a quantile level. In addition, it can also test whether the quantiles of one variable can predict the quantiles of another variable. The CQ method is implemented using Equation 4 below:

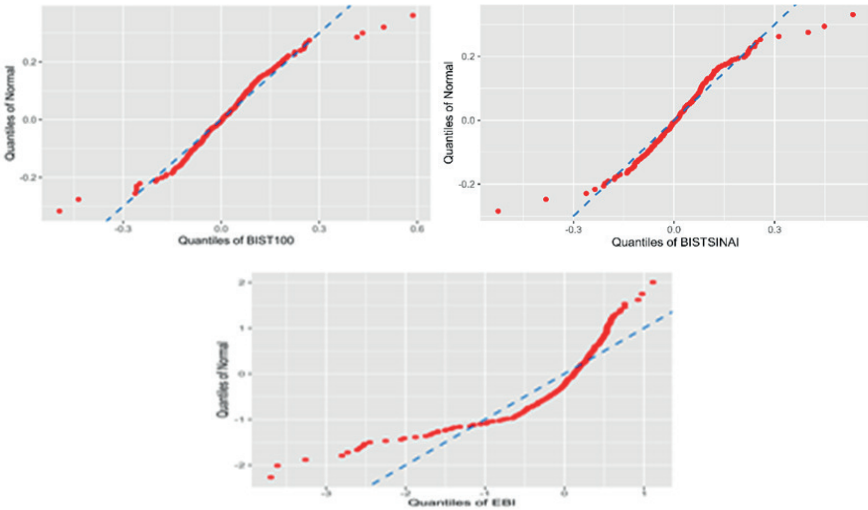
$$\varphi_\tau(k)=\frac{E\left[\rho_{\tau1}\left(y_{1t}-q_{1,t}(\tau_1)\right)\rho_{\tau2}\left(y_{2,t-k}-q_{2,t-k}(\tau_2)\right)\right]}{\sqrt{E\left[\rho_{\tau1}^2\left(y_{1t}-q_{1,t}(\tau_1)\right)\right]}\sqrt{E\left[\rho_{\tau2}^2\left(y_{2,t-k}-q_{2,t-k}(\tau_2)\right)\right]}} \tag{4}$$

In Equation 4, τ_1 represents the quantiles of the y_1 variable, τ_2 represents the quantiles of the y_2 variable, and k denotes the lag length. In the CQ method, the correlation between the selected quantiles of the two variables is taken into consideration for the specified lag length.

4. EMPIRICAL FINDINGS

Figure 1 presents the Quantile-Quantile (QQ) plots providing information about the normal distribution of the variables. In the graphs, the blue lines represent the normal distribution line, while the red lines represent the actual distribution of the series, that is, whether there is a deviation from normality.

Figure 1. QQ Plots



According to the results presented in the graphs, it is understood that the series belonging to the BIST 100, BIST INDUSTRIAL, and EUI variables deviate from the normal distribution line at certain quantiles. This situation proves that the relevant variables exhibit an abnormal structure within the sample period.

Below, Table 2 presents the linearity results for the variables included in the study.

Table 2. BDS Test Results

DIMENSIONS	BIST 100	BIST INDUST.	EUI
2	42.710 (0.000***)	47.404 (0.000***)	18.159 (0.000***)
3	45.647 (0.000***)	50.683 (0.000***)	21.235 (0.000***)
4	49.211 (0.000***)	54.777 (0.000***)	23.607 (0.000***)
5	54.481 (0.000***)	60.799 (0.000***)	26.011 (0.000***)
6	61.715 (0.000***)	69.110 (0.000***)	28.845 (0.000***)

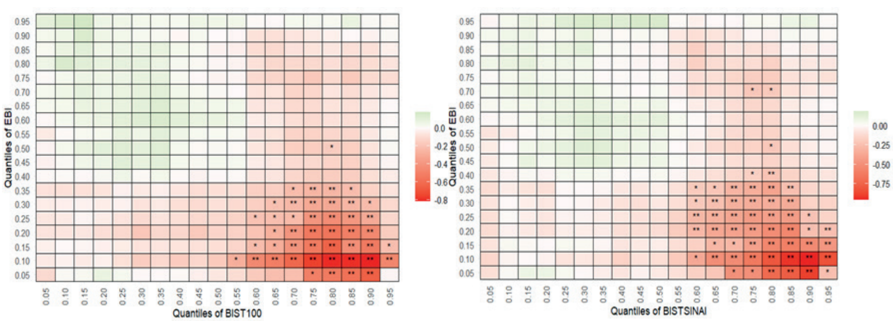
Note: The values presented in the table indicate the estimated z-statistic values for each dimension. The values in parentheses represent the probability values corresponding to the related z-statistics. The symbol *** indicates statistical significance at the 1% level.

The BDS test developed by Broock et al. (1996) is used to evaluate whether the series are linear or not. According to the results presented in Table 2, the obtained z-statistic values indicate that the null hypothesis stating that the relevant variable is linear is rejected for all dimensions from 2 to 6. Thus, the BIST 100, BIST INDUSTRIAL, and EUI variables do not exhibit a linear structure within the analysis period. Therefore, the fact that these variables are neither normally distributed nor linear confirms the suitability of the quantile-based approaches used in this study.

4.1. QQKRLS and QQGC Findings

In order to examine the impact of global energy uncertainty on the stock market in Türkiye, the QQKRLS method was employed, and the graphs of the results are presented in Figure 2. When the relationship between the return series of the BIST 100 and BIST INDUSTRIAL indices and the EUI is examined, it is determined that the effect of the EUI on the BIST 100 is negative and varies across quantiles. In particular, it is observed that the low quantiles of the EUI have a statistically significant effect on the high quantiles of the BIST 100 index.

Figure 2. QQKRLS Outputs for EUI-BIST 100 and EUI-BIST INDUSTRIAL

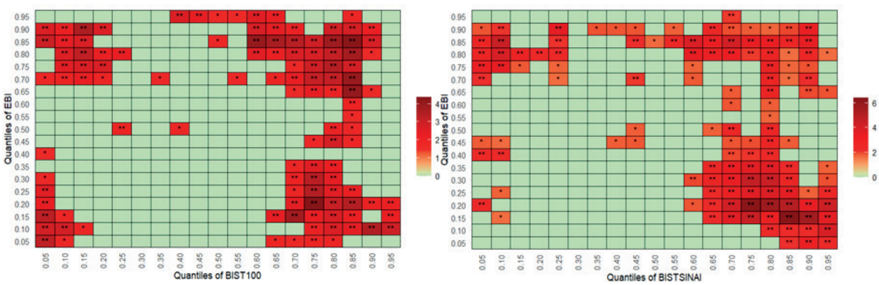


Note: The symbols ** and * indicate statistical significance at the 5% and 10% levels, respectively.

Similarly, it has been determined that the EUI also has a negative effect on the BIST INDUSTRIAL index and that this effect is nonlinear and varies across quantiles. It has been found that the low and medium quantiles of the EUI (0.05–0.40) have a statistically significant effect on the high quantiles of the BIST INDUSTRIAL index (0.60–0.95). When both outputs are evaluated together, it is revealed that the negative effect of the EUI on the

BIST INDUSTRIAL index occurs in more quantile combinations compared to its negative effect on the BIST 100 index.

Figure 3. QQGC Outputs for EUI-BIST 100 and EUI-BIST INDUSTRIAL



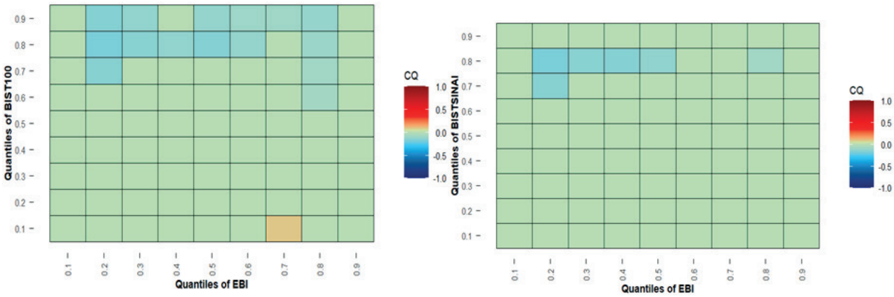
Note: The symbols ** and * indicate statistical significance at the 5% and 10% levels, respectively.

Figure 3 presents the QQGC results for the EUI, BIST 100, and BIST INDUSTRIAL indices. It has been determined that the causality relationship between the EUI and the BIST 100 is nonlinear and varies across quantiles. Moreover, there is a statistically significant causality relationship between many quantiles of the EUI and mostly the high quantiles of the BIST 100. In addition, a statistically significant causality relationship is also observed between the low quantiles of the BIST 100 and the high quantiles of the EUI. Similarly, the causality relationship between the EUI and the BIST INDUSTRIAL also differs across quantiles. Furthermore, compared to the BIST 100 index, there are statistically significant and relatively strong relationships between the EUI and the BIST INDUSTRIAL index, particularly across all quantiles of the EUI and the high quantiles of the BIST INDUSTRIAL. On the other hand, no statistically significant causality relationship could be detected between most quantile combinations of the EUI and the low and medium quantile combinations of the stock market indices.

4.2. Validity Analysis Findings

In order to test the validity of the findings obtained from the QQKRLS method in terms of direction, asymmetry, and nonlinearity, the CQ method was employed. The CQ outputs between the EUI-BIST 100 and EUI-BIST INDUSTRIAL indices are presented below in Figure 4.

Figure 4. Cross-Quantilogram Outputs for EUI-BIST 100 and EUI-BIST INDUSTRIAL



Note: Green squares indicate statistical insignificance at the 5% level.

When the graphs are examined, it is observed that the EUI has a nonlinear negative effect on both the BIST 100 and BIST INDUSTRIAL indices that varies across quantiles.

5. CONCLUSION AND RECOMMENDATIONS

Today, energy plays an important role as a fundamental input for many sectors. Therefore, problems in energy supply and the uncertainties arising from them will lead to adverse developments in the related sectors. In countries such as Türkiye, which are highly dependent on external energy sources, energy uncertainty can affect the economy as a whole. Uncertainties experienced in the energy sector primarily operate through cost and production channels via firms, and from there affect financial markets and increase volatility. In developing countries such as Türkiye, this situation becomes even more pronounced, and shocks experienced in energy supply may lead to deterioration in macroeconomic balances.

This study investigates the relationship between the Turkish stock market and global energy uncertainty. Monthly data for the period from January 1996 to November 2023 were analyzed using the QQKRLS, QQGC, and CQ methods. According to the results obtained from the analyses, it was determined that energy uncertainty creates nonlinear negative effects on both stock market indices and that this effect varies across quantiles. In particular, the impact of energy uncertainty on the BIST INDUSTRIAL index is more pronounced than on the BIST 100 index. In this context, it can be stated that the industrial sector may be more sensitive to cost- and supply-driven shocks occurring in the energy sector.

As a result, in order to reduce the negative effects of energy uncertainty on financial markets in Türkiye, it is important to develop policies aimed at increasing energy supply security and to strengthen existing ones. In addition, giving greater importance to renewable energy investments will provide diversification in energy resources, and this situation will contribute to reducing the risks arising from energy uncertainty. Financial market investors should diversify their investments across different areas by considering the risks that may arise from the energy market and develop strategies that can prevent losses resulting from possible risks. Furthermore, policymakers and regulatory institutions should closely monitor energy markets in order to prevent fluctuations that may occur in financial markets, thereby limiting the negative effects of uncertainties arising from energy markets on firms and consequently on the stock market.

References

Adebayo, T. S., and Özkan, O. (2024). Evaluating the role of financial globalization and oil consumption on ecological quality: A new perspective from quantile-on-quantile granger causality. *Heliyon, 10*(2). https://doi.org/10.1016/j.heliyon.2024.e24636.

Adebayo, T. S., Özkan, O., and Eweade, B. S. (2024). Do energy efficiency R&D investments and information and communication technologies promote environmental sustainability in Sweden? A quantile-on-quantile KRLS investigation. *Journal of Cleaner Production*, *440*. https://doi.org/10.1016/j.jclepro.2024.140832

Ahir, H., Bloom, N., & Furceri, D. (2022). *The world uncertainty index* (No. w29763). National bureau of economic research.

Aloui, C., Nguyen, D. K., & Njeh, H. (2012). Assessing the impacts of oil price fluctuations on stock returns in emerging markets. *Economic Modelling, 29*, 2686–2695. https://doi.org/10.1016/j.econmod.2012.08.026

Aydoğdu, A. (2025). The impact of energy uncertainty on BIST 100: A quantile-wavelet perspective. *International Journal of Energy Studies*, *10*(4), 1317-1349. https://doi.org/10.58559/ijes.1725730

Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *The quarterly journal of economics*, *131*(4), 1593-1636. https://doi.org/10.1093/qje/qjw024

Banna, H., Alam, A., Chen, X. H., & Alam, A. W. (2023). Energy security and economic stability: The role of inflation and war. *Energy Economics*, *126*, 106949. https://doi.org/10.1016/j.eneco.2023.106949

Dang, T. H. N., Nguyen, C. P., Lee, G. S., Nguyen, B. Q., & Le, T. T. (2023). Measuring the energy-related uncertainty index. *Energy Economics*, *124*, 106817. https://doi.org/10.1016/j.eneco.2023.106817

Dang, T. H.-N., Nguyen, C. P., Lee, G. S., Nguyen, B. Q., and Le, T. T. (2023). Measuring the energy-related uncertainty index. *Energy Economics*, *124*, 106817. https://doi.org/10.1016/j.eneco.2023.106817.

Doan, T. N., & Nguyen, T. T. (2025). Energy uncertainty and energy trade: International evidence. *Energy*, *319*, 134978. https://doi.org/10.1016/j.energy.2025.134978

Hainmueller, J., and Hazlett, C. (2014). Karnel reqularized least squares: Reducing Misspecificationnn bias with a flexible and interpretable machine learning approach. *Political Analysis*, 22(2), 143-168. https://doi.org/10.1093/pan/mpt019.

Han, H., Linton, O., Oka, T., and Whang, Y.-J. (2016). The cross-quantilogram: Measuring quantile dependence and testing directional predictability between time series. *Journal of Econometrics*, *193*(1), 251–270. https://doi.org/10.1016/j.jeconom.2016.03.001

Independent Türkçe (2026, April 27). *ABD'nin enerji stratejisi: "İran savaşı, Amerikan şirketlerine talebi artırdı.* https://www.indyturk.com/node/776200/ekonomi%CC%87/abd%E2%80%99nin-enerji-stratejisi-%E2%80%9Ci%CC%87ran-sava%C5%9F%C4%B1-amerikan-%C5%9Firketlerine-talebi-art%C4%B1rd%C4%B1%E2%80%9D

Işık, C., Kuziboev, B., Ongan, S., Saidmamatov, O., Mirkhoshimova, M., & Rajabov, A. (2024). The volatility of global energy uncertainty: Renewable alternatives. *Energy*, *297*, 131250. https://doi.org/10.1016/j.energy.2024.131250

Kanamura, T. (2009). A supply and demand based volatility model for energy prices. *Energy Economics*, *31*(5), 736-747. https://doi.org/10.1016/j.eneco.2009.04.001

Le, T. H., & Nguyen, C. P. (2019). Is energy security a driver for economic growth? Evidence from a global sample. *Energy policy*, *129*, 436-451. https://doi.org/10.1016/j.enpol.2019.02.038

Nandha, M., & Faff, R. (2008). Does oil move equity prices? A global view. *Energy Economics*, 30, 986–997. https://doi.org/10.1016/j.eneco.2007.09.003

Özkan, O., Köseoğlu, O., & Bilkan, T. (2025). Enerji belirsizliklerinin borsa ve döviz piyasasına etkisi: Türkiye'den ampirik kanıtlar. *Afyon Kocatepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, *27*(1), 78-89. https://doi.org/10.33707/akuiibfd.1595322

Qin, Y., Hong, K., Chen, J., & Zhang, Z. (2020). Asymmetric effects of geopolitical risks on energy returns and volatility under different market conditions. *Energy Economics*, *90*, 104851. https://doi.org/10.1016/j.eneco.2020.104851

Ramos, S. B., & Veiga, H. (2013). Oil price asymmetric effects: Answering the puzzle in international stock markets. *Energy Economics*, 38, 136–145. https://doi.org/10.1016/j.eneco.2013.01.019

Salisu, A. A., Ogbonna, A. E., Gupta, R., & Bouri, E. (2024). Energy-related uncertainty and international stock market volatility. *The Quarterly Review of Economics and Finance*, *95*, 280-293. https://doi.org/10.1016/j.qref.2024.04.005

Ullah, A., & Riaz, A. (2025). The impact of energy-related uncertainty on China's overall and sectoral stock returns: Evidence from quantile-on-quantile regression. *Energy*, *320*, 135254. https://doi.org/10.1016/j.energy.2025.135254

Xu, B., Fu, R., & Lau, C. K. M. (2021). Energy market uncertainty and the impact on the crude oil prices. *Journal of Environmental Management*, *298*, 113403. https://doi.org/10.1016/j.jenvman.2021.113403

Yilmazkuday, H. (2024). Geopolitical risks and energy uncertainty: Implications for global and domestic energy prices. *Energy Economics*, *140*, 107985.