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THE EFFECT OF THE UNCERTAINTIES OF MONETARY AND ECONOMY POLICIES ON STOCK MARKETS

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ABSTRACT

Uncertainties create asymmetric and variable effects in economic and financial decision-making processes. However, empirical findings on how these effects differ depending on market conditions remain limited. This paper aims to evaluate the effects of uncertainty on the returns of the Borsa Istanbul (BIST 100) index in a layered manner, using a quantile regression model, in the case of Türkiye. Empirical findings show that both economic and monetary policy uncertainties cause influence on returns during periods of poor market conditions. This result indicates that rising uncertainty increases the risk premium, triggers negative expectations in the market and worsens conditions about it. On the other hand, market returns tend to increase when the effect of uncertainties changes in a positive direction, and increasing uncertainties have positive effects on returns. Consequently, the findings provided by using the quantile regression reveal that the effects of uncertainty on financial markets are not static and homogeneous.

Keywords: *Quantile Regression, Stock Returns, Uncertanities.*

Jel Classification: *C32, E44, G15.*

1.INTRODUCTION

Uncertainty may stem from different factors including crises, wars and unexpected political changes and can impact the economy in different ways whatever triggers it (Bloom vd., 2013). The idea that uncertainty drags economic and financial activities into stagnation is also assisted by the rapidly growing applied and theoretical literature. Research examining the effects of uncertainty on financial and macroeconomic indicators also attract attention accordingly. Among the types of uncertainty examined in the literature, many studies focus on the nexus between monetary policy uncertainty (MPU) and stock markets (Paule-Vianez et al., 2020a; Chiang, 2021; Wen et al., 2022). These research usually examine the correlation between MPU and stock markets for different countries or groups of countries and use only a single MPU index. Therefore, this study tries to expand the nexus between the MPU and stock markets in a different country context, using an alternative MPU index. The effect of monetary policy decisions on financial markets may vary depending on how uncertainty is perceived. Both

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domestic and international developments can increase policy uncertainty by causing uncertainty in economic activities. In addition, the design and adaptation process of unconventional monetary policy instruments that have become widespread recently may blur the functioning of transmission mechanisms. This increase in uncertainty may complicate the decision-making processes of economic and financial actors, causing important decisions to be postponed. Increasing uncertainty brings about an abatement in investments and consumption expenditures and a slowdown in economic activities due to the tendency to act cautiously (Bernanke, 1983; Dixit and Pindyck, 1994; Bloom, 2009). This is also the case in the financial markets. In an environment of uncertainty, investment decisions can be postponed until more information becomes available, similarly to consumption decisions (Dixit and Pindyck, 1994). The "wait-and-see" approach adopted by investors to protect themselves may have negative consequences on both employment and production. In this process, financial market investors act more cautiously and tend to direct their assets to instruments that can be easily converted into cash.

Because of improving capital movements between international financial markets, a close link has raised between the exchange rates and stock markets. The link between these two markets is explained within the framework of commodity market theory and portfolio balancing theory (Tian and Ma, 2010). In commodity market theory, they argue that a country's exchange rates are largely driven by current transactions in the country and, that changes in exchange rates affect real economic factors, impacting both international competition and the balance of trade. In this theory, the causality relationship from the exchange rate to the stock market differs between export-oriented and import-oriented countries. It is estimated that the abatement in the exchange rate in the country (or rise in the country's domestic currency valuation) will negatively affect an export-intensive economy, thus affecting the stock markets because of the diminish in the appeal of the stocks of exporting companies. On the contrary, for the economy of an import-intensive country, the decline in exchange rates is expected to have a positive influence on the stock market. It is estimated that an improvement in the exchange rate will similarly influence the stock markets depending on whether the economy is import or export-oriented and in the opposite direction of the above-mentioned movements (Dornbusch and Fisher, 1980; Obben et al., 2006).

Another macroeconomic factor that impacts stock prices is adjusts in the money supply because of monetary policy practices. Regarding this relationship, which has been researched since the 1970s, in the field, although the effect of monetary expansion on stock prices is generally evaluated as positive, there are different opinions on this issue. The link between stock prices and the money supply is explained by different economic theories. The monetarist approach explains this relationship with the portfolio balance effect: The rise in the money supply causes individuals to direct their portfolios to assets such as stocks. Thus, an upward pressure on stock prices occurs, and a new balance is established between the money in individuals' hands and other assets. Increased liquidity allows individuals to invest their excess money in consumer goods or financial assets. At the same time, the increase in demand for fixed income assets increases bond prices and reduces their yields. Such a situation causes investors to prefer stocks instead of bonds and results in even greater rises in stock prices (Wiedmann, 2011). Sellin (2001) stated that alters in the money supply can influence stock prices only when they change future monetary policy expectations. Expansionary monetary policies that create expectations of tightening in the future may cause stock prices to decline. According to the real activity theory, monetary expansion strengthens cash flows by increasing economic activity, which positively affects stock prices (Maskay, 2007).

In approaches focusing on the impact of interest rates, it is seen that increasing interest rates increase the discount rate and therefore stock prices decrease. Bernanke and Kuttner (2005) argued that the money supply can change the value of stocks by affecting interest rates. Accordingly, a tight monetary policy increases the discount rate by increasing interest rates and diminishes the value of stocks. Similarly, cash flow models recommend that an enhancement in the money supply abates interest rates, which increases the existing value of companies' forthcoming cash movements. This effect increases companies' profits and strengthens investors' dividend expectations, causing stock prices to rise. Therefore, monetary expansion is generally associated with increased demand and price increases in the stock markets. Monetarist economists discuss that this process increases the demand for the market and pushes prices up (Ariff et al., 2012).

The basic aim of this paper is to examine the response of financial markets (stocks listed in BIST100) to economic and monetary policy uncertainties, without ignoring the effect of real effective exchange rate and money supply changes. In this context, the paper is different from previous research in three prominent aspects: First, it focuses on the impact of both the EPU and its sub-index, the MPU index, on the Turkish stock market within, the framework of basic macroeconomic factors. Second, it analyzes data from the Turkish economy, which is an emerging market economy. Finally, by applying the quantile regression (QR) method (Koenker and Bassett, 1978), which allows estimation by dividing the dependent variable into percentiles, it step by step evaluates how the BIST100 index reacts to uncertainties in heterogeneous market conditions (normal, bearish, and bullish market).

2. LITERATURE REVIEW

Various studies have evaluated the effects of MPU on stock markets for different countries or country groups using various econometric techniques and control variables (Cai, 2018; Paule-Vianez et al., 2020a; Uğurlu-Yıldırım et al., 2021). Cai (2018) examined the international spillover of MPU into stock returns in New Zealand and Australia using time-varying causality tests. For Australia, the study revealed that MPU had an adverse effect on stock returns for several months after the debt crisis in Europe in 2009, and also found a unidirectional causality from stock returns to MPU during the Dot-com bubble time span. In the New Zealand context, the paper presents that MPU has an adverse influence on stock returns for several months and that there is a unidirectional causality from stock returns to MPU. Additionally, this study reveals that the impacts of MPU on stock returns in Australia and New Zealand are heterogeneous. Paule-Vianez et al., (2020a) tested the effect of MPU on the returns of the S&P 500 and NASDAQ 100 indices.

The results show that MPU is effective on stock returns, principally during the economic expansion times. Additionally, it has been concluded that controlling uncertainty is important in limiting the negative effects of MPU on stock markets. Paule-Vianez et al., (2020b) examined the effect of MPU on stock returns between January 1985 and March 2020 with regression models, controlling for arbitrage limits and the economic cycle. The study reveals that MPU has an adverse effect on stock returns. Uğurlu-Yıldırım et al., (2021) analyzed the non-linear and cointegration relationships between MPU and the US stock market, taking into account potential risk factors. In this study, conducted using a non-linear lagged distributed autoregressive model (NARDL), it was determined that there is a cointegrated relationship between the MPU and the US stock market. Additionally, it has been determined that there is a bidirectional and adverse link between the performance of the US stock market and MPU in the short term. Chiang (2021) proved the impact of MPU on international stock returns, considering market volatility and dividend yield variables. The findings of the study show that MPU has a significant and negative effect on North American stock returns, and this effect persists with a one-month lag. It was also concluded that the enhancement in MPU spread to the global stock markets. Wen et al., (2022) examined the heterogeneous and asymmetric effects of MPU on the BRICS and G7 countries. Utilizing the quantile regression technique, the findings reveal that MPU has a negative impact on stock returns in most countries, especially when the MPU level is high and returns are low. The study also reveals that yields decline during crisis periods when uncertainty is high and that the reactions of the stock markets in BRICS countries to MPU shocks are less volatile compared to the G7 countries. A study evaluating EPU and MPU indices together was conducted by Jin et al., (2018) and probed the impacts of EPU and MPU on US banks.

Although the findings obtained by quantile regression reveal that EPU and MPU increase the opacity in bank earnings, it is emphasized that banks with strong capital ratios are less affected by these uncertainties in different quantiles. Nusair and Al-Khasawneh (2023) evaluated the asymmetric effects of oil price changes and EPU on the stock returns of the G7 countries. Their findings using the quantile regression technique point out that while increasing EPU abates stock returns in bearish markets, rising EPU can increase returns in bullish markets. Conversely, study on the nexus between monetary policy and the stock market has provided ample proof that monetary policy has a substantial influence on prices.

Applied investigations relevant to this scope comprise Thorbecke (1997), Ewing et al., (1998, 2003), Kwon and Shin (1999), Cassola and Morana (2004), Bernanke and Kuttner (2005), and Chulia et al., (2010). Within the framework of the Keynesian and Monetarist views, it is stated that monetary policy changes can affect stock prices. The monetarist approach argues that expansionary monetary policy changes enhance the demand for stocks by increasing optimal monetary balances, thus increasing stock prices. The Keynesian framework, on the other hand, states that when interest rates fall through an expansionary monetary policy, bonds become less charming than stocks, inducing stock prices to rise. Conversely, Fama (1981) discussed that rise in the money supply may result in inflation, thereby decreasing stock prices. Recent studies have also made more detailed evaluations specific to different country groups. Accordingly, the empirical literature supports both effects.

Many applied research has perused the nexus between stock prices and exchange rates. Aggarwal (1981) obtained findings that support the estimations of flow models. Soenen and Hennigar (1988) reached a negative relationship between the effective value of the dollar and US stock prices. Bahmani-Oskooee and Sohrabian (1992) analysed the nexus between the S&P 500 index and the effective exchange rate and stated that there is a bidirectional causality relationship in the findings, supporting both the portfolio approach and flow models.

Studies conducted in different countries have also examined the relationship between stock prices and exchange rates. Abdalla and Murinde (1997) proved that exchange rate increases positively affected stock prices in South Korea, India, and Pakistan, but this relationship was in the opposite direction in the Philippines. Wong (2017) examined the relationship between stock prices and real exchange rate returns in the Philippines, Malaysia, Korea, Singapore, Japan, Germany, and the UK. Although the study varies between countries, it draws attention to the dynamic structure of the relationship between stock prices and exchange rates. Kassouri and Altıntaş (2020) analyzed the effect of real foreign exchange and dollar exchange rates on stock prices in Türkiye. The study revealed that increases in the real exchange rate negatively affect stock prices. Ülkü and Demirci (2012) analyzed the relationship between exchange rates and stock markets in 9 developing countries, including Türkiye, within the framework of SVAR. The research revealed significant and same-directional relationship between exchange rates and stock markets, and that this relationship is shaped depending on stock returns in developed countries.

Most of the analyses mentioned before examined the nexus between uncertainties and stock markets for developed economies and generally used the monetary policy uncertainty index. Studies focusing on developing economies considering alternative uncertainty indices are limited. In addition, basic macroeconomic determinants have been neglected in studies investigating the effects of uncertainty. To fill this gap, this paper examines the effects of monetary policy and economic policy uncertainties on the stock market in the context of a developing economy like Türkiye, in a framework where the basic macroeconomic determinants of the stock market are not neglected.

3. METHODOLOGICAL FRAMEWORK

In applied macroeconomic or financial time series research, the series subject to research may be exposed to several shocks (natural disasters such as earthquakes, famine, etc., economic recession, and financial crises) in the long term. If the shocks in question have a permanent effect on the series, the stationarity of the series will be negatively affected and a non-stationary process will emerge. The stationarity of the process is closely related to whether the estimated regression reflects a real relationship (Granger and Newbold, 1974; Gujarati, 1995). There are many unit root tests in the literature that have been developed to investigate the stationarity of time series. In this paper, stationarity evaluations of the variables subject to the research were carried out by using the ADF and PP unit root tests, which are considered as a reference test, as well as KPSS stationarity tests in order to robust the results.

3.1. Augmented Dickey-Fuller (ADF) Unit Root Test

The ADF unit root test, which is frequently chosen in testing the existence of unit roots in time series, is evaluated a design of the Dickey-Fuller (DF) unit root test that takes into account higher correlation, making use of the AR(1) process. To solve the higher order correlation problem, the ADF test utilizes the AR(p) process instead of the AR(1) process and covers the "p" lagged difference terms in the equation (Gujarati, 2011). Thus, the ADF equations are specified as follows (none, intercept, and intercept& trend, respectively):

$$\Delta y_t = \delta y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + \varepsilon_i \tag{1}$$

$$\Delta y_t = \mu + \delta y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + \varepsilon_i \tag{2}$$

$$\Delta y_t = \mu + \beta t + \delta y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + \varepsilon_i \tag{3}$$

where, μ is the intercept, t is the deterministic trend, p is the number of lags, and εt is the residuals. For all three of the ADF equations, the null hypotheses claiming the existence of unit roots in the series are the same (Dickey and Fuller, 1979; 1981).

3.2. Phillips-Perron Unit Root Test

In the Dickey-Fuller (DF) (1979) and Augmented Dickey-Fuller (ADF) (1981) unit root tests, which are the first unit root tests in the literature, it is considered that the residuals are independent and homoscedastic. However, in time series applications, it has been stated that most time series have heterogeneously distributed and weakly dependent residuals. For this reason, it is recommended to make nonparametric corrections in the PP unit root test developed by Phillips and Perron (1988), based on the possibility that the residuals may be autocorrelated. The PP unit root test is as follows (4):

$$\Delta y_t = a y_{t-1} + x_t' \delta + \varepsilon_t \tag{4}$$

where a=ρ-1, while xt denotes the deterministic components and εt denotes the residuals. Under the null hypothesis tested in the PP unit root test, it is stated that the series encloses a unit root, while in the alternative hypothesis it is stated that the series does not contain a unit root (Phillips and Perron, 1988).

3.3. KPSS Stationarity Test

Kwitkowski, Phillips, Schmidt, and Shin (KPSS) (1992) introduced a test statistic based on the null hypothesis that the time series is stationary. Considering yt as the time series under investigation, it is expressed in Equation (5) as the sum of a deterministic trend, a stationary residuals, and a random walk process:

$$y_t = \xi t + r_t + \varepsilon_t \text{ ve t=1,2,…,T} \tag{5}$$

where r_t, corresponds to the random walk process, t corresponds to the deterministic trend and ε_t corresponds to the residuals. Test statistics of the KPSS test (Kwiatkowski et al., 1992: 161-165):

$$\hat{\eta} = T^{-2} \sum_{t=1}^{T} \frac{S_t^2}{s^2(l)} \tag{6}$$

Under the null hypothesis, the y_t series is tested for being trend stationary or stationary around an intercept. In this context, the KPSS stationarity test differs from other unit root tests by operating on the null of the alternative hypothesis of a non-stationarity against the null hypothesis of stationarity.

3.4. Quantile Regression

Quantile regression, developed by Koenker and Basset (1978), emerged to provide robust results in cases where the assumption that the series of residuals distributed normal, which is among the classical assumptions of regression, is ignored. The quantile regression technique, which is commonly used in cases where the distribution of the researched data is distorted, is also an approach designed to provide a more comprehensive regression view (Koenker, 2005). This approach is especially useful in situations where conditional quantiles vary. In the quantile regression technique, the regression coefficients are determined depending on the quantiles (percentiles) therefore different results are provided in different quantiles. This situation can be explicated as the explained variable reacting differently to changes in the independent variables at different points of the conditional distribution (Erilli and Çamurlu, 2019). The quantile regression model is as follows:

$$Y_i = x_i \beta_0 + e_i \tag{7}$$

where x_i, corresponds to the (k+1) dimensional vector of the explanatory variables and indicates the linear regression between the θth quantile of the conditional distribution of the explained variable and the explanatory variables. βθ refers to the vector of parameters in the θth quantile regression. Quantile regression estimators can be thought of as a linear programming problem and can be solved by optimizing the two-piece linear objective function of the residuals and using solution methods of linear programming problems such as the boundary technique or the simplex method (Koenker and Hallock, 2001). The objective function corresponds to the weighted sum of the absolute deviations and is shown in Equation (8) (Wu, 1986):

$$\min_{\beta}\frac{1}{n}\left\{\sum_{i:y_i\geq x_i\beta}\theta\,|y_i-x_i\beta|+\sum_{i:y_i\geq x_i\beta}(1-\theta)|y_i-x_i\beta|\right\} \tag{8}$$

When the objective function shown in Equation (8) is minimized according to β, the coefficient (parameter) estimate is calculated with the equation in Equation (9):

$$\min\frac{1}{n}\left\{\sum_{1=1}^{n}\rho_\theta\,(y_i-x_i\beta)\right\} \tag{9}$$

In this case, the $\hat{\beta}$ estimator for the optimal value of θ (0< θ<1) is shown in Equation (10):

$$\hat{\beta}(\theta)=\arg min_{\beta\epsilon R^p}\left\{\sum_{1=1}^{n}\rho_\theta\,(y_i-x_i\beta)\right\} \tag{10}$$

The most important feature of the quantile regression technique is that it presents knowledge about the whole conditional distribution of y according to the explanatory variable x for different quantile (percentile) values, not about the average of the conditional distribution of the dependent variable y, like the classical multiple linear regression method. (Erilli and Çamurlu, 2019).

4. DATA SET, MODEL AND EMPIRICAL FINDINGS

In the primary stage of this section, the dataset used in the research is introduced and then the econometric model developed in the light of the literature review and a preliminary analysis is introduced.

4.1. Data Set and Model

The main aim of this analysis is to observe the effects of basic macroeconomic indicators and uncertainties on financial markets. In the data set used in this context, five variables are adopted, including the BIST 100 index return (BIST 100; log diff. series of BIST 100 index), the economic policy uncertainty index (EPU), the monetary policy uncertainty index (MPU), one of the sub-indices of the EPU, the real effective exchange rate (REER; percentage change), and the money supply (M2; percentage change). The dataset of the research covers the periods between January 2006 and September 2023 and has a monthly frequency. Table 1 demonstrates the definitions, units, and database information of the variables.

Table 1. Abbreviations, Units and Database Information

Variables	Abbrevation	Unit	Database
BIST 100 Index Return	BIST100	Percentage	Matriksdata.com
Monetary Policy Uncertainty Index	MPU	Index	Policyuncertainty.com
Economic Policy Uncertainty Index	EPU	Index	Policyuncertainty.com
Real Effective Exchange Rate	REER	Index (percentage change)	TCMB-EVDS
Money Supply	M2	TL (percentage change)	TCMB-EVDS

In order to estimate the log-log form regression, the natural logarithms of the variables subject to the research were taken and econometric analyses were continued with these forms. The advantage of making inferences through log-log models is that the effect of variables on the dependent variable can be expressed more clearly by making percentage comments regardless of the unit.

Table 2 maintains the descriptive statistics of the variables, including the mean, median, standard deviation, minimum, and maximum values. These statistics offer ideas into the data distribution and the general characteristics of the variables. The LBIST100 variable demonstrates positive average and median values during the examined period, reflecting positive average returns. The values range from approximately -0.21 to +0.26, indicating the bounds of the maximum returns and losses. JB statistics reveal that the null hypothesis of normality holds only for the uncertainty indices, confirming their normal distribution. In contrast, BIST100 returns, along with the M2 and REER, deviate from the normal distribution, highlighting differences in their statistical behaviours.

Table 2. Descriptive Statistics

Variables	Mean	Median	Std. Dev.	Maximum	Minimum	JB Statistics
LBIST100	0.00723	0.007425	0.075436	0.205784	-0.26292	9.285437***
LMPU	4.210921	4.207119	0.583978	5.717256	2.927631	3.708932
LEPU	4.985736	4.963514	0.416513	6.064387	3.889305	0.466447
LREER	-0.0007	-0.00034	0.006944	0.027512	-0.03652	168.2434***
LM2	0.000706	0.000674	0.000865	0.005392	-0.00178	229.2084***

Note: i.*** indicates 1% significance levels. ii. "L" refers to the logarithmic operation.

Descriptive statistics were followed by a correlation analysis to explore the direction of the relationships between the variables. The positive and negative correlation coefficients show the direction of these relationships, while the magnitude of the coefficient reflects their strength. Table 3 summarises the correlation coefficients for the variables.

Table 3. Correlation Analysis

Variables	LBIST100	LEPU	LMPU	LREER	LM2
LBIST100	1				
LEPU	-0.0892	1			
LMPU	-0.0329	0.4118	1		
LREER	0.2599	-0.0853	-0.1352	1	
LM2	-0.3195	0.1825	0.1322	-0.6228	1

According to the results of the correlation analysis, there is a 41% positive correlation between LEPU and LMPU. On the other hand, LM2, LMPU, and LEPU appear to be negatively correlated with BIST100 returns, while there is a positive correlation relationship between LREER and BIST100.

Table 2 represents the descriptive statistics, while Table 3 gives the results of the correlation analysis, contributing to the specification and examination approach (within the context of regression estimators) informed by the literature for the models analyzed in this paper. A positive 41% correlation between LEPU and LMPU, along with the fact that LMPU is a subindex of LEPU, suggests a potential multicollinearity issue when evaluating their effects on LBIST100. To address this, the impacts of these two uncertainty indices on BIST100 returns were assessed using separate models.

The positive correlation between the variables implies that the LEPU and LMPU findings are expected to align directionally in the modelling results. Additionally, the dependent variable, LBIST100, does not follow a normal distribution and demonstrates high volatility, as indicated by its standard deviation exceeding its mean. Given this, robust results can be achieved using estimators targeting the median and other percentiles, such as quantile regression, rather than mean-based regression estimators.

The closed and open form representations of the return models examined in this paper are presented below, respectively:

$$LBIST100_t = f\,(LMPU_t, LREER_t, LM2_t) \quad (11)$$

$$LBIST100_t = f\,(LEPU_t, LREER_t, LM2_t) \quad (12)$$

The open form representations of the BIST100 return models within the framework of the quantile regression are as follows:

$$QLBIST100_t(\tau|x_t)=\alpha(\tau) + \delta_1(\tau)LMPU_t + \delta_2(\tau)LDK_t + \delta_3(\tau)LM2_t + \varepsilon(\tau), 0 < \tau < 1 \quad (13)$$

$$QLBIST100_t(\tau|x_t)=\omega(\tau) + \beta_1(\tau)LEPU_t + \beta_2(\tau)LDK_t + \beta_3(\tau)LM2_t + \nu(\tau),\ 0<\tau<1 \quad (14)$$

where $\boldsymbol{\delta_1}, \boldsymbol{\delta_2}, \boldsymbol{\delta_3}$ and $\boldsymbol{\beta_1}, \boldsymbol{\beta_2}, \boldsymbol{\beta_3}$ correspond slope coefficients, α and ω represent the intercepts, and ε(τ) and ν(τ) symbolizes the residuals of the models. τ is a parameter specific to the quantile regression adopted in this research and corresponds to percentages varying between 0 and 1.

4.2. Empirical Findings

In the regression models introduced in Eq. (3) and Eq. (4), unit root and stationarity analyses are included in the primary stage of econometric analyses to prohibit the spurious regression issue (Granger and Newbold, 1974; Gujarati, 2015; Kartal et al., 2023). To investigate the existence of a unit root, information about the stationarity of the variables was provided by applying the ADF unit root test, which is a very reference test, and the PP unit root tests, which include some corrections to the ADF test, and then the KPPS stationarity test. Currently, Monte Carlo simulations performed by Amano and Norden (1992) and Schlitzer (1995) have everlastingly shown that combining ADF and KPSS tests for unit root analysis provides the most reliable findings.

Table 4. Summary of the Unit Root Tests

	ADF Unit Root Test		PP Unit Root Test	
Variables	**Intercept (τ Stat.)**	**Int. & trend (τ Stat.)**	**Intercept (Adj. τ Stat.)**	**Int. & trend (Adj. τ Stat.)**
LBIST100	-13.3257*** (0.0000)	-13.2899*** (0.0000)	-13.3294*** (0.0000)	-13.2931*** (0.0000)
LMPU	-6.0578*** (0.0000)	-6.0884*** (0.0000)	-5.9621*** (0.0000)	-5.9863*** (0.0000)
LEPU	-3.2224** (0.0153)	-4.9016*** (0.0000)	-2.9003** (0.0473)	-4.6572*** (0.0011)
LREER	-10.8450*** (0.0000)	-10.9417*** (0.0000)	-9.4967*** (0.0000)	-9.7739*** (0.0000)
LM2	-12.6061*** (0.0000)	-12.6758*** (0.0000)	-12.5855***(0.0000)	-12.6807***(0.0000)

Note: ** and *** mean significance levels for 10% and 5%.

At the first stage of unit root testing, the paper examines the variables performing the ADF and PP unit root tests. Table 4 presents the results. The ADF test evaluates whether the variable comprises a unit root, and the statistics imply that the null hypothesis is rejected for LBIST100, LMPU, LEPU, LREER, and LM2. This outcome confirms that these variables are stationary. Similarly, the Phillips-Perron (PP) test produces consistent results by rejecting the null hypothesis for the same variables, reaffirming their stationarity at the level and alignment with the I(0) process. The ADF and PP test results consistently indicate that LBIST100, LMPU, LEPU, LREER, and LM2 exhibit stationarity at the level. To ensure greater robustness, the paper also applies the KPSS stationarity test, with its results detailed in Table 5.

Table 5. KPSS Stationarity Test

Variables	Intercept (LM Stat.)	Intercept & trend (LM Stat.)
LBIST100	0.0305***	0.0301***
LMPU	0.2105***	0.1449***
LEPU	0.6325***	0.1302***
LREER	0.2343***	0.0299***
LM2	0.2600***	0.1003***

Note: *** means significance level for 1%.

The KPSS stationarity test was **run** with a null hypothesis that contrasts with the ADF and PP tests, as it tests stationarity against the alternative hypothesis of non-stationarity. The LM test statistics reveal that the null hypothesis of stationarity holds for all variables. Consequently, the unit root and stationarity analyses conclude that LBIST100, LMPU, LEPU, LREER, and LM2 are stationary at their levels. These findings demonstrate that it is possible to estimate these variables at their levels without encountering the risk of spurious regression.

Table 6. Estimation Results of the Quantile Regression Models

Dependent variable: LBIST100								
	Model I				**Model II**			
Quantile 1	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**
(0.05)	LMPU	-0.0478***	0.0183	-2.6213	LEPU	-0.1337***	0.0487	-2.7473
	LM2	0.0137	0.0165	0.8301	LM2	0.0817***	0.0262	3.1134
	LREER	1.9578	1.6257	1.2043	LREER	0.9489	1.1196	0.8475
Quantile 2	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**
(0.10)	LMPU	-0.02582**	0.0131	-1.9790	LEPU	-0.0476*	0.0282	-1.6867
	LM2	0.0153	0.0120	1.2727	LM2	0.0291**	0.0135	2.1592
	LREER	2.6533**	1.2470	2.1277	LREER	3.5409**	1.6809	2.1065
Quantile 3	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**
(0.25)	LMPU	-0.0233*	0.0124	-1.8722	LEPU	-0.0530**	0.0246	-2.153
	LM2	0.0059	0.0112	0.5246	LM2	0.0305**	0.0144	2.1147
	LREER	2.7618*	1.4015	1.9706	LREER	3.1380**	1.4828	2.1163
Quantile 4	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**
(0.5)	LMPU	0.0040	0.0131	0.3081	LEPU	0.0253	0.0328	0.7706
	LM2	0.0028	0.0120	0.2345	LM2	-0.0100	0.0211	-0.4756
	LREER	3.8250***	1.4310	2.6729	LREER	4.0858***	1.4676	2.7840
Quantile 5	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**
(0.75)	LMPU	0.0290**	0.0147	1.9700	LEPU	0.0721**	0.0313	2.3057
	LM2	-0.0026	0.0111	-0.2350	LM2	-0.0367**	0.0179	-2.0515
	LREER	2.1402**	1.0845	1.9735	LREER	2.5805**	1.1371	2.2695
Quantile 6	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**	**Regressors**	**Coefficient**	**Std. Err.**	**t Stat.**
(0.95)	LMPU	0.0321**	0.0192	1.6666	LEPU	0.1136***	0.0464	2.4472
	LM2	-0.0150	0.0158	-0.9513	LM2	-0.0778***	0.0302	-2.5737
	LREER	2.7722**	1.5886	1.7450	LREER	3.0647***	1.0522	2.9128

Note: *,**,*** mean the significance levels for 10%, 5%, and 1%.

Table 6 shows the findings of the quantile regression models. The 5%, 10%, and 25% percentiles represent the effects of EPU and MPU on stock market returns (bearish market), where BIST100 returns are lowest. The 50% percentage represents the normal values of the market (normal market conditions), and the 75% and 95% percentages represent the ranges where the return is highest (bullish market). In other words, the first three quantiles represent the bearish market where stock returns are low, the median regression represents the normal earnings period, and the last three quantiles represent the bullish market, indicating the highest values of returns (Mensi, 2014; Chen et al., 2022). According to the findings:

- Statistically significant coefficients were obtained for MPU and EPU in periods when market conditions were bad. Moreover, the sign of these coefficients is negative in all three quantiles. Therefore, increases in both MPU and EPU worsen bad market conditions. As stock returns increase, in other words, as the transition from the 5% and 10% quantiles to the 25% quantile, the coefficient estimates for monetary policy uncertainty decrease quantitatively. This situation shows that the adverse effect of MPU and EPU has decreased in line with the improvements in the market,

- In periods when the stock market provides relatively normal returns, statistically significant coefficient estimates regarding monetary policy uncertainty, economic policy uncertainty and money supply are not observed. The REER has a statistically significant positive effect. In this context, while the market exhibits normal condition behavior, the appreciation of the domestic currency has an increasing effect on returns,

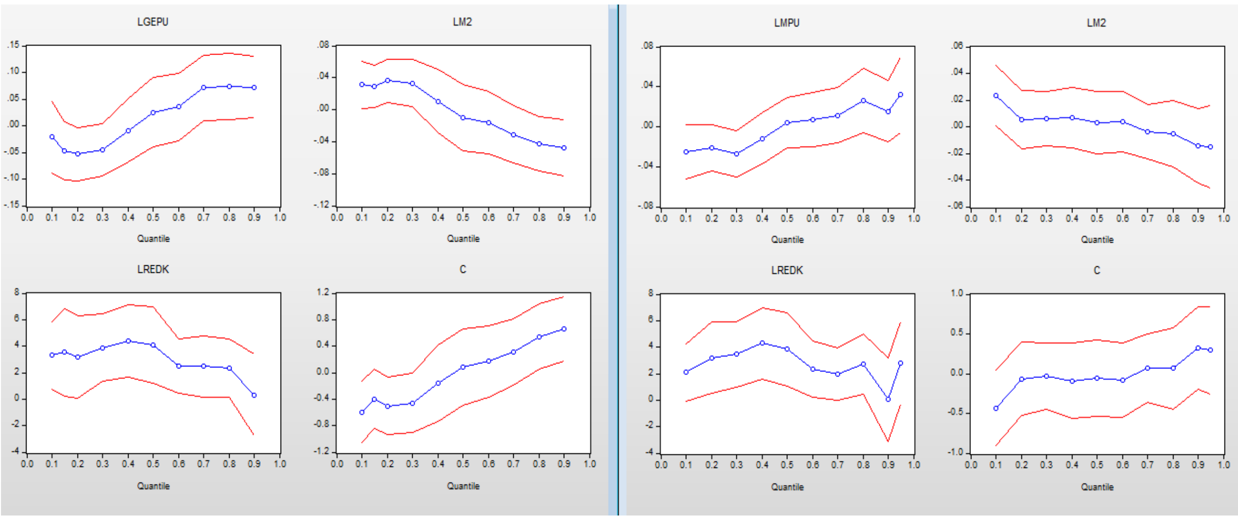
- When the periods during which the markets are highly efficient (75% and 95% segments) are examined, the effect of MPU and EPU on the markets is positive and statistically significant, and this effect also increases as the market improves. In other words, increases in uncertainty that occur when the market is in good shape also increase returns,
- The REER variable is statistically significant and positive in all percentiles except the 5% percentage in both models. The appreciation of the country's domestic currency has positive effects on financial markets. However, it is seen that this effect reaches its maximum level under normal market conditions in both models (there is a structure that gradually increases from low quantiles to the middle quantile and then follows a fluctuating course, see Figure 1). When the model findings regarding REFC are considered as a whole, it is seen that the most coefficient effective variable on stock returns is the country's domestic currency,
- The effect of the M2 has a different pattern than the other variables. The relationships become significant in the right and left tails of the distribution. When the 75% and 95% percentiles of Model II, which includes economic policy uncertainty, are examined, which correspond to the bullish market, it is seen that money supply increases have a negative (reducing) effect on returns. On the other hand, statistically significant and positive coefficient estimates regarding the money supply were obtained at low quantiles. Under normal market conditions, there is no statistically significant relationship. This finding shows that when market conditions are bad, money supply increases stimulate financial markets positively. Although negative coefficient estimates regarding money supply were obtained in the 75% and 95% percentages of Model I, these coefficients are not statistically significant.

The findings provided by the quantile regression are also compatible with the theoretical expectations in the literature (regarding the fact that the coefficients of EPU and MPU are in the same direction and MPU is a sub-index), and also show the separation between EPU, which is the major uncertainty indicator, and MPU, which is its sub-index. It clearly appears: The EPU index has a more dominant effect on financial markets than the monetary policy uncertainty index. The fact that EPU coefficient estimates are higher than the MPU reflects the broad-spectrum effects of economic and political decisions and shows that economic policy uncertainty plays a greater role in market fluctuations.

Figure 1 presents the changes and tendencies of the coefficient estimates obtained from the quantile regression models according to different quantiles. Within the scope of this analysis, the patterns of the impact of uncertainties on financial returns were examined, and the findings clearly showed similar trends. It is noteworthy that these effects, which vary depending on market conditions, differ in bullish and bearish markets. In bearish markets, increasing uncertainty worsens financial conditions, while in bullish markets, the effect of uncertainty is reflected in an increase in returns. Findings showing that financial markets react heterogeneously to uncertainties also show that uncertainties that arise during periods of market optimism and growth positively affect returns by increasing the perception of investment opportunities. The negative effects of MPU, especially in bad market conditions, have been previously reported by Wen et al. (2022) and have also been empirically proven. When considered from the EPU framework, Nusair and Al-Khasawneh (2023) also stated, like this research, that uncertainty reduces returns in bad market conditions, whereas the opposite situation occurs when market conditions are on the rise. Finally, these findings of the research show that the effects of uncertainties on financial markets are not static but dynamic and that these effects vary significantly according to market conditions, and these findings are bolstered by Kundu and Paul (2022); You et al., (2017); Yuan et al. (2022) and Wen et al., (2022).

When the findings are evaluated within the framework of macroeconomic factors, the fact that the REER has a statistically significant effect on the stock market in all quantiles except the 5% percentage supports the goods market theory. Dornbusch and Fisher (1980), within the framework of the commodity market theory (traditional theory), state that while the appreciation of the domestic currency creates positive effects on the stock market in export-oriented economies, it can also positively mobilise the market in import-oriented countries. These findings of the study are based on those of Obben et al. (2006), Tian and Ma (2010); Kapusuzoğlu and İbicioğlu (2010); Kaya et al., (2013); and Belen and Karamelikli (2015). It is also in parallel with the studies of Boyacıoğlu and Çürük (2016) and Kassouri and Altıntaş (2020). Additionally, as stated by Kabir et al., (2014), the most effective variable on the stock market is the real effective exchange rate. The findings regarding the money supply vary according to market conditions as, well as uncertainties. When market conditions are bad, in line with theory, increases in the money supply have a stimulating effect on the market. Moreover, as market conditions improve, the effects of the money supply on the market first become insignificant and then turn negative. These findings coincide with the findings of Taamouti (2015), who states that there are significant relationships in the right and left tails, although they are not statistically significant under normal market conditions. The negative effects of the money supply in high quantiles on the market Taamouti, (2015); Bahloul and Amor (2022) are similar to the findings presented in Oyadeyi's (2024) developing country themed studies.

Figure 1. Coefficient Sizes According to the Quantiles



5. CONCLUSION

Increasing global fluctuations and economic uncertainties in recent years have become more effective and directive on financial markets. Economic policy uncertainties both affect investors' decision processes and are among the primary elements influencing the volatility of stock markets. In particular, the difficulties brought about by global economic crises, trade wars and the pandemic have made the impact of uncertainties in financial markets even more noticeable. This reveals that movements in financial markets are shaped not only by economic factors but also by the unpredictability of policy decisions.

In this research, the rebound of the stock market to economic and monetary policy uncertainties is investigated within the framework of the BIST100 index returns. This study, contucted with quantile regression models, reveals the heterogeneous effects of EPU and MPU on financial returns under varying requirements of the market.

The first finding of the research is that the effect of EPU on financial markets is vigorious than that of MPU. This finding emphasises that this type of uncertainty, which reflects the far-reaching consequences of economic and political decisions, has a more dominant effect on financial markets than monetary policy. Secondly, increases in uncertainty (both EPU and MPU increases) that develop in bad market conditions have more devastating effects on the market. During these periods, a decrease in the negative effects of uncertainties was observed along with limited improvements in the market. Therefore, partial recoveries in market conditions alleviate the negative effects of uncertainty and make the market less sensitive. On the other hand, it has been determined that the effects of both EPU and MPU on stock returns are positive in good market conditions where returns are high. Therefore, it indicates that the uncertainties in the recovery periods of the market go beyond the traditional risk perception and can be considered as an opportunity by investors.

Among the findings on how the stock market is affected by macroeconomic factors, the effect of the real effective exchange rate is too great to be ignored. The reaction of the Turkish stock market to the exchange rate supports the commodity market theory. The fact that Türkiye is an import-intensive economy also explains the positive effect of the REER on the markets. Money supply, whose impact varies according to market conditions, is another macroeconomic factor. When conditions are bad, increasing money supply stimulates stock markets by increasing market liquidity and accelerates the recovery process. Moreover, rising the money supply in periods when market conditions are positive can create a saturation effect in the markets and cause the stock market to stagnate. This essentially shows that increased liquidity is considered by investors as a factor that reduces excessive risk appetite. Thus, the effects of the money supply are related to both market conditions and investor sentiment. As a result, this paper reveals that the effects of uncertainties and essential macroindicators on financial markets are not static, but have a dynamic character that changes according to market conditions.

Policymakers should focus on reducing EPU through clear communication, as it has a stronger impact on financial markets MPU. During market downturns, targeted fiscal and liquidity measures can help stabilize markets, but excessive liquidity should be avoided in positive market conditions to prevent stagnation. Ensuring exchange rate stability is also crucial due to its strong effect on stock markets. Finally, given the dynamic nature of market responses, a flexible and data-driven approach to financial regulation is essential for long-term market stability.

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