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Electricity Prices and Stock Market Performance: Evidence from Borsa Istanbul*

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Abstract

In this study, the effects of electricity prices on the change of the closing price of the Borsa Istanbul 100 index and its sub-sector price indexes are analyzed with non-linear autoregressive distributed lag models by using the Turkish monthly data for the June 2006 to February 2018 period. The findings suggest that there is an asymmetric relationship between the changes in electricity prices and the Borsa Istanbul price index. The dynamic effects of electricity price changes on the Borsa Istanbul and its sub-sector price indexes reveal that all price indexes demonstrate significantly rapid and strong responses to negative changes in a period of about 3 months while introducing considerably stronger responses to positive changes in a period of generally 9 months. Therefore, a negative shock in electricity prices conducts to a rise in price indexes in the short-run. However, a positive shock in electricity prices dominates in the long-run for all price indexes except Technology.

Keywords: *Electricity Prices; Stock Exchange; Asymmetry; Cointegration; NARDL.*

JEL Classification: *Q40; E44; C13.*

1. Introduction

There are extensive studies concerning the effects of energy prices on stock markets. The majority of these studies use oil or gas prices as energy prices. However, the effect of electricity prices on economic performance is a more direct form compared to oil prices. The purpose of this study is to analyze the effects of electricity prices on the stock market for an emerging economy -Turkey.

Energy is an indispensable part of the economic order and daily life. However, providing the necessary energy source mostly from fossil fuels creates negative effects on the environment and these negative effects underline the necessity of energy innovation (see, for example, Balcilar, Bekun & Uzuner, 2019, Baloch, Ozturk, Bekun &

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Khan 2020 and Adedoyin, Ozturk, Agboola, Agboola & Bekun, 2021). On the other hand, energy is the basic building block of economic performance, electricity is one of the most widely available forms of energy, and it is considered an integral part of the production as well as the economic growth process. While evaluating a country's economy, the stock market of that country is also taken into consideration, because stock exchanges serve as a barometer for the country's economy (Dursun&Ozcan, 2019, p.191). Considering these facts, it is important to examine the effects of energy prices on the stock market. Studies that concern the relation between energy prices and the stock market mostly investigate the effects of crude oil prices on stock markets. The results originating from these studies are far away from presenting a unity since they reveal contradicting conclusions for different countries. For instance, studies such as Jones and Kaul (1996), Sadorsky (1999), Park and Ratti (2008), O'Neil, Penm and Terrell (2008), Darmawan, Siregar, Hakim and Manurung (2020), Alam (2020) and Le (2020) found that the oil prices have a negative effect on the stock market while Narayan and Narayan (2010), Shabbir, Kousar and Batool (2020) and Khan, Teng, Khan Jadoon and Khan (2021) found a positive effect. On the other hand, Cong, Wei, Jiao, and Fan (2008), Apergis and Miller (2009) and Kumar, Pradhan, Tiwari and Kang (2019) did not find a statistically significant relationship between the stock market and oil prices. Furthermore, there are few papers that examined the relationship between natural gas prices and the stock market (see, for example, Kumar, Pradhan, Tiwari & Kang, 2019, and Acaravci, Ozturk&Kandir, 2012). Both studies found that there was no long-run relationship between natural gas and stock prices.

Using crude oil prices for energy prices may have various challenges. For instance, several problems occur when economic agents use crude oil prices as energy input prices, provided that Brent or WTI is adopted as a crude oil price indicator. There is no stable relationship between Brent or WTI benchmark oil and Turkey's import oil that possess low gravity features. Plus, unsettled and ever-changing tax rates spark off an inconsistent and altering relationship between crude and after-tax petroleum product prices. For example, Turkish authorities may look to amend tax regulations in circumstances where the Turkish Lira value of petroleum product prices increase. By altering tax rates based on the increasing exchange rates, authorities make sure that petroleum product prices remain unchanged.

Contrary to many studies that examine the effect of energy prices on the stock market, this study uses electricity instead of oil to represent energy prices. In addition, it differs from other studies in the literature in that it is the only study that examines the effect of electricity prices not only on the BIST 100 index but also on all sub-sectors. This paper attempts to assess the effect of energy prices on the stock market directly by observing the electricity prices rather than crude oil prices. To the best of our knowledge, there is only one former study that has examined the effect of electricity prices on stock market returns (Souhir, Heni&Lotfi, 2019). Their results found the evidence of long-run dependence between electricity market returns and Nordic Market index and 11 other sector indexes.

Studying the effect of energy prices on the stock market for Turkey bears significant importance since Turkey's energy usage rapidly increased after the 1980s (Enerji İşleri Genel Müdürlüğü, access date: 29.01.2020). However, Turkey, like most of the European countries, imputes high tax rates on petroleum products. Even corporate tax revenues shown under direct taxes fall behind tax revenues from petroleum products classified under indirect taxes (Alcan, 2014, p.89). Due to relevant tax codes, oil prices cannot directly affect the stock market. On the other hand, the number of sectors directly using natural gas is quite low; however, natural gas energy is heavily used in electricity generation. Although natural gas import prices are restrained from public sharing, electricity prices that firms determine are discoverable in Turkey. In this respect, it is more meaningful to assess the effects of electricity prices on stock market prices rather than looking at the effects of oil and natural gas prices on the stock market.

Electricity is the leading secondary energy source, which accounts for 19% of the total final energy consumption, a share that is set to increase as demand growth for electricity outpaces all other fuels in the world (IEA, 2018). Moreover, electricity is considered to be one of the essential driving forces of economic output in all economies, therefore, directly and indirectly, complements labor and capital as inputs in the production process (Sekantsiand&Motlokoa, 2016, p.150).

Electricity price fluctuations may affect stock returns in two main channels: firm-level and consumer level. At the firm level, electricity is important for the production of various goods and services. The rise in electricity prices increases production costs. These high costs can reduce cash flow and diminish stock returns. At the consumer level, rising electricity prices can affect consumer spending by reducing the amount of disposable income, and redound on firm-level revenue and demand for products.

All in all, the effects of decreasing or increasing electricity prices in the stock market differs at both firm and consumer level. When prices are decreasing, firms that keep their products at high price levels or a downward rigidity in nominal will be reluctant to set lower prices. Contrarily, in a market where prices are increasing, firms will attempt to curtail their production or reflect the increasing prices to their customers.

In literature, various papers have considered and examined the asymmetric relationship between energy prices that are measured with crude oil prices and economic activity (Mork, 1989; Mork, Olsen &Mysen, 1994; Lee, Ni &Ratti, 1995; and Ferderer, 1996). They suggest that energy price hikes have a negative impact on GDP, but a falloff in prices does not necessarily lead to a positive impact on output.In addition, there are studies examining the asymmetric effect of oil prices on the stock market (Cheikh, Naceur, Kanaan & Rault, 2020; Marschner & Ceretta, 2021; Abubakirova, Syzdykova, Dosmakhanbet, Kudabayeva & Abdulina 2021; Hashmi, Chang & Bhutto 2021; and Jiang & Liu 2021)These studies reveal that positive and negative fluctuations in oil prices for different financial markets have asymmetric effects on stock price indices, but this effect differs on a market basis.Therefore, in order to reflect these characteristics, the asymmetric effect of electricity prices on Borsa Istanbul and its sub-sector economic activity (service, financial, industry, and technology) price indexes were investigated by using Shin, Yu, and Greenwood-Nimmo (2013) cointegration method in a non-linear Autoregressive Distributed Lag (NARDL) model. For this purpose, monthly data that covers the period from June 2006 to February 2018 is used. The estimates indicate the presence of asymmetry for Borsa Istanbul 100 price index and electricity prices. The empirical evidence reveals that Borsa Istanbul and its sub-sectors price indexes react faster to decreasing in electricity prices when compared to increasing ones in the short run. On the other hand, increasing electricity prices dominates that of a negative one in the long-run.

The rest of this paper structured as follows; section 2 provides both empirical methodology and the analysis results. Section 3 concludes the paper.

2. Methodology and Empirical Results

The study aims to examine whether or not there are short and long term asymmetric effects of electricity prices on the Borsa Istanbul 100 (BIST) price index and its sub-sectors. For this purpose, asymmetric cointegration in a non-linear autoregressive distributed lag model introduced by Shin, Yu and Greenwood-Nimmo (2013) is used. The current study employs the monthly data covering the period from June 2006 to February 2018. The data for Electric Prices (EP) are taken from State Statistical Institute, the data is the sub-component of the consumer prices index (CPI) (code: 0451001), and the data on exchange rate, BIST price index and its sub-sectors (Services, Financial, Industrial and Technology) are obtained from Electronic Data Delivery System of the Central Bank of the Republic of Turkey. Both the Electricity Price data and the index price data are converted into the US dollar by being divided into the exchange rate. All of the transformed series are expressed in natural logarithms.

There is an extensive literature that use the Engle and Granger (1987) and Johansen (1988) cointegration methods to examine the long-run relationship as an asymmetric linear combination of non-stationary stochastic regressors. These two methods require that at least two of the variables in the system have the same integrated degrees. If the variables have different integrated degrees Pesaran, Shin, and Smith (2001) propose a cointegration method in a linear Autoregressive Distributed Lag model framework. However, if asymmetric cointegration is present Granger and Yoon (2002) bring forward the idea that "hidden cointegration" is defined between positive and negative separations in the variables. They indicate that if a series' positive and negative components are cointegrated, a linear model may give misleading results. Therefore, Shin et al. (2013) develop a test for the short and long-run asymmetric relationships of variables using the Non-Linear ARDL (NARDL) model.

NARDL model that is employed in this paper is a relatively new technique for detecting both long- and short-run asymmetries between economic variables without requiring the same order integration between two variables. Considering the asymmetric cointegrating regression:

$$BIST_t = \alpha + \beta^+ EP_t^+ + \beta^- EP_t^- + u_t \qquad (1)$$

where β^+ and β^- are asymmetric long-run parameters and EP_t^+ and EP_t^- are partial sum processes of positive and negative changes in EP_t where:

$$EP_t^+ = \sum_{j=1}^{t} \Delta EP_j^+ = \sum_{j=1}^{t} \max(\Delta EP_j, 0),$$

$EP_t^- = \sum_{j=1}^{t} \Delta EP_j^- = \sum_{j=1}^{t} \min(\Delta EP_j, 0)$.

These decompositions are used in the standard ARDL model to gather the asymmetric changes in the short and long-run relationships of variables. The standard linear ARDL (p, q) cointegration model can be written as

$$\Delta BIST_t = \alpha + \gamma x_t + \rho BIST_{t-1} + \theta EP_{t-1} + \sum_{j=1}^{p-1} \gamma_j \Delta BIST_{t-j} + \sum_{j=0}^{q-1} \varphi \Delta EP_{t-j} + \varepsilon_t \quad (2)$$

where x_t is a vector of deterministic regressors (such as trend and seasonal dummies). By combining (1) with the ARDL (p, q) model, we obtain the following asymmetric error correction model:

$$\Delta BIST_t = \alpha + \gamma x_t + \rho BIST_{t-1} + \theta^+ EP_{t-1}^+ + \theta^- EP_{t-1}^- + \sum_{j=1}^{p-1} \gamma_j \Delta BIST_{t-j} + \sum_{j=0}^{q-1} \left(\pi_j^+ \Delta EP_{t-j}^+ + \pi_j^- \Delta EP_{t-j}^- \right) + e_t$$

$$= \alpha + \gamma x_t + \rho \xi_{t-1} + \sum_{j=1}^{p-1} \gamma_j \Delta BIST_{t-j} + \sum_{j=0}^{q-1} \left(\pi_j^+ \Delta EP_{t-j}^+ + \pi_j^- \Delta EP_{t-j}^- \right) + e_t \quad (3)$$

where $\xi_{t-1} = BIST_{t-1} - \beta^+ EP_{t-1}^+ - \beta^- EP_{t-1}^-$ is the non-linear error correction term.

The asymmetric dynamic multiplier effect of a unit change in EP_t^+ and EP_t^- on $BIST_t$ are obtained from the asymmetric ARDL model (3) defined by

$$m_h^+ = \sum_{i=0}^{h} \frac{\partial BIST_{t+i}}{\partial EP_t^+},\ m_h^- = \sum_{i=0}^{h} \frac{\partial BIST_{t+i}}{\partial EP_t^-} h = 0,1,2\ldots$$

Note that as $h \to \infty$, then $m_h^+ \to \beta^+$ and $m_h^- \to \beta^-$, where $\beta^+ = \frac{-\theta^+}{\rho}$, $\beta^- = \frac{-\theta^-}{\rho}$. β^- and β^+ are the asymmetric long-run parameters.

An asymmetric ARDL model can be employed when variables are stationary at the level and first difference or mixture of these. However, if the variables are stationary at the second difference, then a non-linear ARDL model could not apply, and model inferences will be misleading. For this reason, this empirical analysis, in the first stage analysis the degree of integration of the variables determined using three different unit root or stationarity tests. These are the Augmented Dickey and Fuller (1981) (ADF) test, Phillips and Perron (1988) (PP) test, and KPSS test developed by Kwiatkowski, Phillips, Schmidt and Shin (1992). The null hypothesis of the ADF and PP tests are the presence of a unit root, and the alternative hypothesis is that the series is stationary. In the KPSS test, the null hypothesis is that the series are stationary, while the alternative hypothesis is that the series are non-stationary. Table 1 suggests that the result for all three tests show that variables are stationary in the first difference; and thus, non-linear ARDL method may be applied considering ADF, PP and KPSS tests.

Variables		**ADF**	**PP**	**KPSS**
BIST	Level	-2,2237	-2,6481	0,2288***
	First Difference	-9,4263***	-9,4160***	0,0367
Service	Level	-2,3864	-2,5168	0,3512***
	First Difference	-9,6055***	-9,6979***	0,0463
Financial	Level	-2,1303	-2,6403	0,2454***
	First Difference	-9,5019***	-9,5534 ***	0,0352
Industry	Level	-1,9444	-2,7782	0,2530***
	First Difference	-8,7116***	-8,6868***	0,0367
Technology	Level	-0,0659	-2,7438	0,2870***
	First Difference	-9,6795***	-9,7598***	0,0599
EP	Level	-1,8554	-2,0227	0,6095***
	First Difference	-9,9447***	-10,4017***	0,0395

***, **, * indicate level of significance at the 1%, 5%, 10% respectively.
In the KPSS test, the null hypothesis indicates that the series is stationary.

Table 1: Unit Root and Stationarity Tests

Following Granger and Yoon (2002) for the hidden cointegration; in the second stage; we test whether there is an asymmetric relationship between the variables. Shin et al. (2013) have developed two test procedures for this and firstly, they follow Banerjee, Doladoand Mestre (1998) and propose a t-test (t_{BDM}) of the joint null hypothesis H_0: ρ = 0 (no cointegration) against $H_A: \rho < 0$ (cointegration). Then, they follow Pesaran, Shin and Smith (2001) and propose an F- test (F_{PSS}) with the null hypothesis $H_0: \rho = \theta^+ = \theta^- = 0$.

	BIST	***Service***	***Financial***	***Industry***	***Technology***
t_{BDM}	-3,0840*** (0,0025)	-3,5158*** (0,0006)	-3,0610*** (0,0027)	-3,0854*** (0,0025)	-2,1244** (0,0355)
F_{PSS}	4,2611*** (0,0066)	5,3398*** (0,0017)	4,1538*** (0,0076)	4,2250*** (0,0069)	2,1566* (0,0962)

p-values are given in parentheses.

***, **, * indicates level of significance at the 1%, 5%, 10% respectively.

Table 2: Bounds Testing for Asymmetric Cointegration

Table 2 reports F_{PSS} and t_{BDM}test statistics for the asymmetric cointegration with each of *BIST*, *Service*, *Financial*, *Industry*, and *Technology* price indexes. Both statistics reject the null hypothesis, and thus we can conclude there is a long-run asymmetric relationship between variables for *BIST* and sub-sector of economic activity price indexes.

In the third stage, the Wald test statistics is used to test whether there is a long and short-term asymmetrical relationships. The null hypotheses used for long and short-run asymmetric relations testing are as follows:

$H_0: \beta^+ = \beta^-$for the long-run (W_{LR})

$H_0: {\pi_j}^+ = {\pi_j}^-$ j= 1,…, q-1 for the short-run (W_{SR})

The rejection of null hypotheses both in the long-run and short-run shows the existence of long-run and short-run asymmetric relationships, respectively.

	BIST	*Service*	*Financial*	*Industry*	*Technology*
W_{LR}	80,9928*** (0,0000)	200,1126*** (0,0000)	76,9491*** (0,0000)	73,3137*** (0,0000)	7,8969*** (0,0057)
W_{SR}	220,6572*** (0,0000)	1848,889*** (0,0000)	220,9606*** (0,0000)	232,5356*** (0,0000)	370,4744*** (0,0000)

p-values are given in parentheses.

***, **, * indicates level of significance at the 1%, 5%, 10% respectively.

Table 3: Long-run and Short-run Symmetry Tests

Table 3 reports the test statistics for long-run and short-run symmetry. The Wald test statistics reject the null hypothesis both for long-run and short-run symmetry at the level the %1 of significance for the *BIST* and its sub-sector price indexes. Thus, we can conclude that there are both short and long-run asymmetric relationships between *EP* and Price Indexes. In line with these results, Hashmi et al. (2021) found an asymmetrical relationship between oil prices and stock prices for Russia, Venezuela, Mexico, Norway, China, India and Japan, both in the long run and in the short run, while Jiang and Liu (2021) obtained similar results for China, Hong Kong, America and Britain.

	BIST	*Service*	*Financial*	*Industry*	*Technology*
Variable	**Panel A: NARDL Specification**				
$BIST_{t-1}$	-0,1690*** (0,0025)				
$Service_{t-1}$		-0,2501*** (0,0006)			
$Financial_{t-1}$			-0,1628*** (0,0027)		
$Industry_{t-1}$				-0,1683*** (0,0025)	
$Technology_{t-1}$					-0,0860** (0,0355)
EP^{+}_{t-1}	-0,0400 (0,6595)	0,0264 (0,7979)	-0,0311 (0,7444)	-0,0734 (0,3873)	-0,1319* (0,0931)
EP^{-}_{t-1}	0,0004 (0,9964)	0,0863 (0,4527)	0,0101 (0,9221)	-0,0363 (0,6906)	-0,1200 (0,1363)

ΔEP^{+}	-1,3189*** (0,0024)	-0,9777** (0,0373)	-1,4156*** (0,0018)	-1,2818*** (0,0022)	-1,4793*** (0,0001)
ΔEP^{+}_{t-2}		-0,0975** (0,0188)			
ΔEP^{+}_{t-3}		0,7389** (0,0232)			
ΔEP^{+}_{t-6}		-0,6813** (0,0294)			
ΔEP^{-}	-5,5595*** (0,0000)	-5,2792*** (0,0000)	-5,7965*** (0,0000)	-5,3788*** (0,0000)	-4,5978*** (0,0000)
ΔEP^{-}_{t-1}	3,2746*** (0,0000)	2,9203*** (0,0000)	3,3992*** (0,0000)	3,2013*** (0,0000)	2,8151*** (0,0000)
$\Delta Service_{t-4}$		0,1365** (0,0221)			
$\Delta Service_{t-5}$		0,1378** (0,0187)			
$\Delta Service_{t-6}$		0,1349** (0,0208)			
Constant	0,3675*** (0,0012)	0,5312*** (0,0001)	0,3663*** (0,0014)	0,3656*** (0,0012)	0,1907** (0,0264)
Panel B: Long-run Coefficients					
β^{+}	-0,2364 (0,6751)	0,1054 (0,7912)	-0,1909 (0,7532)	-0,4364 (0,4265)	-1,5343 (0,1495)
β^{-}	0,0026 (0,9964)	0,3450 (0,4007)	0,0622 (0,9211)	-0,2156 (0,7040)	-1,3965 (0,2052)
Panel C: Diagnostic Statistics (p-values)					
χ^2_{SC}	0,4246	0,3534	0,4948	0,4835	0,5561
χ^2_{White}	0,0000***	0,0054***	0,0000***	0,0000***	0,0000***

p-values are given in parentheses. ***, **, * indicates level of significance at the 1%, 5%, 10% respectively.

Table 4: Estimation of the Nonlinear ARDL Model for BIST 100 and the Stock Exchange's Sub-Components

In Table 4, Panel A presents the parameter estimates of the NARDL model. In the long-run, the estimated parameter of the positive change of *EP* (EP_{t-1}^{+}) is found negative for all price indexes except for *Service,* which means an increase in *EP* decreases the price indexes. While all price indexes except *Industry* and *Technology* increase in response to negative changes of *EP* (EP_{t-1}^{-}). However, positive and negative changes of the *EP* for all sectors and *BIST* price indexes are not statistically significant except *Technology* index. In the short-run, both the estimated coefficients ΔEP^{+} and ΔEP^{-}, express positive and negative variations, and they are found negative and statistically significant for all indexes. In other words, while *EP* increase (decrease) in the short-run; *BIST*, *Service, Financial*, *Industry,* and *Technology* indexes decrease (increase). However, the decrease in the previous period of $\Delta EP_{t-1}^{-}$is statistically significant and positive, which causes a decline in all price indexes.On the other hand, Souhir et al. (2019) observed that the results of the unconditional correlation coefficients can be seen as having different levels of positive correlation between electricity market returns and financial, industry and technology stock returns.

Panel B reports the results of long-run coefficients. Results confirm the above analysis. The relationship between *EP* and price indexes in the long-run equilibrium ($\beta^{+}$and β^{-}) are found statistically insignificant. These results suggest that a relationship between *EP* and *BIST* includes asymmetry in the short-run but not in the long run.

Panel C presents diagnostic statistics results. $\chi_{SC}^{2}$is for the autocorrelation test developed by Breusch and Godfrey (1978), and the null hypothesis of the test refers to the situation in which there is no autocorrelation. The test statistics suggest that the null hypothesis cannot be rejected and could not find autocorrelation problems in discussed models. $\chi_{White}^{2}$is for the heteroscedasticity test developed by White (1980). The null hypothesis that there is no heteroscedasticity is rejected at the 1% significance level.

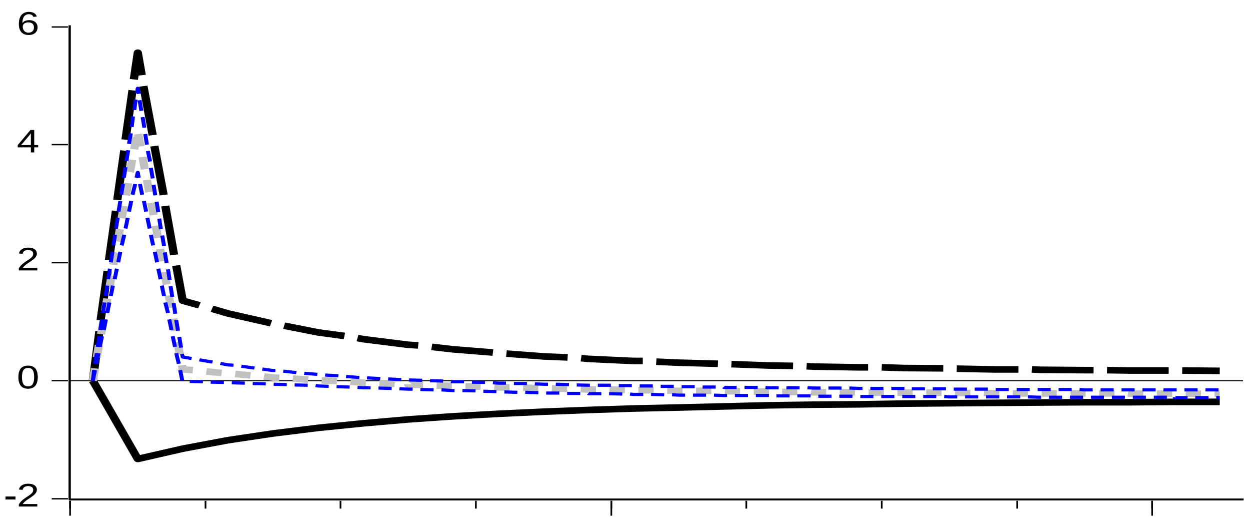

Figure 1: Electric Prices-BIST Price Index Dynamic Multiplier

Figures 1, 2, 3, 4, and 5 present the asymmetric responses of *BIST*, *Service*, *Financial*, *Industry*, and *Technology* price indexes to positive and negative *EP* shocks. These responses are observed for 24 months. Accoding to the colors in the figure, the black bold straight line gives the effect of one unit positive shock in *EP* on the *BIST* and sub-sectors, the black bold dashed line shows the effect of one unit negative shock in *EP* on the *BIST* and its sub-sector of economic activity prices indexes and at last the gray dashed line demonstrates the difference between these two. Blue dashed lines form the upper and lower band of the confidence interval of 90%. In Figures 1, 2, 3, 4, and 5, a negative shock in *EP* (a decrease in electricity prices) causes a rapid increase during the first two months, and this increasing effect decreases rapidly for *BIST* and all sub-sector price indexes. A similar effect on magnitude cannot be observed for the effect of higher electricity prices. However, the difference between positive and negative shocks in *EP* is reported since the grey broken line diminishes and disappears after three months for all price indexes except for *Service*. For *Service* price index after three months the effect of a positive shock dominates the negative one for up to six months. Then again between six and eight months, negative shock starts dominating the effect of a positive shock. After the ninth month, the effect of a positive shock again dominates the negative one for all price indexes except *Technology*. The equilibrium corrections are achieved after nearly one year for *BIST*, *Financial*, and *Industry* price indexes, however, for *Technology* it takes a shorter period (nearly two months). On the other hand, for the *Service* index, the asymmetric effect of *EP* pass through is more persistent, and it takes nearly two years. Overall, dynamic multipliers suggest that a negative shock in *EP* conducts to a rise in price indexes in the short-run. However, a positive shock in *EP* dominates in the long-run for all price indexes except *Technology*.

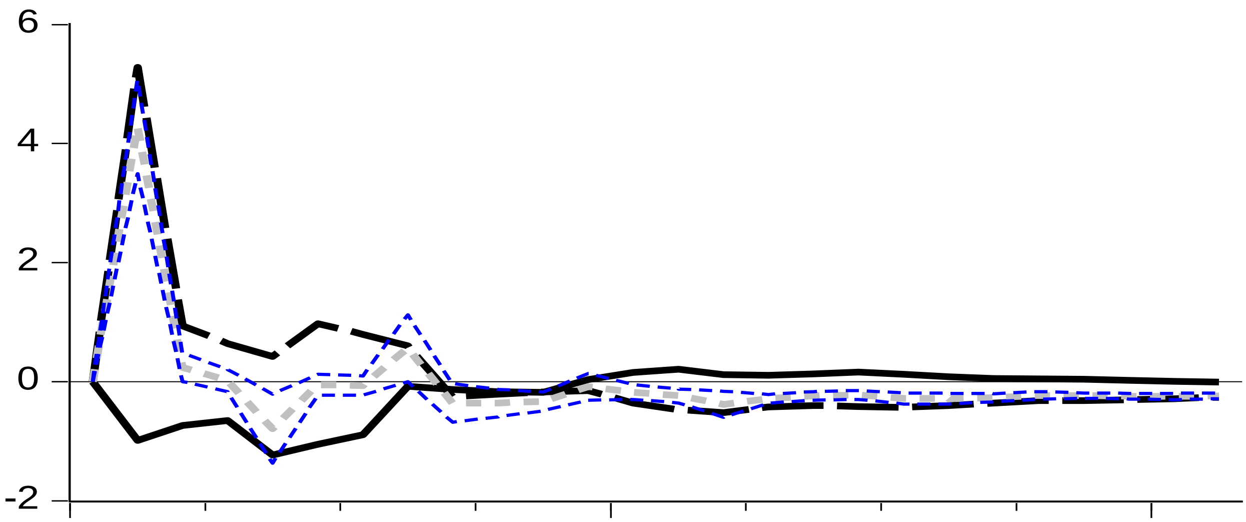

Figure 2: Electric Prices-Service Price Index Dynamic Multiplier

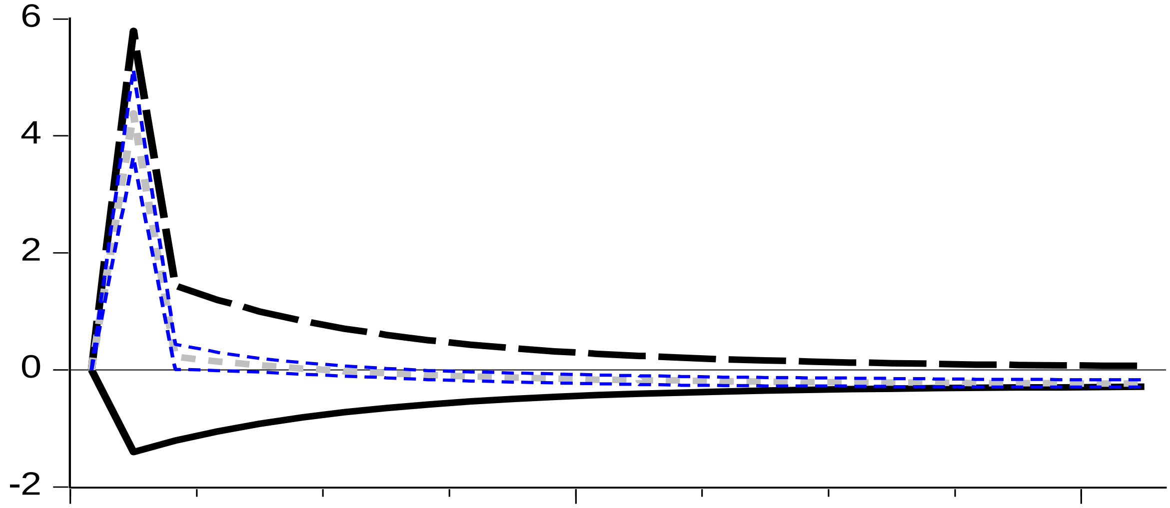

Figure 3: Electric Prices-Financial Price Index Dynamic Multiplier

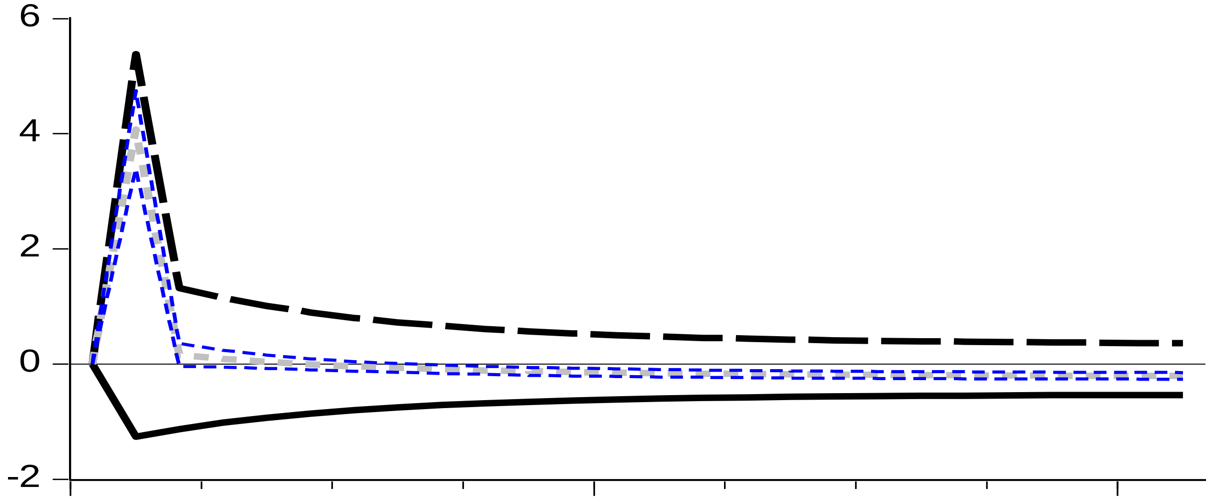

Figure 4: Electric Prices-Industry Price Index Dynamic Multiplier

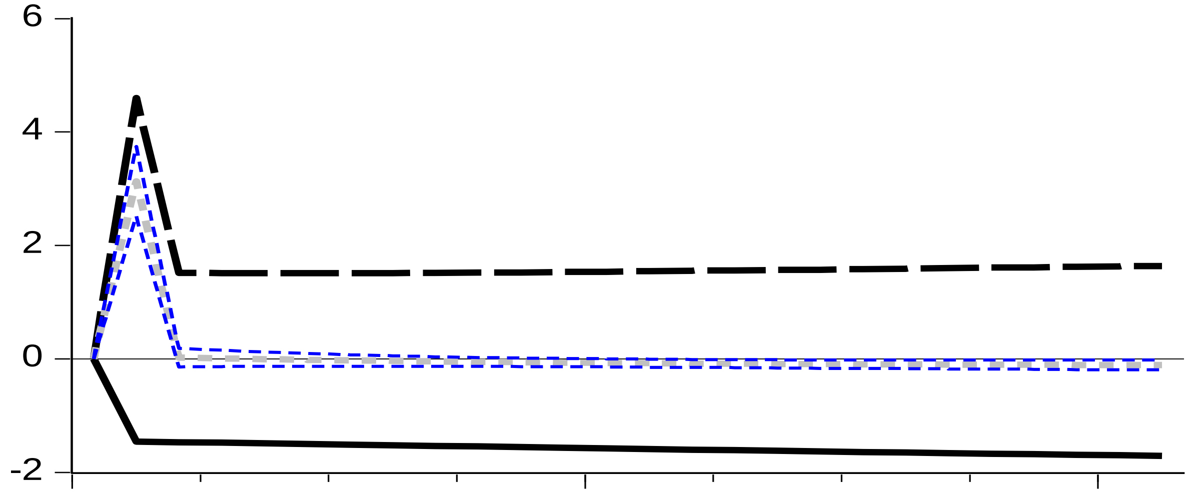

Figure 5. Electric Prices-Technology Price Index Dynamic Multiplier

3. Conclusion

Even if the importance of energy in developed economies has been declining, energy consumption is still vital for all world economies. In Turkey, which is one of the emerging economies, the electrical energy requirement shows a parallel increase with economic growth. This paper studies the effect of electricity price on the stock market closing prices and sub-sectors of the stock market in Turkey from 2006 June to 2018 February by using a non-linear ARDL model.

The empirical analyses reveal that an asymmetrical relationship between *Electricity Prices* and each of *BIST*, *Service*, *Financial*, *Industry*, and *Technology* sectors price indexes exist for both short and long-runs. In other words, increases or decreases in electricity prices will effect the formation of prices in *BIST* and its sub-sectors differently. Furthermore, dynamic multiplier graphs clearly show that the effect of a negative shock on electricity prices dominates a positive one in the short- run. As opposite, in the long run, the effect of positive price shocks dominates negative price shocks.

Electric energy consumption in Turkey is concentrated on the service sector, which covers a very large area in the national economy, and the constantly developing industry sector. Therefore, as a result of the analysis, the fact that the changes in electricity prices have an effect on the Service price index and the Industrial price index both in the short and long term is a reflection of this situation. Changes in electricity prices do not have a long-term effect on the technology price index, thus this can be explained by the structure of the Technology sector. Because this sector is in a position that provides significant gains in energy efficiency and therefore affects energy prices rather than being affected by energy prices.

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