Üçüncü Sektör Sosyal Ekonomi Dergisi
Third Sector Social Economic Review
58(2) 2023, 1455-1466
doi: 10.15659/3.sektor-sosyal-ekonomi.23.06.2137

Research Article

Exploring Effects of Macroeconomic Variables on Financial Markets: Evidence from Türkiye

Makroekonomik Değişkenlerin Finansal Piyasalar Üzerindeki Etkilerinin İncelenmesi: Türkiye Örneği

Murad AHMADZADA	Fikri KAPLAN	Waqar BADSHAH
Temple University murad.ahmadzada@temple.edu https://orcid.org/0000-0001-9033-3746	Assistant Professor Dr., University of Turkish Aeronautical Association fkaplan@thk.edu.tr https://orcid.org/0000-0002-4284-3466	Assistant Professor Dr., Istanbul University Department of Management Information System Faculty of Economics waqar.badshah@istanbul.edu.tr https://orcid.org/0000-0001-5009-8745

Makale Geliş Tarihi	Makale Kabul Tarihi
30.11.2022	29.05.2023

Abstract

The entire economy of the nation and businesses both are impacted by macroeconomic factors and these factors are the main drivers of financial markets over the world. Türkiye has faced significant economic and political challenges that have affected its financial markets for a long time. After global financial crisis, Türkiye's financial markets experienced ups and downs that brought risks for investors. This paper aims to examine the relationship between macroeconomic variables and the stock exchange index for the case of Türkiye using monthly data the period between January 2010 and December 2015. Unit root tests (Augmented Dickey-Fuller, Phillips Perron) and OLS model were applied to investigate whether macroeconomic factors such as GDP, Exchange Rate, Inflation Rate, M2, and global factors such as Crude Oil Prices, Gold Prices have an impact on ISE 100 Index, or not. The empirical findings show that Exchange Rate, M2, GDP, Gold prices, and Oil prices significantly affected the ISE 100 Index. As the results indicate, there is no evidence that the inflation rate contributes to the ISE 100 Index.

Keywords:*Macroeconomic variables, Istanbul Stock Exchange, Consumer Price Index, Crude Oil Prices, Exchange Rate, Türkiye*

Öz

Küresel çapta yaşanan makro ekonomik değişkenlerden ve değişimlerden hem ülke ekonomileri hemde diğer finansal piyasalar etkilenmektedir. Türkiye uzunca bir süredir finansal piyasalarını etkileyen siyasi ve ekonomik zorluklarla karşı karşıya kalmaktadır. Küresel finansal krizin ardından Türkiye finans piyasalarında yatırımcılar için riskleri de beraberinde getiren iniş çıkışlar yaşandı. Bu çalışma, makroekonomik değişkenler ile borsa endeksi arasındaki ilişkiyi 2010-2015 yılları arasında Türkiye örneğinde aylık veriler kullanarak incelemeyi amaçlamaktadır. GSYİH, Döviz Kuru, Enflasyon Oranı, M2 gibi makroekonomik faktörlerin ve Ham Petrol Fiyatları, Altın Fiyatları gibi küresel faktörlerin İMKB üzerinde etkisinin olup olmadığını araştırmak için birim kök testleri (Augmented Dickey–Fuller, Phillips Perron) ve OLS modeli uygulanmıştır. Ampirik bulgular, Döviz Kuru, M2, GSYİH, Altın fiyatları ve Petrol fiyatlarının İMKB 100 Endeksi'ni önemli ölçüde etkilediğini göstermektedir. Ayrıca, enflasyon oranının İMKB 100 endeksine katkıda bulunduğuna dair bir kanıt yoktur.

Keywords: *Makroekonomik değişkenler, Borsa İstanbul, Tüketici Fiyat Endeksi, Ham Petrol Fiyatı, Döviz Kuru, Türkiye*

Önerilen Atıf /Suggested Citation
Ahmadzada, M.& Kaplan, F, Badshah, W., 2023 Exploring Effects of Macroeconomic Variables on Financial Markets: Evidence from Türkiye, *Üçüncü Sektör Sosyal Ekonomi Dergisi,* 58(2), 1455-1466

1. Introduction

Throughout different periods, the effects of macroeconomic factors on the financial markets have been investigated and obtained different results. According to the results, global and macroeconomic elements have affected the financial markets of both developed and developing countries. Through numerous channels, financial performance is associated with economic growth. Some changes in macroeconomic indicators such as the interest rate, money supply, economic growth, inflation, and positive or negative shocks on global factors such as the price of gold and oil may have an impact on the stock market index. (Ozer, 2015) indicated that Türkiye is a country that imports many intermediate goods such as oil and natural gas from different countries. These products are the most critical factors for each company operating in Türkiye to produce. Therefore, dependence on these goods directly affects exports. Exchange rate, money supply, and other macroeconomic factors complete this cycle.

In summary, it is necessary to understand the effect of macroeconomic variables on financial markets to increase stock market performance and attract foreign financial investors' attention. Culter et al. (1989), Poon and Taylor (1991), Kwon and Shin (1999), Richards (1996), Gjerde and Saettem (1999) failed to find a relation that stock returns affected macroeconomic variables significantly. On the other hand, Hendry (1986), Abugri (2008), and Humpe and Macmillan (2009) concluded that macroeconomic factors do not have any impact on stock returns.

Türkiye is one of the emerging markets in Europe, and there is only one stock exchange market called Istanbul Stock Exchange (ISE). The ISE was founded in 1986, and there are 486 Turkish companies with a market capitalization of $157.6 billion (www.ceicdata.com). The Istanbul Stock Exchange Market has indices such as ISE 100, which contains both ISE 30 and ISE 50 indices, and there are some sector and sub-sector indices as well. The ISE National-100 Index is considered a national market-leading indicator because both the ISE National-50 and ISE National-30 Index are included in ISE 100.

As mentioned above, Türkiye has only one stock exchange; that's why we use the index of the stock exchange (ISE 100) as our dependent variable in the study. The independent variables used in this study are GDP, Inflation Rate, Broad Money Supply, Exchange Rate, and Oil and Gold Prices to estimate the impacts of macroeconomic activities on the ISE 100 Index. First of all, if an economic climate is growing, the output will be boosted, and most companies should be experiencing enhanced productivity. The increased revenue makes the firm shares much more eye-catching because they can give bigger dividends to shareholders. An extended period of financial development will undoubtedly tend to profit shares. Finally, raising capital permits firms to expand their businesses, broaden operations, and produce tasks in the economy. Alawin et al. (2018) analyzed the relationship between economic growth and stock returns in Nigeria and the United Arab Emirates by applying the VAR model. They stated that stock market development boosts economic growth. Thus, it can be concluded that to promote economic development, these countries need to support and develop the stock market.

The exchange rate is an essential factor not for only financial markets but also in countries' economies. The upward or descending shift in exchange rate influences the stock rates in all financial markets. The effect of the exchange rate on the stock is related to many instruments, such as the size of the stock market, the level of capital control, the exchange rate regime, and the volume of trade (Pan et al., 2007). The empirical findings show that exchange rates and stock returns are negatively correlated through all periods. Any volatility (positive or negative) in the home currency will affect the country's trade (both exports and imports) and economy negatively. Moreover, if this volatility increases the exchange rate, that is, the depreciation of the main currency, then especially developing countries such as Türkiye will be in a difficult situation in all fields. At the same time, this increase will leave a question mark in investors' minds, and they will think twice about options for investing: the foreign exchange market and the stock market.

High inflation generally results in lower returns on the stock market because it directly increases interest rates and reduces economic growth. Investors might obtain insight by checking out historical returns data during high and low inflation durations. But in general, unfortunately, the results of the investigations have regularly been contradictory. Nonetheless, most academics have uncovered that higher inflation is related to lower stock rates (Tiryaki, et al., 2017).

Another macroeconomic variable that affects ISE Index is the money supply. When the money supply rises, it results in a drop in real interest rates. According to the Keynesian hypothesis, if a country is faced with an unexpected change or shock in the money supply, then stock prices will automatically decline. A higher cash supply leads to reduced interest rates, excellent stock rates, and lower supply returns. Nevertheless, a higher cash supply can cause more significant inflation and interest rate, a reduced supply price, and greater returns.

The last variables used in the study are oil and gold prices which also affect stock returns in the financial markets. The continuous boost in oil prices might trigger a rising cost of living in the economic climate, increasing interest rates. As a result, investors may move to the markets where they can earn higher incomes through different investment tools than the securities markets. A rise in oil prices usually lowers the expected economic growth rate and enhances inflation assumptions over shorter horizons for oil-dependent countries. Decreasing financial growth prospects subsequently lower business' profits expectations, leading to dampening results on stock prices. Basher et al. (2012) likewise examined the relationship between oil costs, exchange rates, and stock exchange. Their study showed that positive shocks in oil rates tend to dispirit emerging market stock prices and the U.S currency exchange rate in the short run. Another variable in our study is gold which is viewed as a different investment tool from the securities market. When the volatility is high, and investors are uncertain about their predictions about the stock market, they start investing in safe assets such as gold to reduce their risk. On the one hand, it increases demand for these kinds of assets, but on the other hand, it also witnesses a decline in stock prices. As a whole, gold and the stock correlation is vice versa proportional. This means that when the gold price goes up, prices in the securities market will drop. Historically, it has been observed that gold does very well when the stock market is most downhearted. This gold and securities market relationship stands for all world economic situations. Gold is one of the essential instruments for the portfolio diversification of investors. It is also typically correlated with the stock exchange during risk-on periods.The securities market of Gulf Cooperation Council members are positively affected by high oil prices(Arouri and Rault, 2012). These studies and their results are very beneficial and bring a new perspective to the field and mentality of risk management. When investors take into account these findings seriously, it directly reduces the risks to their portfolios.

2. Literature Review

Economists have been fascinated for decades with establishing the relationship between macroeconomic variables and stock prices (Odoyo et al.,2014). As a result, several empirical research studies have established the main elements that influence stock prices. There have been a lot of studies on the relationship between macroeconomic variables and stock returns on IMKB100 using different methods, tools, and models which conduct several results. Karamustafa and Kucukkale (2003) concluded a cointegration relationship between ISE and other variables applying Granger Causality Test and results showed that none of the macroeconomic variables is the indicator for the share of returns. Savasa and Samiloglu (2010) found a long-run cointegrating relationship between ISE and money supply, the industrial production index, the real effective exchange rate index, long-term domestic interest rates and the US Federal funds rates using the ARDL approach. Acikalin, et al., (2008) studied the long-run relation between the macro indicators: GDP, nominal interest rate, nominal exchange rates, current account balance, and ISE. Results show unidirectional relationships between ISE and other variables, and any changes in these macro indicators affect the ISE index. Ilhan and Akdeniz (2020) found that interest rate, VIX, oil prices, exchange rate, and CDS premium had both negative and positive significant effects for some periods. Buyuksalvarci and Abdioglu (2010) analysed the relationship between the ISE and foreign exchange rate, gold price, M2, industrial production index, and CPI. The findings reveal unidirectional long-run causality between ISE and these variables. So, people can seriously consider making predictions for the exchange rate, M2, CPI, industrial production index, and gold price.

Karacaer and Kapusuzoglu (2010) examined long-term and short-term relationships between ISE and inflation, industrial output, and exchange rate. Findings show that there are bidirectional (between exchange rate and industrial output) and unidirectional (between inflation and industrial output; between ISE and industrial output) causal relations among the variables. Kandir (2008) studied the relationship between industrial production index, CPI, money supply, exchange rate, interest rate, oil price, MSCI World Equity Index, and stock portfolio returns using a multiple regression model. Empirical results

show that the inflation rate is not significant for all portfolios; exchange rate, interest rate, and World Equity index had effects on all portfolios. Moreover, it seems industrial production, money supply, and oil prices don't affect stock returns. Sahin and Sahin (2023) studied how macroeconomic and financial factors affect the USD/TL exchange rate bid-ask spread for the Turkish Lira and found that efficiency in the bid–ask exchange rate spread can be controlled. Cankal (2015) analyzed the relationship between stock market returns and interest rate, exchange rate, and inflation using the SVAR model. Empirical findings reveal that the exchange rate affects the ISE100 index most and interest rate shocks and inflation rate also affect the ISE100 index. Cagli et al. (2010) studied the relationship between the ISE 100 index level and macroeconomic variables by applying the OLS method. Obtained results show a cointegrated relationship between GDP, oil price, industrial production, and the ISE100 index. Rjoub, et al. (2009) examined the effects of interest rate, unanticipated inflation, risk premium, exchange rate, and money supply on the ISE 100 index using the OLS technique. Empirical results show that inflation, interest rate, risk premium, and money supply affected stock market returns significantly. However, these findings reveal that some other macro indicators affect the stock market stronger rather than those variables tested in the research. Sancar et al. (2017) studied the relationship between the stock prices and industrial production index, interest rate, M1, exchange rate, and CPI. They reach results that the M1, consumer price index, industrial production index affected stock price index positively. On the other hand, a significant and negative relationship was found between the exchange rate and the stock price index. Yacouba and Altintas (2019) found that stock returns react asymmetrically to real effective exchange rates and interest rates. On the other hand, there is an asymmetrical impact of changes in money supply on stock return. Kasman (2005) conclude that industrial production and exchange rate volatility are significantly related to stock market volatility. Sahin and Sahin (2014) studied exchange rate and liability dollarization in Türkiye from 2009 and 2012 and they found that high volatility on exchange rate could affect small businesses' pricing decisions.

Hondroyiannis et al. (2005) found that both stock market and bank financing encourage economic growth, but they had a small effect on the economic growth of Greece. Irshad et al. (2021) found a positive impact of volatility of the US stock market on the Brazilian stock exchange, Mexican stock exchange, and Russian stock exchange because of the settling in the same geographic area and trade volume between them. On the other hand, volatility spillover in the US stock market led to less effect on the Chinese stock market, the Indonesian stock market, and the Indian stock market. Badshah et al. (2016) reach results that the foreign exchange rate, oil, and gold prices have a causal relationship with the Karachi Stock Exchange Index. Hosseini et al. (2011) found that oil price and money supply positively affected China's stock returns, but India's stock returns negatively in the long run but inflation positively affected both countries' stock returns. Tripathy (2011) showed that the exchange rate, interest rate, and the international market had a significant impact on the Indian stock market. Naik and Padhi (2012) concluded that money supply and industrial production affect positively, but inflation negatively affects stock prices. Ibrahim and Yusoff (2001) noted that money supply had a negative impact on stock prices in the long run while they are positively associated in the short run. Omorokunwa and Ikponmwosa (2014) investigated that both interest and exchange rate had a small impact on stock price volatility while the stock price was affected by inflation rate too much. Kuwornu (2012) investigated that the most influential macroeconomic factor is the inflation rate which affects stock market returns in Ghana.

3. Methodology

This study aims to find the relationship between macroeconomic variables and financial markets in Türkiye between 2010 and 2015. The monthly data was obtained from World Bank Data and the Central Bank of the Republic of Türkiye database. Financial markets in Türkiye experienced considerable ups and downs after the global financial crisis of 2008, which affected the entire world. The reason why the period between 2010 and 2015 were chosen for this study is these years were challenging for Türkiye's financial markets, with both positive and negative developments. Analyzing this period with negative and positive effects gives us efficient results how macroeconomic factors impact on the Istanbul Stock Exchange especially during the unstable period.

The study will employ an OLS model to check relationship between the ISE 100 Index and Gross Domestic Product, Crude Oil Prices, Exchange Rate, Gold Prices, Inflation Rate, and M2 using Stata

software. These variables are the essential factors that affects financial markets in different ways. Any negative and positive changes in these indicators have impacts on financial markets where investors need to pay attention on their investment decisions.

Firstly, the data is tested for stationarity using Augmented Dickey-Fuller and Phillips-Perron test. Regression results are examined to determine how financial markets respond to any independent variable changes.

Here, ISE is a function of Gross Domestic Product, Crude Oil Prices, Exchange Rate, Gold Prices, Inflation Rate, and M2:

$$ISE = \beta 0 + \beta 1 GDP + \beta 2 ExchangeRate + \beta 3 CPI + \beta 4 M2 + \beta 5 OilPrice + \beta 6 GoldPrice + \mu$$

Variables are transformed into logarithms in order to avoid trends' effects:

$$LISE = \beta 0 + \beta 1 LGDP + \beta 2 LExchangeRate + \beta 3 LCPI + \beta 4 LM2 + \beta 5 LCOP + \beta 6 LGoldPrice + \mu$$

L*ISE**: Logarithm of ISE; ***LGDP: Logarithm of GDP; ***L*COP**: Logarithm of Crude Oil Prices; ***L*CPI**: Logarithm of Inflation: ***L*M2** : Logarithm of Broad Money Supply; ***L*ExchangeRate**: Logarithm of Exchange Rate ; ***L*GoldPrice**: Logarithm of Gold Price

4. Empirical Findings

Table 1: Unit Root Tests Results

Variables	**Augmented Dickey-Fuller**		**Phillips Perron**	
	T-statistic	P-value	T-statistic	P-value
ln ISE	-2.157	0.223	-2.084	0.251
ln △ ISE	-8.619	0.0004	-8.664	0.0007
ln GDP	-1.74	0.411	-1.739	0.411
ln △ GDP	-8.306	0.0002	-8.306	0.0003
ln Exchange Rate	0.689	0.99	0.569	0.986
ln △ Exchange Rate	-6.766	0.0005	-6.722	0.0006
ln CPI	-2.52	0.111	-2.806	0.1174
ln △ CPI	-7.155	0.0002	-7.121	0.00001
ln M2	-0.396	0.911	-0.369	0.9108
ln △ M2	-8.529	0.0009	-8.528	0.0002
hiln COP	0.859	0.993	0.479	0.9842
ln △ COP	-6.188	0.00008	-6.157	0.0009
ln Gold Price	-0.813	0.816	-0.989	0.7574
ln △ Gold Price	-6.639	0.0001	-6.614	0.0009

Firstly, all the variables are logarithmically transformed according to the parameter estimation of the formula. Table 1 shows ADF and PP results that none of the variables become stationary at 1%,5%, or 10% significance levels when variables are in levels. All variables become stationary after first differencing. We can use these variables for statistical purposes because they are all integrated in the same order.

Table 2: Model Significance

Model	Multiple R	R Square	Adjusted R Square	Standard Error
	0.924	0.854	0.841	0.606

In Table 2, we can see the model's significance. However, in this case, *R*2 tells us how much percent of the change in the ISE index is explained by the explanatory variables (GDP, CPI, Exchange Rate, M2, COP, Gold Prices). In this case, the explanatory variables explain almost 85.4% change in the Istanbul Stock Exchange Index. Following this, Multiple R value is 0.924 that shows the model has strong linear relationship and perfect positive correlation between independent variables and ISE index.

Table 3: Regression Results

Variables	Coefficient	P-value	Standard Error
Intercept	-51.523019	0.00006	5.42420732
GDP	0.51977342	0.05647813	0.26765429
CPI (Inflation Rate)	-0.0132233	0.73484548	0.03887582
M2 (Broad Money Supply)	1.67125549	0.00000005	0.18641923
Exchange Rate	-1.9756564	0.000000023	0.21498414
COP (Crude Oil Prices)	-0.3696181	0.0000155	0.06284715
Gold Prices	0.13984141	0.0596	0.07294453

$$ISE = -51.52 + 0.52GDP - 1.98ExchangeRate - 0.013CPI + 1.67M2 - 0.37OilPrice + 0.14GoldPrice + \mu$$

The equation given above shows that Crude Oil Prices (COP), Exchange Rate, and Inflation rate are negatively related to ISE Index. On the other hand, Gold Prices, M2, and GDP positively affect the ISE 100 Index. Among all variables, only the inflation rate is insignificant because its p-value is higher than for all (10%,5%,1%), but M2, Exchange rate, and COP are significant at 1%, and Gold Prices and GDP are significant at 10%. So, in this study, we can't say that inflation rate has any impact on the ISE Index.

The equation suggests that a 1% increase in Gold Prices, M2, and GDP increases the ISE Index approximately by 0.14%, 1.67%, and 0.52%, respectively. Following this, a 1% increase in COP and Exchange rate decreases the ISE Index approximately by 0.37% and 1.98 %.

5. Discussion and Conclusion:

This study has tried to examine how selected macroeconomic variables affected the ISE Index from January 2010 to December 2015 on a monthly basis using the OLS method. To sum up, the results show a significant relationship between the ISE Index and the tested macroeconomic variables, namely, exchange rate, broad money supply, GDP, Gold prices, and Oil prices**.**

Türkiye experienced economic uncertainty, political risks, and market volatility since decades. This study provides a general overview why macroeconomic indicators should be taken into consideration to determine the risks for financial markets in Türkiye.

The exchange rate has been a very important factor for the Istanbul stock market and the Turkish economy. With Türkiye being a tourism country simultaneously, increasing foreign investments caused the exchange rate to be at a reasonable level for a long time. However, when the Turkish lira appreciates, input prices in manufacturing fall, and imports increase. Considering that Türkiye's economy has a high level of imports of intermediate goods, the exchange rate directs the economy and seriously affects stock returns. Along with the exchange rate, oil prices are also negatively correlated with stock returns. Since Türkiye is a country dependent on oil imports and is one of the main factors in companies' production, positive or negative shocks in oil prices have a significant impact on stock returns. Gold prices which is another global factor that investors should take into account. Our findings show that inflation does not affect the stock market. The increased cost of living does not cause stock returns to increase or decrease. On the other hand, an increase in the money supply causes lower interest rates and stock returns.

The period between 2010 and 2015 was preferred to examine because this 5 year-period was unstable. The results that derived from the study help to investor understand the impacts of macroeconomic effects on ISE Index for the following volatile periods. Ongoing political and economic challenges continue to pose risks for investors in Türkiye’s financial markets. Considering all the results, investors can obtain the risk-return balance by investigating the main macroeconomic factors' relationship to the ISE Index. They need to manage their portfolios and pay particular attention to money supply and exchange rate factors for forecasting. However, policymakers should take actions to implement the policies that calculating possible effects of macroeconomic indicators on Türkiye’s financial markets. These policies may include encouraging accountability and transparency, stabilizing markets during the period of volatility.

References

Abugri, B. A. (2008). Empirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American markets. International Review of Financial Analysis, 17(2), 396-410. https://doi.org/10.1016/j.irfa.2006.09.002

Acikalin, S., Aktas, R., and Unal, S. (2008). Relationships between stock markets and macroeconomic variables: an empirical analysis of the Istanbul Stock Exchange. Investment Management and Financial Innovations, 5(1), 8-16.

Alawin, M., Ali, A., Merza, E.(2018). The Relationship between Economic Growth and Stock Market. International Journal of Advances in Management and Economics, 7(5). 01-08. Retrieved from https://www.managementjournal.info/index.php/IJAME/article/view/123/455

Arouri, M. E. H., and Rault, C. (2012). Oil prices and stock markets in GCC countries: empirical evidence from panel analysis. International Journal of Finance and Economics, 17(3), 242-253. https://doi.org/10.1002/ijfe.443

Badshah, W., Alvi, M. S. I., and Sayilir, O. (2016). Macro-Economic Variables and Their Impact on Stock Exchange: A Study of Pakistan (KSE 100 Index). Journal of Research in Business, Economics and Management, 5(5), 704-716.

Basher, S. A., Haug, A. A., and Sadorsky, P. (2012). Oil prices, exchange rates and emerging stock markets. Energy Economics, 34(1), 227-240. https://doi.org/10.1016/j.eneco.2011.10.005

Buyuksalvarci, A., and Abdioglu, H. (2010). The causal relationship between stock prices and macroeconomic variables: A case study for Türkiye. Journal of Economic and Management Perspectives, 4(4), 601.

Cagli, E. C., Halac, U., and Taskin, D. (2010). Testing Long-Run Relationship between Stock Market and Macroeconomic Variables in the Presence of Structural Breaks: The Turkish Case. International Research Journal of Finance and Economics, 48(48), 49-60.

Cankal, E. (2015). Relationship between stock market returns and macroeconomic variables: evidence from Türkiye. Journal of Economics and Behavioral Studies, 7(5 (J)), 6-18. https://doi.org/10.22610/jebs.v7i5(J).601

Chung, K., and Shin, T. (2001). Cointegration and causality between macroeconomic variables and stock market returns - ScienceDirect. Global Finance Journal, 10(1), 71-81. https://doi.org/10.1016/S1044-0283(99)00006-X

Culter, D. M., Poterba, J. M., and Summers, L. H. (1989). What moves stock prices? Journal of Portfolio Management, 15(3), 4-12. https://doi.org/10.3905/jpm.1989.409212

Gjerde, O., and Saettem, F. (1999). Causal relations among stock returns and macroeconomic variables in a small, open economy. Journal of international financial markets, Institutions and money, 9(1), 61-74. https://doi.org/10.1016/S1042-4431(98)00036-5

Hendry, D. F. (1986). Econometric modelling with cointegrated variables: an overview. Oxford of International Financial Markets, Institutions and Money, 15(2). https://doi.org/10.1111/j.1468-0084.1986.mp48003001.x

Hondroyiannis, G., Lolos, S., and Papapetrou, E. (2005). Financial markets and economic growth in Greece, 1986–1999. Journal of International Financial Markets, Institutions and Money, 15(2), 173-188. https://doi.org/10.1016/j.intfin.2004.03.006

Hosseini, S. M., Ahmad, Z., and Lai, Y. W. (2011). The role of macroeconomic variables on stock market index in China and India. International journal of Economics and Finance, 3(6), 233-243. Retrieved from https://mpra.ub.uni-muenchen.de/112215/

Humpe, A., and Macmillan, P. (2009). Can macroeconomic variables explain long-term stock market movements? A comparison of the US and Japan. Applied financial economics, 19(2), 111-119. https://doi.org/10.1080/09603100701748956

Ibrahim, M. H., and Yusoff, S. W. (2001). Macroeconomic variables, exchange rate and stock price: A Malaysian perspective. International Journal of Economics, Management and Accounting, 9(2),141-164.

Ilhan, A., and Akdeniz, C. (2020). The Impact of Macroeconomic Variables on The Stock Market in The Time of Covid-19: The Case of Türkiye. Ekonomi Politika ve Finans Araştırmaları Dergisi, 5(3), 893-912. https://doi.org/10.30784/epfad.810630

Irshad, S., Khurshid, M., Badshah, W., Bulut, M. (2021). Volatility spillovers from US to Emerging seven stock markets: Pre and post analysis of gfc. International Journal of Contemporary Economics and Administrative Sciences, 11(1), 46-59 https://doi.org/10.5281/zenodo.5136385

Kandir, S. Y. (2008). Macroeconomic variables, firm characteristics and stock returns: Evidence from Türkiye. International research journal of finance and economics, 16(1), 35-45.

Karamustafa, O., and Kucukkale, Y. (2003). Long run relationships between stock market returns and macroeconomic performance: evidence from Türkiye. International Research Journal of Finance and Economics, 151(1-2), 601-610.

Karacaer, S., and Kapusuzoglu, A. (2010). Investigating causal relations among stock market and macroeconomic variables: Evidence from Türkiye. Journal of Economic and Management Perspectives, 4(3), 501.

Kasman S., K.,(2006). "The Relationship Between Macroeconomic Volatility and Stock Market Volatility," Istanbul Stock Exchange Review, Research and Business Development Department, Borsa Istanbul, 8(32), 1-10.

Kuwornu, J. K. (2012). Effect of macroeconomic variables on the ghanaian stock market returns: A co-integration analysis. Agris on-line Papers in Economics and Informatics, 4(2): 1-12. Retrieved from http://ugspace.ug.edu.gh/handle/123456789/26836

Kwon, C. S., and Shin, T. S. (1999). Cointegration and causality between macroeconomic variables and stock market returns. Global finance journal, 10(1), 71-81. https://doi.org/10.1016/S1044-0283(99)00006-X

Odoyo, F. S., Muasya, R., and Kenneth, K. T. (2014). Effect of foreign exchange rates on price per share. Journal of BusinessAdministration and Education, 6(2), 34-56 https://www.infinitypress.info/index.php/jbae/article/view/992

Omorokunwa, O. G., and Ikponmwosa, N. (2014). Exchange Rate Volatility and Foreign Private Investment in Nigeria. Asian Journal of Business Management, 6(4), 146–154. https://doi.org/10.19026/AJBM.6.5157

Ozer, M. (2015). Can Türkiye be a good example for the Balkan Nations? The story of illusion of well-being. Edition of Xavier Richet, Hasan Hanic and Zoran Grubisic, New Economic Policy Reforms, Belgrade Banking Academy, Belgrade, Serbia, 15-58.

Pan, B., MacLaurin, T., and Crotts, J. C. (2007). Travel blogs and the implications for destination marketing. Journal of travel research, 46(1), 35-45. https://doi.org/10.1177/0047287507302378

Poon, S., and Taylor, S. J. (1991). Macroeconomic factors and the UK stock market. Journal of Business Finance and Accounting, 18(5), 619–636. https://doi.org/10.1111/J.1468-5957.1991.TB00229.X

Pramod Kumar, N. A. I. K., and Puja, P. (2012). The Impact of Macroeconomic Fundamentals on Stock Prices Revised: A Study of Indian Stock Market. Journal of International Economics, 7(1), 76-91. Retrieved from https://mpra.ub.uni-muenchen.de/id/eprint/38980

Richards, A. J. (1996). Volatility and predictability in national stock markets: how do emerging

and mature markets differ? Staff papers, 43(3), 461-501. https://doi.org/10.2307/3867551

Sahin and Sahin, 2014. An Overview on the Exchange Rate and Liability Dollarization in Türkiye. The International Journal of Applied Economics and Finance, 8: 62-81.

Sahin and Sahin (2023). An Empirical Examination of Asymmetry on Exchange Rate Spread Using the Quantile Autoregressive Distributed Lag (QARDL) Model. Journal of Risk and Financial Management 16:38. https://doi.org/10.3390/jrfm16010038

Rjoub, H., Tursoy, T. and Gunsel, N. (2009), "The effects of macroeconomic factors on stock returns: Istanbul Stock Market", Studies in Economics and Finance, 26(1), 36-45. https://doi.org/10.1108/10867370910946315

Sancar, C., Ahmet, UGUR., and Akbas, Y. E. (2017). The analysis of the relationship between stock price index and the macroeconomic variables: Türkiye example. International Journal of Social Sciences and Education Research, 3(5 S), 1774-1786. https://doi.org/10.24289/ijsser.336971

Savasa, B., and Samiloglu, F. (2010). The impact of macroeconomic variables on stock returns in Türkiye: An ARDL bounds testing approach. Afyon Kocatepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 12(1), 111-122. Retrieved from https://dergipark.org.tr/en/pub/akuiibfd/issue/1625/20364?publisher=aku

Tiryaki, A., Erdogan, L., and Ceylan, R. (2017). The causal relationship between selected macroeconomic variables and stock returns in Türkiye. Uluslararası İktisadi ve İdari İncelemeler Dergisi, 19, 299-326. https://doi.org/10.18092/ulikidince.309275

Tripathy, N. (2011). Causal relationship between macro-economic indicators and stock market in India. Asian Journal of Finance and Accounting, 3(1), 208-226. http://dx.doi.org/10.5296/ajfa.v3i1.633

Yacouba, K., and Altintas, H. (2019). The asymmetric impact of macroeconomic shocks on stock returns in Türkiye: a nonlinear ARDL approach. Journal for Economic Forecasting, 22, 98-116.

www.ceicdata.com, accessed on May, 2022

Araştırma Makalesi

Exploring Effects of Macroeconomic Variables on Financial Markets: Evidence from Türkiye

Makroekonomik Değişkenlerin Finansal Piyasalar Üzerindeki Etkilerinin İncelenmesi: Türkiye Örneği

Murad AHMADZADA	Fikri KAPLAN	Waqar BADSHAH
Temple University murad.ahmadzada@temple.edu https://orcid.org/0000-0001-9033-3746	Assistant Professor Dr., University of Turkish Aeronautical Association fkaplan@thk.edu.tr https://orcid.org/0000-0002-4284-3466	Assistant Professor Dr., Istanbul University Department of Management Information System Faculty of Economics waqar.badshah@istanbul.edu.tr https://orcid.org/0000-0001-5009-8745

Genişletilmiş Özet

Bu çalışma, makroekonomik değişkenler ile borsa endeksi arasındaki ilişkiyi 2010-2015 yılları arasında Türkiye örneğinde aylık veriler kullanarak kontrol etmeyi amaçlamaktadır. GSYİH, Döviz Kuru, Enflasyon Oranı, M2 gibi makroekonomik faktörlerin ve Ham Petrol Fiyatları, Altın Fiyatları gibi küresel faktörlerin İMKB üzerinde etkisinin olup olmadığını araştırmak için birim kök testleri (Augmented Dick-Fuller, Phillips Perron) ve OLS modeli uygulanmıştır. Ampirik bulgular, Döviz Kuru, M2, GSYİH, Altın fiyatları ve Petrol fiyatlarının İMKB 100 Endeksi'ni önemli ölçüde etkilediğini göstermektedir. Ayrıca, enflasyon oranının İMKB 100 endeksine katkıda bulunduğuna dair bir kanıt yoktur.

Farklı dönemler boyunca makroekonomik faktörlerin finansal piyasalar üzerindeki etkileri araştırılmış ve farklı sonuçlar elde edilmiştir. Elde edilen sonuçlara göre, küresel ve makroekonomik unsurlar hem gelişmiş hem de gelişmekte olan ülkelerin finansal piyasalarını etkilemiştir. Çok sayıda kanal aracılığıyla, finansal performans ekonomik büyüme ile ilişkilendirilir. Faiz oranı, para arzı, ekonomik büyüme, enflasyon gibi makroekonomik göstergelerdeki bazı değişimler ile altın ve petrol fiyatı gibi küresel faktörlerdeki pozitif veya negatif şoklar borsa endeksi üzerinde etkili olabilir. Özer (2015), Türkiye'nin petrol ve doğal gaz gibi birçok ara malını farklı ülkelerden ithal eden bir ülke olduğunu söylemiştir. Bu ürünler Türkiye'de faaliyet gösteren her firmanın üretmesi için en kritik unsurlardır. Dolayısıyla bu mallara bağımlılık doğrudan ihracatı etkiler. Döviz kuru, para arzı ve diğer makroekonomik faktörler bu döngüyü tamamlar.

Özetle, borsa performansını artırmak ve yabancı finansal yatırımcıların ilgisini çekebilmek için makroekonomik değişkenlerin finansal piyasalar üzerindeki etkisini anlamak gerekmektedir. Culter ve ark. (1989), Poon ve Taylor (1991), Kwon ve Shin (1999), Richards (1996), Gjerde ve Saettem (1999), hisse senedi getirilerinin makroekonomik değişkenleri önemli ölçüde etkilediğine dair bir ilişki bulamamıştır. Öte yandan Hendry (1986), Abugri (2008) ve Humpe & Macmillan (2009) makroekonomik faktörlerin hisse senedi getirileri üzerinde herhangi bir etkisinin olmadığı sonucuna varmışlardır.

Yukarıda da belirtildiği gibi Türkiye'de tek bir borsa vardır; bu nedenle çalışmada bağımlı değişken olarak borsa endeksini (İMKB 100) kullandık. Bu çalışmada makroekonomik faaliyetlerin İMKB 100 Endeksi üzerindeki etkilerini tahmin etmek için GSYİH, Enflasyon Oranı, Geniş Para Arzı, Döviz Kuru ve Petrol ve Altın Fiyatları değişkenleri kullanılmıştır. Her şeyden önce, eğer bir ekonomik ortam gelişiyorsa, üretim artacaktır ve çoğu şirketin üretkenliği artacaktır. Bu daha fazla gelir, hissedarlara

daha büyük temettüler verebildikleri için firma hisselerini çok daha dikkat çekici hale getirir. Uzun bir finansal gelişme dönemi şüphesiz kar paylarına yönelecektir. Son olarak, sermaye artırmak, firmaların işlerini genişletmelerine, operasyonlarını genişletmelerine ve ekonomide görevler üretmelerine izin verir. Alawin ve ark. (2018), VAR modelini uygulayarak Nijerya ve Birleşik Arap Emirlikleri'nde ekonomik büyüme ile hisse senedi getirileri arasındaki ilişkiyi analiz etmiştir. Borsa gelişiminin ekonomik büyümeyi artırdığını tespit ettiler. Dolayısıyla, ekonomik kalkınmayı teşvik etmek için bu ülkelerin borsayı desteklemesi ve geliştirmesi gerektiği sonucuna varılabilir.

Çalışmada kullanılan son değişkenler, finansal piyasalarda hisse senedi getirilerini de etkileyen petrol ve altın fiyatlarıdır. Petrol fiyatlarındaki sürekli artış, ekonomik ortamda artan bir yaşam maliyeti ve faiz oranlarını tetikleyebilir. Bunun sonucunda yatırımcılar menkul kıymet piyasalarından farklı yatırım araçları ile daha yüksek getiri elde edebilecekleri piyasalara yönelebilirler. Petrol fiyatlarındaki artış genellikle beklenen ekonomik büyüme oranını düşürür ve petrole bağımlı ülkeler için daha kısa vadeli enflasyon varsayımlarını güçlendirir. Azalan finansal büyüme beklentileri, daha sonra işletmenin kar beklentilerini düşürerek hisse senedi fiyatları üzerindeki sonuçların azalmasına yol açar. Basher ve ark. (2012) benzer şekilde petrol maliyetleri, döviz kurları ve borsa arasındaki ilişkiyi inceledi. Çalışmaları, petrol oranlarındaki pozitif şokların, kısa vadede gelişmekte olan piyasa hisse senedi fiyatlarının ve ABD döviz kurunun moralini bozma eğiliminde olduğunu gösterdi. Çalışmamızda yer alan bir diğer değişken ise menkul kıymetler piyasasından farklı bir yatırım aracı olarak görülen altındır. Oynaklık yüksek olduğunda ve yatırımcılar borsa hakkındaki tahminlerinden emin olmadıklarında, risklerini azaltmak için altın gibi güvenli varlıklara yatırım yapmaya başlarlar. Bir yandan bu tür varlıklara olan talebi artırırken diğer yandan hisse senedi fiyatlarında da düşüşler yaşanıyor. Bir bütün olarak, altın ve hisse senedi korelasyonu tam tersi orantılıdır. Bu, altın fiyatı yükseldiğinde menkul kıymetler piyasasında fiyatların düşeceği anlamına gelir. Tarihsel olarak, borsanın moralinin en bozuk olduğu zamanlarda altının çok iyi performans gösterdiği gözlemlenmiştir. Bu altın ve menkul kıymetler piyasası ilişkisi, tüm dünya ekonomik durumları için geçerlidir. Altın, yatırımcıların portföy çeşitlendirmesi için vazgeçilmez araçlardan biridir. Aynı zamanda tipik olarak riskli dönemlerde borsa ile ilişkilidir. Arouri & Rault (2012), GCC ülkelerinin menkul kıymetler piyasasının yüksek petrol fiyatlarından olumlu etkilendiğini tespit etti. Bu çalışmalar ve sonuçları çok faydalıdır ve risk yönetimi alanına ve zihniyetine yeni bir bakış açısı getirmektedir. Yatırımcıların bu bulguları ciddiye almaları portföylerine yönelik riskleri doğrudan azaltır.

Bu çalışma, OLS yöntemi kullanılarak Ocak 2010'dan Aralık 2015'e kadar seçilen makroekonomik değişkenlerin İMKB Endeksi'ni nasıl etkilediğini aylık bazda incelemeye çalışmıştır. Özetlemek gerekirse, sonuçlar İMKB Endeksi ile test edilen makroekonomik değişkenler, yani döviz kuru, geniş para arzı, GSYİH, Altın fiyatları ve Petrol fiyatları arasında anlamlı bir ilişki olduğunu göstermektedir.

Döviz kuru, İstanbul borsası ve Türkiye ekonomisi için çok önemli bir faktör olmuştur. Türkiye'nin turizm ülkesi olmasıyla birlikte artan yabancı yatırımlar, döviz kurunun uzun süre makul seviyelerde seyretmesine neden olmuştur. Ancak Türk lirası değerlendiğinde imalatta girdi fiyatları düşmekte, ithalat artmaktadır. Türkiye ekonomisinin yüksek düzeyde ara malı ithalatına sahip olduğu düşünüldüğünde, döviz kuru ekonomiye yön vermekte ve hisse senedi getirilerini ciddi şekilde etkilemektedir. Döviz kuru ile birlikte petrol fiyatları da hisse senedi getirileri ile negatif ilişkilidir. Türkiye'nin petrol ithalatına bağımlı bir ülke olması ve şirketlerin üretimlerinin ana faktörlerinden biri olması nedeniyle, petrol fiyatlarındaki olumlu veya olumsuz şoklar hisse senedi getirilerini önemli ölçüde etkilemektedir. Yatırımcıların dikkate alması gereken bir diğer küresel faktör olan altın fiyatları. Bulgularımız enflasyonun hisse senedi piyasasını etkilemediğini göstermektedir. Artan yaşam maliyeti, hisse senedi getirilerinin artmasına veya azalmasına neden olmaz. Bir yandan, para arzındaki bir artış, daha düşük faiz oranlarına ve hisse senedi getirilerine neden olmaktadır.