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T.C.

ANKARA YILDIRIM BEYAZIT UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCE

**THE RELATIONSHIP BETWEEN MONETARY
POLICY AND STOCK EXCHANGE PRICES OF
İSTANBUL**

MASTER'S THESIS

Taha Kürşat MENEVŞE

DEPARTMENT OF BUSINESS ADMINISTRATION

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ANKARA, 2024

APPROVAL PAGE

The thesis, titled as “The Relationship Between Monetary Policy and Stock Prices: Evidence From Borsa İstanbul” and prepared by Taha Kürşat MENEVŞE, was accepted by the following committee members unanimously/ by majority as a thesis for the degree of Master Science in Ankara Yıldırım Beyazıt University, Graduate School of Social Science, Department of Business Administration.

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DECLARATION

I declare that thesis is my own work, that I have not had any unethical behaviour violating patents and copyrights at all stages from the planning to writing of the thesis, that I have obtained all the information in this thesis within academic and ethical rulse, and that I have cited all the information and comments used in this thesis. (22.11.2024)

Signature

Taha Kürşat MENEVŞE



DEDICATION



To My Precious Family

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I want to state my gratitude to everyone and in particular for my esteemed advisor Prof. Dr. Nildağ Başak CEYLAN and Prof. Dr. Ayhan KAPUSUZOĞLU very much for valuable advice, support, and patience. With them vast knowledge and experience, they always supported me in my thesis study.

I would also like to state to my family and siblings who have brought me to this day and supported me throughout my education life.



ABSTRACT

The Relationship Between Monetary Policy and Stock Prices: Evidence from Borsa İstanbul

This paper examines the effect of monetary policy on the stock exchange prices in Türkiye using monthly data for eighteen years (2006:12-2024:2). Data are taken from the Central Bank of the Republic of Türkiye and Turkish Statistical Institute. The method of data analyses used are Ordinary Least Square (OLS), Johansen Cointegration test, and Granger causality test. BIST100 Index is used as an indicator for stock exchange prices while the explanatory variables included the Central Bank of the Republic of Türkiye monetary policy weekly repo rate, 3 months Treasury bill rate, M3 money supply, and USDTRY foreign exchange rate. The cointegration test result determines that there is a long run relationship between monetary policy and stock exchange prices in Türkiye. The OLS regression result reveals that monetary policy weekly rate significantly explains % 0.4 changes of stock exchange prices in Türkiye. 3 months Treasury bill rate insignificantly explains % 0.1 changes of stock exchange prices. M3 money supply significantly explains % 17 changes of stock exchange prices. USDTRY foreign exchange rate insignificantly explains % 5.3 changes of stock exchange prices. The Granger causality test reveals that BIST100 index has no casual relationship with monetary policy weekly repo rate, 3 months Treasury bill rate, M3 money supply, and USDTRY foreign exchange rate.

Keywords: Monetary policy, stock price, Treasury bill rate, foreign exchange rate, money supply.

ÖZET

Para Politikası ile Hisse Senedi Fiyatları İlişki: Borsa İstanbul'dan Bulgular

Bu çalışma, Türkiye'de para politikasının borsa fiyatları üzerindeki etkisini on sekiz yıllık (2006:12-2024:2) aylık veriler kullanarak incelemektedir. Veriler Türkiye Cumhuriyet Merkez Bankası ve Türkiye İstatistik Kurumu'ndan alınmıştır. Kullanılan veri analiz yöntemleri Sıradan En Küçük Kareler (OLS), Johansen Kointegratin testi ve Granger nedensellik testidir. Borsa fiyatları için gösterge olarak BIST100 Endeksi kullanılırken, açıklayıcı değişkenler arasında Türkiye Cumhuriyet Merkez Bankası haftalık para politikası repo faiz oranı, 3 aylık Hazine bonusu faiz oranı, M3 para arzı ve USDTRY döviz kuru yer almaktadır. Eşbütünleşme testi sonucu Türkiye'de para politikası ile borsa fiyatları arasında uzun dönemli bir ilişkinin olduğunu tespit etmektedir. OLS regresyon sonucu, para politikası haftalık faizinin Türkiye'de borsa fiyatlarındaki %4'lük değişimi anlamlı bir şekilde açıkladığını ortaya koymaktadır. 3 aylık Hazine bonusu faizi borsa fiyatlarındaki yüzde 0,1'lik değişimi çok az açıklıyor. M3 para arzı borsa fiyatlarındaki yüzde 17'luk değişimi önemli ölçüde açıklamaktadır. USDTRY döviz kuru borsa fiyatlarındaki % 5,3'lük değişimi önemsiz bir şekilde açıklamaktadır. Granger nedensellik testi BIST100 endeksinin para politikası haftalık repo faizi, 3 aylık Hazine bonusu faizi, M3 para arzı ve USDTRY döviz kuru ile nedensel bir ilişkisinin olmadığını ortaya koymaktadır.

Anahtar Kelimeler: Para politikası, hisse senedi fiyatı, Hazine tahvili faiz oranı, döviz kuru, para arzı.

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LIST OF ABBREVIATIONS

APT	: Arbitrage Pricing Theory
ARIMA	: Autoregressive Integrated Moving Average
BIST	: İstanbul Stock Exchange
CBRT	: The Central Bank of the Republic of Türkiye
CPI	: Consumer Price Index
GDP	: Gross Domestic Product
ICAPM	: Intertemporal Capital Asset Pricing Model
MPC	: Monetary Policy Committee
MRR	: Minimum Rediscount Rate
OLS	: Ordinary Least Squares
TURKSTAT	: Turkish Statistics Institute
VAR	: Vector Autoregressive

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1. INTRODUCTION

Financial specialists and policymakers broadly analyze the relationship between financial approach and stock market costs. Stock market costs are crucial for a country's money related environment, they are a key component. Money related approach centers on controlling the cash supply and credit channels rather than fair altering the interest rate to oversee the generally financial action level. The cash advertise and capital showcase, in spite of their contrasts in length and other viewpoints, are interrelated. The common agreement is that macroeconomic markers, such as intrigued rates, cash supply, and remote trade, can affect stock costs. In this manner, central banks prioritize understanding the affect of financial apparatuses like cash supply, swelling rate, and intrigued rate on stock cost execution.

The stock advertise plays a basic part within the economy by apportioning assets and directing them towards important speculations. The stock trade showcase is considered a principal component of budgetary frameworks, because it viably disperses assets among financial performing artists.

The execution of the stock trade market is closely tied to the financial circumstance of a nation. A diminish in stock costs comes about in a decay within the country's monetary conditions, though an increment in stock costs leads to an enhancement within the country's budgetary circumstance. The stock exchange market indices serve as vital indicators for the economy. It is vital to get it how the expansion of financial arrangement might affect the development of stock trade costs.

Financial management involves the administration of the get to, volume, and heading of cash and credit to attain particular budgetary destinations. Short-term interest rates, money supply, and credit conditions are utilized by monetary authorities to achieve these missions. Monetary policy's mission is to guarantee cost solidness. A pivotal challenge is guaranteeing the successful transmission of money related approach to monetary frameworks. This transmission is accomplished through the intrigued rate channel, credit channel, or cost level inside the financial environment. An effective transmission mechanism can potentially enhance the return on investment.

Financial specialists utilize diverse instruments to influence the approach on the bounty of transmission channels. Intrigued rate control the financial arrangement coordinate or roundabout. Within the coordinate control, intrigued rate is connected the portfolio or adjust sheet of banks utilizing particular credit control, stabilization securities.

Elumilade and Asaolu (2006) expect that intrigued rate can impact the targets of money related approach. The money authorities utilize money related approach apparatuses to influence the adjust sheet of the banks. Intrigued rates and credit channels which are organized by money authorities are comprimised with monetary arrangement. With regard to this framework, the money related framework does not take portion of choice for budgetary framework costs or benefits and allocation of credits. Advance, there's a certain association between roundabout financial arrangement and budgetary framework so both of them can impact each other. The deregulate of intrigued rates and backhanded financial approach instrument utilization are exceptionally important for change of monetary markets. In specific, there's a collective relationship between backhanded money related approach exchange control and completely utilized capital markets.

With regard to emprical works, financial specialists consider that financial approach and macroeconomic circumstances impact the instability of stock costs. Christopher, Minsoo, HuaHwa and Jun (2006) emphasize that macroeconomic factors influence speculation choices of speculators. The needed macroeconomic approaches are anticipated to influence emphatically on the stock trade showcase.

Especially the change of cash related course of action in Türkiye, the subject of the portion of cash related course of action through stock promote execution has picked up much more thought from investigators and policymakers. This paper focuses to clarify the affect of cash related course of action on İstanbul Stock Exchange toward different financial approaches.

Stock Exchange of İstanbul (BIST) was established the year of 1866. In 2023, there are total 655 companies listed in BIST. On the other hand, Central Bank of Republic of Türkiye was established in 1930.

This paper examines the impact of financial factors on İstanbul Stock Exchange. Subsequently the goals of the consider are:

- To understand the relationship between money related arrangement factors and stock advertise execution of Türkiye.

- To decide the impact and comes about of plnety of money related approach factors on the stock advertise execution.

For this point this paper applies diverse econometric procedures in analyzing factual truths of these factors.

The other part of the paper organized as follows. The second chapter examines the historical aspect of Türkiye's financial approach beginning with 2000 financial situations finishing with the most recent financial approach applications and the advancement of İstanbul Stock Exchange. Chapter 3 reviews hypothetical and emprical writing on the relationship between financial arrangement and exchange prices. The fourth chapter contains the information scheme and its sources that incorporates certain measurements and econometric tests. The fifth chapter, the emprical results are examined and measured with the related literature. At long last, Chapter 6 concludes the paper.

2. HISTORICAL DEVELOPMENT OF TÜRKİYE’S MONETARY POLICY AND İSTANBUL STOCK EXCHANGE

2.1. Türkiye’s Monetary Policy From 2000

In this chapter, diving into the usage of money related arrangement measures since the year 2000. The system utilized in this examination consolidates the desires of the monetary policymakers’ interest rate arrangement.

The time between the 1990s and the early 2000s, the economy of Turkey encountered numerous economic challenges. The period was characterized by high interest rates, primarily due to substantial public debt. Consequently, the issue of dollarization emerged as a significant concern for the Turkish economy. To address this issue, the Inflation Struggle Program was introduced. However, the effectiveness of this program was limited, as the economic targets were not met, and the fixed rate system remained unchanged. The year of 2001, the economic program initiative was launched.

A urgent minute within the advancement of central bank enactment happened in 2001, with the foundation of the essential objective of cost solidness as the foundation of the monetary policymaker’s command. Also, monetary policymaker was granted specialist to require vital measures, and Monetary Policy Committee (MPC) was set up. Early 2000s annual reports highlighted the primary policy instrument as short-term interest rates (CBRT,2001).

From 2010 onwards, monetary policymaker embraced the mixed and wide corridor structure. This framework permitted central bank to reply quickly to unforeseen stuns by altering the composition of subsidizing rebellious without changing the approach rate. Given a favorable financial viewpoint, the central bank emphasized the interest of both budgetary solidness and cost soundness. Subsequently, the central bank utilized financial arrangement rebellious that included shifting intrigued rates in day by day financing to oversee the weighted normal subsidizing for each day (CBRT,2011).

From 2010 until 2017, the higher line of the corridor has been set at a tall level in connection via interest rate which is decided by monetary policymakers. Moreover, structure of subsidizing and weighted normal financing fetched were balanced every day. This

complexity in money related policy made it challenging to comprehend. Be that as it may, by the beginning of 2017, the higher band of the intrigued rate passage has been tolerably decreased. As outlined in Figure 1, amid the period from 2010 to 2016, the normal financing rate was reliably over the financial approach rate, with vacillations within the Overnight Money Market Rates (CBRT,2017).

From 2017 onwards, the intrigued rate corridor has been continuously contracted, however the approach rate has not been utilized as a subsidizing rate. Instep, the Late Liquidity Window subsidizing, which speaks to the most elevated intrigued rate for day by day utilize, developed as the essential financing apparatus. In spite of the fact that the Late Liquidity Window isn't customarily considered a money related arrangement instrument, it was utilized as the most financing instrument from mid-2017 to mid-2018.

The exchange rate experienced a sudden increment in August 2018. In reaction, the central bank altogether raised the arrangement rate, checking the starting of its utilize as the essential financing device. The central bank too locked in in different subsidizing exchanges past the approach rate and week after week repo financing. In any case, the normal financing rate reliably taken after the approach ratio, and the short term debt investment rates endured at a comparative level inside the corridor (CBRT,2019).

Within the 2019's last six months, the weekly repo rate was dynamically diminished. Amid this term, week by week repo exchanges served as the essential source of financing. In any case, the onset of the Covid-19 widespread in 2020 required a lessening in weekly repo rate, that encouraged the solidness of the money related frameworks. Also, weekly repo rate started extending at end of 2020. In reaction, conventional auctions were utilized, moving from fixed rate auctions to weighted normal weighted average funding rate auctions, which come about within the funding rate surpassing corridor.

Diminishing weekly repo rate was continued 2021's beginning, with funding primarily occurring through weekly repo auctions. Exchange rate fluctuations emerged as a significant challenge for the economy in 2022. To address this issue, a Liraziation strategy was implemented. The strategy aimed to increase the weight of the Turkish Lira across all balance sheets, ensure that the central bank's funding collateral predominantly consisted of fixed income Turkish Lira denominated assets, and establish the Turkish Lira as the sole

medium of exchange for internal transactions. The reduction in the policy rate continued throughout this year.

Within the moment half of 2023, the increment of the interest rates was begun. To handle the inflation level, controversial monetary policy implementations were used. Gradual interest rate increases still continue. After the Monetary Policy Committee of March 2024, interest rates was started to remain constant.

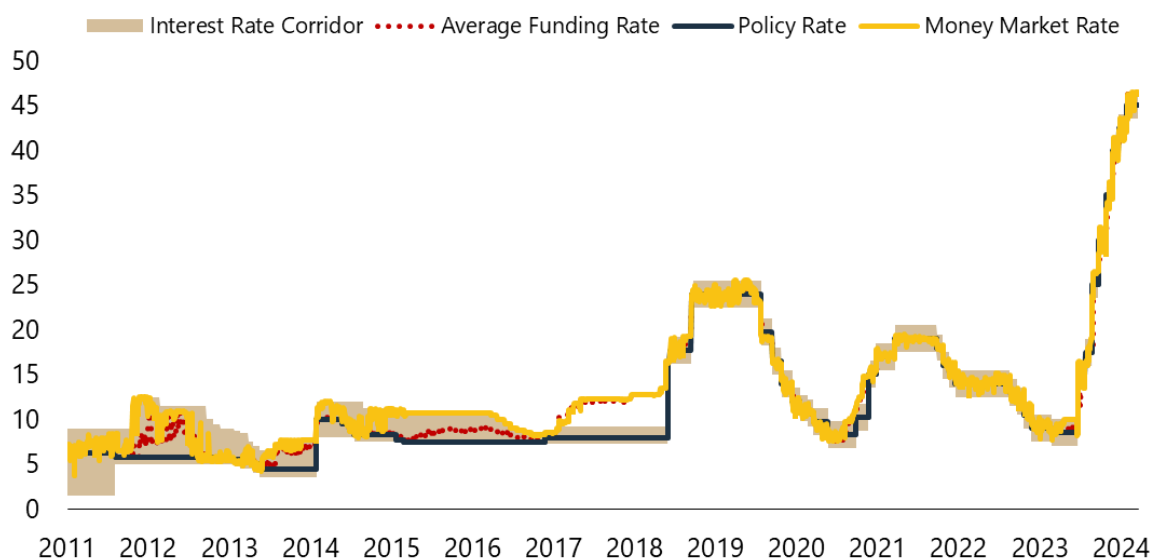


Figure 1. Interest Rate Corridor, Average Funding Rate and Money Market Rate

2.2. Concept of Stock Exchange and History of İstanbul Stock Exchange

Capital environments, in conjunction with the banking and insurance industries, play an essential role in the economic structure. Together, these components represent a crucial segment of the financial system. Financial systems are designed to link savers with those in need of capital, thereby promoting the movement of funds. They consist of a variety of institutions and the regulatory agencies that supervise and regulate them. The most point of money related frameworks is to direct accessible reserve funds within the advertise toward the foremost beneficial speculation openings, in this way upgrading the effectiveness of this handle.

Capital markets are defined as the platforms where surplus funds are allocated with the expectation of achieving a particular return. These markets act as venues for evaluating different financial instruments. Organizations in search of capital employ these instruments

to obtain financing. As a result, capital markets enable the transformation of modest savings into investments, effectively channeling these funds into the economy through the issuance of securities

In this context, financial markets play a crucial role in promoting savings within economies, thereby facilitating the allocation of these resources to satisfy economic needs through the aggregation of capital. The essential sub-markets that fulfill this work contain long and short term financial environments. Key members in financial environments incorporate managing an account teach, capital advertise organizations, and stock exchanges.

The stock exchange operates as a dedicated platform for trading, functioning as a continuous entity where participants engage in the buying and selling of quantifiable commodities, governed by private law frameworks that are established and regulated by the state.

When examining the stock market's role in a nation's economy, it is vital to consider various elements such as the distribution of security stocks, their ratio to Gross National Product (GNP), and market capitalization as regards Gross Domestic Product. Analyzing the trends these metrics over time can provide valuable insights. Thus, the importance of financial markets, especially stock exchanges, can vary significantly from one country to another. The variations in a company's stock price are a key indicator of its performance and reliability. From a macroeconomic perspective, stock markets are typically among the first sectors to react to shifts in money supply, inflation, foreign exchange rate, political changes, and GNP. The performance trends of companies are reflected in their stock prices on the exchange. Each day, a multitude of stocks and bonds are traded in these markets, with prices updated in real-time. Price changes are driven by need financial instruments and available quantity, resulting in continuous fluctuations (Oğuz, 1987). Consequently, companies whose securities are traded face ongoing evaluation and scrutiny. The prices determined in the stock market serve as important economic indicators.

The primary aim of investors engaging in stock exchanges is to achieve financial gains. The overall market dynamics are influenced by the interactions between buying and selling activities. Stock exchanges function as platforms where individuals with surplus capital can

connect with those in need of financial resources. As active marketplaces, they contribute significantly to the vibrancy and movement within the financial sector.

Fund transfers in financial markets can be classified into two main approaches: direct and indirect. In the indirect fund transfer method, individuals or entities with excess savings deposit their funds into a financial structure. Financial structure then redistributes these funds to various investing entities, thereby serving as an intermediary. In this scenario, the bank takes on the responsibility for the loans it provides, facilitating the link between savers and investors. In contrast, direct financing occurs when savers invest their funds directly into investment opportunities. This method requires savers to evaluate and approve the investment projects they choose to support. Capital markets play a crucial role in establishing the necessary infrastructure for direct fund transfers (Doğu, 1994).

The global and international aspects of capital, along with transactions involving international securities, are marked by significant capital flows. What elements have influenced this phenomenon in the global financial landscape? Primarily, savings are directed towards securities that promise lower costs and higher yields. The key issue revolves around the availability of access opportunities. Thus, within a market economy, the volume of savings in the economy is vital, as is the effective allocation of these savings into the most productive investment channels. To tackle the issue of resource availability, a well-functioning market is imperative. In such an environment, entities seeking to mitigate budget deficits through borrowing, as well as those looking to transition existing businesses into publicly traded entities, come together (Dorodnyh, 2014). This includes government bodies, private sector participants aiming to issue both short- and long-term debt securities, and companies seeking new investors by offering shares. Stock exchanges act as the platform for these transactions.

The advancement of fund management systems within financial markets, coupled with the liquidity of economic entities beyond merely holding cash or placing funds in demand deposits, has led to capital markets playing a crucial role in liquidity management. The inherent marketability of financial assets allows for the efficient transfer of these assets among investors, thereby reducing transaction costs. A liquidity emergency can regularly raise into a more extensive money related emergency, basically due to the middle person parts played by banks and other budgetary educate. These teach may inadvertently contribute to budgetary precariousness, particularly when interconnected through credits or

associations with securities firms or other monetary substances. Stock trades speak to the foremost compelling scenes for changing over freely held securities into cash, hence assembly the demand for securities within the primary market.

Stock exchanges play a pivotal part in encouraging the method of going open, which in turn broadens the dissemination of capital. This instrument permits for the deal of littler offers to a bigger pool of speculators in private markets. Companies that are recorded on stock trades harvest different preferences. The act of being recorded not as it were increments their perceivability but too empowers them to capitalize on the openings accessible inside the stock exchange system, in this manner improving the promoting and deals of their shares. As a result, capital ownership becomes more democratized, allowing smaller investors to engage as stakeholders in larger corporations.

Recent developments in global economies have resulted in an increased demand for financing among nations. As these financial needs have grown, domestic markets have often fallen short, leading countries to pursue funding from international markets. This transition has introduced a new dynamic and heightened the volume of capital circulation, thereby amplifying the global character of capital. Furthermore, instabilities encompassing future financial conditions and raising risks have driven to a rise in advertise interest rates, inciting support suppliers to embrace a more short-term center in their financing approaches.

In a well-functioning market, the availability of fundamental analysis data allows investors to conduct more accurate assessments. The evolving trajectories of companies and their corresponding stock prices are inherently mirrored in market valuations. Additionally, firms listed on the Borsa Istanbul (BIST) are subject to specific regulatory frameworks. They are required to disclose financial statements and other relevant information, which investors can easily access through the stock exchange bulletin and various media channels. Stock exchanges play a imperative part in ensuring the interface of investors. Companies whose securities are listed and traded must meet certain standards. As a result, these organizations are under continuous scrutiny, and information about them is disseminated swiftly to ensure the safeguarding of investor interests.

Although the practice of stockbroking is often linked to the 14th century, its origins can be traced back to 1200-1500 BC. Historical documentation from the Romans and

Phoenicians suggests that these ancient civilizations laid the groundwork for the first stock market through organized trading fairs.

In the 5th century BC, the Roman Empire established an institution known as the *Collegium Marcatorum*, located in the forum named after *Bosarium*, a Roman king, along the Tiber River in Rome. This organization facilitated the assembly of local merchants, wholesalers, and intermediaries for trading activities, thereby establishing the preliminary foundations of what would eventually develop into the contemporary stock market, albeit in a more primitive form.

A significant transformation in commerce began with the introduction and use of bills during the 12th and 13th centuries. This adoption greatly improved the practicality and efficiency of trade practices (Petram, 2014).

The beginnings of stock exchanges can be followed back to the medieval fairs that began with showed up in Italy. By the 15th century, fairs in cities such as Antwerp, Lyon, and Geneva were instrumental in fostering economic development. Transactions resembling modern stock market activities were conducted in "Burgess." The exploration of new continents and the establishment of key maritime routes shifted global trade towards the Atlantic, enhancing the prominence of Antwerp (Fleckner, Hopt, 2013). The Antwerp Stock Exchange, notable for its enclosed trading hall, allowed a large number of merchants to engage in trading activities. The inscription "In usumnegatiatorum Linguane" at the entrance indicates that the stock exchange is open to individuals who speak various languages, suggesting that Antwerp's stock market is accessible to all nations (Dougall, Gaumintz, 1980). Taking after the foundation of the Antwerp Stock Exchange, the Lyon and Toulouse Stock Trades started their operations, with the primary stock exchange in Paris formally opening in 1724.

The stock exchanges in Hamburg and Bremen also contribute significantly to the global financial system. Stock Exchange of New York, recognized as the biggest stock exchange within the world nowadays, remains a crucial player in progressing exchanging actions (Banner, 1998).

In modern times, commodity exchanges have progressively transformed into futures exchanges, enabling forward transactions, futures contracts, and options trading. Within this

framework, commodity exchanges exemplify a complex structure integral to contemporary economies.

The beginning of the capital advertise can be followed back to the Ottoman Empire, where Galata financiers shaped an affiliation in 1864. Although capital market activities began in Havyar Han, they did not receive official recognition until 1873-1874. In 1999, the institution was formally established and named the "Dersaadet Bond Exchange." It is noteworthy that on August 23, 1923, foreign nationals constituted a significant majority of the exchange's membership until the introduction of new regulations. Subsequently, the stock exchange was reorganized into two categories: principal and honorary members, with a requirement that principal members be Turkish nationals. This control was went with by a few extra orders, underscoring the government's devotion to the significance of the stock showcase inside the system of the Republic (Borsa Rehberi, 1992).

In the 16th century, the Ottoman Empire began to face a series of challenges that would ultimately contribute to its decline, a trend that would become increasingly evident in the 20th century. While the empire possessed the potential for robust economic activities, these were frequently obstructed by social irregularities. Nevertheless, the rise of a modern economic system in Western Europe fostered enhanced commercial and economic exchanges between select European nations and the Ottoman Empire. These interactions, however, were significantly affected by internal conflicts within the empire, including taxation issues, political instability, and inadequacies in legal structures. As a result, the expected economic growth did not occur to the anticipated degree. Western powers took advantage of these internal difficulties to advance their own interests, beginning in the 16th century, when they secured various privileges through agreements known as "Capitulations."

The issuance of debt securities following the Crimean War in 1854 was succeeded by a range of government bonds from foreign enterprises operating within the empire, particularly in industries such as railways, electricity, gas, and tram services. After the establishment of the Constitutional Monarchy, the trading of bonds and stocks from domestic companies began in the market. In 1864, bankers in Galata formed an association that laid the foundation for the creation of the "Dersaadet Bond Exchange" in Istanbul in 1866, with backing from Turkey's creditor states (Sermaye Piyasası ve Borsa Temel Bilgiler Kılavuzu, 1993). This exchange commenced operations and was officially listed on the stock exchange, with a commissioner appointed by the Ministry of Finance overseeing its functions. Both

domestic and foreign bonds and shares were actively traded on this platform, utilizing telegraphic communication to facilitate transactions with European stock exchanges. Notably, Panama bonds and Suez Canal stocks were frequently brokered by foreign bankers and purchased by wealthy Turkish investors.

The rise of the industrial revolution within the Western world at the conclusion of the 18th century started significant changes. This revolution, coupled with European colonial pursuits, enabled the growth of large corporations and their shift towards public ownership. As a result, foreign traders and minority communities within the Ottoman Empire began to invest in these enterprises by purchasing shares and bonds, indicating an increasing interest in stock market investments. In this milieu, the latter part of the 19th century saw the empire striving to adapt its legal, administrative, and economic systems to align with Western standards. The influx of foreign capital contributed to the development of a market within the empire, with Galata bankers playing a crucial role in this transformation. Influenced by the Tanzimat reforms, the Turkish population also started to participate in these financial advancements.

The stock exchange in this emerging market was established in 1906 and underwent a significant transformation in 1999, when it was renamed the "Esham and Bonds Exchange" following the introduction of a regulatory framework. This institution continued to function throughout the Republican era. In 1922, a new regulation was introduced, which established the groundwork for the modern stock exchange system, incorporating essential provisions. On February 17, 1923, just before the official proclamation of the Republic, Mustafa Kemal delivered a speech at the opening of the Turkish Economic Congress in Izmir (Tokgöz, 2018). In this address, he proposed progressive economic ideas and models that continue to hold relevance for developing nations. During the 1950s, Western economists advising underdeveloped countries articulated fundamental principles and concepts of "Development Economics," reflecting themes previously addressed by Gazi in his speeches.

Securities and Exchange Law No. 1447, enacted in 1929, along with Regulation No. 8172 issued in the same year, facilitated the restructuring of the existing stock exchange, which subsequently commenced operations under the title "Securities Exchange" in Istanbul. However, a decree in 1938 resulted in the closure of the Istanbul Stock Exchange, which was then relocated to Ankara and reestablished as the "Bond Exchange," incorporating foreign exchange and shares. The drawbacks of this relocation soon became evident, leading

to the stock exchange's return to Istanbul in 1941 (Sermaye Piyasası ve Borsa Temel Bilgiler Kılavuzu, 1993).

Since the launch of the liberalization program in 1980, capital movements in Turkey have experienced considerable transformation. Essential legal frameworks have been instituted to support this liberalization initiative (Artun, 1997). Among these, Turkish Decree No. 32, which addresses the Protection of the Value of Currency, contains several provisions relevant to the getting free of financial circulations. With respect to degree of liberalization and the FX regime, an agreement between Turkey and the International Monetary Fund in April 1990 facilitated transition from Article 8 to Article 8, thereby endorsing the convertibility of the Turkish Lira (TL). These regulatory developments signify a significant transition for Turkey, which had previously maintained exchange controls for a prolonged period.

The enactment of the Capital Markets Law No. 2499 in Turkey in the year of 1981, July represented a pivotal restructuring of the capital market, which significantly altered the organization and operations of the Stock Exchange. This legislation gave rise to the abrogation of the Securities and Exchange Law of 1929, identified as Law No. 1447, and was later succeeded by the Securities Act, which was established on October 6, 1983, through Decree Law No. 91. Following the implementation of this Decree Law, the "Regulation on the Establishment and Development of Securities Exchanges" was issued a year later, on October 6, 1984. Additionally, on December 18, 1985, the regulation pertaining to the Istanbul Stock Exchange (ISE) was published in the Official Gazette No. 18962, which became effective and enabled the stock exchange to begin its operations on December 26, 1985 (İMKB, 1990).

The introduction of the Capital Markets Law in 1981 marked a pivotal moment in the evolution of Türkiye's capital markets, leading to the creation of the Capital Markets Board. This board authorized the essential lawful structure for long term financial instrument environment and progressively implemented necessary structural reforms. In 1983, the formal establishment of stock exchanges was achieved, accompanied by detailed regulations that governed their functioning and organization, with the Capital Markets Board tasked with oversight and auditing duties (Boratav, 1984). The first organized stock exchange in Turkey commenced operations in early 1986. A notable rebranding took place on April 4, 2013,

when the Stock Exchange of Istanbul was rebranded Stock Exchange Istanbul A.Ş., resulting in a change of its abbreviation from 'ISE' to 'BIST'.

On February 19, 2020, the BIST share indices experienced a significant alteration with the removal of two zeros. In response to this adjustment, the divisor values of the impacted indices were multiplied by 100 to establish the new index values, reflecting the zero removal. Furthermore, the index values calculated prior to this modification were divided by 100 to ensure that both the initial and historical index values corresponded with their respective starting points (BIST, 2020).



3. LITERATURE REVIEW

Monetary policy refers to a collection of strategies, tools, and measures aimed at impacting various economic instruments like balance of payments, investment activities, the real economy, economic growth, and other macroeconomic indicators, all within the context of a nation's monetary framework while taking into account current trends. The refinement of these policies is essential for ensuring the stability of macroeconomy and finance.

Within the setting of international banking, it is broadly recognized that the execution of money related arrangement falls beneath the domain of the nation's official money related specialist, particularly the monetary policymakers. Monetary policymaker straightforwardly impacts adjust sheets of financial institutions through arrangement its financial instruments, which subsequently modifies the liquidity within the managing an account division. This modification, enabled by the credit and money multiplier, has a straightforward effect on reserve money, the total money supply, the real economy, financial markets, and investment activities.

The application of monetary policy tools has been thoroughly examined by economists, yielding important insights and practical guidance in economic literature. Notably, M. Friedman contends which monetary policymaker has sufficient authority of managing the cash quantity, while also arguing that inflation is not a phenomenon shaped by multiple factors. This viewpoint is based on the monetary policymaker's capacity to impact cash quantity and intrerest rates along monetary policy implementations and alterations to the decrease rate. Particularly, once monetary policymaker secures financial instruments within the financial environment, it leads an increment within the saves and monetary base of the managing an account framework, subsequently increasing the money supply and bringing down short-term interest rates.

In current financial surrounding, a considerable community portion cooperates with financial environment, either straightforward or not. On a daily basis, both individual and institutional investors, including mutual fund managers and insurance company representatives, invest capital in a variety of stocks. As a result, it is crucial for investors to evaluate the expected returns on different stocks alongside the risks involved to make well-informed decisions about buying or selling these assets.

While macroeconomists have thoroughly analyzed the effects of many financial actions on industries, the finance literature is largely neglected the network among long term investment prices and financial action. Interplay among financial action and security transaction is critical, as accommodative monetary policy can bolster economical strength. Moreover, experimental works suggest that extensive financial actions can be a favorable effect for stock market performance.

On the other hand, companies aiming to raise capital through the issuance of new securities must have a comprehensive understanding of how to price these securities effectively. This research endeavor seeks to explore the decision-making processes of equity market investors as they allocate their investment capital among different stocks. Essentially, it investigates how these investors determine which stocks to buy or sell to create an optimal portfolio that maximizes returns while minimizing associated risks.

Capital markets are a crucial component of the financial system, significantly contributing to a nation's economic growth. In contrast, monetary policy involves a set of strategies arranged for managing cash quantity and loan, as well as modifying interest rates, via intention in affecting whole financial performance. Steady state research offers many assumptions that elucidate relationship among the stock market and financial action, as evidenced via various financial indicators. It is generally acknowledged that, within the context of monetary policy transmission mechanisms, a reverse financial action typically gives direction to a decline in stock prices, during an accommodative financial action is linked for an increase in stock prices.

Traditionally, financial action's main aim is to achieve price endurance while fostering maximum production and hiring levels for the financial environment. Central banks strive for meeting aim by manipulating different financial action elements. Financial action impact on so-called real economy operates through a comprehensive network of financial markets, which includes the equity market. Indeed, financial action significantly influences lenders' resource allocation decisions, impact ultimately extends to industry.

Literature's main part extensively examines the interplay between the stock market and economic activity, highlighting various macroeconomic factors. Specific channels of asset prices are integral to the transmission mechanisms of financial action. Transmission mechanism generally accepted financial action tends for exerting downward influence on

stock prices, while expansionary financial action is associated with an upward influence. This perspective is reinforced by frameworks such as Tobin's q theory and Modigliani's wealth impact model. Tobin's q theory posits a positive relationship between the cash quantity and stock prices. In contrast, Modigliani and Mishkin contend reductions in interest rates lead to an increase in stock prices, subsequently fostering business investment. Under typical circumstances, a low-interest-rate environment is expected to draw greater capital into the stock market in anticipation of higher returns, whereas a high-interest-rate environment is likely to promote increased savings in financial institutions. Fama and Schwert investigate the connection between stock returns and Treasury bill rates, uncovering negative slope coefficients in their regressions of stock returns against Treasury bill rates. While central banks possess the ability to influence interest rates, they also impact inflation expectations. Notably, inflation is positively correlated with interest rates and negatively correlated with stock prices. Booth and Booth utilize two key variables to elucidate the impact of financial action on stock and bond returns: the discount rate and the federal funds rate. Their research indicates a contractionary financial action is linked to a decline in the monthly returns of both large and small portfolios of stocks and bonds. Nata (1995) explores the interplay between stock prices and various macroeconomic factors, including cash quantity, inflation, industrial production indices, exchange rates, and interest rates within the Tokyo Stock Market context. The study employs a Vector Error Correction Model, which indicates a generally positive correlation among the majority of these variables, with the exception of inflation, where the relationship between interest rates and stock prices exhibits variability. In a related investigation, Hasan and Tariq (2009) analyze the long-term dynamics between equity prices and monetary variables, specifically focusing on cash quantity and foreign exchange rates, by applying cointegration tests, Granger causality assessments, and impulse response analyses.

Financial action in any nation aims to achieve a variety of objectives can be articulated through macroeconomic indicators such as employment levels, cash quantity, inflation rates, real output, and exchange rates. Certain macroeconomic factors, including the central bank's discount rate, may exert indirect influences on the financial landscape via the action transmission mechanism. In the context of stock valuation, it is commonly posited stock prices are reflective of future expectations. Central banks play a crucial role in establishing both the current and anticipated future real interest rates, which in turn impact household consumption and saving behaviors over time. The discount rate serves as a pivotal link

between financial action and the stock market, particularly concerning anticipated future interest rate fluctuations. Empirical findings indicate both dovish and hawkish monetary policies have significant impacts on current and prospective stock returns. The prevailing consensus in financial literature suggests contractionary financial action correlates with declining stock prices, while expansionary action is associated with rising stock prices. Furthermore, alterations in financial action are believed to influence forecasts regarding interest rates, the cost of equity capital, and expectations surrounding corporate profitability. A fundamental assumption is an increase in interest rates resulting from contractionary financial action would compel investors to allocate more resources to the stock market. Research by Bernanke and Gertler highlights financial action impacts external financing beyond just interest rates, thereby reinforcing the concept of the credit channel within the monetary transmission framework. Nonetheless, banks remain the primary conduits through which financial action shocks are transmitted to the real economy. Mbutor's investigation into the financial action transmission channel further elucidates this dynamic. The analysis employs GDP as the dependent variable, with explanatory variables encompass the consumer price index, serving as an indicator of domestic prices, and treasury bills, which act as a proxy for the minimum rediscount rate. Additionally, the broad cash quantity (M2), the exchange rate, the total volume of credit, and the maximum interest rate are included as proxies for the cost of loans. The findings of this research indicate a positive adjustment of 0.25 percentage points in the rediscount rate will leave the volume of credit provided by banks unchanged during the initial period. Mbutor emphasizes loan agreements typically require modifications. However, the study reveals an increase in the minimum rediscount rate (MRR) leads to a contraction in the credit extended by banks to their clients. Furthermore, the exchange rate emerges as a significant element within the financial action transmission framework. Kim posits corporate profitability and stock prices are pivotal in influencing the exchange rate. Mukherjee (1995) examined the interplay between stock prices and various macroeconomic indicators, including the exchange rate, cash quantity, industrial production index, inflation, and interest rates. The findings suggest a positive correlation among all variables, with the exception of inflation and interest rates. Ibrahim (2003), similar to Mukherjee, investigated the long-term relationship and dynamic interactions between the stock market and various economic indicators, including real output, the aggregate price level, the cash quantity, and the exchange rate. The findings indicate a positive correlation between the stock price index and economic factors such as the cash quantity, consumer price index, and industrial production. Conversely, a negative

correlation was identified between the stock price index and exchange rates. Tsoukalas employed the Vector Autoregressive (VAR) model to analyze the relationship between stock prices and macroeconomic variables, including exchange rates, industrial production, cash quantity, and consumer prices, revealing a strong association among these factors. Thorbecke explored the relationship between financial action and stock prices through various approaches, with the VAR model being a primary method incorporates macroeconomic variables such as stock returns, output growth, inflation, and the federal funds rate. This research demonstrated shocks in financial action significantly influence firms' access to credit. In contrast, Boschen and Mill utilized a different methodology to assess financial action's impact, indicating the VAR model suggests a substantial positive impact of financial action on monthly stock returns. Patelis focused on the role of financial action in determining stock returns, employing long-horizon regression as the methodology, which incorporates two distinct sets of variables: financial action and financial variables. The study concluded accurate predictions of future returns can be derived from financial action indicators. Cassola and Morana (2006) conducted an analysis utilizing a VAR model focused on the euro area. This model incorporates variables such as real GDP, inflation, real M3 balances, short-term interest rates, bond yields, and real stock prices, aiming to investigate the transmission mechanism of financial action. The findings of Cassola and Morana align with those of Jensen and Johnson, who established a connection between financial action changes and stock returns. Their research indicates long-term stock returns resulting from reductions in the discount rate are not only higher but also exhibit less volatility compared to returns associated with increases in interest rates. Jensen and Johnson employed the discount rate as a representative measure of "financial action," given its impactiveness as an indicator of financial action shifts. Some scholars argue discrete adjustments in action interest rates influence the forecasts of market-determined interest rates and the cost of equity. Furthermore, Waud noted alterations in the discount rate significantly impact expectations regarding corporate profitability. In a subsequent investigation, Jensen examines an extension of the Fama and French model by positing financial action has a significant impact on the returns required by investors. The findings indicate stock returns, which exhibit predictable variations, are influenced by both financial action and prevailing business conditions, with anticipated stock returns being greater during periods of tight financial action compared to those of loose financial action. Inflation, regarded as the most critical monetary factor, reflects the increase in the cash quantity relative to output. The underperformance of the stock market following inflationary periods

has been extensively analyzed in financial literature. The United States Presidential Task Force identified a negative correlation between real stock returns and inflation. Prior to this finding, research conducted by Nelson, Fama, and Schwert highlighted the adverse relationship between stock returns and both actual and anticipated inflation. Two primary perspectives have emerged to elucidate this anomaly. The first perspective, known as the tax impact, suggests the depreciation and valuation of inventories during inflationary periods, coupled with the fact stock prices do not align with inflation, results from increased corporate tax obligations, ultimately leading to a reduction in after-tax profits. In this context, inflation can be viewed as a driving force behind fluctuations in stock prices. The second perspective, referred to as the proxy impact, offers an alternative explanation for the inverse relationship observed between real stock returns and inflation. There are two primary assumptions: the first posits a positive correlation between cyclical variations in profits and output growth, while the second asserts financial action operates in a countercyclical manner. Eugene Fama suggests there exists an inverse relationship in money demand, characterized by current inflation levels and anticipated future growth in national productivity. A reduction in expected future output growth corresponds with a decrease in present stock returns, accompanied by a rise in current inflation. This research provided Fama with evidence supporting a direct link between stock returns and inflation. In contrast, Benderly and Zwick contend the relationship is more accurately framed as one between inflation and anticipated output growth. Furthermore, Geske and Roll (1983) expanded upon Fama's perspective, indicating reverse causality plays a significant role in the inverse relationship between stock returns and inflation. In the context of the study, an increase in the deficit due to a downturn in production results in a rise in the national debt. While Kaul arrived at conclusions similar to those of Geske and Roll regarding the stock returns-inflation relationship, his analysis did not comprehensively address the issue of debt monetization. Nonetheless, Zhao (1999) identified a notable negative correlation between stock prices and inflation, which closely resembles the relationship between output and stock prices. Udegbumam and Eriki (2001) demonstrated inflation exerts a considerable adverse impact on stock prices. Their research paper presented compelling evidence of a robust correlation between stock prices and various economic indicators, including gross domestic product (GDP), interest rates, cash quantity, and financial regulation.

Financial action measures are widely recognized for their short-term impacts on stock prices; however, many specialists argue the overarching action framework established by

monetary authorities can have profound implications for asset market performance over the long term. Some specialists suggest monetary policies marked by persistent or volatile inflation can lead to instability in financial markets. In contrast, policies focused on price level stabilization are typically viewed as reducing the risk of asset price bubbles. Nevertheless, a faction of specialists posits a strong commitment to maintaining low inflation may unintentionally create imbalances facilitate the emergence of asset price bubbles by nurturing overly optimistic expectations about future economic growth.

Research has shown both financial action and the associated uncertainty have a substantial impact on asset prices. Boyle and Peterson (1995) illustrate the relationship between financial action uncertainty and asset prices by indicating, in the absence of a monetary sector and capital formation, total dividends align with real output. However, when the demand for money is considered, total real dividends begin to deviate from real output, with dividends increasingly influenced by the inflation rate. As a result, Boyle and Peterson (1995) contend stock prices are impacted by variations in macroeconomic uncertainty, not only because of changes in the required rate of return on equities but also due to the influence of these variations on anticipated future dividends. It is essential to understand the impact of the latter is dependent on the prevailing financial action.

In the realm of international economic interactions, recent observations suggest central banks are adopting easing strategies in anticipation of forthcoming phases of diminished economic growth or recession. As a result, there is a tendency for both the expected returns and the actual returns to rise on average.

Grasping the influence of financial action on financial markets, especially the equity sector, is essential for understanding its broader implications for the economy. Given the pronounced responsiveness of stock prices to economic fluctuations and their inherent volatility, this responsiveness can lead to significant variations in stock valuations, which may contribute to the formation of market bubbles and negatively impact the overall economic landscape.

Rahman and Uddin investigate the interplay between stock prices and exchange rates, employing Johansen cointegration and Granger causality tests. Their findings indicate an absence of both cointegration and random relationships between these financial variables. In contrast, Alam and Udder focus on the linear association between stock prices and financial

action, particularly examining how fluctuations in interest rates impact share prices. Their research reveals a significantly adverse impact of financial action on stock prices. Additionally, Quadir (2013) explores the connections among macroeconomic indicators, including the Treasury bill interest rate, industrial production, and stock market returns. Utilizing the autoregressive integrated moving average (ARIMA) model, Quadir concludes positive correlation exists between the Treasury bill interest rate and industrial production as mediated by stock market returns. Furthermore, Saidjada (2013) employs the Johansen cointegration method alongside the Vector Error Correction (VEC) model to analyze the relationship between financial action and stock prices. This study incorporates reserve money and the 91-day Treasury bill interest rate, revealing a negative correlation between stock prices and the Treasury bill, while indicating no significant relationship between stock prices and the broader reserve cash quantity. Theoretical frameworks elucidating the relationships among interest rates, exchange rates, and stock returns are abundant. Kasman (2011) highlights interest rate risk may serve as an additional market factor within Merton's (1973) Intertemporal Capital Asset Pricing Model (ICAPM). Investors must consider the necessity for additional compensation due to the risks posed by fluctuations in interest rates. Furthermore, stock market volatility is likely to react to these interest rate changes. The theoretical framework elucidates the interplay among interest rates, exchange rates, and stock returns is supported by several models. Kasman (2011) posits interest rate risk may serve as an additional market factor within Merton's (1973) intertemporal capital asset pricing model (ICAPM). This assertion implies investors require extra compensation for the risks linked to interest rate variations.

Financial action shocks are acknowledged as pivotal elements shape investor sentiment. Participants in equity markets frequently display an increased responsiveness to these monetary fluctuations, which can result in varying degrees of optimism or pessimism contingent upon alterations in financial action (Bernanke & Kuttner, 2005; Kurov, 2010). Bernanke (1983) introduces the concept of real options theory, suggesting investment demand declines amid uncertainty, leading to a deterioration in investor sentiment. This situation arises as investors tend to hold onto cash while they await more advantageous investment prospects, thereby creating an atmosphere of diminished investor confidence. Lutz (2015) illustrates investors closely monitor financial action announcements, which have a profound impact on financial markets. Additionally, Lutz (2015) contends financial action shocks serve as a fundamental factor influencing investor sentiment within both

traditional and non-traditional financial action contexts. In settings marked by high uncertainty, pessimistic tendencies often overshadow optimistic ones, as investors focus on maximizing their minimum utility (Schröder, 2011).

This body of research holds practical implications for portfolio managers and is also relevant to central bankers. Various proposed mechanisms of financial action transmission link changes in central bank action to the stock market, which in turn impacts overall economic output through consumer spending and investment behaviors. Specifically, one such mechanism suggests decrease in interest rates, which are not influenced by market dynamics, boosts stock prices and, as a result, enhances financial wealth and lifetime resources, ultimately leading to an increase in consumption driven by the wealth impact.

There exists substantial evidence indicating a direct correlation between financial action and stock prices, alongside its capacity to impact economic growth and inflation (Suhaibu et al., 2017; Iacoviello & Minetti, 2008). Conversely, exchange rates exert a direct influence on companies by impacting both input and output prices. An increase in the exchange rate typically leads to a decline in sales and profits for exporting firms, which in turn results in a decrease in their stock prices. Conversely, importing firms experience an uptick in sales and profits, leading to an increase in their stock prices. This dynamic is reversed when exchange rates decline. Despite ongoing discussions regarding the appropriateness of addressing deviations in asset prices, particularly stock prices, it is evident financial action does respond in practice, as confirmed by Khan and Saha (2017). The relationship between financial action and stock market dynamics is inherently reciprocal. For participants in the stock market, variations in financial action variables significantly influence their investment strategies and risk management practices. Conversely, it is crucial for central banks to comprehend the interplay between financial action and asset prices, a necessity underscored by the global financial crisis of 2008-2009. A comprehensive understanding is essential for central bankers to impactively impact stock prices, as well as to assess their implications for inflation and financial stability (Wang & Mayes, 2012).

Stock prices play a pivotal role in shaping financial conditions across various markets through multiple channels. The overarching aim is to extend the influence of financial action beyond traditional macroeconomic indicators such as economic growth, inflation, exchange rates, and unemployment. Stock prices are among the most scrutinized asset classes, often

exhibiting heightened sensitivity to economic fluctuations due to their susceptibility to a wide array of factors (Wang & Mayes, 2012). The implications of these findings are vital for the formulation of financial action and the assessment of investor portfolios. The design of financial action and the strategies employed by investors are of paramount importance. Central bank officials and market analysts should meticulously analyze the connections between financial action variables and stock price movements to mitigate the impacts of action adjustments. Central bank leaders bear a degree of responsibility in addressing issues related to stock price volatility, extending beyond mere reactions to changes in interest and exchange rates. While both reactive and proactive perspectives are beneficial, it is evident financial action can significantly impact stock market valuations. Further investigations reveal financial action possesses the capacity to influence both economic growth and inflation.

In the analysis of investment expenditures, an alternative structural model posits reduction in interest rates leads to an increase in stock prices. This appreciation in stock prices, in turn, encourages higher levels of business investment, as evidenced by Tobin's q , which represents the ratio of a firm's market equity to its book value. In other words, rising stock prices contribute to a decrease in stock yields, which subsequently lowers the costs associated with financing investments through equity issuance.

Specialists often associate restrictive or expansive monetary policies with corresponding increases or decreases in future interest rates, as well as declines or rises in levels of economic activity. Financial specialists investigate various elements clarify how changes in the discount rate impact stock returns. For example, specific adjustments to action rates can influence expectations regarding market-driven interest rates and the cost of equity capital. Furthermore, alterations in the discount rate may also impact anticipations related to corporate profitability.

The exchange rate constitutes a significant factor influencing both the input and output prices of firms. For instance, an increase in the exchange rate typically results in a decline in the sales and profits of export-oriented companies, which in turn is likely to cause a decrease in their stock prices. Conversely, companies rely on imports may experience an uptick in sales and profits, leading to an appreciation in their stock prices. This dynamic aligns with the conventional understanding of the impacts of exchange rate devaluation. Exchange rates represent the value of foreign currencies, and fluctuations in these rates are

closely linked to variations in stock prices. In the context of goods markets, an appreciation of the currency can adversely impact the share prices of exporting firms while benefiting those of importing firms. Research conducted by Adam and Nguyen (2019), Roubaud and Aroui (2018), and Manu and Bhaskar (2018) has demonstrated a significant correlation between exchange rates and stock markets in both emerging and developed economies.

Expectations are important for shaping financial action and can significantly influence the market valuation of financial instruments. Two primary frameworks exist to elucidate the function of expectations within financial markets. The first framework, articulated by Brown and Rozeff (1979), is the adaptive expectations model, which relies on historical data to explain the market value of financial instruments. The second framework, rooted in the rational expectations theory proposed by Muth (1961) and Lucas (1975), posits both past and present information are essential for comprehending market behavior. According to the adaptive expectations model, investors may not react immediately to changes in expansionary financial action, instead waiting until inflation begins to rise. In contrast, the rational expectations model suggests investors would promptly respond to an increase in the inflation rate.

An alternative theoretical framework suggests decrease in interest rates is likely to boost stock prices, which subsequently reduces the likelihood of financial distress. This impact, in turn, fosters an increase in consumer expenditure on durable goods as worries about consumer liquidity diminish.

The foundational efficient-markets present-value model posits stock prices are fundamentally linked to the present value of expected future dividends. This implies variations in stock prices arise from changes in anticipated dividends and/or the discount rate. Since stocks signify ownership in physical assets, the concept of monetary neutrality indicates long-term financial action should not impact real stock prices. However, in the short run, financial action interventions can influence stock prices by altering the expected dividends, the discount rate, or the equity premium.

Early models investigating the impact of financial action on asset prices primarily focused on how changes in liquidity influence the demand for various assets within the private sector's investment portfolio. When action actions enhance liquidity, asset prices generally rise while returns decline, as households adjust their portfolios in response to an

increase in central bank liabilities. Conversely, other theoretical approaches have highlighted the influence of action on the cost of capital, which subsequently impacts the expected growth rates of corporate dividends or earnings.

Numerous monetary indicators are utilized to elucidate the relation among alterations in financial action and the dynamics of economic markets. Key determinants include the maturity of the market under consideration and the specific instruments employed to impactuate changes in financial action. The interplay between financial action and stock prices is reciprocal. The execution of financial action holds significant implications for stock market participants, particularly concerning their investment willingness and risk appetite. For central banks, a critical aspect of comprehending the relationship between financial action and asset prices is the global financial crisis of 2009-2010. It is essential for central banks to grasp both the impacts on stock prices and entanglements for inflation and financial strength.

4. DATA AND METHODOLOGY

The chapter delineates the data and methodology employed in the study. Subsequent sections contribute a detailed description of the variables involved. The temporal scope of this research spans from December 2006 to February 2024, with the limitation of the data being the weekly repo figures, which commenced publication in the final month of 2006. The ensuing portion of this section introduces the econometric techniques utilized in the analysis, along with a rationale for the selection of these specific methods.

4.1. Data

4.1.1. Introduction of Variables and Data Sources

The research utilizes monthly data from Türkiye to examine the impact of the financial action rate on the stock prices of the İstanbul exchange, specifically focusing on the BİST100 index. The analysis incorporates various economic indicators, including the M3 money supply, weekly repo rate, 3 months treasury bill rate, and the USDTRY exchange rate. A regression analysis is employed to distinguish the relationships among these variables.

The data is sourced from the Central Bank of the Republic of Türkiye (CBRT), the Turkish Statistical Institute (TURKSTAT), and Refinitiv Terminal. Table 1 demonstrates a comprehensive analysis of the abbreviations, definitions, frequencies, sources for all variables involved.

Table 1. Data Definition

Abbreviation	Definition	Frequency	Source
bist	BİST100 Index	Monthly	Refinitiv
haz	Treasury 3 Month Bill Rate	Monthly	Refinitiv
m3	M3 Cash quantity	Monthly	CBRT
repo	Weekly Repo Rate	Monthly	CBRT
fx	Exchange Rate	Monthly	Refinitiv

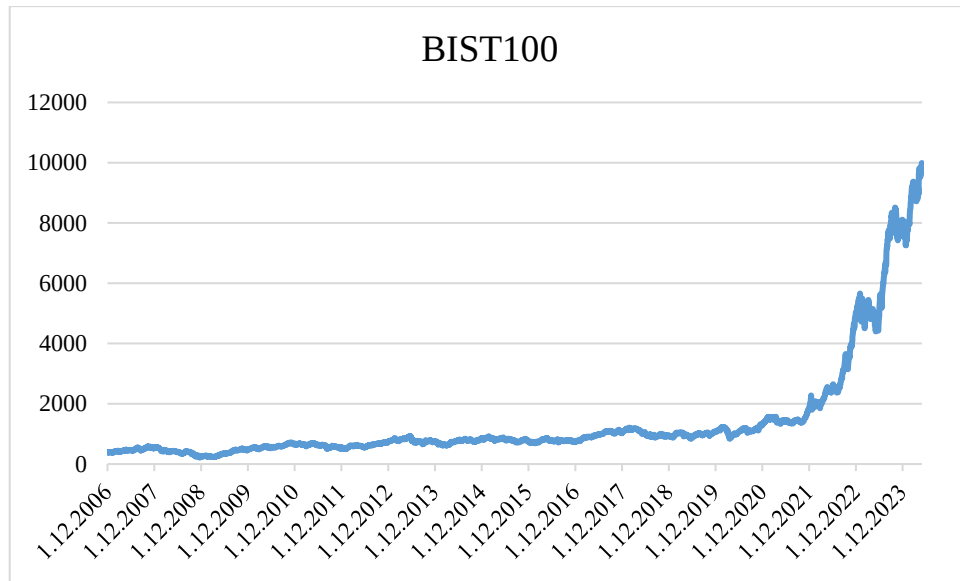


Figure 2. BIST100 Index

The graph illustrates the BIST100 Index, which serves as a primary indicator of the Turkish economy. This index comprises companies significantly influence and reflect the financial landscape. The data presented spans from 2006 to 2024. Initially, from the start of the graph until late 2021, the index exhibited relative stability. The outbreak of the COVID-19 pandemic in 2019 prompted a global response to mitigate its economic repercussions. In response to these challenges, expansionary monetary policies were implemented, leading to an increase in stock market indices. Following 2021, the BIST100 Index experienced a consistent upward trend. Although the impact of the COVID-19 pandemic has diminished somewhat, the index continues to rise, primarily driven by inflationary pressures.

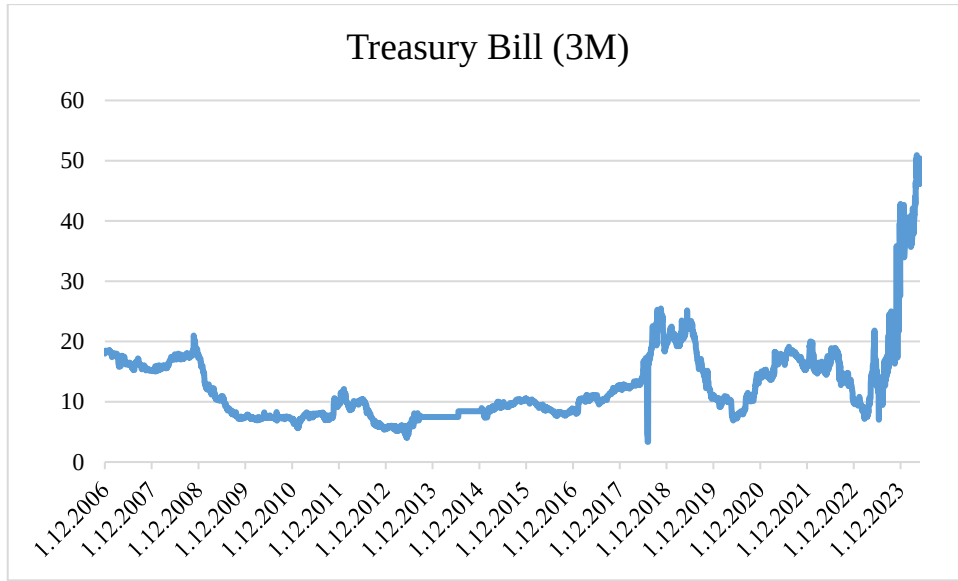


Figure 3. 3 months Treasury Bill Rate

In Türkiye, the treasury bond with the shortest maturity is the three-month bond; however, these bonds are not typically utilized in transactions or other financial activities. Instead, market participants tend to favor benchmark and long-term bonds. Throughout the period from 2006 to 2008, bond interest rates remained stable. Following 2008, there was a remarkable decrease in bond interest rates, primarily attributed to the global economic crisis of year. In response to this crisis, an expansionary financial action was implemented, leading to a general reduction in interest rates. Up until July 2018, the interest rate on three-month bonds exhibited minimal fluctuations, indicating a lack of volatility. However, a foreign exchange shock in 2018 resulted in an increase in bond interest rates. In an effort to address this shock, the central bank promptly raised the action interest rate, which subsequently contributed to a decrease in bond interest rates. Nevertheless, the persistent high inflation led to a sharp increase in bond interest rates.

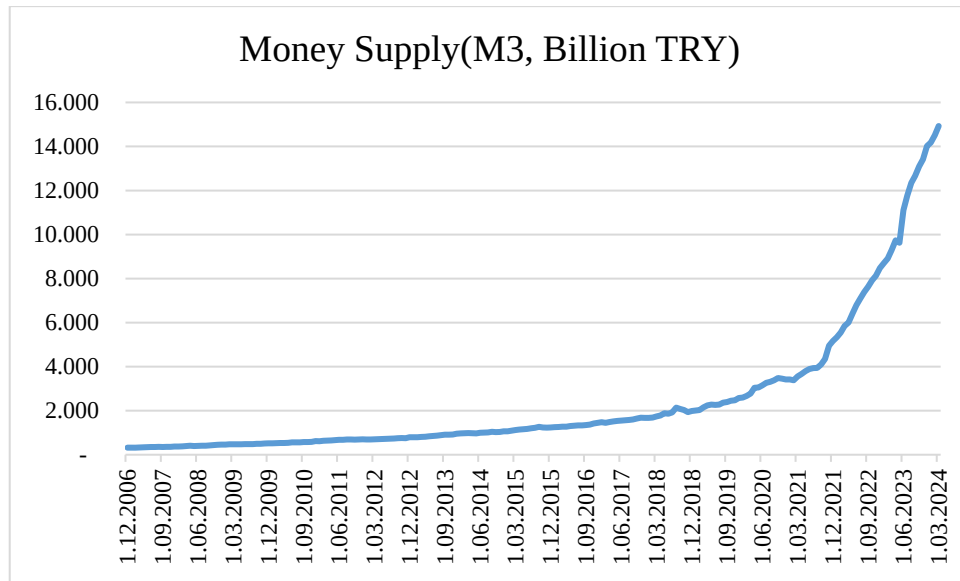


Figure 4. M3 Money Supply

In this study, the most comprehensive measure of money supply, M3, is employed for analysis. The M3 category encompasses M2, as well as money market funds and repurchase agreements, along with negotiable instruments issued by banks. The M3 money supply exhibited a consistent linear growth until the year 2021. Notably, the banking crisis of 2001, the global economic crisis of 2008, and the foreign exchange shock of 2018 did not significantly impact the overall money supply. Nevertheless, inflation plays a crucial role in determining the money supply levels. As inflation rates escalated, there was a corresponding and immediate increase in the cash quantity. Following 2021, the money supply experienced a rapid rise.

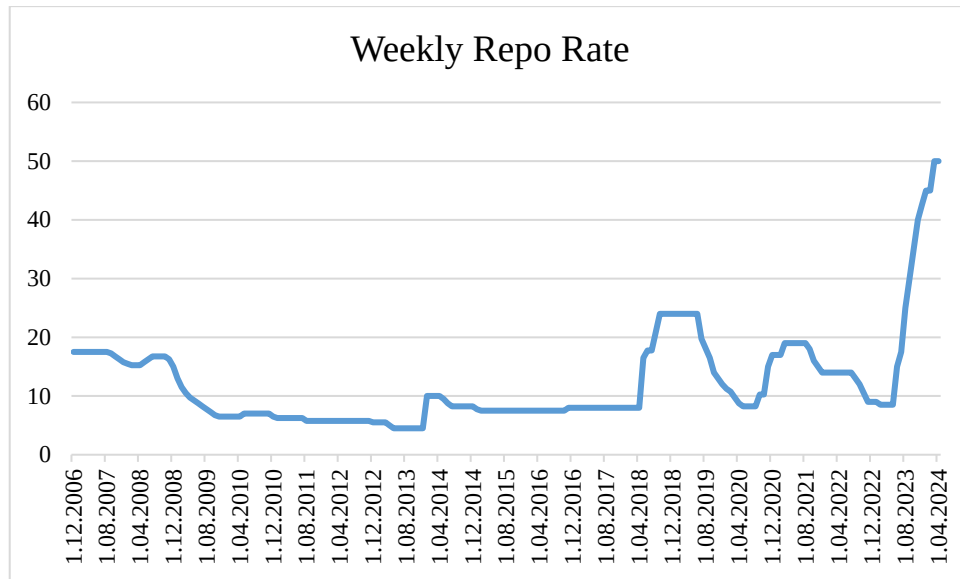


Figure 5. CBRT Weekly Repo Rate

Following the banking crisis of 2001, the central bank raised the financial action rate, which subsequently contributed to a reduction in the inflation rate. This initial increase in the action rate was followed by further adjustments. Due to enhanced financial stability, the weekly action rate remained relatively stable. Conversely, in 2018, the action rate was raised in direct response to a foreign exchange shock. This increase in the action rate persisted until late 2021, marking the beginning of a more accommodative financial action stance. In May 2023, the implementation of a stringent financial action led to a significant rise in the weekly action rate.

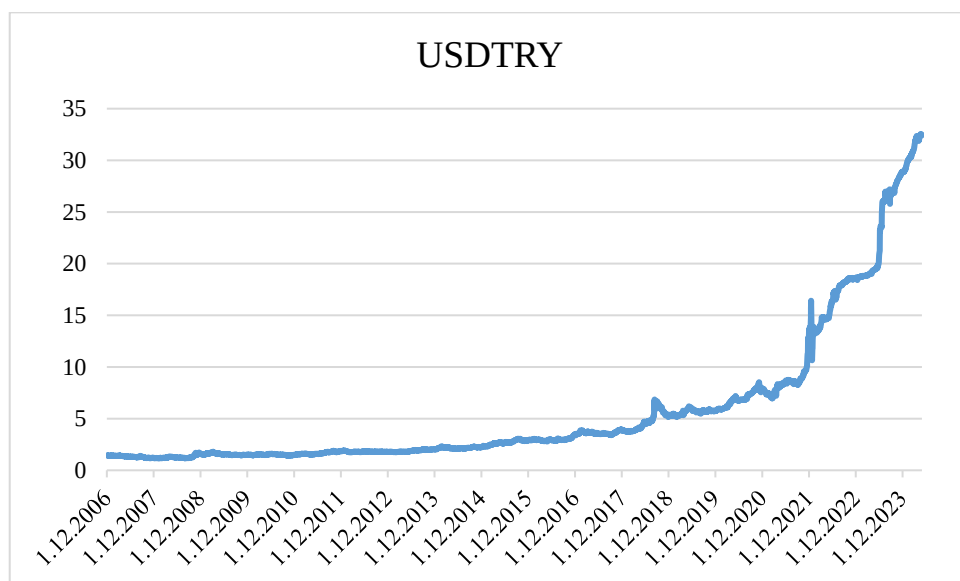


Figure 6. USDTRY Foreign Exchange Rate

In this study, the USDTRY exchange rate is analyzed. The accompanying graph illustrates the USDTRY rate remained relatively stable until late 2021. A notable increase in the USDTRY rate commenced in July 2018, attributed to a foreign exchange shock. Subsequently, a reduction in the financial action rate further contributed to the rise of the USDTRY. This escalation in the USDTRY rate was linked to a corresponding increase in the inflation rate. Following 2021, there was a significant and rapid increase in the foreign exchange rate.

Here is the statistics of all variables:

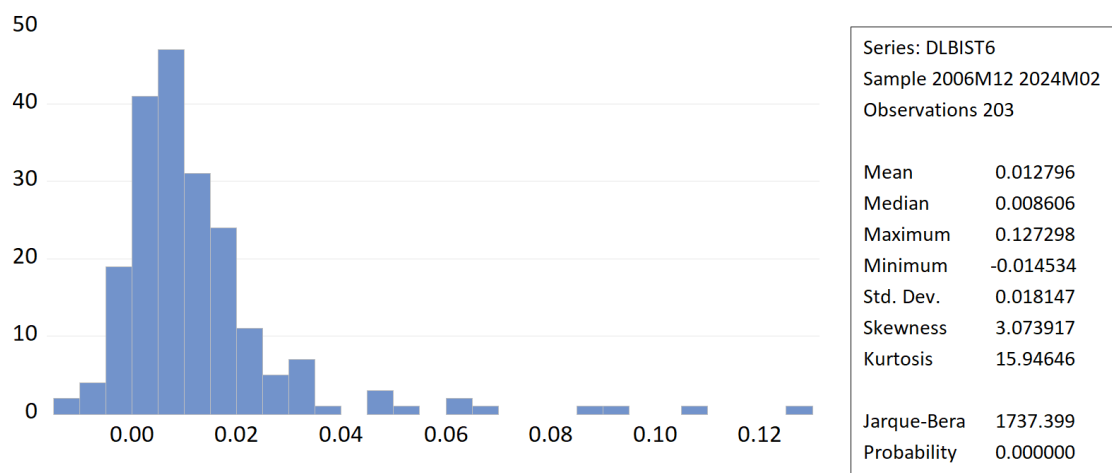


Figure 7. BIST 100 Index Statistics

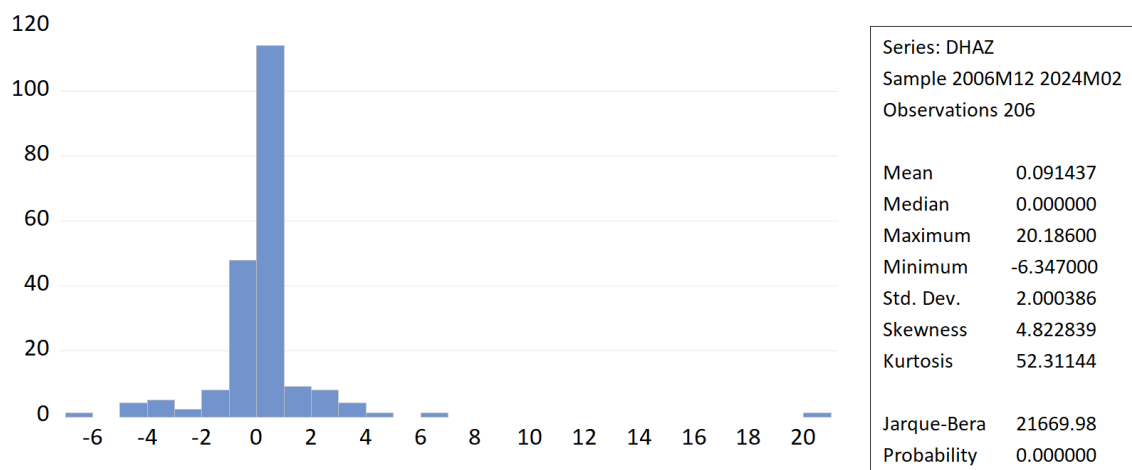


Figure 8. 3 Months Treasury Bond Bill Rate Statistics

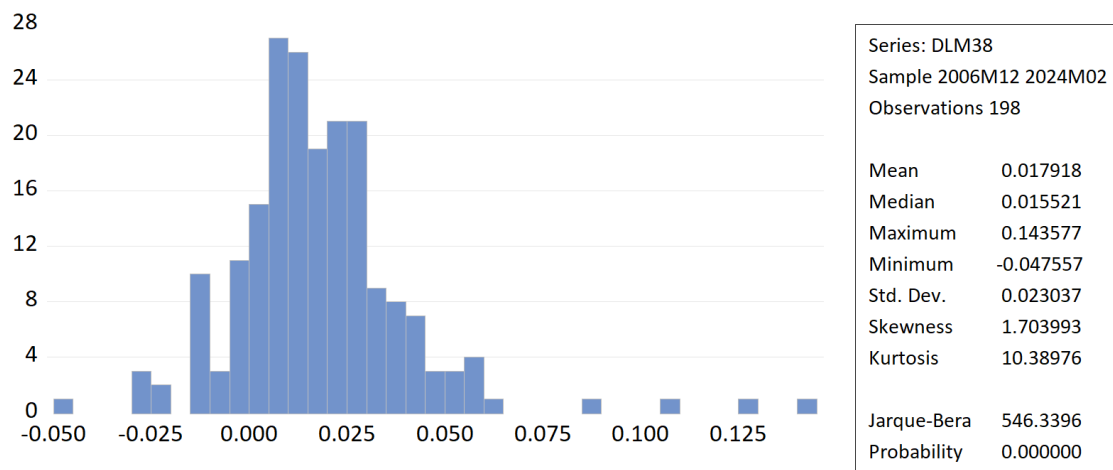


Figure 9. M3 Cash quantity Statistics

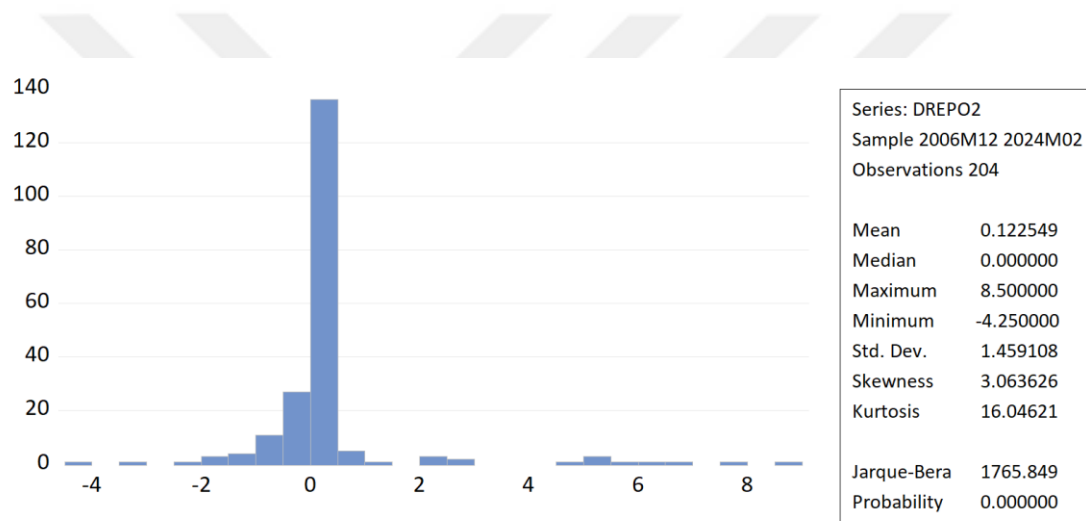


Figure 10. CBRT Weekly Repo Statistics

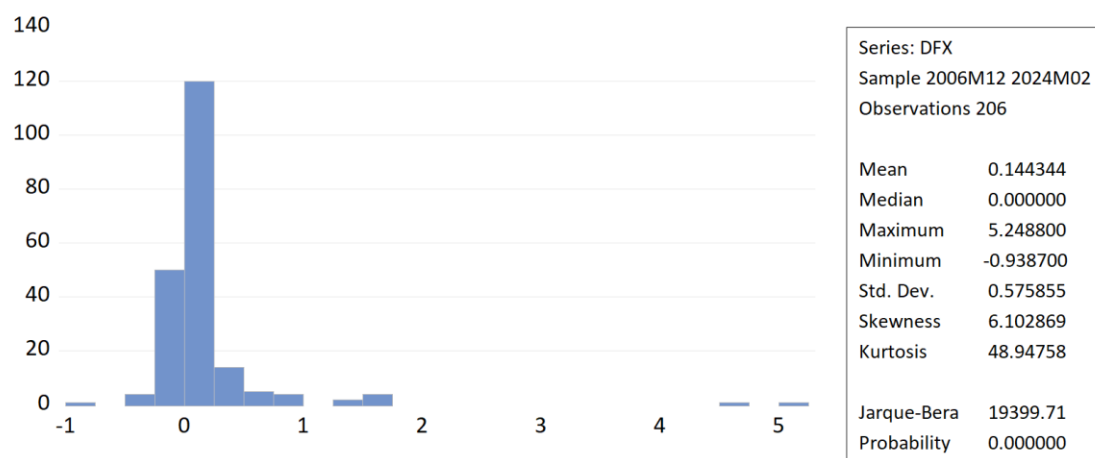


Figure 11. USDTRY Foreign Exchange Rate Statistics

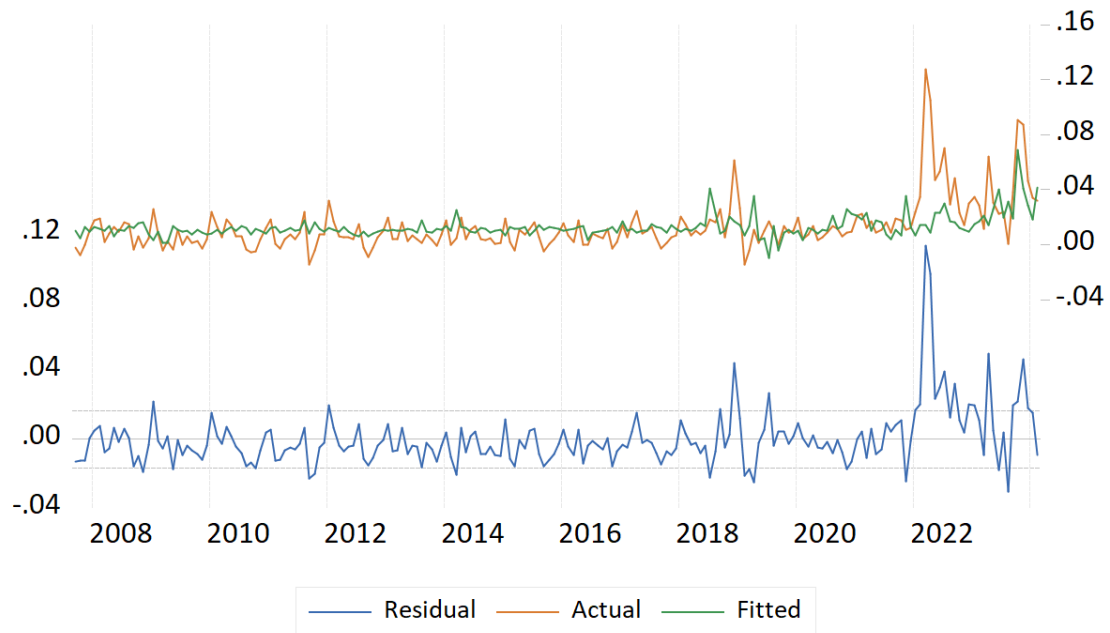


Figure 12. The Model Residuals

4.1.2. Multicollinearity Test

Multicollinearity is a statistical phenomenon occurs when predictor variables exhibit a strong or perfect correlation with one another. This condition can significantly impede the estimation of regression coefficients β and complicate their interpretation. Numerous studies utilizing regression models have neglected to evaluate the presence of multicollinearity among predictors, leading to erroneous estimates of the regression coefficients. This issue is regularly credited to the infringement of the suspicion illustrative factors are directly autonomous. In any case, fulfilling this suspicion does not essentially block the plausibility of surmised direct reliance among the informative factors, which can result in multicollinearity challenges. It is noteworthy the existing literature does not provide a clear and universally accepted definition of multicollinearity (Rockwell, 1975).

The theoretical framework delineates two extreme scenarios: Perfect Multicollinearity and the complete absence of Multicollinearity. A center guideline of relapse investigation is free factors consolidated within the demonstrate ought to not show a straight interrelationship. Moreover, two extra basic presumptions must be satisfied: the residuals created by the demonstrate ought to adjust to a ordinary conveyance with a cruel of zero and display consistent fluctuations, nearby the necessity autocorrelation among the residuals is truant (Oke, Akinkunmi, Etebefia, 2019). When independent variables are linearly

correlated, this condition is identified as multicollinearity. The existence of multicollinearity can result in substantial forecasting inaccuracies and hinder the assessment of the individual impacts of each variable within the model. In instances where two or more variables are perfectly linearly correlated, this condition is referred to as perfect multicollinearity. Nevertheless, in real-world applications, data typically exist along a continuum. Thus, multicollinearity should be perceived as a spectrum (Charemza, Deadman, 1997). While some level of multicollinearity may be almost unavoidable, the primary concern is to determine the point at which multicollinearity becomes harmful. The econometric literature generally asserts the constructs of predictor variables are not collinear within the population. Consequently, any multicollinearity detected in empirical datasets is viewed as a sample-specific phenomenon rather than an accurate representation of the underlying relationships in the population.

Multicollinearity adds a layer of intricacy to research outcomes, potentially obstructing researchers' ability to interpret findings impactively. This issue complicates the comprehension of results due to its influence on the magnitude of regression coefficients and the likelihood of increased standard errors, which can ultimately impact the statistical significance of these coefficients. Multicollinearity is characterized by a situation in which two or more indicator factors inside a different relapse system display a solid relationship. This condition can result in eccentric variances within the gauges of relapse coefficients in response to minor alterations within the demonstrate or dataset (Daoud, 2017). Whereas it does not diminish the by and large prescient control or unwavering quality of the demonstrate concerning the test information, it does influence the calculations including the subordinate and free factors of person indicators. A tall degree of multicollinearity may too hinder program applications from performing the fundamental framework reversal required for calculating regression coefficients, or it may lead to mistakes within the comes about of such reversals. In spite of the fact multicollinearity does not impact the by and large goodness of fit or prescient precision, it makes troubles when the objective is to assess the person commitments of each illustrative variable. Upon detecting multicollinearity, the most straightforward and impactive strategy is to collect and incorporate additional data (Croushore, Stark, 2001). Alternatively, various methods have been developed, including model respecification, biased estimation, and different techniques for variable selection.

In econometric research, multicollinearity, or collinearity, presents a challenge when the predictor variables in a regression model exhibit linear dependence. The Gauss-Markov theorem, along with the more appropriate OLS or maximum likelihood estimation, remains unimpacted by nature of correlation structure among the independent predictors. The existence of correlation among these predictors results in an increase in the standard errors of the corresponding coefficients, thereby inflating their variances. The Variance Inflation Factor (VIF) is utilized as a tool to evaluate and quantify the degree of this variance inflation. Generally, VIF values are calculated by statistical software during the regression analysis process and are displayed in the output within a specific VIF column.

To assess the existence of multicollinearity, the Variance Inflation Factor (VIF) can be employed. The Variance Inflation Factor serves as a ratio quantifies the extent of multicollinearity in regression analysis. The formula for calculating VIF is as follows:

$$VIF_i = \frac{1}{1 - R^2_i}$$

R^2_i = Unadjusted coefficient of determination for regressing the i th independent variable on the remaining ones

The absence of multicollinearity among the variables is indicated by a Variance Inflation Factor (VIF) ratio remains below 10. Figure illustrates all centered VIF values are less than 10, confirming multicollinearity is not present in the model.

Table 2. Variance Inflation Factors Result

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
dfx	4.33E-06	1.125817	1.055522
dlhaz	3.95E-07	1.165494	1.162426
dln3	0.002770	1.675874	1.042183
drepo	7.36E-07	1.152833	1.144473
c	2.28E-06	1.624249	NA

4.1.3. Unit Root Tests

In macroeconomics and finance, it is customary to either detrend or calculate the first differences of time series data before performing analyses. Selecting the appropriate method for a given time series or a set of series is essential for various statistical applications. For example, Nelson and Kang (1981) highlighted detrending data derived from a random walk

could result in the misleading inference of a non-existent time series structure. Conversely, applying first differences to data is fundamentally trend-stationary may unintentionally introduce a unit root into the moving average representation of the series (Herranz, 2017).

The use of unit root tests has gained significant traction in macroeconomic research. It has become standard to conduct preliminary tests on time series data to ascertain whether they exhibit trend-stationarity or difference-stationarity, and this classification is subsequently utilized in further analyses (Choi, 2001). Such analyses may include tests whose validity or structure depends on the trend or difference stationarity of the data, estimations impose one of the two forms, or interpretations of economic significance based on the established trend or difference stationarity of the series.

Schwert (1987), Lo and Ma (1989), Blough (1988), and other researchers have indicated tests designed to detect unit roots or trend stationarity may exhibit low statistical power when confronted with certain specific alternatives. Their findings reveal unit root tests demonstrate diminished power in finite samples, particularly against the local alternative of a root is nearly, but not quite, equal to unity. In Section 2 of this paper, it is illustrated any trend-stationary process possesses analogous local unit root alternatives. These alternatives are generated by incorporating a random walk with a negligibly small innovation variance into a stationary series. Consequently, any test aimed at identifying a unit root or trend stationarity is likely to exhibit arbitrarily low power against some alternatives from the opposing category (Cochrane, 1991).

The importance of the statistical results is primarily linked to the sensitivity of asymptotic distribution theory regarding various estimators or test statistics to the presence of a unit root. This sensitivity is evident as a discontinuity occurs when the largest root approaches 1 or when the random walk component nears zero (Dickey, Fuller, 1979). As a result, many researchers consider it crucial to perform pretests on a time series to ascertain its classification, despite the potential for low power in such tests, to ensure the appropriate asymptotic distribution theory is applied in subsequent analyses (Dickey, Fuller, 1981).

In the field of applied econometrics, assessing the order of integration is a crucial procedure. The significance of the order of integration lies in its impact on the selection of an appropriate econometric model for analysis (Park, 2003). Numerous tests exist to ascertain the order of integration, commonly referred to as unit root tests. These tests serve

to characterize the time series as either stationary or non-stationary. Among these, the Augmented Dickey-Fuller (ADF) test is the most widely recognized for determining the order of integration. Additionally, the Phillips-Perron (PP) test is another frequently employed method for this purpose. In both the ADF and PP tests, the null hypothesis (H_0) posits the series is non-stationary, while the alternative hypothesis (H_A) asserts the series is stationary. Elliot (1996) highlights the ADF test's appeal due to its simplicity and the absence of a uniformly superior alternative. Furthermore, Davidson and MacKinnon (2004) note the PP test tends to perform less impactively than the ADF test in infinite sample scenarios. The results of the ADF and PP unit root tests for all variables are presented in Table 2.

Here is the hypothesis of the unit root test:

Null: The variable has a unit root

Alternative: The variable does not have a unit root

As the p value of all variables are smaller than % 5 level of significance, so the null hypothesis can be rejected. Thus, all of the variables has no unit root.

Table 3. Unit Root Test Results

Variable	Case	Statistics	Level	First Difference
dlbist(-6)	Intercept	ADF t-statistic	-4.153925	-11.40415
		P value	0.0010	0.0000
		PP t-statistic	-6.590162	-61.43517
		P value	0.0000	0.00001
	Intercept&Trend	ADF t-statistic	-5.276730	-10.34917
		P value	0.0001	0.0000
		PP t-statistic	-7.575417	-66.13537
		P value	0.0000	0.0001
dlm3(-8)	Intercept	ADF t-statistic	-10.95088	-10.63866
		P value	0.0000	0.0000
		PP t-statistic	-11.66415	-52.31311
		P value	0.0000	0.0001
	Intercept&Trend	ADF t-statistic	-10.63866	-10.63321
		P value	0.0000	0.0000
		PP t-statistic	-12.21210	-60.11375
		P value	0.0000	0.0001
drepo(-2)	Intercept	ADF t-statistic	-5.123902	-12.96274
		P value	0.0000	0.0000
		PP t-statistic	-9.790239	-28.00787
		P value	0.0000	0.0000
	Intercept&Trend	ADF t-statistic	-12.97660	-29.59214
		P value	0.0000	0.0000
		PP t-statistic	-10.07223	-29.59214
		P value	0.0000	0.000
dhaz	Intercept	ADF t-statistic	-12.22235	-10.10586
		P value	0.0000	0.0000
		PP t-statistic	-12.23159	-95.32283
		P value	0.0000	0.0001
	Intercept&Trend	ADF t-statistic	-12.36128	-10.11101
		P value	0.0000	0.0000
		PP t-statistic	-12.31802	-94.18232
		P value	0.0000	0.0001
dfx	Intercept	ADF t-statistic	-11.68845	-8.987630
		P value	0.0000	0.0000
		PP t-statistic	-12.02757	-75.51518
		P value	0.0000	0.0001
	Intercept&Trend	ADF t-statistic	-12.80212	-9.050976
		P value	0.0000	0.0000
		PP t-statistic	-12.74310	-80.13449
		P value	0.0000	0.0001

4.1.4. Cointegration Test

The concept of cointegration has become increasingly prominent in empirical research within various branches of economics, particularly in the analysis of the relationships among nonstationary time series data. The fundamental premise of cointegration suggests for a collection of variables, each integrated of order one $I(1)$, there exists at least one linear combination is stationary or integrated of order zero $I(0)$. This framework enables the investigation of both long-term and short-term economic dynamics (Kim, 2003).

Cointegration analysis has emerged as a crucial tool for applied econometricians. A commonly utilized technique involves evaluating the rank of the long-run matrix using the maximum likelihood method established by Johansen. The distributions related to the test statistics are derived from integrals of Brownian motions, for which closed-form solutions are not available (Komolafe, 1996).

To identify the cointegration relationship among variables, AIC is employed. AIC aids in selecting the appropriate lag intervals and assumption methods. In this process, all variables are compiled as a group in Eviews. Subsequently, the Johansen System Cointegration Test is applied, and all assumptions are consolidated. Based on the Akaike Information Criterion, the second assumption method and three lag intervals are selected.

Table 4. Akaike Information Criterion (AIC) Lag Interval Selection

Selected (0.05 level*) Number of Cointegrating Relations by Model					
Data Trend	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	4	3	5	4	5
Max-Eig	4	3	5	3	3
*Critical values based on MacKinnon-Haug-Michelis (1999)					
Information Criteria by Rank and Model					
Data Trend	None	None	Linear	Linear	Quadratic
Rank or No. Of CEs	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Log Likelihood by Rank (rows) and Model (columns)					
0	263.7708	263.7708	264.0665	264.0665	264.7036
1	330.7319	331.5576	331.8295	331.8676	332.4706
2	369.8992	371.0758	371.3235	371.4103	371.9901
3	385.7673	394.0429	394.2635	394.4303	394.8542
4	393.3245	401.6019	401.6973	402.8199	402.8484
5	393.8138	403.8548	403.8548	408.0128	408.0128
Akaike Information Criteria by Rank (rows) and Model (columns)					
0	-1.697107	-1.697107	-1.648357	-1.648357	-1.603147
1	-2.287377	-2.285571	-2.246938	-2.236970	-2.201767
2	-2.589629	-2.581096	-2.552576	-2.532750	-2.507669
3	-2.650438	-2.705108*	-2.686668	-2.657309	-2.640977
4	-2.625124	-2.669449	-2.660076	-2.630258	-2.620191
5	-2.526568	-2.578806	-2.578806	-2.570081	-2.570081
Schwarz Criteria by Rank (rows) and Model (columns)					
0	-0.006594	-0.006594	0.126681	0.126681	0.256418
1	-0.427812	-0.409102	-0.302848	-0.275975	-0.173152
2	-0.561013*	-0.518670	-0.439434	-0.385798	-0.310002
3	-0.452771	-0.456726	-0.404475	-0.324401	-0.274258
4	-0.258406	-0.235110	-0.208832	-0.111393	-0.084421
5	0.009201	0.041489	0.041489	0.134740	0.134740

The cointegration test investigates the long-term relationships among variables. The Johansen System Cointegration test is employed to ascertain these long-term associations.

This model evaluates the impact of financial action on stock market prices and tests the null hypothesis of no cointegration while accounting for a linear deterministic trend. The trace statistics for all variables exceed their respective critical values, indicating a long-term relationship between financial action and stock market prices.

Table 5. Cointegration Test Result

Unrestricted Cointegration Rank Test (Trace)					
Hypothesized No. Of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	
None *	0.550576	354.2051	76.97277	0.0000	
At most 1 *	0.413449	199.0462	54.07904	0.0000	
At most 2 *	0.305981	95.54800	35.19275	0.0000	
At most 3 *	0.079126	24.68842	20.26184	0.0115	
At most 4	0.043838	8.696640	9.164546	0.0613	
Trace test indicates 4 cointegrating eqn(s) at the 0.05 level					
* denotes rejection of the hypothesis at the 0.05 level					
**MacKinnon-Haug-Michelis (1999) p-values					
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)					
Hypothesized No. Of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**	
None *	0.550576	155.1589	34.80587	0.0000	
At most 1 *	0.413449	103.4982	28.58808	0.0000	
At most 2 *	0.305981	70.85959	22.29962	0.0000	
At most 3 *	0.079126	15.99178	15.89210	0.0482	
At most 4	0.043838	8.696640	9.164546	0.0613	
Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level					
* denotes rejection of the hypothesis at the 0.05 level					
**MacKinnon-Haug-Michelis (1999) p-values					
Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):					
dlbist	dln3	drepo	dfx	dhaz	c
69.83189	-33.38000	-0.273887	-2.405717	0.661029	0.022641
-29.20627	14.94569	-1.151142	0.717105	1.452719	-0.005783
27.71684	-84.92603	-0.054394	2.295691	-0.097955	0.898774
42.13882	-7.207059	-1.252806	-0.780469	0.298928	-0.108804
32.53920	30.88198	0.245948	1.336764	-0.316249	-1.193539
Unrestricted Adjustment Coefficients (alpha):					
d(dlbist)	d(dln3)	d(drepo)	d(dfx)	d(dhaz)	d(c)
-0.004421	0.003962	0.002082	-0.000410	-0.001207	-0.000407
0.008429	-0.002484	0.009833	0.000515	0.000515	0.000515
-0.169193	0.429709	0.094669	0.240864	0.089792	0.089792
0.181357	-0.092438	-0.098360	0.091003	-0.069625	-0.069625
-0.852813	-0.689048	0.278985	0.279104	0.053997	0.053997
1 Cointegrating Equation(s):	Log likelihood	280.5114			
Normalized cointegrating coefficients (standard error in parentheses)					
dlbist	dln3	drepo	dfx	dhaz	c
1.000000	-0.478005	-0.003922	-0.034450	0.009466	0.000324
	(0.08412)	(0.00168)	(0.00344)	(0.00161)	(0.00166)

Table 5. (continued) Cointegration Test Result

Adjustment coefficients (standard error in parentheses)					
d(dlbist)	-0.308754				
	(0.05324)				
d(dlm3)	0.588631				
	(0.10416)				
d(drepo)	-11.81504				
	(6.22924)				
d(dfx)	12.66453				
	(2.83985)				
d(dhaz)	-59.55351				
	(9.13712)				
2 Cointegrating Equation(s):	Log likelihood	332.2605			
Normalized cointegrating coefficients (standard error in parentheses)					
dlbist	dlm3	drepo	dfx	dhaz	c
1.000000	0.000000	-0.618181	-0.174733	0.848665	0.002113
		(0.07911)	(0.15111)	(0.07617)	(0.05013)
0.000000	1.000000	-1.285047	-0.293475	1.755629	0.003743
		(0.16440)	(0.31404)	(0.15829)	(0.10417)
Adjustment coefficients (standard error in parentheses)					
d(dlbist)	-0.424470	0.206801			
	(0.05315)	(0.02568)			
d(dlm3)	0.661185	-0.318497			
	(0.11202)	(0.05413)			
d(drepo)	-24.36524	12.06995			
	(6.29662)	(3.04237)			
d(dfx)	15.36431	-7.435263			
	(3.03322)	(1.46558)			
d(dhaz)	-39.42900	18.16859			
	(9.09989)	(4.39684)			
3 Cointegrating Equation(s):	Log likelihood	367.6903			
Normalized cointegrating coefficients (standard error in parentheses)					
dlbist	dlm3	drepo	dfx	dhaz	c
1.000000	0.000000	0.000000	-0.055300	0.006029	-0.005664
			(0.00438)	(0.00130)	(0.00146)
0.000000	1.000000	0.000000	-0.045203	0.003994	-0.012423
			(0.00531)	(0.00158)	(0.00177)
0.000000	0.000000	1.000000	0.193201	-1.363089	-0.012580
			(0.24282)	(0.07221)	(0.08101)
Adjustment coefficients (standard error in parentheses)					
d(dlbist)	-0.366750	0.029943	-0.003463		
	(0.05519)	(0.06331)	(0.00081)		
d(dlm3)	0.933718	-1.153552	1.62E-05		
	(0.10345)	(0.11867)	(0.00152)		
d(drepo)	-21.74132	4.030115	-0.453466		
	(6.68104)	(7.66385)	(0.09818)		
d(dfx)	12.63809	0.918024	0.062088		
	(3.17504)	(3.64210)	(0.04666)		
d(dhaz)	-31.69642	-5.524475	1.011591		
	(9.54306)	(10.9469)	(0.14023)		
4 Cointegrating Equation(s):	Log likelihood	375.6862			

Table 5. (continued) Cointegration Test Result

Normalized cointegrating coefficients (standard error in parentheses)					
dlbist	dln3	drepo	dfx	dhaz	c
1.000000	0.000000	0.000000	0.000000	-0.055607 (0.00957)	-0.004737 (0.01035)
0.000000	1.000000	0.000000	0.000000	-0.046388 (0.00791)	-0.011666 (0.00855)
0.000000	0.000000	1.000000	0.000000	-1.147753 (0.06578)	-0.015816 (0.07110)
0.000000	0.000000	0.000000	1.000000	-1.114573 (0.17565)	0.016749 (0.18984)
Adjustment coefficients (standard error in parentheses)					
d(dlbist)	-0.384023 (0.06221)	0.032898 (0.06344)	-0.002950 (0.00118)	0.018578 (0.00239)	
d(dln3)	0.955427 (0.11668)	-1.157265 (0.11898)	-0.000629 (0.00221)	0.000111 (0.00448)	
d(drepo)	-11.59160 (7.35784)	2.294194 (7.50252)	-0.755222 (0.13947)	0.744519 (0.28233)	
d(dfx)	16.47286 (3.52857)	0.262158 (3.59795)	-0.051921 (0.06688)	-0.799411 (0.13539)	
d(dhaz)	-19.93529 (10.5989)	-7.535997 (10.8073)	0.661928 (0.20090)	1.980137 (0.40669)	

4.1.5. Granger Causality Test

The development of extensive longitudinal panel databases has significantly transformed the theory of panel causality, presenting challenges for empirical researchers who may find it difficult to apply the latest methodologies emerging in the academic literature. The increasing availability of panel datasets include a wide array of individuals over various time periods is becoming more common (Engle, Granger, 1987). A prominent illustration of this trend is the increasing accessibility of cross-country data over time. Consequently, the focus within panel-data econometrics is shifting from micropanel, which are defined by a high number of individuals (Z) and a limited number of time periods (Y), to macropanel incorporate both a high Z and a high Y . In this framework, traditional issues associated with time-series econometrics, such as (non)stationarity and (non)causality, gain importance.

In the realm of finance, causality can be assessed by evaluating the capacity of past values of one time series to predict future values of another time series. The Granger Causality test serves as a statistical method to determine whether one time series can provide significant information for forecasting another time series (Troster, 2016).

The concept of Granger causality, as articulated by Granger (1969), provides a crucial framework for examining the dynamic relationships between time series. According to this framework, a time series Z_t is said to Granger-cause Y_{t+1} if it offers predictive information about Y_{t+1} is not accessible from any other elements within a complete information set, which encompasses Y_{t-j} for all $j \geq 0$.

Although Granger causality tests for time series do not engage in counterfactual analysis, they are relatively straightforward to execute and circumvent the inferential difficulties arise from the need to establish prior assumptions, a prerequisite in counterfactual research (Maziarz, 2015). Granger Causality test's aim is primarily understood through perspective for conditional distribution; however, most research articles have utilized conditional mean regression models to assess Granger causality, which inherently presupposes linear causal relationships. As a result, these models fall short in their ability to assess tail causal relationships or nonlinear causal dynamics.

Table 6. Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
d1m3does not Granger Cause dlbist	193	0.83301	0.5278
dlbist does not Granger Cause d1m3		20.3825	4.E-16
drepo does not Granger Cause dlbist	198	2.95047	0.0137
dlbist does not Granger Cause drepo		0.18960	0.9663
dfx does not Granger Cause dlbist	198	37.2554	2.E-26
dlbist does not Granger Cause dfx		7.01992	5.E-06
dhaz does not Granger Cause dlbist	198	1.52241	0.1847
dlbist does not Granger Cause dhaz		2.95540	0.0136
drepo does not Granger Cause d1m3	193	1.72375	0.1312
d1m3 does not Granger Cause drepo		1.13196	0.3450
dfx does not Granger Cause d1m3	193	1.99417	0.0815
d1m3 does not Granger Cause dfx		1.23368	0.2951
dhaz does not Granger Cause d1m3	193	5.71570	6.E-05
d1m3 does not Granger Cause dhaz		0.81258	0.5421
dfx does not Granger Cause drepo	199	7.22255	3.E-06
drepo does not Granger Cause dfx		0.52772	0.7551
dhaz does not Granger Cause drepo	199	5.79412	5.E-05
drepo does not Granger Cause dhaz		7.55782	2.E-06
dhaz does not Granger Cause dfx	201	1.18746	0.3168
dfx does not Granger Cause dhaz		16.3815	2.E-13

Granger Causality test outputs demonstrate M3 money supply does not appear to influence the BIST100 index, the BIST100 index can, in fact, influence the M3 money supply. Additionally, although the weekly repo rate may have a leading impact on the BIST100 index, the reverse does not hold true. The relation among the USDTRY foreign exchange rate and the BIST100 index is characterized by mutual influence, with each variable capable of leading the other. In contrast, the 3-month Treasury bill rate does not seem to lead the BIST100 index, although the BIST100 index can lead the 3-month Treasury bill rate. Furthermore, there is no discernible leading relation among the weekly repo rate and the M3 money supply. Similarly, the USDTRY foreign exchange rate and the M3 money supply do not exhibit a leading relationship. However, the 3-month Treasury bill rate can lead the M3 money supply, while the reverse is not evident. The USDTRY foreign exchange rate has the potential to lead the weekly repo rate, but the weekly repo rate does not lead the USDTRY foreign exchange rate. Lastly, both the 3-month Treasury bill rate and the weekly repo rate can influence each other, although the 3-month Treasury bill rate can lead the USDTRY foreign exchange rate without latter reciprocating.

4.1.6. Akaike Information Criterion (AIC)

AIC is a valuable tool for evaluating prediction error and, by extension, the comparative quality of different statistical models applied to a given dataset. When multiple models are available, AIC assesses each model's performance relative to the others, thus aiding in the selection process.

Grounded in the concepts of information theory, AIC recognizes any statistical model used to represent the underlying data-generating process will inevitably be an imperfect approximation, leading to some level of information loss. AIC measures this loss, with models preserve more information being considered superior (Cavanaugh, Neath, 2019).

In evaluating information loss, AIC strikes a balance between model accuracy and simplicity. This dual consideration enables AIC to mitigate the risks associated with both overfitting, where a model is overly complex, and underfitting, where a model inadequately captures the essential structure of the data (Croushore, 2001).

To determine the optimal lag length for the Vector Autoregressive (VAR) model in Eviews, this method allows for the identification of the appropriate criterion. A lower value

of the criterion indicates a more suitable lag length (Wagenmakers, Farrell, 2004). Consequently, AIC is employed to ascertain the number of lags, as it yields the smallest value among the various criteria. The model presents the value of AIC as follows:

Table 7. Akaike Information Criterion

Determinant resid covariance (dof adj.)	1.05E-14
Determinant resid covariance	7.96E-15
Log likelihood	1864.043
Akaike information criterion	-17.73571
Schwarz criterion	-16.84112
Number of coefficients	55

Following the establishment of the criteria method, it is essential to determine the appropriate number of lags. This involves an analysis of the lag structure using Eviews. Subsequently, the criteria for lag length are chosen. The analysis indicates a lag length of three is optimal for the model, as suggested by AIC. The asterisk (*) in AIC signifies this lag number is suitable for the model.

Table 8. Lag Length Criteria (Model)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	1645.112	NA	4.39e-14	-16.56679	-16.48375	-16.53318
1	1775.203	252.2989	1.52e-14	-17.62832	-17.13010*	-17.42665*
2	1799.877	46.60541	1.53e-14	-17.62502	-16.71161	-17.25530
3	1827.366	50.53523	1.49e-14*	-17.65016*	-16.32157	-17.11239
4	1845.892	33.12214	1.59e-14	-17.58477	-15.84099	-16.87894
5	1869.571	41.13895*	1.62e-14	-17.57142	-15.41246	-16.69754
6	1886.262	28.15601	1.77e-14	-17.48749	-14.91335	-16.44556
7	1902.965	27.33223	1.94e-14	-17.40369	-14.41435	-16.19370
8	1916.610	21.63925	2.20e-14	-17.28899	-13.88447	-15.91095

The determination of the lag length for the BIST index is conducted using an identical methodology. The BIST index variable is modeled through Vector Autoregressive (VAR) analysis. It is crucial to all variables within the model are treated as endogenous in the context of VAR estimation. The accompanying figure illustrates AIC is employed to ascertain the appropriate lag length. As previously indicated, a lower value of this criterion signifies a more optimal selection of lag length.

Table 9. Akaike Information Criterion (BİST index)

Akaike AIC	-5.653409
Schwarz SC	-5.604613

Following the establishment of the criteria method, it is essential to determine the appropriate number of lags. This involves an analysis of the lag structure using Eviews. Subsequently, the criteria for lag length are chosen. The analysis indicates a lag length of six is optimal for the model according to AIC. The asterisk (*) in AIC signifies this lag number is suitable for the model.

Table 10. Lag Length Criteria (BİST index)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	506.7234	NA	0.000354	-5.108317	-5.091710	-5.101595
1	560.2762	106.0237	0.000208	-5.639154	-5.605939	-5.625709
2	560.3348	0.115409	0.000210	-5.629644	-5.579822	-5.609478
3	567.6840	14.40143	0.000197	-5.693778	-5.627348	-5.666889
4	567.9685	0.554746	0.000199	-5.686551	-5.603514	-5.652940
5	574.6727	13.00210*	0.000187	-5.744169	-5.644525*	-5.703836*
6	576.1300	2.811386	0.000187*	-5.748787*	-5.632536	-5.701733
7	577.0803	1.823967	0.000187	-5.748286	-5.615427	-5.694509
8	577.0859	0.010684	0.000189	-5.738242	-5.588775	-5.677743

To determine the appropriate lag length for the three-month Treasury bill rate, a consistent methodology is employed. The three-month Treasury bill rate is modeled using Vector Autoregression (VAR). It is important to note all variables within the model are treated as endogenous in the VAR estimation process. The accompanying figure illustrates AIC is utilized to ascertain the lag length. As previously indicated, a lower value of this criterion signifies a more optimal selection of lag length.

Table 11. Akaike Information Criterion (3 months Treasury bill rate)

Akaike AIC	-1.499516
Schwarz SC	-1.450720

The selection of the criteria method necessitates the subsequent determination of the appropriate number of lags. This process involves an analysis of the lag structure using Eviews. Following this analysis, the criteria for lag length are established. The results indicate a lag length of zero is optimal for the model according to the Akaike Information Criterion. Consequently, the actual time series value of the 3-month Treasury bill rate is

impactively represented by the model. The asterisk (*) in AIC signifies the chosen lag length is suitable for the model.

Table 12. Lag Length Criteria (3 months Treasury bill rate)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	147.4822	NA*	0.013333*	-1.479618*	-1.463010*	-1.472896*
1	147.9525	0.931152	0.013405	-1.474268	-1.441053	-1.460823
2	148.5357	1.148641	0.013461	-1.470057	-1.420235	-1.449891
3	149.9720	2.814585	0.013402	-1.474464	-1.408035	-1.447576
4	150.0040	0.062461	0.013534	-1.464687	-1.381650	-1.431076
5	150.4399	0.845419	0.013611	-1.458989	-1.359345	-1.418656
6	150.4650	0.048322	0.013746	-1.449141	-1.332889	-1.402086
7	151.4593	1.908300	0.013747	-1.449084	-1.316225	-1.395307
8	153.4554	3.810812	0.013610	-1.459146	-1.309679	-1.398647

The determination of the lag length for the M3 cash quantity follows a similar methodology. The M3 money supply variable is analyzed using Vector Autoregressive (VAR) modeling. It is important to note all variables within the model are treated as endogenous in the VAR estimation process. The accompanying figure illustrates AIC is employed to ascertain the appropriate lag length. As previously indicated, a lower value of this criterion indicates a more suitable selection of lag length.

Table 13. Akaike Information Criterion (M3 Money Supply)

Akaike AIC	-4.735231
Schwarz SC	-4.686435

Following the establishment of the criteria method, it is essential to determine the appropriate number of lags. This involves an analysis of the lag structure using Eviews. Subsequently, the criteria for lag length are chosen. The analysis indicates lag length of eight is optimal for the model, as suggested by AIC. The asterisk (*) in the AIC signifies this lag number is suitable for the model.

Table 14. Lag Length Criteria (M3 Money Supply)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	464.0336	NA	0.000545	-4.677107	-4.660500	-4.670385
1	467.8484	7.552457	0.000530	-4.705539	-4.672324*	-4.692095*
2	469.2156	2.692933	0.000528	-4.709248	-4.659426	-4.689082
3	470.6686	2.847443	0.000525	-4.713825	-4.647395	-4.686936
4	471.0933	0.827934	0.000528	-4.708014	-4.624976	-4.674403
5	471.2974	0.395751	0.000533	-4.699974	-4.600329	-4.659641
6	473.8005	4.829166*	0.000525	-4.715156	-4.598904	-4.668101
7	474.4582	1.262367	0.000526	-4.711699	-4.578840	-4.657922
8	475.8624	2.680727	0.000524*	-4.715782*	-4.566315	-4.655283

The determination of the lag length for the weekly repo rate follows a similar methodology. The weekly repo rate variable is assessed using Vector Autoregressive (VAR) modeling. It is important to note all variables within the model are treated as endogenous in the VAR estimation process. The accompanying figure illustrates the AIC is employed to establish the appropriate lag length. As previously indicated, a lower value of this criterion signifies a more optimal selection of lag length.

Table 15. Akaike Information Criterion (Weekly Repo Rate)

Akaike AIC	-1.670351
Schwarz SC	-1.621555

Following the establishment of the criteria method, it is essential to determine the appropriate number of lags. This involves an analysis of the lag structure using Eviews. Subsequently, the criteria for lag length are chosen. The analysis indicates lag length of two is optimal for the model, as evidenced by AIC. The asterisk (*) in the AIC signifies this lag number is suitable for the model.

Table 16. Lag Length Criteria (Weekly Repo Rate)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	155.3261	NA	0.012318	-1.558850	-1.542243	-1.552128
1	161.3585	11.94293	0.011707	-1.609682	-1.576467	-1.596238
2	165.3233	7.809416*	0.011362*	-1.639630*	-1.589807*	-1.619463*
3	166.1065	1.534743	0.011387	-1.637440	-1.571010	-1.610551
4	166.7346	1.224448	0.011430	-1.633683	-1.550646	-1.600072
5	167.0257	0.564558	0.011512	-1.626522	-1.526878	-1.586190
6	167.3140	0.556261	0.011595	-1.619334	-1.503082	-1.572279
7	167.6551	0.654522	0.011673	-1.612677	-1.479818	-1.558900
8	168.4542	1.525651	0.011697	-1.610649	-1.461182	-1.550150

To determine the appropriate number of lags for the USDTRY foreign exchange rate, a consistent methodology is employed. The USDTRY foreign exchange rate variable is modeled using Vector Autoregression (VAR). It is important to note all variables within the model are treated as endogenous in the VAR estimation process. The accompanying figure illustrates the AIC is utilized to ascertain the optimal lag length. As previously indicated, a lower value of this criterion signifies a more suitable selection of lag length.

Table 17. Akaike Information Criterion (USDTRY Foreign Exchange Rate)

Akaike AIC	-2.948809
Schwarz SC	-2.900013

Following the establishment of the criteria method, it is essential to determine the appropriate number of lags. This involves analyzing the lag structure using Eviews. Subsequently, the selection of lag length criteria is performed. The analysis indicates a lag number of zero is optimal for the model according to the Akaike Information Criterion. Consequently, the actual time series of the USDTRY foreign exchange rate is impactively represented by the model. The asterisk (*) in the Akaike Information Criterion signifies the chosen number of lags is suitable for the model.

Table 18. Lag Length Criteria (USDTRY Foreign Exchange Rate)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	291.8234	NA*	0.003103*	-2.937610*	-2.921003*	-2.930888*
1	292.4324	1.205744	0.003115	-2.933661	-2.900446	-2.920217
2	293.0842	1.283740	0.003126	-2.930143	-2.880321	-2.909977
3	293.3772	0.574215	0.003148	-2.923002	-2.856572	-2.896113
4	293.3895	0.024003	0.003180	-2.913025	-2.829988	-2.879415
5	294.0663	1.312479	0.003190	-2.909760	-2.810116	-2.869427
6	294.7226	1.266297	0.003201	-2.906289	-2.790037	-2.859234
7	294.8045	0.157225	0.003231	-2.897015	-2.764156	-2.843238
8	296.1578	2.583592	0.003220	-2.900584	-2.751118	-2.840085

According to these informations the model is transformed below:

$$dlbist(-6)=d\beta_0+d\beta_1repo(-2)+dl\beta_2m3(-8)+d\beta_3haz+d\beta_4fx+\mu$$

4.1.7. Ramsey RESET Test

A common source of show detail blunder in conventional slightest squares (OLS) relapse is the exclusion of significant factors. The failure to include these variables can result in the incorrect attribution of changes in the dependent variable to those are present in the model. This oversight may lead to inflated errors associated with the regressors and distort the estimated coefficients. In this tutorial, we will explore the issue of omitted variables through the application of the link test and the Ramsey RESET test (Volkova, Pankina, 2013).

Ramsey Regression Equation Specification Error Test serves as a robust specification test within the field of statistics, aimed at evaluating linear regression models. Its main purpose is to determine whether non-linear combinations of the independent variables enhance the explanation of the dependent variable. The rationale behind this test is if such non-linear combinations are found to have explanatory significance for the dependent variable, it suggests the model may be misspecified, indicating the underlying data-generating process could be more accurately captured by a polynomial or another non-linear functional form.

RESET assesses the significance of regressing residuals against a linear function of vectors obtained from the least-squares estimates of the dependent variable. The specification errors considered include omitted variables and incorrect functional forms. Furthermore, the influence of model specification on the distribution of the Ramsey RESET statistics in relation to the residuals is analyzed (Doan, 2010). However, it is important to note this test is predicated on the assumption of a Gaussian distribution for the model's random component, a condition is often not met in real-world scenarios.

RESET test investigates if non-linear combinations of the estimated values enhance the explanation of the response variable. Specifically, the rejection of the null hypothesis—which asserts all regression coefficients linked to the non-linear terms are zero—suggests the model is mis-specified. An F-test is utilized to confirm this hypothesis. To explore the distribution of the Ramsey RESET test statistic in cases where Gaussian distribution assumption for model errors is not satisfied, we employed the bilateral exponential distribution (Be), the distribution of maximum values (Max), and the distribution of

minimum values (Min). A significance level of 0.05 was consistently applied throughout all analyses.

Here is the hypothesis of the Ramsey RESET test:

Null: Model is the correctly specified

Alternative: Model is misspecified

As the p value is 0.0929 which is more than % 5 level of significance, so fail to reject the null hypothesis. Therefore, the model is correctly specified.

Table 19. Ramsey RESET Test Result

	Value	df	Probability
t-statistic	1.688481	192	0.0929
F-statistic	2.850968	(1, 192)	0.0929
Likelihood ratio	2.918447	1	0.0876
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	0.000785	1	0.000785
Restricted SSR	0.053628	193	0.000278
Unrestricted SSR	0.052843	192	0.000275
LR test summary:			
	Value		
Restricted LogL	532.2316		
Unrestricted LogL	533.6908		

4.1.8. Chow Breakpoint Test

Detection of structural changes in realm of economics has long posed a considerable challenge within econometric analysis. However, contemporary testing techniques are predominantly designed to identify structural breaks. Some researchers argue against the notion of abrupt structural breaks, suggesting instead such changes are more likely to occur gradually over time. As a result, elements such as technological progress, variations in consumer preferences, and modifications in action are identified as key drivers of structural changes, which generally manifest as gradual transformations over extended periods.

Structural breaks denote modifications in the parameters of the model being analyzed. When the conditional relations among dependent and independent variables experiences a structural break, the reliability of the model coefficient estimates may be compromised

across different regimes. Therefore, estimates do not account for structural breaks are prone to bias and may lack consistency.

A prominent method for detecting structural breaks is the Chow test analysis. This analytical procedure evaluates the equality of coefficient sets between two separate regression models. A critical assumption of Chow test is the error variances of the two models are the same. If this assumption is violated, the outcomes of the Chow test may be inaccurate, potentially resulting in a mismatch between the actual size of test and the predetermined alpha level (Ciuiu, Badileanu, Georgescu, 2015). To mitigate these concerns, the present study advocates for the incorporation of permutation methods to refine the Chow test analysis for identifying structural breaks within a linear framework.

The permutation test evaluates the probability of obtaining a test statistic value is equal to or more extreme than the observed statistic, under a specific null hypothesis. This involves recalculating the test statistic after randomly rearranging the data labels. Such tests demand considerable computational power, and their use in the natural and behavioral sciences has been historically constrained until the emergence of high-speed computing capabilities. The core concept of permutation methods is to establish a reference distribution by recalculating a statistic across a multitude of permutations of the dataset.

Permutation methods are esteemed for their considerable impactiveness, primarily due to their inherent adaptability, lack of reliance on specific distributional assumptions, and simplicity in formulation. These attributes enhance the clarity with which the core principles of these testing methodologies can be conveyed to users. A significant benefit of permutation tests, in contrast to parametric tests, is their strong theoretical foundation. While the credibility of parametric tests depends on the assumption of random sampling, permutation tests are validated through the principle of random assignment of experimental units, which does not rely on any assumptions about the underlying population.

For researchers in econometrics and practitioners employing the traditional Chow test, a persuasive argument for the integration of the proposed permutation techniques for the Chow test in detecting structural breaks in linear models is the accuracy of the p-value generated by these permutation methods. This stands in contrast to the estimated or asymptotic significance values generally produced by other methods. As a result, the

permutation approach offers a more dependable evaluation of the randomness linked to a particular outcome (Edame, Okoi, 2015).

To determine the breakpoint of the model, recursive estimation techniques are employed. Subsequently, the CUSUM of Squares Test is conducted. Aggregate quantity test is designed to identify systematic changes in regression coefficients, while aggregate sum of squares test is specifically used to spot sudden shifts in the stability of these coefficients. This cumulative sum test also functions as a tool for evaluating the randomness of a binary sequence consisting of zeros and ones (Dataplot will convert a dataset with exactly two distinct values into a binary sequence). In this context, zeros are represented as negative ones. The following presents the results pertaining to the model's breakpoint:

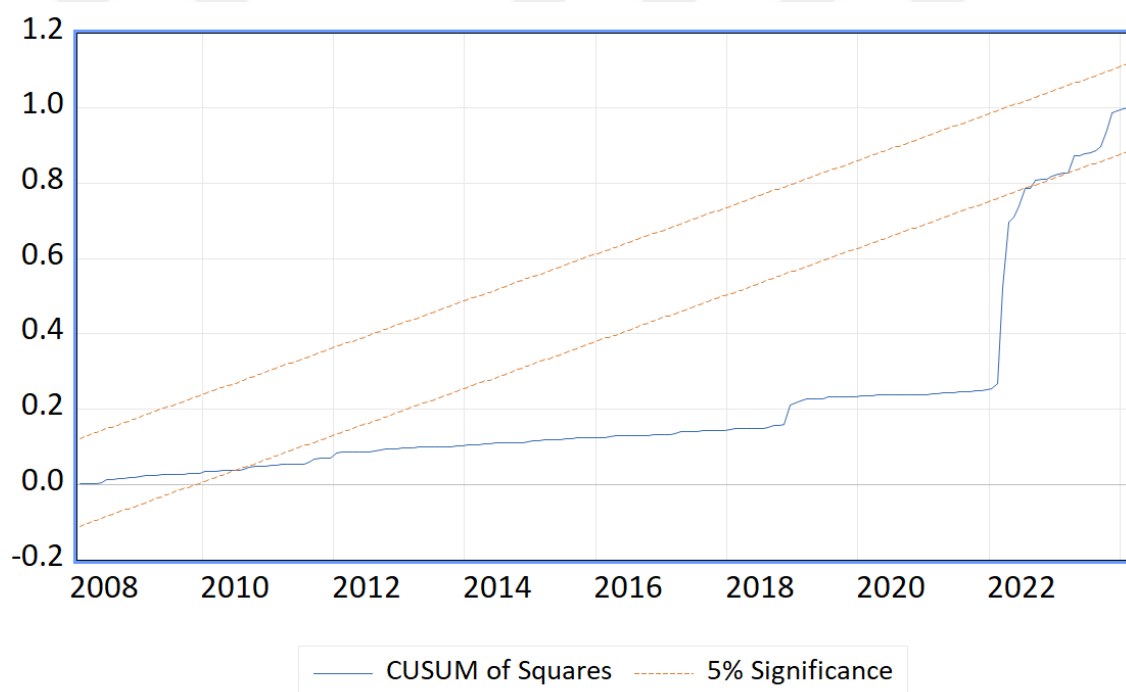


Figure 13. CUSUM of Squares Test Result

According to the CUSUM of squares test graph, in 2010 September there may be structural break in the model. Here is the hypothesis of the Chow Breakpoint test:

Null: There is no structural break (no break point)

Alternative: There is structural break (break point)

As the p value of F statistics is 0.5002 which is greater than % 5 level of significance, so fail to reject null hypothesis. Therefore, there is no structural break in series.

Table 20. Chow Breakpoint Test Result

F-statistic	0.873128	Prob. F(5,188)	0.5002
Log likelihood ratio	4.545285	Prob. Chi-Square(5)	0.4738
Wald Statistic	4.365642	Prob. Chi-Square(5)	0.4981

4.1.9. Wald Test

The Wald test may be a measurable strategy utilized to assess the noteworthiness of particular illustrative factors inside a given show. Within the domain of numerous relapse, which consolidates a double result variable together with one or more illustrative factors, each illustrative variable is related with a unmistakable parameter. The Wald test is among different methods utilized to find out whether the parameters connected to a set of informative factors are rise to to zero.

When the Wald test uncovers importance for a specific illustrative variable or a collection of such factors, it infers the parameters related with these factors are not zero, in this way advocating their consideration within the show. In differentiate, a non-significant result from the Wald test recommends the pertinent illustrative factors may be overlooked from the show. For a single illustrative variable, a t-test is utilized to evaluate the centrality of the parameter. It is critical to note for a single parameter, the Wald measurement is identical to the square of the t-statistic, coming about within the same conclusions (De Maio, Iomelli, 2008).

A broadly recognized elective for assessing the centrality of different informative factors is the probability proportion test, which can be utilized over different measurable models. It is proposed this test is especially beneficial in settings characterized by little test sizes or a tall number of parameters.

Wald test, commonly accepted as the Wald Chi-Squared Test, capacities as a measurable approach to decide the importance of informative factors inside a given demonstrate. The assignment "noteworthy" infers these factors play a vital part within the model, while those don't contribute genuinely may be avoided without altogether

compromising the model's in general legitimacy. This test is appropriate to a wide range of models, counting both parallel and ceaseless factors (Torre, Lee, 2014).

When the Wald test illustrates the coefficients connected to certain illustrative factors are zero, it infers these factors may be overlooked from the show. In differentiate, on the off chance the test demonstrates the coefficients are not zero, it is suggested to keep these factors inside the show.

Wald test is frequently inspected in connection to chi-squared conveyances, as the examining dispersion gets to be progressively well-defined with bigger test sizes. This particular emphasis of the test is sometimes alluded to as the Wald Chi-Squared Test to recognize it from the Wald Log-Linear Chi-Square Test, which serves as a non-parametric elective based on log chances proportions.

Table 21. Wald Test Results

Test Statistic	Value	df	Probability
t-statistic	2.771317	193	0.0061
F-statistic	7.680197	(1, 193)	0.0061
Chi-square	7.680197	1	0.0056
Null Hypothesis: C(1)=0			
Test Statistic	Value	df	Probability
t-statistic	3.171261	193	0.0018
F-statistic	10.05690	(1, 193)	0.0018
Chi-square	10.05690	1	0.0015
Null Hypothesis: C(2)=0			
Test Statistic	Value	df	Probability
t-statistic	2.368111	193	0.0189
F-statistic	5.607952	(1, 193)	0.0189
Chi-square	5.607952	1	0.0179
Null Hypothesis: C(3)=0			
Test Statistic	Value	df	Probability
t-statistic	2.332556	193	0.0207
F-statistic	5.440820	(1, 193)	0.0207
Chi-square	5.440820	1	0.0197
Null Hypothesis: C(4)=0			

As the p value of all variables are smaller than % 5 level of significance, so reject the null hypothesis. Therefore, all of the variables are significant. There is no misspecification in the model.

4.2. Methodology

4.2.1. Linear Regression Model

Regression analysis investigates the relationship between a dependent variable and one or more independent variables. This analytical approach enables the prediction of future values of the dependent variable, identifies key predictors, and evaluates the impact of changes in a predictor or treatment on the dependent variable's outcome.

The concept of regression focuses on understanding the dependence among variables and is essential in various research contexts, with linear regression being a widely recognized example of this methodology. These techniques form the basis for many advanced regression methods.

In statistical terms, regression analysis is employed to explore relationships characterized by cause-and-effect dynamics among variables. Univariate regression specifically examines the relationship between a single dependent variable and one independent variable, aiming to establish a linear equation that encapsulates this relationship. When a regression model includes one dependent variable and multiple independent variables, it is classified as multilinear regression. This approach extends the principles of simple linear regression by integrating several explanatory variables. The term 'linear' is relevant in both cases, as it is based on the premise the dependent variable is linked to a linear combination of the independent variables. The overarching framework of the single-equation linear regression model encompasses both simple (two-variable) regression and multiple regression, which are interrelated components within this broader structure.

Regression analysis serves to elucidate the relationships between two or more variables that demonstrate cause-and-effect interactions, while also enabling predictions concerning the subject matter based on these identified relationships. Linear regression analysis specifically seeks to evaluate the impact of a predictor variable on a designated outcome. This method is distinct from correlation analysis, which primarily aims to ascertain the strength and direction of the association between two random variables. The core assumptions that underpin linear regression analysis include: the independence of observations related to the dependent variable, the requirement for the dependent variable to follow a normal distribution for each value of the predictor variable, and the necessity for the

variability of the dependent variable to remain stable across the spectrum of the independent variable (Granger, Newbold, 1974). This stability can be evaluated by plotting the residuals against the predictor variable; when these assumptions are satisfied, the residuals will exhibit a random distribution across various x-axis values.

Univariate regression analysis pertains to the exploration of the relationship between a single independent variable and a dependent variable, while multivariate regression analysis examines relationships involving multiple independent variables. In univariate regression, the emphasis is placed on how a dependent variable is impacted by one independent variable, resulting in the development of a linear equation encapsulates this relationship. In contrast, multivariate regression analysis aims to account for the variation in the dependent variable by analyzing the concurrent influences of several independent variables. The essential assumptions of multivariate regression analysis include the necessity for a normal distribution, the absence of outliers, and the nonexistence of multicollinearity among the independent variables (Hill, Griffiths, 2001).

The fundamental aim of regression analysis, similar to other statistical techniques, is to depict observed data in a manner is clear, applicable, and visually appealing. In some instances, established theories may specify how the dependent variable varies in response to changes in independent variables. However, when such theories are lacking, it becomes essential to depend on the data itself to inform our analytical strategies. Regardless of the situation, a crucial preliminary step in performing regression analysis is to develop appropriate visual representations of the data.

Multiple linear regression builds upon the principles of simple linear regression by integrating several predictor variables. When researchers propose the variable of interest may be impacted by multiple predictors, relying exclusively on simple linear regression may prove inadequate. In these situations, a multiple regression model accounts for various predictor variables simultaneously can be utilized. This approach enables researchers to incorporate multiple significant factors into a unified analytical framework. The advantages of multiple linear regression include the potential for a more accurate and nuanced understanding of how each individual factor relates to the outcome, as well as insights into the combined impacts of all factors on the outcome and the relationships among the different predictor variables.

Multiple linear regression model is fundamentally grounded in the principles of simple linear regression, which means the four essential assumptions apply to simple linear regression must also be satisfied in the context of multiple linear regression. Beyond the concepts previously outlined for simple linear regression, it is crucial to introduce additional considerations. This examination will concentrate on cases involving two predictor variables alongside a single outcome variable (Davidson, Mackinnon, 1993). With a total of three variables, the data can be impactively visualized in a three-dimensional space. While models include a larger number of predictor variables still adhere to the same foundational principles, they introduce greater complexities in terms of visualization. A significant difference between multiple and simple linear regression is the consideration of linear relationships among the predictor variables in the multiple regression framework. These interrelationships, referred to as "multicollinearity," can have a substantial impact on the model's coefficients and the precision of their estimation.

A variety of methodologies have been proposed for the estimation of parameters within specified model. Method under consideration in this analysis is known as ordinary least squares, which involves determining parameter estimates by minimizing a quantity known as the residual sum of squares. In the realm of simple regression, all calculations associated with least squares are fundamentally based on averages, sums of squares, and sums of cross-products. Although introductory textbooks often present alternative formulas for deriving corrected sums of squares and cross-products from their uncorrected versions, these formulas can result in considerable inaccuracies when executed on a computer, thus making their use inadvisable. The criterion function employed for the derivation of estimators is primarily grounded in the residuals, which can be geometrically interpreted as the vertical distances separate the fitted line from the actual y values.

Regression analysis serves as a foundational technique for elucidating econometric models. Numerous alternative methodologies exist for interpreting the linear regression model. Among these, Ordinary Least Squares (OLS) is the most prevalent approach utilized for modeling purposes. This strategy works by minimizing the whole of the squared contrasts between the watched values of the subordinate variable and the anticipated values determined from the direct work of the independent variable. From a geometric perspective, a reduction in these differences indicates a superior fit of the model to the data. The OLS estimator demonstrates consistency for fixed impacts at the level when the regressors are

exogenous and maintains perfect collinearity, ensuring a reliable variance estimate of the residuals, provided the regressors possess finite fourth moments. The Gauss-Markov theorem asserts OLS is optimal within the realm of linear unbiased estimators, particularly when the error terms exhibit homoscedasticity and are serially uncorrelated. Under these specified conditions, the OLS method yields the minimum variance.

Instrumental variables techniques represent a crucial component of the econometric toolkit, particularly for addressing issues related to endogeneity and measurement error. A prevalent method within econometrics involves interpreting significant discrepancies between the coefficients derived from Ordinary Least Squares (OLS) and those obtained through Instrumental Variables as indicators of the instrument's validity. The rationale behind this approach lies in the notion OLS regression can provide insights into the true impact the researcher aims to estimate. However, to my knowledge, the existing literature lacks a formalized methodology for comparing these two estimates. This approach utilizes information gleaned from the OLS regression such as the inclusion of control variables, variance sizes, and changes in R^2 to estimate range of values within which the true treatment impact is likely to reside. The extent of this range is contingent upon how "informative" the observable variables are regarding the unobservable ones, as determined by the researcher. As a result, this methodology enables the researcher to calculate a parameter facilitates a formal bounding argument. This parameter, referred to as the coefficient of proportionality, quantifies the relative relationship between selection based on observable and unobservable factors.

Ordinary least squares (OLS) models are predicated on the objective of identifying a relationship between one or more independent variables and a dependent variable is either continuous or measured on an interval scale. This relationship is defined by the goal of minimizing the sum of squared errors, where an error is understood as the difference between the actual and the predicted values of the dependent variable. Linear regression, which may involve a single predictor or multiple predictors, is the most commonly utilized analytical method incorporates OLS models.

Gauss–Markov theorem contributes foundational criterion for determining the optimality of OLS estimates. Among all unbiased linear combinations of the observed data, OLS estimates are distinguished by their minimal variance. Providing the underlying assumptions are satisfied and the intention is to employ linear unbiased estimates, OLS

estimates emerge as the preferred option. Additionally, in scenarios where the errors are normally distributed, OLS estimates gain further justification, as they also function as maximum likelihood estimates (Hill, Griffiths, 2001).

Ordinary least-squares (OLS) models work beneath the introduce the examiner is setting up a demonstrate to depict the relationship between one or more autonomous factors and a ceaseless or at slightest interval-level subordinate variable. This approach points to play down the entirety of squared mistakes, characterized as the inconsistencies between the watched and anticipated values of the subordinate variable. Straight relapse, whether single or different, is the foremost predominant expository method utilizes OLS models.

There are a lot of method to analyze the relationship between financial action and stock exchange prices in the literature. Tsoukalas, Boschen and Mill, Patelis, Cassola and Morana are examined the relationship between financial action and stock exchange prices using Vector Autoregressive method. Nata, Saidjada are studied this relations by using Vector Error Correction model. Quadir is used the Autoregressive Integrated Moving Average to obtain the relationship between financial action and stock exchange prices. However, Ordinary Least Square (OLS) method is used to explain the relationship between financial action and stock exchange prices in this study. The aim of using OLS is different model can be used for describing the relationship between financial action and stock exchange prices. Moreover, the data are used in the model is more suitable for Ordinary Least Square (OLS).

The empirical model is inspired by Nwakoby (2016) which is shown as follows;

$$bist = \beta_0 + \beta_1 repo + \beta_2 m3 + \beta_3 haz + \beta_4 fx + \mu$$

bist= BIST100 index

repo= Weekly repo rate

m3= M3 cash quantity

haz= 3 months Treasury bill rate

fx= USDTRY foreign exchange rate

As explained in Methodology, OLS regression analysis is chosen for estimation.

Table 22. Ordinary Least Square Method Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
drepo	0.002377	0.000858	2.771317	0.0061
dln3	0.166902	0.052630	3.171261	0.0018
dlhaz	0.001487	0.000628	2.368111	0.0189
dfx	0.004853	0.002081	2.332556	0.0207
C	0.008737	0.001510	5.786868	0.0000
R-squared	0.191942			
Adjusted R-squared	0.175194			
S.E. of regression	0.016669			
Sum squared resid	0.053628			
Log likelihood	532.2316			
F-statistic	11.46104			
Prob(F-statistic)	0.000000			



5. EMPIRICAL RESULTS

The data are converted logarithmic form and taken difference to fit the model. Here is the adjusted formula of the model:

$$dLbist(-6)=d\beta_0+d\beta_1repo(-2)+dL\beta_2m3(-8)+d\beta_3haz+d\beta_4fx+\mu$$

The findings derived from the estimated model utilizing the Ordinary Least Squares (OLS) method indicate the influence of various factors on stock exchange prices. The coefficient of determination (R^2) stands at 0.20, suggesting approximately 20% of the change in the stock market can be attributed to these variables. The F statistic is recorded at 11.46104, which is significant at the 5% level, as the F probability is below this threshold. This indicates financial action exerts a statistically significant impact on stock exchange prices, implying it accounts for a 20% impact on these prices.

The coefficient for the three-months Treasury bill rate is 0.001487, accompanied by a t-value of 2.368 ($p > 0.05$). This suggests a positive correlation between the three-month Treasury bill rate and stock exchange prices. Specifically, a one percentage point increase in the Treasury bill rate is associated with a 0.1% increase in stock exchange prices. The p-value is less than the 5% significance level, leading to the conclusion the null hypothesis-stating the three-month Treasury bill rate does not significantly impact stock exchange prices can be rejected. Thus, the three-month Treasury bill rate has a positive and significant impact on stock exchange prices. Quadir investigates the interplay between macroeconomic variables, including the Treasury bill interest rate and industrial production, and their impact on stock market returns. Utilizing the autoregressive integrated moving average (ARIMA) model, the analysis reveals a positive relationship between the Treasury bill interest rate and industrial production as mediated by stock market returns. Similarly, Saidjada explores the connection between financial action and stock prices through the Johansen cointegration method and the Vector Error Correction (VEC) model, which incorporates reserve money and the 91-day Treasury bill interest rate. This study concludes there exists a negative relationship between stock prices and the Treasury bill. Fama and Schwert investigate the correlation between stock returns and Treasury bill rates, revealing negative slope coefficients in their regressions of stock returns against Treasury bill rates. While the conclusions drawn in this study regarding Treasury bill rates differ from those of Siadjada,

the findings presented here regarding Treasury bills align conceptually with the perspectives of Quadir.

The coefficient for M3 is 0.1669, accompanied by a t-value of 3.171261 ($p > 0.05$). This indicates a positive correlation between the M3 money supply and stock exchange prices. Specifically, a one percentage point increase in the M3 money supply is associated with a 17% increase in stock exchange prices. The p-value is below the 5% significance threshold, leading to the conclusion the null hypothesis—stating M3 money supply significantly impacts stock exchange prices—cannot be rejected. Consequently, it can be asserted M3 money supply has a positive and significant impact on stock exchange prices. This assertion is further substantiated by theoretical frameworks such as Tobin's q theory and Modigliani's wealth impact model. Tobin's q theory posits a positive relationship between money supply and stock prices. Nata (1995) explores the connections between stock prices and various macroeconomic variables, including money supply, inflation, industrial production index, exchange rates, and interest rates within the Tokyo Stock Market. The Vector Error Correction Model employed in this study indicates a positive relationship with money supply. Similarly, Mukherjee investigates the interplay between stock prices and several macroeconomic factors, including exchange rates, money supply, industrial production index, inflation, and interest rates, concluding a positive relationship exists with money supply. Ibrahim Mukherjee further examines the long-term relationships and dynamic interactions between the stock market and various economic variables, such as real output, aggregate price levels, money supply, and exchange rates, finding a positive correlation between the stock price index and economic variables like money supply, consumer price index, and industrial production. Tsoukalas employs the Vector Autoregressive (VAR) model to analyze the relationship between stock prices and macroeconomic factors, including exchange rates, industrial production, money supply, and consumer prices. The research indicates a significant correlation between stock prices and various macroeconomic factors. Jensen identifies stock returns, which exhibit predictable variations, are influenced by financial action and prevailing business conditions, with anticipated stock returns being greater during periods of tight monetary conditions compared to those of loose monetary conditions. Inflation, recognized as a critical monetary variable, reflects the increase in the money supply relative to output. Udegbumam and Eriki demonstrate inflation exerts a considerable negative impact on stock prices. Their working paper presents compelling evidence of a robust connection between stock prices and key

economic indicators such as gross domestic product (GDP), interest rates, money supply, and financial regulations. Saidjada investigates the interplay between financial action and stock prices utilizing the Johansen cointegration approach and the Vector Error Correction (VEC) model, which incorporates reserve money and the interest rate of 91-day Treasury bills. The findings reveal a negative association between stock prices and Treasury bills, while no significant relationship is observed between stock prices and the broader money supply. The results of this study align closely with previous research concerning the relationship between money supply and stock market prices.

The coefficient for the weekly repo rate is 0.004, accompanied by a t-value of 2.77131 ($p > 0.05$). This indicates a positive correlation between the weekly repo rate and stock exchange prices. Specifically, a one percentage point increase in the weekly repo rate is associated with a 0.4% increase in stock exchange prices. The p-value is below the 5% significance threshold, leading to the conclusion the null hypothesis—stating the weekly repo rate significantly impacts stock exchange prices—cannot be rejected. Consequently, it can be asserted the weekly repo rate has a positive and significant impact on stock exchange prices. Modigliani and Mishkin contend lower interest rates contribute to rising stock prices, which subsequently encourages business investment. While central banks possess the ability to influence interest rates, they also impact inflation expectations. Nata explores the interplay between stock prices and various macroeconomic factors, including money supply, inflation, industrial production index, exchange rates, and interest rates within the Tokyo Stock Market. The Vector Error Correction Model employed in this study indicates a positive relationship for all variables, with the exception of inflation, where the interaction between interest rates and stock prices is inconsistent. Mukherjee investigates the connections between stock prices and several macroeconomic variables, such as exchange rates, money supply, industrial production index, inflation, and interest rates, finding a positive relationship for all variables except inflation and interest rates. Cassola and Morana analyze a VAR model for the euro area, incorporating real GDP, inflation, real M3 balances, short-term interest rates, bond yields, and real stock prices, to assess the transmission mechanisms of financial action. The findings of Cassola and Morana align with those of Jensen and Johnson, who establish a connection between financial action changes and stock returns. Their research indicates long-term stock returns resulting from reductions in discount rates are not only higher but also exhibit less volatility compared to returns associated with increases in interest rates. Udegbumam and Eriki further demonstrate inflation exerts a

significant adverse impact on stock prices. Their working paper presents compelling evidence of a robust correlation between stock prices and various economic indicators, including gross domestic product (GDP), interest rates, money supply, and financial regulation. Additionally, Alam and Udder investigate the linear relationship between stock prices and financial action, focusing specifically on the interplay between share prices and fluctuations in interest rates. Their findings reveal financial action negatively influences share prices. However, the conclusions regarding the relationship between interest rates and stock market prices in this study may not align with the prevailing perspectives in the existing literature. The term between 2020-2023 years is very complicated about monetary policy actions. Although there was a reduction in short term interest rates, CBRT was used some monetary policy tools such as increasing haircut in collateral structure and increasing required reserve in banks' asset side to tighten the financial environment. As a result, the data which are used in the thesis are altered the direction of the way of the variable.

The coefficient for the USDTRY foreign exchange rate is 0.05, accompanied by a t-value of 2.332556 ($p > 0.05$). This indicates a positive correlation between the USDTRY exchange rate and stock market prices. Specifically, the coefficient suggests one percent increase in the USDTRY exchange rate corresponds to a 0.05 percent increase in stock market prices. Given the p-value exceeds the 5 percent significance threshold, the null hypothesis stating "the USDTRY foreign exchange rate does not significantly impact stock market prices" can be rejected. Consequently, it can be concluded the USDTRY exchange rate exerts a positive and statistically significant influence on stock market prices. Nata explores the connections between stock prices and various macroeconomic factors, including money supply, inflation, industrial production index, exchange rate, and interest rates within the Tokyo Stock Market. The findings from the Vector Error Correction Model indicate a positive relationship with the foreign exchange rate. Similarly, Mukherjee investigates the interplay between stock prices and several macroeconomic variables, such as exchange rate, money supply, industrial production index, inflation, and interest rates, concluding there exists a positive relationship with the exchange rate. Furthermore, Mukherjee and Ibrahim analyze the long-term relationships and dynamic interactions between the stock market and a range of economic variables, including real output, aggregate price levels, money supply, and exchange rates. Their research demonstrates a positive correlation between the stock price index and economic indicators such as money supply, consumer price index, and industrial production. The research indicates a negative correlation between the stock price

index and exchange rates. Tsoukalas investigates the interplay between stock prices and various macroeconomic variables, including exchange rates, industrial production, money supply, and consumer prices, employing the Vector Autoregressive (VAR) model. The findings reveal a significant connection between stock prices and foreign exchange rates. In a separate analysis, Rahman and Uddin examine the relationship between stock prices and exchange rates using Johansen cointegration and Granger causality tests; however, they did not identify any cointegration or random relationship between the two variables. The existing literature presents diverse perspectives on the relationship between foreign exchange rates and stock prices. The conclusions drawn in this study regarding the interaction between foreign exchange rates and stock prices align closely with the findings of Mukherjee and Ibrahim, while contrasting with the results reported by Nata and Mukherjee.



6. CONCLUSION

The relationship between financial action and stock market prices remains a significant topic of inquiry, likely to persist in relevance for the foreseeable future. There exists a considerable interest in understanding the dynamics between these two elements, as this relationship is critical for various reasons. From the perspective of financial action authorities, assessing how stock market prices respond to financial action instruments is essential for formulating impactful financial action strategies. The transmission of financial action extends beyond the influence of short-term interest rates on other asset classes; it encompasses the momentum of asset prices, including long-term interest rates and stock prices, in turn impact borrowing costs and wealth changes, ultimately influencing real economic activity.

For stakeholders in financial markets, comprehending the response of stock market prices to financial action is of paramount importance. Financial action applies a substantial impact on financial markets, necessitating well-informed investment decisions and the development of appropriate risk management strategies account for the sensitivity of stock market prices to financial action shifts.

However, estimating the sensitivity of stock market prices to financial action presents several challenges. Primarily, short-term interest rates are simultaneously influenced by fluctuations in stock market prices. Additionally, other factors, such as economic news, also play a role in shaping both short-term interest rates and stock market prices.

Stock exchange prices exhibit sensitivity to changes in market conditions influenced by various financial action instruments. This empirical analysis aims to explore the relationship between financial action and stock exchange prices in Türkiye, covering the period from December 2006 to February 2024. A singular model is employed for this investigation. The empirical analysis utilizes linear regression based on Ordinary Least Squares (OLS) methodology, allowing for an examination of the relationship between dependent and independent variables. Additionally, both short-run and long-run relationships are assessed through this approach.

The empirical results indicate a lack of cointegration among the variables, suggesting a long-run relationship exists between financial action and stock exchange prices. The

Variance Inflation Factor (VIF) analysis confirms the absence of multicollinearity among the variables, indicating their independence and statistical significance. Furthermore, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (P-P) tests reveal the variables do not possess a unit root, confirming their stationarity. Consequently, the Granger Causality test is conducted, which shows the variables do not exert a causal impact on one another. In econometric analysis, certain variables may not accurately reflect performance in their current state. To address this issue, the Akaike Information Criterion (AIC) is employed. The Akaike Information Criterion (AIC) is employed to ascertain the necessary lag of variables. In this model, the BIST100 index, M3 money supply, and weekly repo rate are incorporated with their respective lags. The specification of the model is validated through the Ramsey RESET Test, which assesses the presence of omitted variables. The results indicate no omitted variables exist within the model. Additionally, the Chow Breakpoint Test is utilized to evaluate the structural integrity of the model, revealing there are no structural breaks present. The Wald Test further elucidates the significance of the explanatory variables, confirming all variables contribute meaningfully to the model.

This paper investigates the impact of financial action on stock prices, revealing a long-term relationship between the two of them. The Granger causality test indicates the causative relationship flows from the stock market to financial action, suggesting stock exchange prices can influence the formulation and direction of financial action. This finding implies that monetary policy tools such as interest rate and money supply can be responsive to fluctuations in stock prices. Furthermore, the Ordinary Least Squares (OLS) results demonstrate financial action significantly accounts for variations in stock prices.

A key action implication derived from this research is financial action strategies in Türkiye should consider the dynamics of stock prices. Overall, the findings underscore the influence of financial action and its instruments on stock exchange prices.

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