Iğdır Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi
Iğdır University Journal of Economics and Administrative Sciences
2022 – Sayı (*Issue*) 7 – 15-24

Araştırma Makalesi
Research Article

RAPID CHANGE IN THE NUMBER OF INVESTMENTS IN STOCK MARKETS: THE CASE OF TURKEY

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ABSTRACT
During the Covid-19 period in Turkey, the number of investors in the stock market has increased in an unprecedented way. The change in the number of investors is associated with many factors such as behavioural factors, macroeconomic indicators, and returns on alternative investment instruments. However, in Turkey, with the effect of the recession, companies started to be offered to the public to be funded by their own sources. This study examines the relationship between the initial public offering index (IPO), the USA dollar rate, the largest alternative to the local currency, the Borsa Istanbul index, and the number of investors, using VAR analysis with data between 2012-2022. Although the results show a positive relationship between the IPO and the number of investors, the increase in the number of investors will not maintain the current trend due to the limited number of companies to be offered to the public.

Keywords: exchange rate; stock market; VAR analysis

INTRODUCTION

The stock market's most indicative figure is the capitalization value. Using this value, the size of the countries' stock markets can be ranked. Another measure might be the ratio of the population invested at least in one stock. Market capitalization over the years, in general, is in an uptrend. There are new companies included through IPOs, plus the increase in companies' value leads to higher capitalization rates. The number of investors is more stable in contrast. While the investors in certain countries have a risk appetite for stocks in other countries, the percentage of stock market investors is minimal. One country worth looking at is Brazil. Although 2020 was a highly volatile year in the financial markets, the low-interest rate scenario prompted individual Brazilian investors to seek riskier assets when faced with ever lower yields on more conservative investments. According to data released from the B3 stock exchange, the number of individual accounts registered in the principal Brazilian stock market increased by 92% over 2019, to 3.2 million. The number represents the fifth consecutive year of growing inflow into the stock market. In 2019, the individual investors' base had increased by 106.7% (B3, 2020). Out of the total investors, 33% sought higher profitability, while 38% invested in learning how to invest in other types of investment. The main difference between Brazil and Turkey is the duration of the increase. Brazil has been on a five years trend, whereas this increase has been abrupt in Turkey.

The covid-19 pandemic might have also contributed to the increase in new investors in other countries. There has been an increase in the investors' appetite, especially among young investors in the USA. In the USA, 15% of the total investors are new investors who started investing in 2020 (Schwab, 2021). The firm surveyed 1,000 Americans ages 21 to 75 among a

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Submission: 14.06.2022
Acceptance: 23.06.2022

diverse range of demographics and found that 476 respondents invest in the stock market. Of the nearly 500 investors, 15% started in the stock market in 2020. Schwab (2021) concluded that new investors are not just young people, but middle-aged people also started investing for the first time this year. They are also an older cohort discovering investing for the first time. About 55% of respondents said they started investing in creating an emergency fund during the pandemic, and 53% said they began generating an additional income source.

The most dramatic change took place in Turkey. The population of Turkey in 2000 was 63 million. In 2021 the population was 85 million. It is an increase of 34.9% (Macrotrends, 2022). Despite the rise in population and the increased awareness of the stock markets, there was almost no change in the number of investors until 2020. In 2020 the number of investors nearly doubled to a total of 1.976,976.

BORSA ISTANBUL AND DEMAND FOR IPO'S

We will analyse the factors causing this surge in the number of investors in Borsa Istanbul. There are Covid-19-related reasons such as the injection of funds by the government, the extra time resulting from working from home, the need to support the lost income by additional sources by taking new financial risks, the drop in the credit rates to create purchasing power by the government the very attractive returns of the IPO companies, delayed new investments in start-ups, the money saved by some consumers due to drop in certain customer spending items such as travel, entertainment diverted the funds to new financial instruments, the low and negative real rates for most of the year forcing people to take more risks.

In Table 1, we analysed the size of the equity portfolios based on the size of the accounts and the changes between 2017-October 2021. The total value of the portfolios increased by 67.1% at the end of 2019. Most of the increase was in the 100,001TL-500,000TL and 500,001 TL-1,000,000 TL segments. In 2020 the total portfolio size increased by 105,0% to 380.78 billion TL. This year, however, the largest segment increase was 100,001 TL-500,000 TL segments, with an increase of 146.8%. The second highest segment increase was the 1001 TL-10,000TL segment. In 2021 the risk appetite dropped. The total value of the portfolios only increased by 14.5%.

Table 1. Total Size of the Portfolio Breakdown by Account Sizes

(Size of account TL)	2017	2018	% change	2019	% change	2020	% change	2021	% change
0-1000	54	58	7.40%	55	-5.20%	95	72.70%	165	73.70%
1001-10000	824	1051	27.50%	893	-15.00%	1833	105.30%	2131	16.30%
10001-100000	8502	9355	10.00%	10786	15.30%	22635	109.90%	23898	5.60%
100001-500000	11971	12306	2.80%	18177	47.70%	44859	146.80%	48263	7.60%
500001-10000000+	101263	88397	-12.70%	155869	76.30%	311366	99.80%	361456	16.10%
Total	122614	111167	-9.30%	185780	67.10%	380788	105.00%	435913	14.50%

Source: Data Analysis Platform (2022).

In 2019 the highest number of investor increase was in the 500,001 TL - 1,000,000 TL segment with a 56,9% increase. However, the total number of investors only increased by 2,1%. The most dramatic increase took place in 2020 during the pandemic. For the first time, the number of investors almost reached 2 million. The overall growth was 65,6%. The highest segment

increase was the 500,001 TL - 1,000,000 TL segments, with an increase of 155,9%. This may indicate that the high-net-worth individuals transferred their funds from other accounts.

Table 2. Number of BIST Investors Breakdown by Account Sizes

Size of Account	2017	2018	% change	2019	% change	2020	% change	2021	% change
0-1000	586000	603348	3.00%	595527	-1.30%	699309	17.40%	926242	32.50%
1001-10000	187360	226343	20.80%	201815	-10.80%	410479	103.40%	503198	22.60%
10001-100000	235298	265163	12.70%	286918	8.20%	597826	108.40%	633152	5.90%
100001-500000	58191	60512	4.00%	87781	45.10%	213862	143.60%	227603	6.40%
500001-10000000+	14485	13822	-4.60%	21690	56.90%	55500	155.90%	62392	12.40%
Total	1081334	1169188	8.10%	1193731	2.10%	1976976	65.60%	2352587	19.00%

Source: Data Analysis Platform (2022).

Looking beyond the obvious reasons, the additional investors might have actually been attracted by the IPOs rather than the general stock market. This appetite was noticeable in 2019 and much more dramatic in 2020. There were only eight IPOs in 2020 totalling 462.5 million TL. The striking factor is the demand coming for those stocks. The demand for those stocks ranged between 7 to 53 times the public offer amounts. The expectation of fast short-term profits and the inability to purchase only a small portion of the demanded quantity led the investors to open duplicate accounts at the brokerage houses. This is clear when we look at the breakdown of the size of the portfolios. There are 954,803 accounts with a value between 0 and 5,000 TL. Between 5,001 - 20,000 TL, the number of accounts is 342,365.

Table 3 shows the IPOs one year before the Covid-19, during Covid-19 in 2020 and 2021. In 2019 there were 6 IPOs at Borsa Istanbul. The first day's close average was 7.29% up. One month later, the average close was up by 14.18%. The BIST100 was up 25.4% in 2019. Since the IPOs take place anytime during the year, it is not comparable to the yearly return of the BIST100. The returns in the first month after the IPO ranged from 69.3% to 22.2%.

Table 3. IPOs, First day and First Month Price Changes

	Number of IPOs	First Day % change	One Month % change
2019	6	7.29%	14.18%
2020	8	11.76%	124.24%
2021	44	6.98%	53.91%

Source: Capital Markets Board (2021).

In 2020 the IPO total was eight companies. The first day's closes were up 11.76% from the IPO price. The BIST has a cap for a one-day price movement. The maximum one-day price is limited to around 10%. On the other hand, the one-month return average was a spectacular 124.2%. During the year Covid-19, first, there were a dramatic drop in the BIST100 and then the recovery of the prices. The year 2020 eventually closed at a 29.1% return for the BIST100. The highest one-month return among the IPOs was 191.9%, and the lowest was 34.3%.

In 2021, there were a record number of IPOs. The attractiveness of 2020 of the previous years, the postponement of IPOs of earlier years, plus the additional demand motivated the companies to grab a market share at attractive prices. As of the end of November 2021, a total of 44 companies completed their IPOs. The average one-day returns were 6.98%. Excluding the last

two IPO, which did not complete their first month in the markets, 42 companies' one-month return was 22.5%. The average might be misleading since some companies had very high returns while some share prices dropped below their IPO prices. The highest one-month return was 557.4%, followed by the next highest return of 247%. The lowest return was -26%. Eight companies' share prices were in the negative territory.

Table 4 shows the annual index changes of the IPO index and the BIST100 index. In 2013, 2015, 2019, 2020, and 2021 the IPO index performed better than the BIST100 index. In 2014, 2016, 2017, and 2018 the IPO index performance was worse than the BIST100 index. While the number of IPOs varies from one year to another, the performance also varies, which is counter-intuitive. During an up year for the BIST100, it is more common to realize a similar or better performance from the IPO index. By definition, a new IPO is included in the IPO index on its first day of trading. It stays in the index for two years. If the number of companies in the index goes below 5, the company which completed the 2-years period will be kept in the index until a new IPO company is included. These rules make it difficult to separate the first day, first month, and 2-year performance of the companies on average. The poor performance of the IPO index in specific years might be due to the overvaluation of the IPO or due to having a few companies which might be subject to unsystematic risk and not performing as expected.

Table 4. Number of BIST Investors Breakdown by Account Sizes

Closing Year	IPO Index	% Change	BIST100 Index	% Change
2012	863.69		782.08	
2013	1250.98	44.84%	678.02	-13.31%
2014	1224.12	-2.15%	857.21	26.43%
2015	1267.04	3.51%	717.27	-16.33%
2016	1301.45	2.72%	781.39	8.94%
2017	1834.02	40.92%	1144.8	46.51%
2018	1321.16	-27.96%	912.7	-20.27%
2019	2112.85	59.92%	1144.25	25.37%
2020	6277.62	197.12%	1476.72	29.06%
2021*	12852.90	104.73%	1809.65	22.55%

*End of November

Source: Investing (2022) and authors' calculations

Between 2012-2018 the annual increase has been 7.34% and 2.61% in the IPO and BIST100 indexes. The difference becomes enormous during the years 2019-2021. The yearly increase in the IPO index is more than four times of the BIST100 index. If someone invested in the IPO index at the beginning of 2019, the return would be 872.78% which is almost 8.9 times higher than the BIST100 index.

STOCK MARKETS AND INVESTORS

The data regarding the number of stock market investors in several countries are not publicly available. Surveys are generally used to analyse the behaviour of investors. Besides economic factors influencing the number of investors' personal characteristics, prejudices and behavioural factors play a role in the change in the number and volume of stock market investors. Studies on the number of stock market investors in the literature generally consider personality traits and behavioural factors. Studies examining the stock market volume and index change are carried out by reviewing economic variables with econometric methods.

With the development of behavioural economics, it has been understood that the consumption, saving, and investment tendencies of individuals can show irrational characteristics, and various

hypotheses have been formed about the reasons for these behaviours. Shefrin and Statman (1985) found that investors quickly sold off stocks that gained value; however, it shows that they hold the stocks that have decreased in value for more extended periods. Due to the disposition effect, investors increase the trading volume in certain periods and change the holding period of the stock. Investors' buying and selling by taking into account the behaviour of others can also be explained by the herd effect, and the herd effect can help explain the anomalies in the market (Hon-Snir et al., 2012). According to Wang and Canela (2006), the herd effect is more common in emerging markets, and the herd effect may occur independently of market conditions.

Investor behaviour can often be affected by the news and recent experiences. Personal characteristics also play a role in determining the number of investors and investment volume. Behavioural biases of individuals include risk tendencies, gambler's fallacy, and trusting their luck; however, the unprecedented increase in the number of investors in the stock market in Turkey in recent years may be insufficient to explain the seasonal and temporary changes. For a more concrete analysis, it is necessary to examine the changing macroeconomic variables together with the number of investors; unfortunately, the lack of investor data based on countries prohibits macroeconomic analysis.

There is a study made in Japan that tried to find whether the investor base of a company's stock can be increased by reducing its minimum trading unit (MTU) or lot size. The outcome showed that the reduction in MTU dramatically increases the number of the shareholders and, at the same time, the stock prices. The more people who were afforded to purchase a stock eventually created additional demand for that stock (Amihud et al., 1999). Another study analysing South Korea, Philippines, Malaysia, Taiwan, Singapore, and Thailand examined and found that the increase (decrease) of the returns of the stock price index will decrease (increase) the exchange rate, which means the domestic currency appreciates (depreciates). However, the effect is not always direct, suggesting that the relationship between stock and foreign exchange markets can change depending on market conditions (Tsai, 2012).

One study analysed the relationship between local and foreign investors and the positive feedback. Except for the time frames May-June 2013 and August 2018, there have been no instances of positive feedback trading being done by foreign investors, while local investors used positive feedback trading all the time. Local investors provided higher trade volume compared to foreign investors. Foreigners, on the other hand, have a higher contribution to the herd effect compared to locals. Also, it has been found that both foreign and local investors traded collectively, but this effect was found to be more assertive on foreign investors (Somuncu, 2021). An important finding in the literature is that expected stock returns are a significant determinant of the market participation decision. Hurd et al. (2011) find individuals with higher expected stock returns are more likely to be stock investors. Arrondel et al. (2014) see stock market participation increases if the expectation of a positive stock market return is high.

Reis (2021) analysed both the domestic and the foreign investors at Borsa İstanbul. The research showed that the pandemic affected domestic and foreign investors differently. According to the findings obtained from the analysis, a unidirectional causality relationship was found between COVID-19 and the risk appetite of foreign investors. Kaya (2021), who associates the number of stock market investors with risk appetite, examines the relationship between investors' risk attitudes by using weekly data for the period 2008-2020. The results of the analysis reveal that risk appetite and herd psychology are related to investment decisions and that domestic investors are affected by the decisions of foreign investors.

This study examines the reasons for the rapid increase in the number of investors in the Turkish stock market. In the first part of the study, the performance of Borsa Istanbul and the changes in the number of investors are examined. The public offering issue stands out as the factor that most affects the number of investors apart from the classical macroeconomic variables discussed. In the other part, the factors affecting the stock market markets and the number of investors are examined, especially during the Covid-19 period. Then, the data and methodology used in the study are discussed, and the results of the VAR analysis are interpreted.

DATA AND METHODOLOGY

Data

In this study, we employ weekly time series covering the period from January 2012 to January 2022. The reason for choosing this period is that the IPO index starts to be calculated in the relevant period. In the literature, there is no analysis of stock market investor numbers using macroeconomic variables. However, since it is possible for the factors affecting the stock market volume and index to affect investor behaviour, various variables that are expected to directly affect the stock market index are included in the analysis.

As the determinants of the rapidly increasing number of Borsa Istanbul investors in recent years, the public offering index (IPO), Borsa Istanbul index (BIST), and the US Dollar exchange rate (USD) are included in the analysis. The increase in the number of companies offered to the public and the higher performance of the public offering index compared to BIST is one of the important factors affecting the number of investors.

The low valuation of the stocks of the companies offered to the public increases the profit expectations of the investors. One of the reasons for the new investor to be included in the stock market is the high performance of the companies offered to the public in the past and the belief that the new companies will provide high returns.

The number of stock market investors undoubtedly depends on the stock market index. BIST's return compared to its past performance and other investment instruments affect the number of investors. As another variable, the dollar rate is chosen. The Turkish Lira's depreciation against the dollar compared to the local currencies of other developing countries in recent years and the beginning of the dollarization process stand out as one of the factors affecting the investor's demand for the stock market.

All variables are converted to logarithms in order to remove excesses in the data and reduce the effects of outliers (Wooldridge, 2016).

Time Series Properties

There are some assumptions for the VAR estimation. First, the variables must be stationary. The Augmented Dickey-Fuller and the Phillips-Perron unit root tests are performed to understand whether the variables included in the analysis are stationary.

According to the test results in Table 5, all variables are unstationary at the level; however, when the first differences are taken, all variables become stationary according to the two test results. In addition, the lag length must be determined in order to make the VAR estimation. The optimum delay lengths are determined as one according to the Schwarz Information Criteria (SIC).

Table 5. Unit Root Test Results

	ADF		PP	
Variables	**Level**	**First Differences**	**Level**	**First Differences**
NI	-0.128	-3.208**	2.033	-23.02***
IPO	1.874	-21.33***	1.867	-21.35***
BIST	2.505	-8.187***	2.743	-7.648***
USD	1.389	-29.54***	1.238	-29.32***

* 10% level of significance, ** 5% level of significance, *** 1% level of significance

Table 6 shows the cointegration test results. The idea behind the cointegration is that although multivariate time series are integrated, certain linear transformations of the time series may be stationary. The result indicates the non-existence of cointegration among the four variables.

Table 6. Johansen's Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value
None	0.067045	51.88525	55.24578
At most 1	0.020085	16.76945	35.01090
At most 2	0.012714	6.503065	18.39771

Granger causality test is used to examine the existence and direction of the cause-and-effect relationship between stationary time series. According to the granger causality test results, IPO is the granger cause of NI; however, the number of investors is not affected by the other two variables. On the other hand, as expected, the Borsa Istanbul index is the granger cause of the IPO. These two variables move parallel to each other during the period in which the dataset is analysed; however, the volatility of the IPO index is higher. Therefore, it is not surprising that there is a causal relationship between IPO and BIST. When BIST is examined as a dependent variable, no variable granger causes BIST. On the other hand, BIST has a one-way impact relationship with USD.

Table 7. Granger Causality Test

Dependent variable: NI		
	Chi-sq	Prob.
IPO	5.794	0.016
BIST	0.289	0.590
USD	1.201	0.273
Dependent variable: IPO		
	Chi-sq	Prob.
NI	1.092651	0.295
BIST	209.2433	0.000
USD	0.302	0.582
Dependent variable: BIST		
	Chi-sq	Prob.
NI	0.403	0.525
IPO	0.065	0.797
USD	0.065	0.797
Dependent variable: USD		
	Chi-sq	Prob.
NI	0.117	0.731
IPO	0.044	0.832
BIST	6.843	0.008

Many individual factors and expectations affect the number of stock market investors. On the other hand, this study aims to examine the effect of concrete macroeconomic variables on the number of investors. IPO is associated with investing with equity and the expectation of profitability. The positive performance of companies that went public in the past increases the number of companies that go public. For this reason, it is expected that the companies offered to the public and the number of investors will act together. The increase in the number of investors is related to the profit expectation of individual investors. Investors who want to increase their tangible assets have to decide between alternative financial instruments. Therefore, we expect that response of NI will be a positive shock to BIST. The local currency in Turkey has been depreciating against the USD in recent years, so individuals who want to protect their purchasing power demand USD. The increase in the USD value makes Borsa Istanbul attractive to foreign investors. On the other hand, domestic investors are risky compared to alternative investment instruments in Turkey; however, they can invest in stocks that offer high returns. Therefore, the relationship between the two variables may change periodically.

The impulse-response functions reflect the effect of a standard deviation shock in one of the random error terms on the present and future values of the endogenous variables. Figure 1 plots the impulse responses of NI to the other variables.

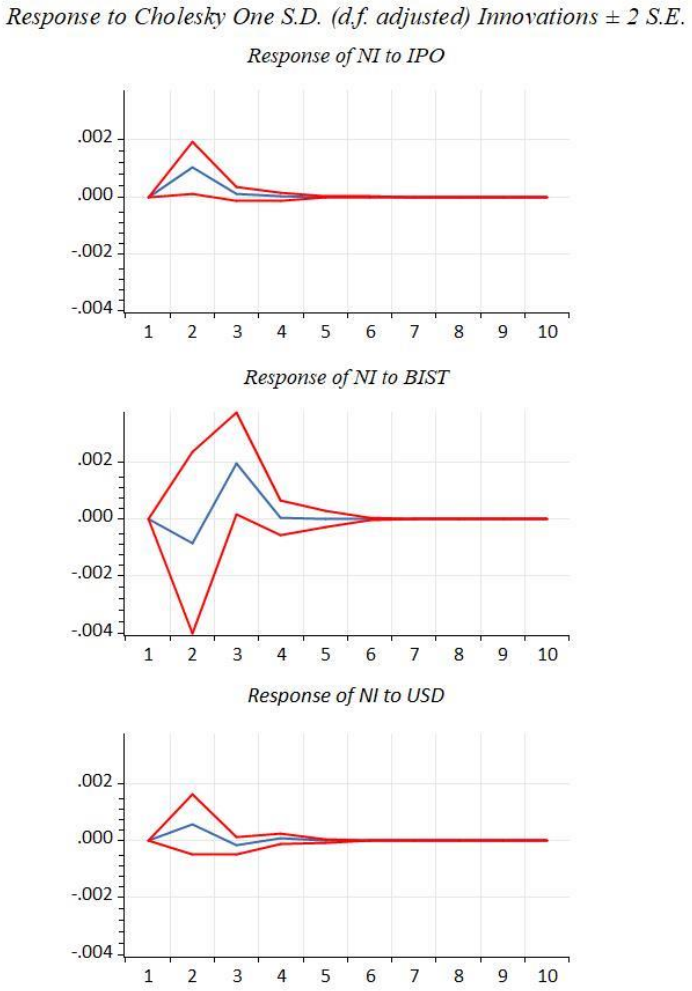

Figure 1. Impulse Response Functions of the VAR Model

A positive Cholesky o standard-deviation shock to IPO increases NI for two periods. In the third period, the effect gets slightly negative and vanishes. A positive shock to BIST has a negative impact on NI but becomes positive during the second period, and this effect continues until the fourth period. USD doesn't play an important role in the number of investors. The consequences of a positive shock to the dollar are similar to the results of the IPO. The number of investors increases in the first two periods after the positive shock, then the effect disappears. The results show that the impact of the variables on the number of investors is short-term but positive.

CONCLUSION

Individuals invest by using financial instruments apart from real investments to maintain their purchasing power and profit. Investors take risks and gains into account when deciding between different financial instruments. Interestingly, the number of investors in the stock market in Turkey has almost doubled in recent years.

In the period of high inflation and low growth experienced in Turkey in recent years, the number of investors in the stock market, which is a relatively risky investment instrument, has increased. During the Covid-19 period, there has been an increase in the number of companies that do not want to borrow and need liquidity, and the number of companies offered to the public in Turkey has increased in recent years.

There are various studies in the literature examining investor decision and motivations; However, not sharing the number of investors in the stock market prevents researchers from making econometric analyses using macroeconomic variables. This study analysed the data shared in Turkey in recent years and the macroeconomic indicators that can affect the change in the number of investors.

The results of the analysis show that there is a causal relationship between the public offering index and the number of investors. The gradual rise of the public supply index in recent years has led individuals to think that they will earn more returns compared to the BIST100 index, leading to an increase in the number of investors. The results of the VAR analysis show that the IPO and USD positively affect the number of investors in the short term.

Investor behaviour and number provide information about a country's economy. When there is a recession in the economy, individuals may narrow their investment volume or prefer high-risk financial instruments. There is a need for new studies on the increasing number of investors during the period when Turkey's economic growth slowed down, and the negative effects of Covid-19 were experienced. In a country like Turkey, where financial literacy is insufficient and behavioural factors significantly affect investment decisions, analyses of the number of investors will provide new information on both the correct orientation of individuals and the economic performance of countries.

CONFLICT OF INTEREST STATEMENT

Authors have no conflict of interest to declare.

AUTHOR CONTRIBUTIONS

The two authors contributed equally.

REFERENCES

Ahimud, Y., Mendelson, H., Uno, J. (1999). Number of Shareholders and Stock Prices: Evidence from Japan. *Journal of Finance*, 54(3), 1169-1184

Arrondel, L. Calvo-Pardo, H., Tas, D. (2022). Subjective Return expectations, Information and Stock Market participation: Evidence from France. *Unpublished Working Paper*. University of Southampton, Southampton.

B3 (2020). The Discovery of the Exchange by Brazilian Investors. *B3 Brazilian Stock Exchange Survey*. (p8)

Data Analysis Platform. (2021). Number of Investors by Nationality. https://www.vap.org.tr/portfoy-dilimi-bazinda-yatirimci-sayilari

Hon-Snir, S., Kudryavtsev, A., Cohen, G. (2012). Stock market investors: Who is more rational, and who relies on intuition? *Shlomit International Journal of Economics and Finance*, 4(5), 56-72.

Hurd, M., Van Rooij, M. and Winter, J. (2011), Stock market expectations of Dutch households. *Journal of Applied Econometrics*, 26(3): 416-436.

Investing. (2022). *Investing*. www.investing.com.tr

Kaya, A. (2021). Menkul Kıymet Yatırımcıların Risk Alma Eğilimleri. *BDDK Bankacılık ve Finansal Piyasalar Dergisi*, 15(2).

Kilic, Y. (2020). Borsa İstanbul'da COVID-19 (Koronavirüs) Etkisi. *Journal of Emerging Economies and Policy*. 5(1), 66–77

Macrotrends. (2022). Turkey Population 1950-2022. https://www.macrotrends.net/countries/TUR/turkey/population

Reis, S. G. (2021). Covid-19 (Koronavirüs) Pandemisi ve Risk İştahı: Borsa İstanbul Yerli ve Yabancı Yatırımcılar Örneği. *Anadolu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 22 (3), 87-98.

Schwab. (2021). *Schwab*. https://www.aboutschwab.com/press-releases (04/08/2021)

Shefrin, H., Statman, M. (1985). The Disposition to Sell Winners Too Early and Ride Losers Too Long. *Journal of Finance*, 40(3), 777-790.

Somuncu, K. (2021). Yerli ve Yabancı Yatırımcıların BIST-100 Endeksi Üzerine Etkilerinin İncelenmesi. *İşletme Araştırmaları Dergisi*, 13(4), 2962-2975

Tsai, I.C. (2012). The Relationship Between Stock Price Index and Exchange Rate in Asian Markets: A Quantile Regression Approach. *Journal Of International Financial Markets, Institutions & Money*. 22, 609-621.

Unal, S. (2020). Covid-19 Salgınında Borsa İstanbul Şirketlerinin Fiyatlamalarının Etkinliği. *Ekonomi, Politika & Finans Araştırmaları Dergisi*, 5, 13-31.

Veri Analiz Platformu. (2022). Portföy Dilimi Bazında Yatırımcı Sayıları. *Veri Analiz Platformu Web Page*. https://www.vap.org.tr/portfoy-dilimi-bazinda-yatirimci-sayilari

Wang, D., Canela, M. (2006). Herd Behavior towards the Market Index: Evidence from 21 Financial Markets. *Working Paper*, University of Barcelona.

Wooldridge, J. M. (2016). *Introductory Econometrics: A Modern Approach*, 6th ed., Cengage Learning.

Yetgin, M. A. (2020). Korona Virüsün Borsa İstanbul'a Etkisi Üzerine Bir Araştırma ve Stratejik Pandemi Yönetimi, *Finans Ekonomi ve Sosyal Araştırmalar Dergisi*, 5(2), 324-335.