BORSA ISTANBUL and JANUARY EFFECT

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Borsa İstanbul ve Ocak Ayı Etkisi

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Anahtar Kelimeler (İngilizce)

1)January Effect

2)Calender Effect

3)Weekly Effect

4)Behavioral Finance

5)Efficient Market Hypothesis

ÖZET

Bu çalışmada, gelişmekte olan ülkelerden olan Türkiye'nin menkul kıymetler borsasında Ocak Ayı etkisi araştırıldı. 1988-2015 yılları için günlük yüzde getirileri kullanılarak çalışma yapıldı. Bunun yanısıra 2002-2015 yılları da firma bazlı veri kullanılarak analiz yapıldı. Çalışma Ocak ayının büyük etkisini gösteren istatistiksel olarak anlamlı sonuçlara ulaştı. Hafta etkisi olarak da Ocak ayı içerisinde ikinci haftanın %2.8 daha yüksek getiri getirdiği sonucuna erişildi. Bu sonuç Ocak ayı içerisindeki her haftanın etkileri ayrı ayrı incelendiğinde istatistiksel olarak anlamlı tek haftanın ikinci hafta olduğunu göstermektedir. Çalışmanın ulaştığı bir diğer önemli sonuç ise firma büyüklüğünün etkisinin belirtilmedir. Regresyon analizi sonucu büyük firmalar BIST'te Ocak ayında daha yüksek getiri sağlamaktadır. Son olarak, çalışmada, Ocak ayı etkisinin yıllar geçtikçe azalıp azalmadığını analiz etmiştir.

ABSTRACT

In this paper, it is tried to be investigated whether the January effects is significant in a developing stock market of an emerging country specifically Turkey. For the period 1988-2015, percentage returns on the BORSA Istanbul are applied. Besides, 2002-2015 period is analyzed by using firm level data. The paper reports significantly large returns during the January. Within the January, second week has the highest daily mean return, %2.8 percent which is the only week that statistically significant effect in January if all weeks are considered separately. Another essential result declared in this paper is to explore the firm's size effect. The outcomes of the regression analysis states that big firms in BIST have significantly higher returns in January. Lastly, the January effect is analyzed year by year to see whether it has declining trend or not.

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1. INTRODUCTION

The existence of the January effect has been controversial issue in finance literature for many decades. Do returns differ in the January of the year as compared to the other months of the year? Do markets behave differently on different week of the January? Also, does this anomaly in January return is high as past years or not? These are questions that cover whether the calendar has an influence on stock exchange returns or not. There is a shortage in clarification that the return trend thanks to calendar effect is able to disturb and contradict with the efficient market hypothesis, due to the fact that it recommends the investment strategies which are open to take advantage of past data.

The most famous of all calendar effects is the "January effect," January seems to be different. The purpose of this study is to test whether an investor can earn abnormal returns without risk. If an investor earns lot by using the methodthat selling stocks in January that were obtained when failing at the end of the previous year. This study aims to demonstrate that by only using the past information, an investor can earn an abnormal return in the first month of the next year. Stock returns are higherin January compared to the rest of the year. Our major research questions are to examine the January effect in Borsa Istanbul in several ways. It is rare to see any major econometric work on January effect on BIST 100 index. That is the reason we try to measure the January effect in BIST 100 index. Besides the January effect, additional supporting questions to analyzing the anomaly in January. For instance, we are aiming to differentiate the effects of each week in January. Lastly, we are tried to discover the trend of January effect year by year. By doing so, it demonstrates us whether January effect is decreasing or not.

Additionally, our study is covering the firm level data analysis. For this study a sample of 308 companies was examined for the years between 2002 and 2015. Our research questions for the firm level data is that how does the firm size affect the daily return in January. Whether the firm size is interacted with month of

January or not? In order to do firm level analysis, we used the daily return of firms operating in BIST.

As a contribution to finance literature, our study is dealing with data from the beginning of daily data of BIST to current date. This database is very up to date. By using this data, BIST 100 index is never analyzed in that way. Also, weekly analysis of January effect is a significant analysis to see January effect. One of most crucial contribution of our study is to measure firm size effect in BIST. Lastly, as the literature mentions the trend of January effect year by year, our paper also discusses the trend of January effect yearly.

To summarize the result of our study, January effect is statistically significant in BIST 100 data. Also, weekly analysis of January anomaly has significant results especially in the 2nd weeks of January. In addition to weekly analysis, when the weeks are examined as a cumulative way, the first two weeks and first three weeks of January have significantly higher returns. All these results related with BIST 100 data are consistent with the literature results. However, the study of firm size level gives results contrary to literature's outcomes. While in the literature, the small firms have higher return in January in other countries, in our study, the big firms have higher return in January in Turkey. The reason for this conflict may arise from the difference between the behavior of investors and the structure of small firms in Turkey. Lastly, our study states that the January effect has a declining trend in yearly analysis. That is suitable with the literature's saying.

2. LITERATURE REVIEW

There is an important statement in the modern financial economic theory saying that the representative agent is assumedin the economic models as a rational. The agent chooses according to expected utility theory. Also, this rationality requires unbiased estimates for the future. Based on the expected utility theory, a rational agent is assumed as risk averse. Moreover, the law of diminishing marginal utility and concavity of utility function are valid. Since the stock prices are determined

by rational agents, market equilibrium is attained. Hence, in the equilibrium, assets are valueddepending on the efficient market hypothesis.

2.1. The efficient market hypothesis

The efficient market hypothesis states that, financial prices are influenced by all accessible information and prices can be seen as ideal estimators of correct investment value for all times. The efficient market hypothesis is constructed on the idea that people are rational and maximize expected utility in a correct way and consider all existing information. In other saying, financial assets are priced rationally in every time, given what is freelyacknowledged. Stock prices almostsame with the description of random walks through time. For instance, the price changes are unforeseeable as they happen only depending ontruly new information that is new and unpredictable. Since all information is controlled in stock prices it is impossible to make ahigher profit compared with the average and dominates the market in a risk free case.

In the finance literature, there is an important definition for the efficient market by Fama. According to Fama (1965), an efficient market is:

> *"...a market where there are large numbers of rational profit maximizes actively competing with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants. In an efficient market, on the average, competition will cause the full effects of new information on intrinsic values to be reflected "instantaneously" is actual prices. A market in which prices always "fully reflect" all available information is called "efficient".*

Here, the Fama's definition states that "all available information" is important for market efficiency and three forms exist that should be consider. Firstly, the week form requires that values show the complete information about past returns. Secondly, the semi strong form requires that values display the complete information covering the past data and future estimates. In order to see past data,

official documents published freely can be considered and for the future any available information that may affect the future valuation has to be considered as well. Lastly, the strong form requires that values demonstrate the complete information even if the information is not freely accessible. In that case, of the record information can be included. Hence, although the values give information, it is not able to cover all. If it covers all, the acquisition of information has no cost. However, this is not reasonable for real world. Therefore, this situation requires a better working definition of the efficient market hypothesis. That is the values show the information that the marginal cost of getting information outweighs the marginal benefit of using information to get higher return.

2.2. What does market efficiency indicate?

As an abstraction of the fields of finance and economics, an efficient market is mostly defined as the asset prices are representing the expected fundamental value. The current essential model for stock prices assume that prices of stocks, for the most part deviate little from the fundamental value of the stock.

Market efficiency does not mean investors will get the same expected returns from all their investments nor that it will be ill-advised to act upon expectations. Essentially, what it suggests is that an investment manager will not generate returns systematically above the risk-adjusted turn because stocks prices will for the most part be closer to the expected fundamental value. Investors have different reactions to risks, thus they would create different portfolios. As a result, in the context of the efficient market hypothesis, it is not possible to suggest that one portfolio is better or worse than another.

Essentially, what this all means is that according to efficient market hypothesis, prices are not random in stock markets, however excess returns are possible while being unpredictable. Prices are fairly valued based on the information regarding the financial actions taken by the firms.

2.3. Behavioral Finance

The empirical studies related to pricing or valuation models or the efficient market hypotheses are capable to estimate or describe the cases in behavioral finance. Since the theories cannot explain the certain cases in finance, the empirical analyses become essential especially in the abnormal data such as calendar effect. Because, the real world act randomly compared to theories sayings that includes assumptions and restrictions.

The aim of the behavioral finance is to understand and modeling agents' decision on financial action. In order to do that both theories and empirical statistics are needed to apply. Here, there are some key points that try to explain financial choices. These are the psychological, rational and economics restrictions. By modeling one single agent, it enables us to forecast the behavior of sample group population. Then, by assuming the law of large numbers, it helps to understand the whole population acting in finance.

2.4. Challenging the efficient market hypothesis

Behavioral finance claims that in the market it is possible to reach abnormal returns or a permanent significant trend that provides profitable actions. That is contradicting with the market efficiency hypothesis saying that in the long run any trend or high return will be smoothed. Therefore, the study demonstrates that in the financial markets there are statistically significant results that are saying stock values have abnormal trends. These results are most challenging evidences against efficient market hypothesis. The negative or positive economic shocks in the theories are not sufficient to explain this trend in the data. Instead of reject the theories' saying, it is reasonable to call them as incomplete since the lack of explanation in the abnormal data.

Another issue in challenging the market hypothesis is the human behavior. Since the finance is the study of social sciences, there are millions of factors that may affect the decision of investors. For instance, social media provides much information to their users without controlling their truth. Each one is capable to

manipulate the investors while deciding financial investment. Therefore, the efficient market hypothesis may not satisfy their assumptions such as the people's rationality.

In the next section, the specific findings against efficient market hypothesis are discussed within the concept of the behavioral finance. The yearly anomaly trend of stock exchange market returns exists in almost all countries. In order to direct and advise the investors while deciding investment, the calendar effect is examined by finance academicians deeply (Gultekin and Gultekin, 1983). The analysis on calendar effect done with empirically,demonstrated that a vast number of markets are determined that are affected from the anomaly in the specific months. (Alford and Guffey, 1996).

Calendar effect is one of the major phenomenon in finance that violates the efficient market hypothesis. By using the very old data the statistical analysis provided monthly calendar effects that are one of the best examinations in the literature. The data they used is very robust and highly qualified. The data frequency is monthly (Jacobs and Levi, 1988). Another study is aiming to detect the January effect by reasoning the restrictions in the stock exchange market. Besides, it is explained in the study that investors' strategies form this effect (Arsad and Coutts, 1997). The January effect, the weekend effect and the Halloween effect are the main calendar effects in the finance literature.

2.5. The January effect

January effect is basically the analysis of comparison between January and the other months. The returns in stock exchange markets are higher in January. This is a good opportunity for investors due to its higher riskless return (Rozeff and Kinney, 1976). The January effect is examined by Ritter in 1988 that is related to sales performances of firms in the last month of year and the next month. The study says that at the first month of the year the sales are expectedly higher compared to the December of previous year. (Ritter, 1988).

Another explanation for January effect is the demand preferences for stocks and securities. Since the trade demands are higher at the beginning of the year, by raising the values of stocks there is a higher returns in January (Grinblatt and Keloharju, 2004). The one of the main reason seen in the finance literature is the performance of December. For some several reasons, the prices are decreased a lot in the December; January performance in returns is shining (Branch and Chang, 1990). The January effect is examineddeeply in daily data. The higher returns in the January are concentrated on the first week of the month. Then its higher returns are declining day after day in the same months. But still the average return in this month is significantly higher compared to the other months (Moller and Zilca, 2008).

The relevance of the January effect is affected by firm size and smaller firms are usually more affected by the calendar anomaly, especially if the securities experience extra selling volume before the end of the year (Reinganum, 1983). This evidence is especially clear in the first (five) days of the month, which tend to be characterized by an increased amount of abnormal positive returns (Keim, 1983).

The January effect has been studied mainly in the stock market although there is empirical evidence that it also exists in other markets (e.g., bond markets) – and is more relevant for riskier assets (Chang and Pinegar, 1986). Regarding other market features, the calendar anomaly affects both the regulated and over-the-counter marketsand is therefore not related solely to the laws and rules established, as in some markets (Lamoreux and Sanger, 1989). Even though the taxloss selling hypothesis is one driver of the January effect, empirical evidence demonstrates that the calendar anomaly is also relevant formarkets that do not apply a capital gain tax (Lee, 1992).

This paper examines evidence for the possible existence of the "January effect" in the Borsa Istanbul.The January effect is a hypothesis that there is anabnormal trend in the financial market thatstocks' prices rises in the January compared to the other months of year. This calendar effect would create an opportunity for

investors to buy stocks for lower prices before January and sell them after their value increases.By analyzing the data of US stock market, Rozeff andKinney (1976)reach to the first empirical evidence of the calendar effect specifically the January effect. Then, the January effect by many academicians is become trend topic in these period.

The return on assets is positively higher in the January in comparison with therest of months in the year. Then, January effect has gained thesignificantattention by academicians. Moreover, attraction of calendar effect still lasts by both academicians and investors.Accordingly, our study also focused on this issue. Then, our main empirical findings show that the January effect is related to firm size with returns being higher in January for big firms. However, another empirical results show that the higher return in BIST is not a phenomenon observed only for big firms' stock but also without taking into consideration firm size, January effect is statistically valid in BIST after 2002. The returns of widely followed firms also exhibit strong seasonality, thought opposite in direction to that reported for small, less visible, low stock price firms (Athanassakos, Ackert, 1998).

Additionally, according to the efficient market hypothesis,the using public information should not be able to createunusual profits, since stock' prices should reflect all available information. However, there are several challenges to this hypothesis that have been stated in the literature.

The calendar effect is analyzed with cross sectional data as well that covers eighteen countries by emphasizing weekend, weekly, monthly, day of week and day of month. The authors find that a weekend effect significantly existsin nine countries. However, the daily effect is mostly not valid in the 1980s. The last trading day of the month has high returns in majority of countries. Also, a vast number of countries have high return in December holiday. The January returns are high in almost all countries (Sullivan, Timmermannand White 2001).

Subsequent research confirmed the effect of January effect and acknowledged that the calendar effect is essentially intensive in smaller firms (Keim, 1983; Roll, 1983; Reinganum, 1983) mainlythe firms with low price rates (Branch and Chang, 1990) and those that have underperformed in the past (De Bondt and Thaler, 1985, 1987).

Other studies have identified the reasoning of high returns in month of January. Those are important factors called as market effects, specifically the bid-ask spread and thintrading(Roll, 1981, 1983). Many studieshave also demonstrated a significant January effect in countries outside the United States (e.g., Gultekin andGultekin,1983). Apart from stocks, it is demonstrated that other securities like bonds also have high returns in January (e.g., Fama andFrench, 1993). More recent research has focused on theability of investors to take advantage of the January effect while usingmutual funds or stock index futures (e.g., Booth and Keim,2000; Hensel and Ziemba, 2000; Rendon and Ziemba,2005).

While the literature is trying to explain the January effect, there is some consensus on two of the theories. These are the tax-loss selling hypothesis (Wachtel, 1942) and the window dressing hypothesis (Haugen and Lakonishok, 1988). The tax-loss selling hypothesis states that investors sell the losing stocks in their portfolio at the end of the year to gain a tax benefit.Moreover, the window dressing hypothesis states that financierstradesomesecurities at the end of the year to suggest a more reasonable and profitable portfolio to shareholders in their year-end reports. Both theories suggest that these investors repurchase the stocks in the New Year, creating the high returns observed in January. Recent evidence from Chen and Singal (2004) has identified that the tax-loss selling hypothesis is more likely explanation for the January effect. However, other studies have stated that the theory may not be sufficient to explain the large returns observed in many countries. This exists especially if the tax year for individuals is not consistent with the calendar year (Fountas and Segredakis, 2002).

Despite robust empirical evidence for the existence of a January effect, recent researches haveclaimed that the size of the effect has decreased. As Riepe (1998)

statesthat the 1980s and 1990s see increase knowledge about the January effect. This has given rise to take alternative action by investors to get higher profit in January. So, it is obviously stated in the studies, many investors is realized the January effect and they use their tools for investing accordingly. Consistent with this, research from Mehdian and Perry (2002) and Gu (2003) suggests that the January effect is not statistically significant or about at a minimum level. Also, the effect has been reduced for the stock market of US after 1987. That result indicates that investors use the knowledge of January effect in their investing strategies.

Although the studies of Mehdian and Perry (2002) and Gu (2003) has statistically significant results in their papers, it is discussed that both the studies are criticized due to use of only monthly returns to reach their conclusions. Analyzing the daily trend of the January effect, compared to measuring the effect at the monthly level, may give us a better result for theprogress of the trend. To support this idea, there are two noteworthy explanations for the January effect that are the tax-loss selling hypothesis and window dressing.Both explanations conclude that the majority of the effect occurs in early January. Keim in 1983 reached the results that approximately half of the January effect is intensified in the first trading days of the year. These findings provide reasoning for studying the daily pattern of returns in addition to analysis at the monthly level.

Another paper that aims to analyze that whether the January effect year by year has declined or not.(Mehdianand Perry (2002) and Gu (2003)).In our paper also examined the data in that manner.Our findings provide conclusive evidence that the magnitude of the January effect has declined from 1996 to 2014 as literature said.

The evidence from the daily analysis demonstrates thatsignificant effect commonly begins in the latter part of January. Another paper is aim to research the number of days that show the peak of returns.It is founded that average 16 days are experienced for the peak of return days.However, previously in the 1965–1994 period peak of returns are in approximately 74 days. The result from

the data analysis based on dailydisplays thatwhile positive returns experienced in the first part of January, lower returns experienced in the second part of January in more recent 1995–2004 period. These two changes compensate each other, and consequently, the overall magnitude of the January effect appears similar to its magnitude in the previous 1965–1994 period(Moller and Zilca, 2008).

This paper is planned as following. Quantitative analysis is measuring the January effect by using daily data. Then, evolution of return trends are analyzed with the data of BIST100. Following section provides an analysis of January effect in terms of firm size.Lastly, the results are concluded and interpreted in the paper.

3. DATA AND METHODOLOGY

The data used in this paper is obtained from Bloomberg Terminal. The data consist of two main parts. One is covering daily BIST-100 index (formerly called IMKB Index) from 1988 to 2015, the other is average value of daily firm index from 2002 to 2015 that contains 308 firms operating in Borsa Istanbul.Since commencement of daily calculation of BIST Indices and prior to 1988BIST Indices had been calculated on a weekly basis. Then, BIST-100 Index calculated as a daily basis. Therefore, it is more reasonable to use the BIST-100 index after 1988.

The first data consist of 2 main columns. While in the first column, the data shows the date that is BIST operation days excluding the weekend and the official holidays, in the second column, the data displays the value of daily BIST-100 Index.

The second data involve 3 main columns. In the first column, again, the data displays the date that each firms' operations days in BIST. In the second column, for each date in first column, the stock prices of firms at trade close time in BIST is shown. In the third column, the names of 308 firms are displayed.

In order to analyze the January effect for BIST-100 index, instead of using the absolute value of BIST-100 index, we need to calculate the daily return of BIST-

100 index since we are interested in the change in the daily BIST-100 index. Hence, by using the BIST-100 index, thedaily percentage returns between each date for the period between 1988 and 2015 are calculated as follows:

$$\text{Return} = (BIST_t - BIST_{t-1}) / BIST_{t-1}$$

Furthermore, in the second data we analyzed the January effect based firm level based. The examining the January effect based on firm level requires the calculation of the change in daily stock prices for each firm.Because, the daily stock prices of firms gives transparent information about the firm unless the firm manipulates the market and their investors. Since, by observing this value it is able to get information whether the firm is profitable or making loss or optimistic for future or not. Therefore, the price of firms' stock exchange may be called as good proxy for the firm performance. Hence, this data referred to the second database which covers the daily percentage returns of each firm calculated daily between 2002 and 2015 that is the period of AKP ruling as follows:

$$\text{Return} = (BIST_{t,i} - BIST_{t-1,i}) / BIST_{t-1,I}$$ (t refers date, i refers firm)

Both data source includes the closing trade value of BIST and the dates. Then, by calculating the daily return of BIST as shown above, the dependent variable is created. Hence, it is able to analyze the trend and attitude of return according to date.

In addition to the both data, we need to add dummy variables to able to see the January effect. In the first data, there are several dummy variables are needed to create. Initially, in the first analysis, the dummy variable is equal to 1 when the dates are in the month of January. This analysis is able to measure whether January is significantly different from the other months in years or not.

Apart from the analysis of whole January, it is important to go into details of the January based on the specific weeks. By doing so, it enables us to analyze which week of January is significantly effective on BIST daily return. In order to analyses week based effect, 4 different dummy variables are created for each of week in January. Each dummy variable is equal to 1 when the dates are

specifically in which week of January. By doing so, 4 dummy variables are created called as 1st week, 2nd week, 3rd week and 4th week.

Another weekly analysis is also essential for January effect that covers the weeks of January by grouping. Here, the new dummy variables are created for first 2 week of January and for 3 week of January by giving 1, zero otherwise. As a variable, the first week and the first 4 weeksare already created in the previous analysis part. Therefore, by analyzing these dummy variables, it enables us to show that whether the part of January has significant effect on daily return in BIST or each separate weeks.

To sum up, mean daily returns are compared to detect month of the year effects, if any. To this end, the null of equality of mean daily returns across months are tested for the period 1988-2015, the data is prepared to see January effect in BIST by ignoring firm based effects.

Additionally, in the second database we are aiming to join the firm level analysis to demonstrate the relation between January effect and firm size. When the firm size is joined the analysis, the data range is revised to that the data covers from 2002 to 2015 which is the period of AKP ruling. According to firm level stock prices, the firms' size dummy is created that show whether firm is labeled as big or small. This variable is calculated by few steps. Firstly, for each day of BIST, the firms' stock pricesare averaged. Then, by averaging firm's stockprices, a BIST average stockprice for oneday is calculated. Then, for each firm's the stock prices in BIST is averaged. Finally, average stock prices of BIST and each firms' average stock prices are compared. Then, ifthe firm's average value is higher than the average of BIST, the firm is flagged as 1 and 0 otherwise.

Lastly, for the firm size analysis, apart from firm size dummy variable, interaction dummy variable is created as well. The aim of this dummy variable is to measure the possible existence of relation between firm size and January effect. Thus, the interaction dummy is created to capture the effect of interaction. The interaction dummy is created by multiplying dummy variable of firm size and dummy

variable of January effect. Interaction dummy takes the value of 1 if the firm is labeled as big and the related date is in January.

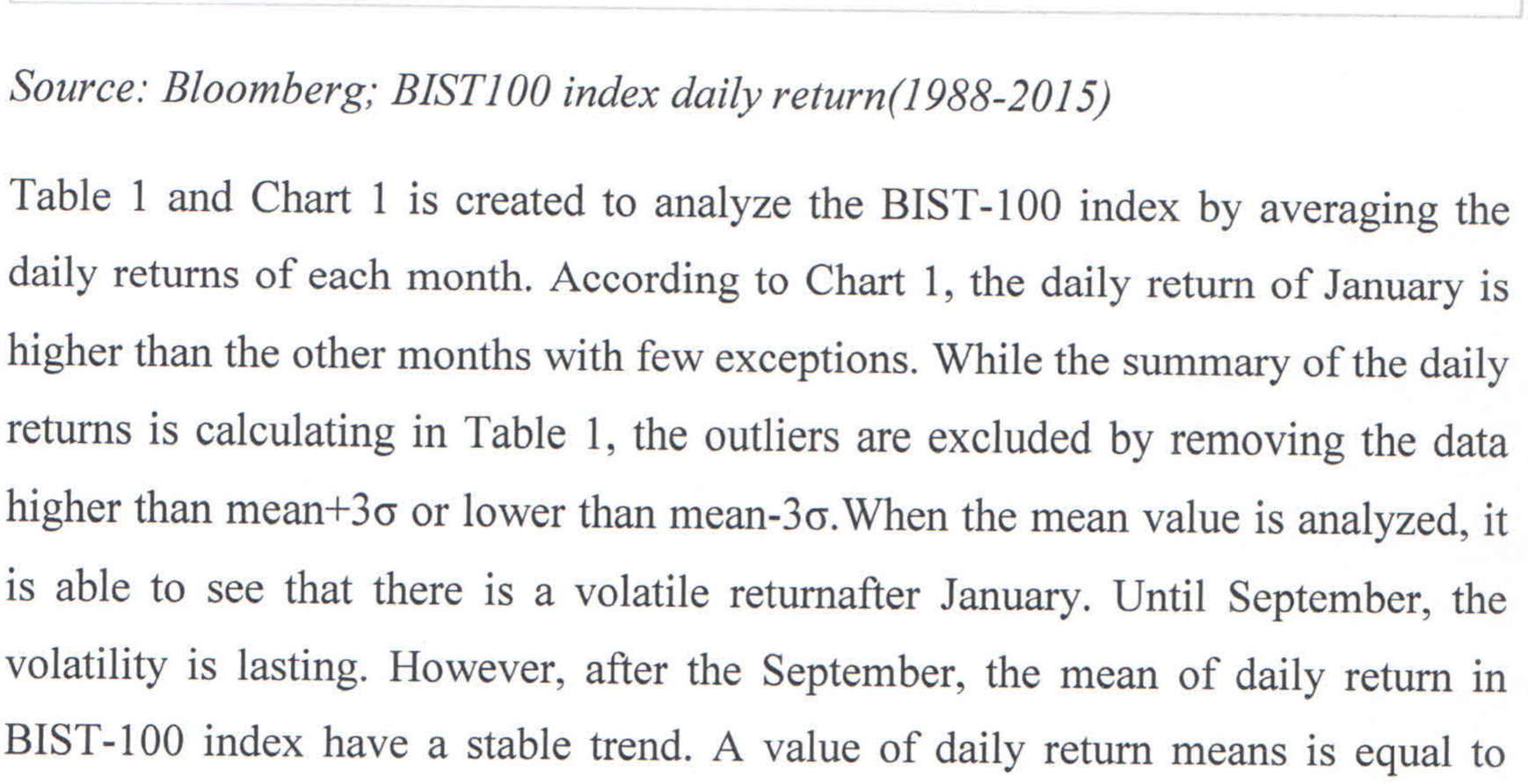
4. DESCRIPTIVE STATISTICS

Table1 Month based BIST 100 average of daily returns

	Daily Returns(%)				
Months	Mean	Min	Max	SDev	Number of Obs.
1	2,1	-48	52	20	524
2	0,7	-34	40	13,1	501
3	0,5	-27	22	10	550
4	0,7	-31	19	12	513
5	0,4	-17	21	7,5	532
6	1,6	-42	40	22	498
7	-0,2	-10	30	5,8	509
8	-0,1	-26	24	12,2	490
9	0,3	-21	22	11,7	505
10	0,3	-12	16	6,1	524
11	-0,2	-18	18	8,3	520
12	0,6	-20	19	7,6	560
All	0,7	-30	30	15,2	6226

Source: Bloomberg; BIST100 index daily return (1988-2015)

Chart1 Month based BIST 100 average of daily returns



Source: Bloomberg; BIST100 index daily return(1988-2015)

Table 1 and Chart 1 is created to analyze the BIST-100 index by averaging the daily returns of each month. According to Chart 1, the daily return of January is higher than the other months with few exceptions. While the summary of the daily returns is calculating in Table 1, the outliers are excluded by removing the data higher than mean+3σ or lower than mean-3σ.When the mean value is analyzed, it is able to see that there is a volatile returnafter January. Until September, the volatility is lasting. However, after the September, the mean of daily return in BIST-100 index have a stable trend. A value of daily return means is equal to 2,1% in January. That is higher than average of all month which is equivalent to 0.13%.

Table 2 Month based all firms in BIST average of daily returns

	All Firms Daily Returns (%) BIST 100			
Months	Mean	Min	Max	SDev
1	0,19	-6,4	3,6	1,3
2	0,10	-5,6	3,1	1,3
3	0,13	-7,7	5,6	1,5
4	0,27	-5,5	3,9	1,1
5	-0,01	-6,8	6,6	1,4
6	-0,07	-11,1	6,2	1,4
7	0,17	-4,6	4,4	1,0
8	0,02	-9,8	3,9	1,4
9	0,14	-4,7	7,5	1,2
10	0,12	-8,7	5,2	1,4
11	0,08	-5,0	8,0	1,5
12	0,12	-5,5	6,8	1,3

Source: Bloomberg; BIST index daily return (2002-2015)

Table 3 Month based big firms in BIST average of daily returns

	Big Firms Daily Returns (%) BIST 100			
Months	Mean	Min	Max	SDev
1	0,12	-6,00	4,09	1,42%
2	0,10	-4,98	3,18	1,36
3	0,10	-8,84	7,05	1,58
4	0,28	-4,70	4,27	1,15
5	-0,01	-7,24	6,67	1,52
6	-0,06	-10,69	6,18	1,48
7	0,23	-4,74	4,85	1,12
8	0,03	-8,89	3,74	1,37
9	0,17	-4,91	8,75	1,34
10	0,14	-8,64	5,88	1,54
11	0,08	-5,25	8,93	1,61
12	0,14	-5,93	6,47	1,32

Source: Bloomberg; BIST index daily return (2002-2015)

Table 4 Month based small firms in BIST average of daily returns

	Small Firms Daily Returns (%) BIST 100			
Months	Mean	Min	Max	SDev
1	0,05	-6,91	3,09	1,24
2	0,10	-6,37	3,47	1,27
3	0,17	-7,08	3,87	1,39
4	0,26	-6,42	3,41	1,08
5	-0,02	-7,08	6,51	1,36
6	-0,07	-11,46	6,17	1,35
7	0,11	-4,35	3,80	0,92
8	-0,00	-10,82	4,17	1,39
9	0,11	-4,59	5,84	1,13
10	0,10	-8,78	4,61	1,33
11	0,08	-5,26	6,95	1,32
12	0,10	-5,95	7,25	1,24

Source: Bloomberg; BIST index daily return (2002-2015)

While Table 2 is analyzing the firm level data, Table 3 and Table 4 are distinguishing the analysis based on the firm size like big firm and small firm. In theTable 2, 308 firms operating in BIST is covered. The data is formed by averaging each firms' daily returns in a monthly based. On the other hand, the Table 3 is generated in order to see the big firms' performance in BIST. The big firms are created by the method as discussed in chapter 3 titled as Data and Methodology. The same method is implemented for small firms and summarized in Table 4.

In the firm level analysis, daily returns of January month attract the attention. The mean values of month are comparable. The January has the second highest mean daily return by the value of 0.0019. Furthermore, the comparison of months in big firms' analysis gives the similar results. The mean of daily return of Januaryin big firms is equal to 0.0012 that is higher than most of the other months. Besides, the small firms' analysis says that the daily return in January is positive and equal to 0.0005. Thus, it is able to interpret that, the mean of daily returns in big firms is higher than the small firms' mean in January.

5. MODEL

$$R_d = \sum_{n=0}^{n} (a_n D_{nd}) + \varepsilon_d$$

R_d = Bist Index Return daily

D_{id} = Dummy variables for months or week based or firm based

The data used in the analysis consists of the daily values of the BIST closing index from 1988 to2015. The closing index values are then used to calculate the daily returns using the formula:

Return = $(BIST_t - BIST_{t-1}) / BIST_{t-1}$

The other data used in the analysis consists of the daily prices of the firms in Bist from January 2, 2002, to March 11, 2015 which is in keeping with the idea that Turkey has been experiencing a more stabilized economy in the last ten years (See Akdoğu, 2011). The closing prices are then used to calculate the daily returns using the formula:

Return =(Price of the Firm $Stock_t$-Price of the Firm $Stock_{t-1}$)/Priceof Firm $Stock_{t-1}$

6. ANALYSIS

Our estimations in following tables are done using Ordinary Least Squares method and the econometric software used is STATA version 14.The empirical results of this paper are supported by the previous research findings that are especially existence of January effect. However, the result related with firm size conflicts with the literature. The statistically significant returns are observed during January in the Turkish Stock Market for the period 1988-2015. The higher return observed in big firms in BIST during the period of 2002-2015 as well.

Table 5 Univariate analysis of daily returns

Dependent Variable	Daily Return
Regressor	(1)
January	0.017**
	(1.97)
Adjusted R^2	0.0004
No of Observations	6804

*The t-stastics are in parantheses. ***, **, and * denote statistical significance at 1%, 5% and 10%, respectively.*
January is the dummy variable takes 1 if date is in January
Source: Bloomberg; BIST100 index daily return (1988-2015)

The model is used:

Daily Return = β0 + β1 (January Dummy) (1)

In the first equation, the regression analysis shown as Table 5 says that the model covers only dummy variables that measures whether the date is inside January or not. According to the results, in BIST, the stocks' returns are %1.7 higher compared to the other months. This result is statistically significant with %95 confidence interval.Lapointe's study displays that as a January effect, 0.7 percent higher return is calculated in the stock exchange market of the US. Besides, there many countries are facing with the January effect in their stock market. For instance, while the January effect is calculated as 2.8 percent higher in Koreastock market, the other Asian countries such as Singapore and Taiwan has experienced around 3 percent higher return in January compared to other months. Hence, there are strong evidence to demonstrate the January effect in Asian countries. Moreover, although India has the exceptional situation for the January Effectcompared to other Asian countries, India has statistically significant positive return as 1.8 percent in January month (Shmuel, J. 2016).

Table 6 Univariate and Multivariate analysis of daily returns

Dependent Variable	Daily Return				
Regressor	(1)	(2)	(3)	(4)	(5)
1st week of January	0.0028				0.004
	(0.11)				(0.16)
2nd week of January		0.038**			0.039**
		(2.19)			(2.22)
3rd week of January			0.019		0.02
			(1.07)		(1.13)
4th week of January				0.006	0.007
				(0.31)	(0.38)
Constant	-0.005*	0.113*	-0.006*	-0.006*	-0,007**
	(-2.23)	(1.26)	(-2.36)	(-2.25)	(-2.68)
Adjusted R^2	0.001	0.006	0.001	0.001	0.003
No of Observations	6804	6804	6804	6804	6804

*The t-stastics are in parantheses. ***, **, and * denote statistical significance at 1%, 5% and 10%, respectively.*
1st week is the dummy variable takes 1 if date is in first week of January, the rest accordingly.
Source: Bloomberg; BIST100 index daily return (1988-2015)

The models are used:

Daily Return = β0 + β1 (1st week of January) (1)

Daily Return = β0 + β2 (2nd week of January) (2)

Daily Return = β0 + β3 (3rd week of January) (3)

Daily Return = β0 + β4 (4th week of January) (4)

Daily Return = β0 + β1 (1st week of January) + β2 (2nd week of January) + β3 (3rd week of January) + β4 (4th week of January) (5)

After analysis of the monthly result, it may be essential to examine the weekly results by evaluating equation 1-5. In order to measure week number effect, for each week of January, dummy variable is created and regressed with dependent

variable called Daily return of stocks. According to Table 6 results, in the second week of January, BIST has higher daily return that is statistically significant according to equation 2. The 5th equation has the regression's result is indicating that among the weeks of January, the only significant week that has higher daily return is 2nd week. In that week, the daily return of BIST is %3.9 higher compared to rest of the weeks.

Table 7 Univariate analysis of daily returns

Dependent Variable	Daily Return			
Regressor	(1)	(2)	(3)	(4)
1week of January	0.0028			
	(0.11)			
2 week of January		0.028*		
		(1.90)		
3 week of January			0.025**	
			(2.17)	
4week of January				0.017**
				(1.97)
Constant	-0.005*	-0.006**	-0.007***	-0.007***
	(-2.23)	(-2.52)	(-2.65)	(-2.71)
Adjusted R^2	0.001	0.004	0.005	0.004
No of Observations	6804	6804	6804	6804

*The t-stastics are in parantheses. ***, **, and * denote statistical significance at 1%, 5% and 10%, respectively.*
2nd week is the dummy variable takes 1 if date is in first two weeks of January, the rest accordingly.
Source: Bloomberg; BIST100 index daily return(1988-2015)

The models are used:

Daily Return = β0 + β1 (First 1 week of January) (1)

Daily Return = β0 + β2 (First 2 week of January) (2)

Daily Return = β0 + β3 (First 3 week of January) (3)

$$\text{Daily Return} = \beta 0 + \beta 4 \text{ (First 4 week of January)} \quad (4)$$

The last analysis of January effect is done by dummy variables that are created by covering first 7 days, first 14 days, first 21 days and first 30 days. In this analysis, 7 and 30 days are already discussed. That means 1th and 4th equations in Table 7 are same with equation 1 in Table 6 and equation 1 in Table 5 respectively. Table 7 is essential to analyze first 14 and 21 days. Hence, 2 weeks dummy variable is statistically significant and during these days, the stock's return will be %2.8 higher. Same case is valid for first 21 days. Again, return of BIST's stocks is %2.5 higher in first 3 week of January. And this result is also statistically significant.

Table 8 Multivariate analyses of daily returns

Dependent Variable	Daily Return	
Regressor	(1)	(2)
January	0.064***	0.025***
	(101.22)	(36.68)
Firm Size	0.025***	0.027***
	(50.49)	(5.34)
Size-January Interaction		0.26***
		(150)
Constant	-0.0023***	-0.001***
	(-11.78)	(4.84)
Adjusted R^2	0.013	0.035
No of Observations	967.231	967.231

*The t-stastics are in parantheses. ***, **, and * denote statistical significance at 1%, 5% and 10%, respectively.*
January is the dummy variable takes 1 if date is in January
Firm_size is the dummy variable takes 1 if the firm is labelled as big
Size_jan_interaction is the interaction dummy including January and firm_size
Source: Bloomberg; BIST100 index daily return(2002-2015)

The models are used:

Daily Return = β0 + β1 (January Dummy) + β1 (Firm Size) (1)

Daily Return = β0 + β2 (First 2 week of January) (2)

Another analysis examining the data based on firm level of BIST. There are firms in different market size. The sizes of firms are compared with the average of BIST. While the firms greater than average are labeled with "big firms", the other is labeled as "small firms". According to the regression analysis with the equation 4 in Table 7, firms' size has significant effect on daily returns. As the result of equation 1 displayed inTable 8states that the stock returns of big firms are %2.5 higher than small firms. Compared to literature results, in BIST firms, a relatively high return is observed by the study of Shelby A. Klock and Frank W. Bacon. According to Shelby A. Klock and Frank W. Bacon (2014), %5 difference is observed by the January effect as used firm level based data. However, in our analysis, by using firm level data, the January effect is measured as %6.4 that is to say in month of January stock returns are higher compared to the other months. The firm level results may follow the reasoning that the big firms may be examined more in BIST compared to small firms by investors. If a calendar effect can be determined in the big firms, the return for investors might be seen as more reliable that is called as highly visible in finance literature. That can be the motivation for the higher return in big firms in BorsaIstanbul.

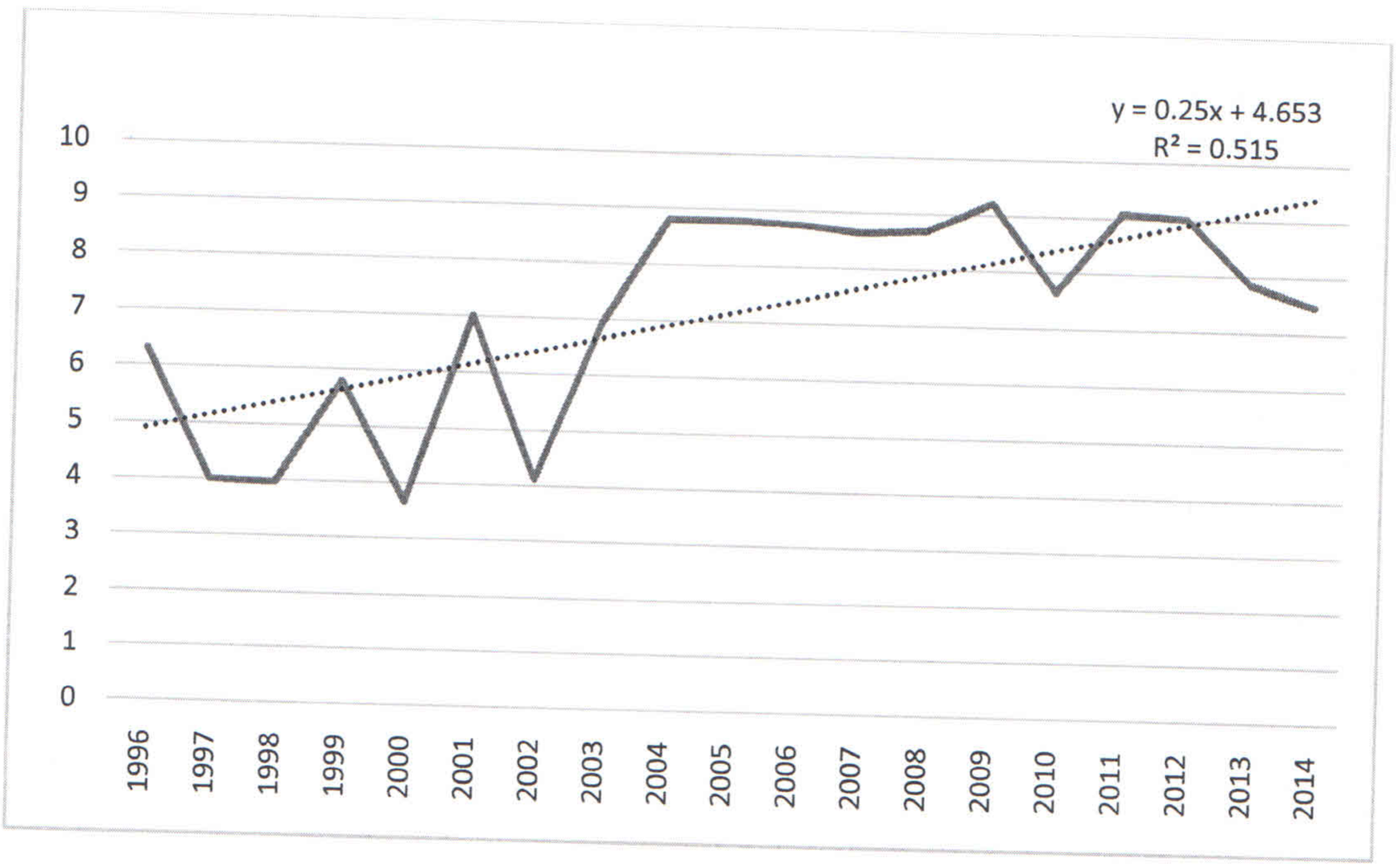
The table 8 explains the effect of firm size and January by using interaction dummy as demonstrated in equation 2. Besides, in table 8, "Firm_size" is created with same method by giving 1 to big firms. A big firm in January may have lower daily return than a small firm in January.In other words, there may be interaction between the two qualitative variables monthly seasonal effect and firm size. Therefore, their effect on mean daily return may not be simply additive as in Table 8but multiplicative as well, as in the following model.

There 3 different independent variables. All of them are statistically significant. Hence, January effect is statistically less significant for small firms compared to

big firms. In other words, in January the mean of daily return of big firms are statistically different from the small ones.

Table 8indicates that 0,024 is the differential effect of January and 0,003 is the differential effect of being a big firm and 0.26 is the differential effect of being a big firm in January.

Chart-2 Annual Mean January Returns



Source: Bloomberg; BIST100 index daily return (1996-2014)

As literature demonstrates that the January effect has decline trend in recent years. In order to measure this decline, we analyzed the January effect year by year. Here, it is essential to subtract the inflation rate from January returns in order to remove the effect of inflation. Inflation might display the returns higher than its real increase.By doing this calculation, the daily returns in January converted to real returns. Then, for each year of January effect is plotted as in the shown Chart 2. Then, we add the trend line that has positive slope. Therefore, year by year the January effect seems increasing. The explanation for the rise in January effect might be high inflation before year 2002. There were crisis period and its effect before 2002. Besides, after crises periods, the returns of BIST also become higher

thanks to stability ofmacroeconomic values. Therefore, both decrease in inflation after 2002 and steady growth of Turkish economy, in recent years' real return of BIST become higher and stable.

7. CONCLUSION

This paper extends recent studies of the January effect by considering the evolution of the daily pattern of the effect by taking into consideration firm size's effect. Before analyzing the firm size effect, the January effect analyzed based on BIST total value. According to the results, in BIST, the stocks' returns are %1.7 higher in January compared to the other months. This result is statistically significant.Beyond the monthly analysis, it is crucial to examine the weekly analysis. The second week of January has higher daily return that is statistically significant. Moreover, among the weeks of January, the only significant week that has higher daily return is 2nd week. The daily return of BIST is %3.9 higher compared to rest of the weeks.

In addition to weekly analysis, it is examined the January effect by covering first 7 days, first 14 days, first 21 days and first 30 days. There is a significant period for the January effect that isfirst 14 and 21 days. The first 14 days' period is statistically significant and the stock's return will be %2.8 higher. This situation is valid for the first 21 days' period as well.Hence, return of BIST's stocks is statistically %2.5 higher in first 3 week of January.

While analyzing the January effect, the firm size is also examined. According to the regression analysis, firms' size has significant effect on daily returns. The stock returns of big firms are %2.5 higher than small firms. To analyze firm effect, it is also important to examine the relation between firm size and monthly seasonal effect. This regression also gives statistically significant result that the firms size and January effect is interrelated. As a result, January effect and the mean of daily return of big firms are statistically different from the small ones.

Although firm based result is conflict with the literature's result. Further research can and should be constructed to investigate to what extend anomaly result for

firm' size analysis is valid compared to literature saying. Accordingly, the dynamics of BIST in January effect should be deeply examined. This research may differentiate BIST from other stock exchange markets.

8. References

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9. APPENDIX

Table-5

Multivariate analyses of daily returns

```
. reg dailyreturn dummy
```

Source	SS	df	MS	Number of obs	=	6,804
				F(1, 6802)	=	3.90
Model	.158856307	1	.158856307	Prob > F	=	0.0485
Residual	277.41156	6,802	.040783822	R-squared	=	0.0006
				Adj R-squared	=	0.0004
Total	277.570416	6,803	.040801178	Root MSE	=	.20195

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dummy	.0174686	.0088511	1.97	0.048	.0001176	.0348196
_cons	-.0069231	.0025574	-2.71	0.007	-.0119364	-.0019099

"dummy" is the dummy variable takes 1 if date is in January

Source: Bloomberg; BIST100 index daily return (1988-2015)

Table-6

Multivariate analyses of daily returns

```
. reg dailyreturn ocak1haftadummysi
```

Source	SS	df	MS	Number of obs	=	6,804
Model	.000475233	1	.000475233	F(1, 6802)	=	0.01
Residual	277.569941	6,802	.040807107	Prob > F	=	0.9141
				R-squared	=	0.0000
Total	277.570416	6,803	.040801178	Adj R-squared	=	-0.0001
				Root MSE	=	.20201

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ocak1haftadummysi	.0028996	.0268694	0.11	0.914	-.0497727	.055572
_cons	-.0054892	.0024593	-2.23	0.026	-.0103102	-.0006681

Ocak1haftadummysi is the dummy variable takes 1 if date is in first week of January

Source: Bloomberg; BIST100 index daily return (1988-2015)

```
. reg dailyreturn ocak2haftadummysi
```

Source	SS	df	MS	Number of obs	=	6,804
Model	.194720432	1	.194720432	F(1, 6802)	=	4.78
Residual	277.375695	6,802	.04077855	Prob > F	=	0.0289
				R-squared	=	0.0007
Total	277.570416	6,803	.040801178	Adj R-squared	=	0.0006
				Root MSE	=	.20194

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ocak2haftadummysi	.0383611	.017555	2.19	0.029	.0039478	.0727744
_cons	-.006226	.0024728	-2.52	0.012	-.0110734	-.0013786

Ocak2haftadummysi is the dummy variable takes 1 if date is in second week of January

Source: Bloomberg; BIST100 index daily return (1988-2015)

```
. reg dailyreturn ocak3haftadummysi
```

Source	SS	df	MS		
Model	.047073891	1	.047073891	Number of obs	= 6,804
Residual	277.523342	6,802	.040800256	F(1, 6802)	= 1.15
				Prob > F	= 0.2828
Total	277.570416	6,803	.040801178	R-squared	= 0.0002
				Adj R-squared	= 0.0000
				Root MSE	= .20199

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ocak3haftadummysi	.0187934	.0174963	1.07	0.283	-.0155048	.0530916
_cons	-.0058405	.0024736	-2.36	0.018	-.0106896	-.0009914

Ocak3haftadummysi is the dummy variable takes 1 if date is in third week of January

Source: Bloomberg; BIST100 index daily return (1988-2015)

```
. reg dailyreturn ocak4haftadummysi
```

Source	SS	df	MS		
Model	.004003187	1	.004003187	Number of obs	= 6,804
Residual	277.566413	6,802	.040806588	F(1, 6802)	= 0.10
				Prob > F	= 0.7541
Total	277.570416	6,803	.040801178	R-squared	= 0.0000
				Adj R-squared	= -0.0001
				Root MSE	= .20201

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ocak4haftadummysi	.0056675	.0180948	0.31	0.754	-.029804	.0411391
_cons	-.0055707	.0024721	-2.25	0.024	-.0104168	-.0007245

Ocak4haftadummysi is the dummy variable takes 1 if date is in fourth week of January

Source: Bloomberg; BIST100 index daily return (1988-2015)

```
. reg dailyreturn haftalıkdummy2
```

Source	SS	df	MS		
Model	.147154588	1	.147154588	Number of obs	= 6,804
Residual	277.423261	6,802	.040785543	F(1, 6802)	= 3.61
				Prob > F	= 0.0575
Total	277.570416	6,803	.040801178	R-squared	= 0.0005
				Adj R-squared	= 0.0004
				Root MSE	= .20195

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
haftalıkdummy2	.0280836	.0147849	1.90	0.058	-.0008995	.0570666
_cons	-.0062573	.0024836	-2.52	0.012	-.011126	-.0013887

Haftalıkdummy2 is the dummy variable takes 1 if date is in first two weeks of January

Source: Bloomberg; BIST100 index daily return (1988-2015)

```
. reg dailyreturn haftalıkdummy3
```

Source	SS	df	MS		
Model	.192128828	1	.192128828	Number of obs	= 6,804
Residual	277.378287	6,802	.040778931	F(1, 6802)	= 4.71
				Prob > F	= 0.0300
Total	277.570416	6,803	.040801178	R-squared	= 0.0007
				Adj R-squared	= 0.0005
				Root MSE	= .20194

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
haftalıkdummy3	.0248078	.011429	2.17	0.030	.0024033	.0472123
_cons	-.0066608	.0025094	-2.65	0.008	-.0115799	-.0017416

Haftalıkdummy3 is the dummy variable takes 1 if date is in first three weeks of January

Source: Bloomberg; BIST100 index daily return (1988-2015)

```
. reg dailyreturn haftalıkdummy4
```

Source	SS	df	MS		
Model	.158856307	1	.158856307	Number of obs	= 6,804
Residual	277.41156	6,802	.040783822	F(1, 6802)	= 3.90
				Prob > F	= 0.0485
Total	277.570416	6,803	.040801178	R-squared	= 0.0006
				Adj R-squared	= 0.0004
				Root MSE	= .20195

dailyreturn	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
haftalıkdummy4	.0174686	.0088511	1.97	0.048	.0001176	.0348196
_cons	-.0069231	.0025574	-2.71	0.007	-.0119364	-.0019099

Haftalıkdummy4 is the dummy variable takes 1 if date is in first 4 weeks of January

Source: Bloomberg; BIST100 index daily return (1988-2015)

Table-8

Multivariate analyses of daily returns

```
. reg daily_return sizedummy dummyjanuary
```

Source	SS	df	MS		
Model	373.636864	2	186.818432	Number of obs	= 967,231
Residual	28214.9393	967,228	.029170929	F(2, 967228)	= 6404.27
				Prob > F	= 0.0000
Total	28588.5762	967,230	.029557164	R-squared	= 0.0131
				Adj R-squared	= 0.0131
				Root MSE	= .17079

daily_return	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
sizedummy	.0247632	.0004905	50.49	0.000	.023802	.0257245
dummyjanuary	.0635616	.000628	101.22	0.000	.0623309	.0647924
_cons	-.0022994	.0001952	-11.78	0.000	-.0026819	-.0019169

dummyjanuary is the dummy variable takes 1 if date is in January

sizedummy is the dummy variable takes 1 if the firm is labelled as big

Source: Bloomberg; BIST100 index daily return (2002-2015)

```
. reg daily_return dummyjanuary sizedummy size_jan_inter
```

Source	SS	df	MS		
Model	1015.34861	3	338.449535	Number of obs	= 967,231
Residual	27573.2276	967,227	.028507504	F(3, 967227)	= 11872.30
				Prob > F	= 0.0000
Total	28588.5762	967,230	.029557164	R-squared	= 0.0355
				Adj R-squared	= 0.0355
				Root MSE	= .16884

daily_return	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dummyjanuary	.0246763	.0006727	36.68	0.000	.0233578	.0259948
sizedummy	.0027068	.0005066	5.34	0.000	.0017138	.0036998
size_jan_inter	.2619697	.0017461	150.03	0.000	.2585474	.2653919
_cons	.0009393	.0001941	4.84	0.000	.0005588	.0013198

dummyjanuary is the dummy variable takes 1 if date is in January

sizedummy is the dummy variable takes 1 if the firm is labelled as big

Size_jan_interaction is the interaction dummy including January and firm_size

Source: Bloomberg; BIST100 index daily return (2002-2015)

Table-1

Month based BIST 100 average of daily returns

	Daily Return (%)				
Months	Mean	Min	Max	SDev	Number of Obs.
1	2,1	-48	52	20	524
2	0,7	-34	40	13,1	501
3	0,5	-0,27	22	10	550
4	0,7	-0,31	19	12	513
5	0,4	-17	21	7,5	532
6	1,6	-42	40	22	498
7	-0,2	-10	30	5,8	509
8	-0,1	-26	24	12,2	490
9	0,3	-21	22	11,7	505
10	0,3	-12	16	6,1	524
11	0,2	-18	18	8,3	520
12	0,6	-20	19	7,6	560
All	0,7	-30	30	15,2	6226

Source: Bloomberg; BIST100 index daily return (1988-2015)