Uluslararası Alanya İşletme Fakültesi Dergisi
Yıl:2015, C:7, S:3, s.105-110

International Journal of Alanya Faculty of Business
Year:2015, Vol:7, No:3, s. 105-110

Is There Ramadan Effect in Turkish Stock Market?

Türkiye Hisse Senedi Piyasasında Ramazan Ayı Etkisi Var Mı?

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Key Words:
Ramadan effect, Turkish Stock Market, Islamic Months, Stock Returns

Jel Classification:
G10, G14

ABSTRACT

There are many studies about the calendar anomalies. However, little attention has been given to Islamic (Hijri) calendar effects. Most of studies about Hijri calendar effects are about Ramadan effect. Ramadan effect refers to significantly higher stock returns in month "Ramadan" than the rest of months of the Hijri calendar. This paper investigates the effect of Ramadan on Turkish Stock Market (BIST 100) using the daily return data for the period of 1988 to 2014 with the application of One Way ANOVA test. The results show that there are significant differences among the Islamic months of years in terms of stock returns, however, there is not a "Ramadan" effect in Borsa Istanbul 100 Index (BIST 100) during the examined period. The month Rajab has the highest and the Rabi'al – thani (Rabi' II) has the lowest mean returns. Ramadan has the fourth highest mean return.

Anahtar Kelimeler:
Ramazan ayı etkisi, BIST 100, İslami Aylar, Hisse Senedi Getirileri

Jel Sınıflandırması:
G10, G14

ÖZ

Takvim anomalileri ile ilgili birçok çalışma mevcuttur. Ancak, takvim anomalileri içinde İslami (Hicri) takvim etkisine çok az önem verilmiştir. Hicri takvim etkileri ile ilgili çalışmaların büyük bir kısmı Ramazan etkisi ile ilgilidir. Ramazan etkisi, Hicri takvimde Ramazan ayındaki hisse senedi getirilerinin diğer aylara göre önemli derecede yüksek olduğunu belirtir. Bu çalışmanın amacı; Türkiye Hisse Senedi piyasasında (BIST 100), 1988-2014 dönemine ilişkin günlük hisse getiri verileri kullanılarak ve Tek Yönlü ANOVA testini uygulayarak Ramazan ayı etkisini araştırmaktadır. Araştırma bulgularına göre İslami aylar arasında hisse senedi getirileri açısından önemli bir farklılık bulunmaktadır, ancak bulgular incelenen dönemde Borsa Istanbul 100 (BIST 100) Endeksinde Ramazan ayı etkisinin olmadığını göstermektedir. Recep ayı en yüksek, Rebiülahir ayı ise en düşük ortalama getiriye sahip aylardır. Ramazan ayı en yüksek ortalama getiriye sahip dördüncü aydır.

1. INTRODUCTION

Because calendar anomalies show the abnormalities in stock returns and contradict to the "efficient market hypothesis", they have been widely researched in both mature and emerging capital markets. These anomalies are day of the week effect, January effect, turn of the month effect, holiday effect and weekend effect.

While "Day of the week effect" explains that returns on some trading days are higher than others (Marrett, Worthington; 2008, 3), "January effect" describes that the average stock returns of January are higher than the average stock returns of the rest of the year (Rathinasamy, Mantripragada, Loh, 1993: 67). "The pre-holiday effect" states that the average stock returns before holidays are higher than other days of the year (Dimitriu, Stefanescu, Nistur, 2011: 1). "Weekend effect" releases that the mean return between the closing of a week and the closing of the first trading day of the following week is negative and the lowest of the week (Hsaio, Solt, 2004: 53). "Turn of the month effect" explains that the stock prices have tendency to increase during the last and first few days of each month (Maberly, Waggoner, 2000: 1).

However, some recent studies focused on a calendar anomaly based on Islamic lunar calendar called "Ramadan Effect".

The Islamic calendar (or Hijri calendar) is a lunar calendar. It contains 12 months that are based on the motion of the moon. Months are Muharram, Safar, Rabi'al awwal (Rabi' I), Rabi'al – thani (Rabi' II), Jumada al-awwal (Jumada I), Jumada al-thani (Jumada II), Rajab, Sha'aban, Ramadan, Shawwal, Dhu al-Qi'dah, Dhu al-Hijjah respectively. 12 lunar months are 12*29,53 = 354,36 days, so lunar calendar is consistently 11 days shorter than a solar year. The Islamic calendar is the

official calendar in countries around the Gulf, especially Saudi Arabia. Other Muslim countries use the Islamic calendar for religious purposes and use the Gregorian calendar for civil purposes. There are many religious months like sacred three months (Rajab, Sha'ban and Ramadan),and days like Ashura, Eid ul-Adha and Eid ul-Fitr in Hijri calendar.

Three sacred months are Rajab, Sha'ban and Ramadan in Islamic lunar calendar. Rajab, Sha'ban and Ramadan are seventh, eighth anf ninth months of Hijri calendar respectively. Because these months include Laylat al-Raghaib, Laylat al-Bara'ah, Laylat al-Miraj and Laylat al-Qadr, muslims give more importance to these months. The first friday night of Rajab is called Laylat al-Raghaib. Although it is not mentioned in the Quran, it is believed that the Allah forgives and gives good works to muslims who pray at that night. Laylat al-Bara'ah is the 14th night of Sha'ban. The Quran has been totally launched at this night. The 27th night of Rajab (Laylat al-Miraj), prophet Mohammad (may peace be upon him) has ascended to heaven. In Islamic belief the Quran has been launched at Laylat al-Qadr and it is more auspicious than thousand months. Although there is not a concrete source about sanctity of Rajab and Sha'ban, Muslims look forward to reach and try to pray more, also refrain from all types of sins and have a positive mood in these months.

Ramadan is one of the "three sacred months" (Rajab, Sha'ban and Ramadan) and the most venerated month of Islamic calendar. It is the ninth month of Hijri calendar. Ramadan significantly changes the social life of Muslims. Muslims fast, try to pray more, refrain from all types of sins and have a positive mood during the month of Ramadan. This significant changes in daily lives which affect their social life and positive mood of Muslims during Ramadan engage researchers' interest if there is Ramadan effect in stock returns. "Ramadan Effect" refers to significantly higher stock returns in month "Ramadan" than the rest of months of the Islamic calendar. Although, many non-moslem investors trade in muslim countries' stock markets, the general social mood of the population has a significant effect on stock markets in Muslim countries (Al- Hajieh, Redhead and Rodgers; 3). Moreover, in the management literatüre, it is stated that the perception of an individual has been affected by individual characteristics, past experiences or social environment (Eren, 2008:70). There are many studies discussing that investor sentiment and social mood can effect stock prices. Hirshleifer and Shumway (2003) show that sunshine is strongly and positively correlated with stock returns. This may be because sunlight affects mood and people tend to be more optimistic in evaluating their future prospects when they are in a good mood than bad mood. Yuan, Zheng and Zhu (2002) investigated the relation between lunar phases and stock market return why psychological studies say that lunar phases affect human behavior and mood. Their study includes 48 countries' stock markets and they found that stock returns are lower on days around a full moon than a new moon. Moreover, Edmans, Garcia and Norli (2007) investigated how changes in investor mood affect stock market. They show that there is a significant decline in stock market index after national soccer team losses.

The aim of this study is to analyze if Turkish Stock Market (BIST 100) has "Ramadan effect" in the period of 1988-2014 . This paper extends the studies in Islamic lunar calendar effect with more recent time period (1988-2014).

2.LITERATURE REVIEW

The persistence of calendar anomalies in stock market returns has led to researchers more focus on this subject. Though there are so many studies about calendar anomalies, studies about Islamic calendar effect has been taken little attention by researchers and most of studies are about "Ramadan Effect".

Fazal (1998) examines the effect of Ramadan during 1989 to 1993 in Karachi Stock Market in consideration to mean returns and stock returns volatility. His study results show a significant decline in stock returns volatility in month Ramadan, however, mean return indicates no significant change.

Husain (1998) examines the Ramadan Effect in Pakistani Equity Market. He documents that there is a significant decline in the volatility of stock returns but not a significant change in mean returns.

Oğuzsoy and Güven (2004) investigates the existence of the effect of Holy days (the feast of Ramadan and the feast of Sacrifice) on stock returns at Istanbul Stock Exchange (Borsa Istanbul- BIST 100) for the period between 1988 and 1999. Their study reveals that ISE National 100 Composite Index have high returns two days before religious holidays and ISE 30 Index stocks' average return on Day 2 (two days before religious days) is about seven times higher than the average return of other days.

Seyyed, Abraham and Al-Hajji (2005) examines the Ramadan effect in terms of volatility in Saudi Arabian stock market and their study find evidence of systematic decline in volatility during Ramadan.

Yavuz, Güriş and Kıran (2008) investigates the Holy Days' effect (the feast of Ramadan and the feast of Sacrifice) on the volatility of trade deficit in Turkey between 1984 to 2006. The results show that the trade deficit is maximum in December and minimum in January. In addition, the volatility of trade balance is maximum in December and minimum in September.

Mustafa (2011) uses conditional and unconditional risk analyses to investigate the effect of Islamic months on Karachi Stock Market between December 1991 to December 2010. His study concluded that there is Ramadan effect in Karachi Stock Market. He also noted that Karachi Stock Market is high risky during Ramadan.

Al-Hajieh, Redhead and Rodgers (2011) examines the calendar effects in Islamic Middle Eastern stock markets in the period of 1992-2007 and they find strong evidence of positive calendar effects during the month of Ramadan. They states that this can be attributed to the positive investor mood or sentiment.

Ariss, Rezvanian and Mehdian (2011) states in their study about Gulf Cooperation Council investors that their trading activity is likely to be reduced during Ramadan.

Bialkowski, Etebari and Wisniewski (2012) investigates the Ramadan effect in 14 Muslim countries in period of 1989-2007. They find that the returns in Ramadan are almost nine times higher than the rest of the year. However, they could not find any difference about trading volume.

Akrami, Garkaz and Mehrazin (2012) find a significant relationship between the month Ramadan and stocks abnormal returns in Tehran stock exchange in the period of 2005-2010 by using Variance analysis and repetitive measures.

Almudhaf (2012) tests the seasonality of monthly stock returns according to the Islamic calendar and investigates the existence of Ramadan effect in twelve stock markets of Islamic countries. The study results show significant presence of Ramadan effect in Jordan, Kuwait, Pakistan and Turkey. Also results indicate evidence of seasonality in stock returns based on Islamic calendar.

Ramezani, Pouraghajan and Mardani (2013) examines the Tehran Stock Exchange during 2002-2012 if there is Ramadan effect. They find a positive and significant relationship between changes of stock exchange and Ramadan, Shawwal and Rabi Al-Awwal months. They also states in their study that there is negative and significant relationship between Stock exchange index and Jumada II, Rabi, Muharram and Rajab months.

Bialkowski, Bohl, Kaufmann and Wisniewski (2013) examines if the mutual fund managers are aware of the Ramadan effect in Turkish Stock Market. They realizes that risk adjusted fund performance for domestic institutional funds, domestic hybrid funds and foreign Turkish equity funds is higher during Ramadan than the rest of the year.

Al-Khazali (2014) searches the Ramadan effect in 15 Muslim countries and altogether as a portfolio. He found Ramadan effect in most countries during the sub-periods 1996-2000 and 2001-2006 and the portfolio during the sub-period 1995-2007. However, he notes that its magnitude diminishes during the financial crisis period (2007-2012).

Shah and Ahmed (2014) examines but not found Ramadan Effect on Karachi Stock Market during 2010-2012.

Mitchell and others (2014) find strong evidence for Ramadan effect in Sharia-compliant markets. They reveals that the effect is strongest in the days leading up to Ramadan and around the beginning of Ramadan's 20th day.

3.DATA AND METHODOLOGY

The Islamic months' date values have been found from the website http://www.staff.science.uu.nl/~gent0113/islam/diyanetcalendar_converter.htm. The data in this website is provided by the website of the Turkish Presidency of Religious Affairs.

Daily Borsa Istanbul 100 Index (BIST 100) data is extracted from the website of ISE for the period of 1988 to 2014. First of all, the monthly returns of all years and the Ramadan have been found. The monthly return of BIST 100 index is calculated as follows:

$$R_{mt} = \ln(ISE_t / ISE_{t-1}) \quad (1)$$

R_{mt} =Return of the Islamic month t,

ISE_t = Value of ISE index in Islamic month t,

ISE_{t-1} = Value of ISE index in Islamic month (t-1)

Because the return data have both positive and negative values, all values have been transformed to positive by adding them the most negative value's positive value.

Table 1 shows the mean returns of Hijri months. According to the results, the highest mean return month is Rajab, and the others are Jumada al-awwal (Jumada I), Shawwal and Ramadan respectively

Table 1: Mean Returns of Hijri Months

	N	Mean	Std. Deviation
Muharram	27	,0504	,11053
Safar	27	,0216	,15655
Rabi'al awwal	27	-,0001	,11830
Rabi'al - thani	27	-,0356	,10881
Jumada al awwal	27	,0868	,19488

Jumada al - thani	27	,0189	,13211
Rajab	27	,1075	,16094
Shaban	27	,0548	,19603
Ramadan	27	,0677	,15353
Shawwal	27	,0713	,16825
Dhu al - Qi'dah	27	,0058	,11620
Dhu al - Hijjah	27	,0401	,12388
Total	324	,0408	,15062

In order to apply ANOVA test, first of all, we tested that if the returns of Hijri months'are normally distributed and variances are homogeneous.

Hypothesis:

H_0 : Return data are normally distributed.

H_1 : Return data are not normally distributed

The data have been tested if they are normally distributed by Kolmogorov-Smirnov test and found that they are normally distributed (p>0,05). In Table 2, it is seen the test of homogenous of variances which is the basic assumption of One Way ANOVA. Variances are homogeneous according to Levene Statistics (p>0,05) (Table 2). So, we can apply ANOVA to the data set.

Table 2: Test of Homogenity of Variances

Levene Statistic	df1	df2	Sig.
1,252	11	312	,252

The hypothesis about ANOVA test are shown below;

Hypothesis

H_0 : There are not differences among Hijri months in terms of return.

H_1 : There are differences among Hijri months in terms of return.

The ANOVA table tests that if there are differences among mean returns of Hijri months. According to the Table 3, there are differences among Hijri months in terms of return (F=2,026, p=0,026). So, we reject H_0 hypothesis and accept H_1 hypothesis.

Table 3: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,488	11	,044	2,026	,026
Within Groups	6,839	312	,022		
Total	7,328	323			

After finding mean return differences among Hijri months', we applied Tukey's HSD (honest significant difference) which is one of post hoc multiple comparisons tests in order to find the mean returns which are significantly different from each other. According to the results, the difference is just because of 4th and 7th months which are Rabi'al – thani and Rajab respectively (p=0,022) (Table 4).

Table 4 : Multiple Comparisons Tukey HSD Test (Rabi'al Thani)

Hijri Months	**Mean Difference**	**Sig.**
Muharram	-0,08593	0,6
Safar	-0,05714	0,959
Rabi'al awwal	-0,03545	0,999
Jumada al awwal	-0,12241	0,103
Jumada al - thani	-0,05448	0,971
Rajab	**-,14309***	**0,022**

Shaban	-0,09039	0,52
Ramadan	-0,10326	0,306
Shawwal	-0,10686	0,256
Dhu al - Qi'dah	-0,04138	0,997
Dhu al - Hijjah	-0,07571	0,771

Table 5 shows the multiple comparisons Tukey HSD Test of Ramadan and the rest of Hijri months. According to the results, mean returns of Ramadan are not different from the rest of other months' of Hijri calendar. So, we cannot say that there is a Ramadan effect in Istanbul Stock Exchange in the examined period.

Table 5 : Multiple Comparisons Tukey HSD Test (Ramadan)

Hijri Months	Mean Difference	Sig.
Muharram	0,01733	1
Safar	0,04612	0,992
Rabi'al awwal	0,06782	0,875
Rabi'al - thani	0,10326	0,306
Jumada al awwal	-0,01914	1
Jumada al - thani	0,04878	0,988
Rajab	-0,03983	0,998
Shaban	0,01287	1
Shawwal	-0,0036	1
Dhu al - Qi'dah	0,06188	0,93
Dhu al - Hijjah	0,02755	1

4. Conclusion

Calendar anomalies show the abnormalities in stock returns in different time intervals, so they have been widely researched in both mature and emerging capital markets. Ramadan effect is one of them. "Ramadan Effect" refers to significantly higher stock returns in "Ramadan" than the rest of months of the Islamic calendar. It has been mentioned in the studies of Hirshleifer and Shumway (2003), Yuan, Zheng and Zhu (2002) and Edmans, Garcia and Norli (2007) that mood and sentiment of investors can affect stock returns. We searched the Ramadan effect in Turkish Stock Market (BIST 100) in the period of 1988-2014, if positive mood affects the stock market returns. The results show that the month Rajab has the highest and the Rabi'al – thani (Rabi' II) has the lowest mean returns. Ramadan has the fourth highest mean returns. The results also show that there is not "Ramadan Effect" in the examined period.

The results about the "Ramadan effect" are inconsistent with Bialkowski, Etebari, Wisniewski's (2012) and Almudhaf's (2012) outcomes. This may due to using different time periods. However this study will not only contribute to the literature about Islamic calendar but also would be useful for investors who trade in Turkish stock market. We cannot state that stock investors in Turkish stock market would benefit from stock returns during the month Ramadan relative to the other months of the year. Although, there are significantly differences between Hijri months in terms of stock returns, Ramadan has the fourth highest mean returns in the period.

According to the research results following views can be expressed:

- There is not a"Ramadan Effect" in Istanbul Stock Exchange in the period of 1988-2014.
- The results of this study is inconsistent with and differ from some other studies' (Bialkowski, Etebari, Wisniewski's (2012) and Almudhaf (2012)) results. This brings an expansion to the calendar effects scientifically.
- The study will contribute to the future researches about calendar effects in consideration of the findings.
- Because the study has a cultural dimension, it will contribute to the development of international stock markets.

- In the management science, the perception of individual has a great impact in the success of activities. So, it has given by the study that how individual perceptions following an orient in concept of investment in the stock markets.

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