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Full Length Research Paper

Efficient Market Hypothesis and the Calendar Effect on the Returns of Shares: Evidence from Amman Stock Exchange

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This research aims at testing the calendar effect on the returns of shares in the ASE, especially Ramadan and the end of the year effects. The research was applied on a sample of shares of (13) companies listed in the Amman Stock Exchange, from different sectors, for the year 2006 in comparison with year 2015. Empirical results revealed significant negative impact of Ramadan on returns, and significant positive impact of January on returns. These findings are of utmost interest amidst investors, researchers and practitioners.

Keywords: *Efficient Market Hypothesis, Calendar Effect, Stock return, Amman stock Exchange*

INTRODUCTION

Efficient Market Theory is based on the fundamental assumption that investors' decisions are rational. Investors take their decisions to maximize their benefit. Thus, investors take these theories to judge their investment values and then decide to sell or buy; relying on the information they have. However, the succession of crises and imbalances in the financial markets, especially in recent years, and in most countries that rely heavily on the financing of investments on these markets, has made those interested question the applicability of the efficient

market theory in practice. A great debate arose among researchers and academics who tried to reconsider the extent to which the efficient market theory is applicable. The debate addressed especially the basic assumptions on which the theory was built. Among other points, some are of a considerable weight: the rationality of investors, i.e., their rationality in taking decisions on financial assets investments, not relying on luck, guessing and following others (herd behavior), random behavior in buying or

selling decisions, and their adequate timing, leading to distortions, sharp deviations and anomalies in markets.

Modern academic studies and research have produced what is known as the behavioral financial theory, which depends in essence on the psychological dimension of the investor in making investment decisions and choosing alternatives to the financial assets traded. This made the investment behavior of several investors irrational and non-prudent, while the efficient market theory relies on rationality and prudence as basic assumptions. This new trend in finance sought to explain the anomalies observed in the financial markets.

Cognitive psychology, which focuses on the behavior of individuals, is a fundamental basis of the behavioral financial science that interprets phenomena and behavior within the financial markets, and, thus, explaining irrational investment decisions, not based on the analysis of the main factors for maximizing the benefit. The fact is that a large part of the investors' decisions lack rationality and prudence. This is reflected in many behaviors and decisions of investors during trading sessions in the financial markets.

Because of the interplay of factors influencing the change in the prices of financial assets in the financial market, the behaviors of investors were included with those factors, together with their implications and the consequences in prices change, trading volume and other market indicators. The behavioral financial theory tries to study these behaviors, by tracking and measuring the impact the behaviors of dealers within the financial market, and the extent of their reflection on prices. The offices of financial advisory and analysis attach great importance to the reflection and impact of these behaviors on the prices of financial assets, and thus, on the efficiency of the financial market, because of prices bias and the gap between market values and real values.

Some scholars sought to find logical explanations of the abnormal or strange phenomena, underlining that the investment decision is the product of human beings governed by human behavior and information in the possession of the decision-maker. Therefore, the researchers, in their interpretation of the anomalies, adopted a modern approach that relies on theories of behavior and psychological perception, in conjunction with traditional finance theories.

Anomalies in the world of investment, express the situation in which the performance of the market obviously differs from the assumption of the theory of market efficiency. The deviation in financial markets is known as the situation where the performance of a share or a group of shares differs from what is expected in the theoretical framework of market efficiency. Some of these deviations appear once and disappear and others continue to emerge. Some investors try to exploit such deviations to outperform the rest of the investors and make high profits as a result.

The concept of deviation in the financial market also includes any event or period of time that can be exploited to produce extraordinary profits that are beyond the equilibrium and pricing models of financial market literature, where risk is the only factor determining the amount of additional profit. Although the market efficiency hypothesis dictates that expected returns should be distributed over days, months and years, and not to be concentrated at a specific time, many evidence is found on that extraordinary profits accompany year, week, month, and holiday cycles.

One of the important effects that fall under the influence of the calendar effect is the impact of the month of Ramadan (Ramadan Effect), which follows the Hijri Muslim calendar, and indicates a relatively low average return compared to the rest of the Hijri months.

A number of researches have been conducted on the impact of the month of Ramadan on the returns of equities in the financial markets, and have shown a fluctuation in stock prices and a decrease in trading during the month of Ramadan. The researchers provided many possible explanations for the impact of Ramadan, especially in Islamic countries. Some of of the researchers explained it as being a result of the lives-style change of Muslim investors during this month and their preoccupation with religious matters, while Ramadan Effect was interpreted by others as being a result of lower working hours, which, in turn, leads to a decline in economic activity. The behavioral financial theory, which is concerned with the psychological and behavioral aspects of the financial market, found that investors in Ramadan do not pay much attention to their investments as in the rest of the months.

The empirical results of many studies have shown the possibility of realizing extraordinary profits because of the impact of Ramadan. The general trend of the financial markets investors' thinking in Islamic countries could create a trend in the movement of shares this month. This trend allows the possibility of capital gains, when building strategies commensurate with Market situation, meaning that in the event of lower yields, and therefore lower equity prices in this month, it would be possible to make profits when buying shares that have fallen in price and selling them in the next month, where they are expected to rise again.

This research aims at testing the calendar effect on the returns of shares in Amman Stock Exchange (ASE), especially the monthly and the end of the year effects, by applying the research methodology on a sample of shares of (13) companies, from several sectors, listed in ASE for the year 2006 in comparison with year 2015.

Significance of the Study

The importance of the study stems from the importance

of the issues of behavioral finance and the discovery of the most important anomalies, deviations and abnormal phenomena that affect the returns of shares of companies listed on the Amman Stock Exchange.

Statement of the Problem

The efficiency of the stock market depends on the behavior of the stock prices of the listed companies. If the behavior is independent, closing prices are also independent, and there is no serial or sequential correlation between closing prices from one period to another, the investor can not achieve extraordinary profits. Thus, is it possible to rely on current stock prices to predict future ones? The problem can be stated in the following main question:

What is the extent of the influence of anomalies and abnormal phenomena that fall under the calendar effect, which is, within the scope of this research, the impact of the month of Ramadan, and the impact of the end of the year on the returns of shares of the under study sample companies?

This main question is divided into the following sub-questions:

1. What is the impact of the holy month of Ramadan on the returns of shares of the sample of companies under study?
2. What is the impact of the month of January on the returns of the shares of the sample of companies under study?

Population and Sample

Research population consists of all companies listed on the Amman Stock Exchange and publish their financial statements for the period 2006-2015. The sample of the study consisted of a number of (13) companies, representing the most important sectors of companies listed on the Amman Stock Exchange. The sectors are: banking, industrial, energy and services. The closing prices of the shares of these companies were collected in both Ramadan and January for the years 2006 and 2015.

Methodology

The descriptive analytical approach was used in this research, and financial analysis of price data of shares of companies listed on the Amman Stock Exchange was carried out. This approach is widely considered as one of the most common approaches in terms of social and human phenomena analysis, and it is commensurate with the subject matter of the research.

The researchers utilized several available statistical methods and tools. The monthly closing prices of companies listed on the ASE were compiled from the beginning of 2006, compared to the end of the year 2015.

LITERATURE REVIEW

Many researchers have investigated the relationship between Calendar Effect and the performance of the stock exchange, and the findings have been rather controversial. For instance:

Białkowski, Etebari & Wisniewski (2012) examined the religion effect (fasting effect) on stock market to determine the investor sentiment and the returns of stock during the month of Ramadan. For comparison purposes, they denominated the continuously compounded returns into the US dollars and annualized all of them. They found a remarkable difference between the means across the sampled stock markets.

Białkowski et al., (2013) took out the data from the domestic mutual funds of Turkey with focus of investment on the equities of Turkey for the period from January 2000 to March 2011. The results indicated that the majority of funds that the managers were actively managing had the tendency to increase the exposure of equity around the time of Ramadan and the festive of Eid al-Fitr. They noted that the managers enhanced the performance of the risk-adjusted funds and the foreign equities of Turkey during the period of Ramadan between the year of 2000 and 2011. However, the domestic index funds were exceptions to the above, because they experienced a higher increase in the flows of funds from the investors. The assumption was that these investors had the motive of participating in the stock market rally. The index funds were slow and could not convert the cash inflows into the stock holdings that made it detrimental to their timing of the performance.

Al-Ississ (2010) divided Ramadan month into groups of 10 days to run a pooled fixed effects panel regression across all the financial markets that he examined. His paper choose (17) Islamic countries within (11) years (1988-2009). He lagged the return variable for the nonsynchronous effects of trading and used the day of the month and the week as the dummies of the year to control the seasonal and calendar regularities. According to him, the holier days of Ramadan had consistently been having higher returns than other months. He noted that the last ten days (0.18%) of this festive season usually had a higher return than the first ten days (0.07%) of the month. He also found out that the mean returns for the period of the last five days that were odd were 0.24%, which was 3.6 times the overall mean return on all other days of the month.

Hajieh (2011) extracted Ramadan effect in mid-east region (Bahrain, Egypt, Kuwait, Jordan, Qatar, Saudi,

Table 1. shows the revenues achieved during 2006-07 in the month of Ramadan and at the end of the year

Closing prices	End of the year	Ramadan
Banking sector	Realized returns	Realized returns
Arab Bank	0.112	-0.002
Housing	0.235	-0.005
Kuwaiti	0.069	0.105
Islamic Bank	0.109	0.026
Cairo Amman Bank	0.089	-0.015
Transformative Industries	Realized returns	Realized returns
Phosphate	0.0500	-0.1103
Potash	0.2864	0.0000
The Refinery	0.1020	0.0040
Cement	0.0031	0.0548
Jordan Iron	0.0460	0.1215
Services Sector	Realized returns	Realized returns
Electricity Company	0.1368	0.0000
Telecommunications Company	0.1990	0.0577
Arab International for Education	0.1525	-0.0310
Land Development Company	0.1256	0.0424

Source: the researcher's calculation according to the Amman Stock Exchange website data

Table 2. shows the revenues achieved during the years 2015-2016 in the month of Ramadan and at the end of the year

Closing prices	End of the year	Ramadan
Arab Bank	-0.017	-0.051
Housing	0.055	0.000
Kuwaiti	0.049	0.010
Islamic Bank	0.031	0.009
Cairo Amman Bank	0.020	-0.029
Transformative Industries	Realized returns	Realized returns
Phosphate	-0.0128	-0.0469
Potash	0.0005	0.0047
The Refinery	0.0541	0.0049
Cement	0.0078	-0.6625
Jordan Iron	-0.0213	-0.0526
Services Sector	Realized returns	Realized returns
Electricity Company	0.1208	0.0326
Jordan Telecom Company	-0.2154	-0.0068
Arab International for Education	0.0450	0.0071
Land Development Company	0.0313	-0.0390

Turkey, and UAE). He used the "Wald-Wolfowitz" and found that the buying shares on the last day before Ramadan and sell it on the last day of Ramadan generate return close to the rate 1.87%.

Ariss (2001) examined calendar anomaly in two studies, she tested day, month, and Ramadan effect, and she used dummy variables to represent the week, day, month, and Ramadan. She found two important results,

Table 3. the revenues achieved during the periods (2006-2007) and (2015-2016) in the month of Ramadan and at the end of the year

Company	2006-2007		2015-2016	
	End of the year	After Ramadan	End of year	After Ramadan
	Realized Returns r	Realized returns r Ramadan	Realized Returns r	Realized returns r
Arab Bank	0.112	-0.002	-0.017	-0.051
Housing	0.235	-0.005	0.055	0.000
Kuwaiti	0.069	0.105	0.049	0.010
Islamic Bank	0.109	0.026	0.031	0.009
Cairo Amman Bank	0.089	-0.015	0.020	-0.029
Phosphate	0.0500	-0.1103	-0.0128	-0.0469
Potash	0.2864	0.0000	0.0005	0.0047
The Refinery	0.1020	0.0040	0.0541	0.0049
Cement	0.0031	0.0548	0.0078	-0.6625
Jordan Iron	0.0460	0.1215	-0.0213	-0.0526
Electricity Company	0.1368	0.0000	0.1208	0.0326
Telecommunications Company	0.1990	0.0577	-0.2154	-0.0068
Arab International for Education	0.1525	-0.0310	0.0450	0.0071
Land Development Company	0.1256	0.0424	0.0313	-0.0390
Total	1.715	0.248	0.148	-0.820
Mean	11.4%	1.7%	1.0%	-5.5%

The table was prepared by the researchers based on the ASE data: www.ase.jo.com

during Ramadan: 1) Less volatility and good return on the last day of the week, because of economy slowdown in Ramadan. 2) The investor like to buy before weekend (Wednesday).

Bley (2010) investigated many anomalies in the Hijri calendar in GCC, like Ramadan, new Hijri year, profit Mohamad birthday, and holy vacations, but he didn't find any significant result, except in Qatar, where a new year in Hijri calendar effect exists.

Abounouri and Izadi (2005) evaluated the effect of weekdays on index of stocks price in Tehran stocks exchange by using the model of time series (Arch and Garch). The results showed the negative significant effect of Wednesdays and Saturdays from 1992 to 2003.

Fazel Saeid et al. (2004) examined Ramadhan effect on stocks return changing. The results of their researches showed that stocks exchange average had not changed so much compared to other lunar months, and stocks return fluctuation decreased so much in this month.

Al-rjub (2004) studied the effect of weekdays on Amman Stocks Exchange (Jordan) from 1992 January to September 2002 using virtual variables. Obtained findings showed that the first working day of week had a negative effect and the last working day of the week had positive effect. He believed that the best day of selling exchange papers was the last day of the week, and the best day of buying exchange papers was the first day of the week.

Ajaji, Mehdi and Perry (2004) investigated the effect of weekdays in 11 new-appeared markets of Eastern Europe including Romania, Hungary, Latvia, Czech, Croatia, Russia, Slovenia, Slovakia, Poland from the 90s to 2002. They have used Regression model containing virtual variables. Empirical results showed that in six above-mentioned markets, stocks return average is negative on Saturday, but only in the markets of Slonia, Latvia these negative returns are significant. In addition, Monday returns average is positive in remaining five markets; only in Russia, the effect of Monday was positively significant.

Lyroudi et al. (2004) extracted the existence of weekdays' effect on eastern and central European countries' stocks exchange including Romania, Hungary, Latvia, Czech, Croatia, Russia, Slovenia, Slovakia, Poland from 1997, Sep 22 to 2009, March 29. The results showed that Czech and Poland markets showed negative significant return on Mondays; while, Slovenia's market has positive return on Wednesdays and negative significant return on Fridays. Poland and Slovakia did not show significant calendar effects. Russia stocks exchange has negative return on Wednesdays and positive return on Fridays.

Nilgun et al. (2008) sought to investigate religious holiday days and months (Ramadan, Eid Al-Adha) on payments fluctuation in Turkey economy using conditioned Variance. It showed that Ramadan and

Ghorban had outstanding impacts on trade decrease. Trade decrease mainly exists in December and the least was in January. The maximum of trade decrease fluctuation was in December and its minimum was in September.

Hamed akrami (2012) investigated the effect of Ramadan month on stocks anomaly return of the companies in Tehran stock exchange. Data relevant to independent variable, which was for a three-month period of before Ramadan, Ramadan, and after Ramadan, had been converted to quantity by the use of virtual variables. The findings showed that there had been a significant relationship between Ramadan month and stocks anomalies return.

Abbasali Arabsarhadi¹ et al. (2016) investigated the effect of Ramadan on stock prices and liquidity indicators in listed companies in Tehran Stock exchange. The results showed that Ramadan had been effective on stock price, turnover and the number of stock traders in listed companies and not effective on the number of shares traded and the number of days of stock trading in listed companies in Tehran Stock Exchange.

Ahmed (2014) examined the consequences of Islamic month Ramadan on the Karachi Stock Market Monthly data of the years 2010, 2011 and 2012. It was observed that returns in KSE market are not showing significant behavior during the month of Ramadan. In the light of observation, it was concluded that Ramadan effect is not significant in Karachi Stock Exchange.

Jehan et al. (2015) studied the effect of financial market anomalies, specifically calendar anomalies, on the behavior of financial investors in terms of decisions and profit. Analyzed in the context of Tunisian financial market, this work examined four calendar effects, which were the weekend effect, the end of the month effect, the January effect and Ramadhan one. The results showed that most of the anomalies existed on the Tunisian stock market. The study showed that the effect of the holy month is twice higher than the rest of the year.

Gavriliadis et al. (2016) examined whether the positive mood documented during Ramadan translates into higher herding compared to non-Ramadan days. Drawing on a sample of seven majority Muslim countries, they reported significant herding during Ramadan in most of their sample markets. The study showed that herding appeared significantly stronger within rather than outside Ramadan for most tests whereby its significance was manifested on both Ramadan- and non-Ramadan-days.

Nida Shah et al., (2017) explored the effect of Islamic Months specifically Ramadan and Zil-Haj on the stock returns and volatility of the Islamic Global Equity Indices. For the said purpose, the data on three Global Equity Islamic Indices including; Dow Jones Islamic Market World Index, MSCI ACWI Islamic Index, and S&P Global BMI Shariah Index were collected. Empirical results revealed significant negative impact of Zil-Haj on returns

and volatility of Islamic Global Equity Indices. However, no significant impact of Ramadan on returns and volatility of Islamic Global Equity Indices were revealed.

Al-smadi et al. (2017) discussed the price trends over the year, and how the seasonality in Malaysia would affect it. The factor investigated in this study was the price on holiday's season, the January effect or any other monthly seasonality. This paper had proved the existence of calendar anomalies in stock price for Chinese New Year Effect, Aidilfitri Effect and Christmas Effect.

RESULTS DISCUSSION

The table shows the returns achieved by the sample companies before and after the month of Ramadan. The above table shows that the sample companies' revenues ranged between losses reaching around 11% (lowest) by the phosphate company in the month of Ramadan, and the highest profits achieved by Jordan Iron Company for the same period.

It is clear from the same table that all the companies in the sample achieved profits at the end of 2006 ranging between 0.3% (Cement Company) and 28.6% (Potash Company).

It should be noted that these results explain the investment behavior, which is characterized by weak Muslims' demand on the shares in the month of Ramadan. In this month, investors tend to increase spending on the requirements of Ramadan and the cost of the feast "Eid al-Fitr", while the demand for shares shows activity at the end of the year; due to clarification of the results of companies, and the coming dividends in a short time, causing rises in earning per share in 2006. The real return was calculated utilizing the following equation:

$$r_{it} = \frac{P_{it} + D_{it} - P_{io}}{P_{io}}$$

r_{it} : real return of stocks of I in month t

p_{it} : company stocks price average of I in ending of the month t

p_{io} : company stocks price average of I in beginning of the month t

d_{it} : paid stocks interest of the company I in the period of t

It is clear from the table above that the sample companies did not make any worth mentioning profit during the month of Ramadan for the year 2015, except for the Jordanian Electricity Company, which achieved a profit of 3.3% in that period, while share prices rest of the sample companies declined, due to the same mentioned reasons. Of course, and in a more general view, the continuing effects of the global crisis caused heavy losses to investors in the financial sector, as the market value of shares listed on the Amman Stock Exchange decreased from more than 40 billion Jordanian dinars on

28 June 2008 to less than 20 billion Jordanian dinars at the end of 2016.

At the end of 2015, the revenues achieved improved as the Jordanian Electricity Company achieved positive returns of 12.1%, while the investment company in the Telecommunications Company suffered a significant loss of 21.5%.

Table (3) shows that the average return on shares of the study sample was 11.4% for the month of January 2007, compared to 1.7% average return of the same sample during the month of Ramadan. The table also shows an average return of 1% compared to (-5.5%) for the year 2016, which is consistent with the researchers conclusion, that there is a clear impact of Ramadan on the returns of the shares, as many market dealers sell their shares to meet the expenses of Ramadan and the requirements of Eid al-Fitr. In addition, many Muslims prefer to pay Zakat (Azzakah) in Ramadan, in return for the double reward, in compliance with the Prophetic Hadith. Additionally, Muslim community spend most time in worship, and some of them reside in mosques for longer times for "Al-Tarawih" prayers and "Aitekaf" (residing in one place) during the last ten days of Ramadan. Moreover, some people sell shares due to the need for extra liquidity, for the widespread charities in Ramadan.

CONCLUSION

In conclusion, the supply of stocks increases, and the demand falls, which negatively affects their prices. It has been noted that there is a clear positive relation between the month of December and the capital return on the shares, subject to this research. The reasons seems to be the addition of dividends to capital gains, in addition to the increase in demand for shares of high-profit companies, as the end of December clearly shows the results for companies, based on their financial reports.

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