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The Effect of Lunar Calendar on Stock Market Returns

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Abstract: *There is much evidence from the past half century on seasonal patterns or calendar anomalies in financial markets, including stock markets and bonds. The purpose of the current study was to investigate the effects of lunar calendar on stock market returns. The present study was a literature review of this subject. The results of this paper presented valuable information about the effects of the lunar calendar on financial markets.*

Keywords: *Lunar Calendar, Stock Exchange, Financial Markets.*

INTRODUCTION

A stock exchange, securities exchange or bourse refers to a market in which pricing and trading of goods and securities are carried out. Generally, the investors enter this market to maximize the returns in proportion to risk. As a result, at the first step they try to increase their return on a certain level of risk or reduce their risk at a certain level of return (Al-Hajieh et al., 2011). When the investors try to get arbitrage which is called a free-risk profit, the market moves toward an efficient market (Shahverdiani et al., 2013). One factor affecting this market is calendar anomalies. The calendar effect refers to the stock tendency to deviate from the norm at different times (Gouider et al., 2015). This theory states that on a particular day of the week, a particular week of the month and even a particular month of the year, the stock prices might increase or decrease when it is compared to other times. Such patterns have been reflected in trading volume as well as volatility in returns (Almudhaf, 2012). The present study investigated a new area of financial management knowledge namely behavioral finance (Hui et al., 2015) and it examined the 'effect of religious months'. The effect of religious months is an anomaly in the capital market and it is one of the categories of 'periodic or calendar effects'. Based on this theory, there exist some anomalies and inconsistencies in the main variables of the market, including returns, volatility of returns and trading volume in different religious months (Yavuz et al., 2008). In other words, there is no regular pattern in the time behavior of these variables in religious months. Therefore, it is possible to generate additional or abnormal returns through developing some strategies for these monthly patterns. Regarding the effect of emotional, behavioral, atmospheric factors and even the sleeping pattern of the market traders on stock prices in financial markets, religion (as an important and influential factor in emotional and behavioral situations) can mainly affect capital investment decisions. As a result, the effect of religious months on the stock market is a significant issue (Mohammadi et al.,2018)

The Effect of Calendar Anomalies on the Stock Exchange

There have been conducted different studies on seasonal patterns or anomalies in financial markets, including the stock market and bond since the last half-century (Raei & Shirzadi, 2008). There have been various debates on these patterns in the scientific and empirical circles, which people have tried to identify, approve or reject them. Regarding market efficiency theory, stock prices in an efficient market always change randomly, which can be due to stock price responses to information that is randomly distributed over time (Abalala & Sollis, 2015). In case the time factor changes the price of the stock, so that during a particular period, besides presented information (randomly), time becomes also effective on the stock price volatility, it can then change the random behavior of the market. Such a kind of patterns can disturb an efficient market and may lead to anomalies (Bahar Moqaddam & Kavaruee, 2013). These effects are called 'calendar effects', or 'calendar anomalies' (Gouider et al., 2015) which are examined in the following section.

a. **Political Cycle Effect**: Generally, in the first and final year of the execution of a government (president), financial markets experience higher abnormal returns when comparing with other years. Therefore, investors make duly decisions and set their purchases and sales regarding the proper time. Failure to consolidate the economic policies of a government in its first working year and ambiguity in the executive system of the next government in the final year of a government increase the volatility of financial markets and bring adjusted returns at a higher risk than other years (Almudhaf, 2012).
b. **Summer Effect**: The summer effect is one of the first calendar effects that have been taken into account by the researchers and financial analysts. Researchers found evidence in the stock market that prices increase more in summer than in other seasons (Bahar Moqaddam & Kavaruee, 2013).
c. **Holidays Effect, Pre-holidays Effect**: Many studies have been conducted in different countries to find evidence of high abnormal returns on the day before the official holidays. Most of these studies have been conducted in US stock markets, and they have confirmed such an effect. It means that abnormal returns have been confirmed within days before the official holiday (Gouider et al., 2015).
d. **Weekend Effect, Daily Effect**: The effect of weekdays refers to the existence of patterns in stock returns in the past, and this pattern is related to specific days in a week (Hui et al., 2015). Such relationships have been substantially acknowledged in the United States, so that the latest trading days of the week are associated with an abnormal positive return, while Monday, the first trading day of the week, shows less returns than the other days and even negative returns (Olson et al. 2015). These effects can show that the returns on different days of the week are not independent and it is contrary to the theory of 'random walk'. The returns should be the same at the end of each week, in case weekdays had no effects, but studies have shown that the use of some daily patterns can lead to additional returns (Halari et al., 2015).
e. **Monthly effect:** In 1987, the researchers tested the moon rotation pattern for the American stock index during 1963-81. They used the regression model with virtual variables to test the hypothesis and divided the months of the stock exchange into two halves, so that the first half of each month began with the last day of the previous month. Regarding the New York Stock Exchange data, they found that the average return on equity was positive for the first half of the month and it was negative for the second half of the calendar months (Al-Hajieh et al., 2011).
f. **Yearend Effect, January Effect, December Effect**: The effect of the months of the year or, in other words, the effects of the yearend have attracted the researchers' attention, hence the main field of the study in applied studies was on market anomalies. Recently, several studies have shown that stock returns, especially the stock of small companies, were significantly higher in the first month than in other months. Therefore, this phenomenon, which has been studied in many financial markets of the world, is known as 'January effect' (Halari et al., 2015). Moreover, there is a phenomenon in the opposite direction of the January effect in the last month of the year which has been investigated in

the financial markets of many countries; which is called 'December effect'. According to later effects, the average stock return is lower in the last month than in other months.

There are some factors which can affect the stock market as follows:

Tax-loss Selling Hypothesis: It is called an important reason that has been noticeable in all studies as the main factor in forming 'December and January phenomena' (Al-Hajieh et al., 2011). In the final days of the year, investors sell stocks that decrease over the year to reduce their taxes. For this reason, stock prices decrease due to an increase in supply. By the end of the year and in January, the pressure on sales gradually declines and prices return to their equilibrium levels, which results in greater returns in early January (Hui et al., 2015).

Window Dressing Hypothesis: Another reason of the January effect is that managers of investment funds tend to have a favorable annual report on the performance of the company to investors. Since they try not to have companies that have suffered from a significant decline during the year in their portfolios (Gouider et al., 2015). Therefore, they arrange their portfolios properly and sell their shares to lower values.

Information hypothesis: Another significant point that can be cited as another reason for the January effect is the information hypothesis and information dissemination (Almudhaf, 2012). January is a month when companies are required to make public financial statements and stock exchanges relevant to financial statements such as their financial statements and their annual accounting reports. Thus, there are uncertainties and probabilities in this month due to financial reports and good or bad news with them.

D) The hypothesis of increasing market liquidity: The widespread expansion of commercial and trading activities in the near term of the fiscal year, increases profits in December for the owners of such activities. Hence, a large amount of this liquidity transfers to January. In addition, due to giving rewards, salaries and retirement benefits in January, households have more liquidity than other months (Bahar Moqaddam & Kavaruee, 2013).

Effect of Ramadan and Muharram

Fazel Hussein (1998) investigated Ramadan's effects on Pakistan's securities market for the first time. In this study, the effect of Ramadan lunar month on the mean return and stock returns volatility by adding dummy variable in GARCH Models of regression function were examined (Mohammadi et al., 2011). The results of his research showed a significant decrease in stock market volatility during Ramadan, although the mean returns did not change significantly. Seyed et al. (2005) used GARCH Models and Saudi market data to investigate the relationship between volatility and calendar effects such as Ramadan. This study showed a systematic pattern of decreasing volatility during Ramadan, which implied a predictable deviation in market risk pricing. Testing the trading data showed that these anomalies were consistent with the decline in trading during Ramadan. Their findings showed that the mean stock return in this month did not change much when it was compared with other lunar months. While the volatility of stock returns significantly declined in this month which could be due to decline in Ramadan speculative activities on the Saudi Arabian Stock Exchange (Halari et al., 2015). It seems that Muslims experience some positive emotions in Ramadan. Fasting can be one reason which means to test patience and humility. Through fasting, Muslims ask forgiveness for their sins, which increase humanity in society that is effective on investors as well. Apparently, Ramadan creates a positive state that may create a lot of investment by the investors who try to be less discriminating and less analytical in relation to their investments (Raei & Shirzadi, 2008).

Fadhil Husain (1998) examined the effects of Ramadan on Pakistan's stock market from 1989 to 1993, he found that the mean returns for this holy month decreased, although it was not a significant decrease. However, it reduced the uncertainty which might be an attractive opportunity for investors to make good commercial profits (Sharma et al., 2015).

Fahad Almudhaf (2012) investigated the effects of Islamic calendar on the stock market in twelve countries and he found that the effect of the holy month of Ramadan significantly increased the stock returns of the stock markets of Jordan, Kuwait, Pakistan and Turkey when they were compared with other months. The

results showed that Muharram, which is the first lunar month, shows a decline in trading volumes and a standard deviation from monthly market yields. This phenomenon can be described as an economic research on the calendar effect in Iran's capital market. Therefore, a main reason for the existence of such an effect in Tehran Stock Exchange has been attributed to a particular pattern of investment in religious events in Iran (Soltani Far, 2011).

Conclusion

Investigating the calendar effects as a branch of behavioral finance focuses on the returns and trading volume at specific times of the year. It aims at understanding a significant difference between the returns and trading volume before these days against other days (as it has been seen in many markets in different parts of the world). Besides, if periodic anomalies exist, it examines the possible reasons for these disorders and anomalies based on holidays and related cultural factors. There are two types of calendars in many Islamic countries. In business activities, Gregorian calendar is mostly used, while the lunar calendar which was formed based on the Islamic months usually determines holidays and religious ceremonies throughout the year. The markets of Islamic countries are usually based on the Gregorian calendar while in Iran it is based on solar calendar. However, the effect of the lunar days and months is not unimportant in Iran. Basically, decreasing the trading volume and the presence of anomalies in these months, the Tehran Stock Exchange may encounter a change in the pattern of the investment. Therefore, in terms of religious beliefs, and since Iraq and Iran are Shiite countries, these months (especially Muharram) are considered as special months of the year. Therefore, Haram(forbidden) months can be great opportunities for the researchers to examine the stock price trend and to assess the indicator of the stock markets of financial markets and identify predictable patterns. Finally, it should be noted that due to mentioned abnormal effects in the particular months and other monthly effects, there is a specific pattern in market behavior that if the investors attempt to identify and use them, they can achieve abnormal returns.

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