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The Halloween Effect: Evidence from Romania

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Abstract
This paper examines the Halloween effect in the Romanian stock market. The analysis is conducted for four stock indices using monthly returns. The Halloween effect is not identified for any of the indices. Therefore, an investment strategy based on the Halloween effect was not suitable for investors in this market.

JEL Codes: G10, G14

Keywords: Seasonal anomalies, Halloween effect, Romanian stock market, Sector indices, Market efficiency

1. Introduction

Seasonal anomalies are still a 'hot' topic in financial literature. They are defined as patterns that occur in the evolution of financial asset returns. Based on these regularities, investors could develop profitable trading strategies in order to obtain systematic abnormal returns by knowing what day of the week it is, what month of the year it is and so on (Doyle and Chen, 2009). As such, the presence of some seasonal anomalies is a threat for the theory of efficient markets introduced by Fama (1970). In an informationally efficient stock market, no anomaly should persist over time (Dichtl and Drobetz, 2014)[1]. Also, if the markets are informationally efficient in a semi-strong form, it must be impossible to earn systematic abnormal returns based on any set of available information.

There are various types of seasonal anomalies that are investigated in literature. Most of them have the tendency to disappear, reverse or attenuate after they were documented (Schwert, 2003). One of the most exciting anomalies is the Halloween effect. According to Halloween effect, returns are significantly higher in November-April period than those in May-October (Baumon and Jacobsen, 2002). This anomaly is interesting because it has not disappeared or weakened after it was discovered. For instance, Jacobsen and Visaltanachoti (2009) showed that summer returns (May-October) were significantly lower than winter

[1] In addition, Doyle and Chen (2009) state that once a seasonal anomaly was discovered it must disappear quickly since it represents new and available information which is assumed to be reflected by prices in a market which is informationally efficient in semi-strong form (in terminology of Fama, 1970).

returns (November-April) for 19 developed stock markets over the period May 1998 to April 2007. Also, it seems that the effect had become more pronounced compared to the results reported by Baumon and Jacobsen (2002). Further, some papers, considering the transaction costs, showed that a trading rule based on the Halloween effect[2] provided risk-adjusted returns in excess compared to returns of a buy and hold investment strategy (Baumon and Jacobsen, 2002; Haggard and Witte, 2010).

This paper attempts to examine the Halloween effect in the Romanian stock market. For this purpose, the analysis is conducted for four stock indices using monthly returns. The results suggest that winter returns (November-April) are not higher than summer returns (May-October) for any of the analyzed indices. This study claims that the Halloween effect is not a worldwide phenomenon.

The rest of the paper is organized as follows. In Section 2, the literature review is provided. Section 3 presents the methodology. Section 4 describes the database. In Section 5 main results are discussed. Section 6 concludes.

2. Literature review

Baumon and Jacobsen (2002) was the first paper that documented a new seasonal anomaly in the stock market, known as the Halloween effect. According to the Halloween effect, returns should be higher in November-April period than those in May-October. It is interesting to note that the discovery of this effect was based on an old market wisdom which suggests to "sell in May and go away" from the market.

Baumon and Jacobsen (2002) found that winter returns (November-April) were substantially higher than summer returns (May-October) in 36 out of the 37 stock markets in their study. It is worth mentioning, that their sample included developed stock markets[3] and, also, developing stock markets[4]. The analyzed period for developed markets was 1970 – 1998[5] and for developing markets was 1988 – 1998[6]. Interestingly, the Halloween effect proved to be strong and highly significant in European stock markets. Furthermore, Baumon and Jacobsen (2002) found no evidence that the effect can be explained by factors like risk or the January effect[7]. Lucey and Zhao (2008) investigated the U.S. stock market between 1926 and 2002 to

[2] To exploit the Halloween effect, investors should sell a market portfolio at the beginning of May, invest in risk free assets and reinvest in a market portfolio at the end of October (Baumon and Jacobsen, 2002).

[3] The developed stock markets were from: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Hong Kong, Ireland, Italy, Japan, Netherlands, Norway, Singapore, South Africa, Spain, Switzerland, the United Kingdom, and United States

[4] The developing markets were from: Argentina, Brazil, Chile, Finland, Greece, Indonesia, Ireland, Jordan, Korea, Malaysia, Mexico, New Zealand, Philippines, Portugal, Russia, Taiwan, Thailand, and Turkey.

[5] One exception was South Africa for which the analyzed period was 1973 – 1998.

[6] For Russia, the analyzed period was between 1996 and 1998.

[7] According to the January effect, January returns are significantly higher than those for the other months of the year (Thaler, 1987).

determine the robustness of the Halloween effect by considering the January effect. For the full sample, they found no evidence of the Halloween effect. Splitting the full period in sub-periods, they did not identify the Halloween or the January effect for value-weighted portfolios. However, the January effect was confirmed for equally-weighted portfolios. Therefore, Lucey and Zhao (2008) concluded that the Halloween effect, when it does appear, might be a reflection of the January effect. In contrast to Lucey and Zhao (2008), Haggard and Witte (2010) showed that the Halloween effect was not the January effect in disguise for the U.S. stock market, confirming the results of Baumon and Jacobsen (2002).

In the recent years, the Halloween effect was investigated in Arabic stock markets by Zarour (2007) for the period January 1991 – December 2004. He confirmed the presence of the Halloween effect in 7 out of the 9 analyzed markets[8] even after the January effect was considered in his study. In another paper, Lean (2011) analyzed the presence of the Halloween effect in the stock markets of six Asian countries namely China, Hong Kong, India, Japan, Malaysia and Singapore over the period January 1991 to June 2008. His results showed that the Halloween effect was present in five stock markets, those from China, India, Japan, Malaysia and Singapore. In accordance with Zarour (2007), Lean (2011) found no evidence that the Halloween effect was simply a reflection of the January effect.

The Halloween effect was analyzed recently by Jacobsen and Visaltanachoti (2009) at sector level in the U.S. for the period July 1926 – December 2006. The results suggested that the difference between winter and summer returns was statistically significant in 12 out of the 17 sectors. Moreover, they observed that the Halloween effect was strong for the sectors related to raw material and production (Construction, Steel and Machine) and less apparent for consumer orientated sectors (Food, Consumer and Utilities).

A recent study, Andrade et al. (2013), showed that all the stock markets contained in Baumon and Jacobsen (2002) paper still registered higher returns during winter (November-April) than during summer (May-October) over the period of 1998 – 2012. Andrade et al. (2013) suggested that the persistence of the Halloween effect could be explained by the fact that stock markets might be slow in arbitraging away inefficiencies.

Some papers challenged the methodology used to identify the Halloween effect. For instance, Marberly and Pierce (2004), re-examining the Halloween effect for the U.S. stock market and for the same period analyzed by Baumon and Jacobsen (2002), revealed that their results were driven by two outliers: the “Crash” of October 1987 and the collapse of the hedge fund Long-Term Capital Management in August 1998. More specifically, after taking in consideration a dummy variable to account for the impact of the two outliers, the Halloween effect disappeared. Similar with the results of Marberly and Pierce (2004), Galai et al. (2008) showed that a relationship between Halloween effect and outliers exists. In contrast, the Halloween effect was observed for the U.S. stock market only after controlling for outliers. In another paper, Witte (2010) claimed that Marberly and Pierce (2004) dealt with outliers in an unsatisfactory way and demonstrated that better methods of confronting influential data produce results very similar to those reported in Bouman and Jacobsen (2002). Witte (2010) and Haggard and Witte (2010) concluded that Halloween effect is robust to consideration of

[8] The markets were from: Abu Dhabi, Bahrain, Dubai, Egypt, Jordan, Kuwait, Oman, Palestine and Saudi Arabia.

outliers. Further, Marberly and Pierce (2003), using a similar approach as in Marberly and Pierce (2004), observed that the Halloween effect was present in the Japanese stock market only before 1986.

3. Methodology

To investigate the Halloween effect, this study uses the methodology proposed by Baumon and Jacobsen (2002):

$$R_{it} = \alpha_{1i} + \alpha_{2i} D_{it} + \varepsilon_{it} \quad (1)$$

where R_{it} is the return of stock index *i* in month *t*, α_{1i} measures the monthly average return over the May-October periods, α_{2i} measures the difference in monthly average return between November-April and May-October periods, D_{it} is a dummy variable which takes value 1 for the months in November-April period and zero otherwise and ε_{it} is an error term which is assumed to be independent and identically distributed with a zero mean and constant variance.

If the estimated coefficient α_{2i} is positive and significantly different from zero then the Halloween effect is identified. This suggests that, on average, monthly returns from November to April are significantly higher than monthly returns from May to October.

4. Database

To examine the Halloween effect in the Romanian stock market, this paper uses the end of month closing levels of four stock indices of the Bucharest Stock Exchange (BSE). They are: the Bucharest Exchange Trading-Composite Index (BET-C), the Bucharest Exchange Trading Index (BET), the Bucharest Exchange Trading-Investment Funds Index (BET-FI) and the Bucharest Exchange Trading Energy and Related Utilities Index (BET-NG). The source of the end of month closing levels for all indices is the BSE website (www.bvb.ro).

BET-C is the composite index of the BSE and it is a market capitalization weighted index that reflects the price movements of all companies listed on the BSE regulated market, Ist and IInd category, excepting the five SIFs[9]. The BET index reflects the price movements of the ten most liquid companies listed on the BSE regulated market. BET-FI is a sectorial index and reflects the price movements of investment funds (SIFs) traded on the BSE. Also, BET-NG is a sectorial index and reflects the price movements of companies traded on the BSE market, which have the main business activity located in the energy sector and the related utilities.

Data for BET-C are available from April 1998. For the BET index, the data are available from September 1997. BET-FI and BET-NG have available data from October 2000 and from December 2006. Therefore, the series of monthly returns for the four indices begin in: May 1998 for BET-C, October 1997 for BET, November 2000 for BET-FI and January 2007 for BET-NG. The ending date for all indices is April 2014.

The monthly returns are computed as follows:

[9] Investment funds

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$$R_{it} = \ln\left(\frac{P_{it}}{P_{it-1}}\right) \quad (2)$$

where R_{it} represents the return of stock index i in month t, P_{it} is the last level of index i in month t and P_{it-1} is the last level of index i in month $t-1$.

Table 1 presents some descriptive statistics of the four stock indices.

Table 1: Descriptive statistics

	R_{BET-C}	R_{BET}	R_{BET-FI}	R_{BET-NG}
Mean	0.0058	0.0095	0.0208	-0.0050
Median	0.0120	0.0144	0.0171	0.0047
Maximum	0.2660	0.2995	0.6452	0.2084
Minimum	-0.3997	-0.4405	-0.8312	-0.5306
Standard deviation	0.0941	0.1047	0.1550	0.0952
Skewness	-0.8853	-0.7107	-0.5393	-2.0896
Kurtosis	5.9977	6.0296	9.7689	12.5478
Jarque-Bera	96.9697	92.8560	317.1274	398.2964
P-value	0	0	0	0
Observations	192	199	162	88

Notes: R_{BET-C} is the monthly return of BET-C index. R_{BET} is the monthly return of BET index. R_{BET-FI} is the monthly return of BET-FI index. R_{BET-NG} is the monthly return of BET-NG index.

5. Results

Table 2 presents the results obtained after the estimation of equation (1) for each stock index considered in this study. For the most comprehensive index of the Romanian stock market, BET-C, it seems that the monthly average return during November-April periods is not significantly higher than the monthly average return during May-October periods. This result suggests that the Halloween effect was not present in the Romanian stock market over the period May 1998 to April 2014.

Table 2: The Halloween effect

	Observations	α_{1i}	α_{2i}
BET-C	192		
Coefficient		-0.0030	0.0176
t-Statistic		-0.2298	1.1459
BET	199		
Coefficient		0.0028	0.0131
t-Statistic		0.1900	0.7550
BET-FI	162		
Coefficient		0.0079	0.0248
t-Statistic		0.4507	1.0177
BET-NG	88		
Coefficient		-0.0239	0.0362
t-Statistic		-1.6483	1.8038

Notes: This table presents the results obtained after the estimation of the equation: $R_{it} = \alpha_{1i} + \alpha_{2i} D_{it} + \varepsilon_{it}$ where R_{it} is the return of stock index *i* in month *t* (*i* = BET-C, BET, BET-FI, BET-NG), α_{1i} measures the monthly average return over the May-October periods, α_{2i} measures the difference in monthly average return between November-April periods and May-October periods, D_{it} is a dummy variable which takes value 1 for the months in November-April and zero otherwise. During the estimation of regressions, the presence of heteroscedasticity and serial correlation in error terms was investigated. The heteroscedasticity was analyzed with the ARCH LM test (Engle, 1982) and the serial correlation was verified with the Breusch–Godfrey Lagrange multiplier test (Breusch, 1978; Godfrey, 1978), using 12 lags (since monthly data were used). If the heteroscedasticity was identified, the *t*-statistics were calculated using the White (1980) methodology. If errors were, also, serially correlated, the Newey and West (1987) methodology was used (see Brooks, 2008, p. 152). ** and * indicates significance at 1% and 5% levels, respectively.

An investment strategy based on the Halloween effect (sell stocks at the beginning of May, invest in risk free assets and reinvest in stocks at the end of October) must be implemented taking in consideration the stocks or the portfolios which have a high level of liquidity. For instance, Dragotă and Mitrică (2004) concluded that the Romanian stock market

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has a low level of liquidity.[10] Mînjină (2010) noted that the lack of liquidity on the Romanian stock market is persistent. More specifically, Geambaşu and Stancu (2010) observed that one stock covers more than 20% of the market turnover, four stocks determine more than half of the market turnover and eight stocks establish more than 75% of the market turnover. For this reason, the Halloween effect is examined for the index that reflects the price movements of the most liquid stock listed on the Romanian stock market (BET). However, the results suggest that the difference between winter returns and summer returns is not statistically significant in the case of BET index.

Following Jacobsen and Visaltanachoti (2009), this study investigates the Halloween effect at sector level. For this purpose, two sector indices are used. The index of investment funds sector (BET-FI) shows no sign of the Halloween effect for the period November 2000 – April 2014. For the energy index (BET-NG), the estimated coefficient α_{2i} is statistically insignificant. This result suggests that winter returns (November-April) are not higher than summer returns (May-October) in the case of BET-NG index.

6. Conclusions

This study examines the Halloween effect on the Romanian stock market. In this regard four stock indices are used. According to the Halloween effect, winter returns (November-April) are significantly higher than summer returns (May-October). This anomaly drew and still draws attention since, this pattern of stock returns proved to be persistent over time (Jacobsen and Visaltanachoti, 2009; Andrade et al., 2013). Moreover, an investment strategy based on the Halloween effect (sell a market portfolio at the beginning of May, invest in risk free assets and reinvest in a market portfolio at the end of October) provided risk-adjusted returns in excess compared to the returns of a buy and hold investment strategy, after the transaction costs were considered (Baumon and Jacobsen, 2002; Haggard and Witte, 2010).

The results presented in this paper demonstrate, however, that the Halloween effect cannot be universally accepted. The composite index of the Romanian stock market shows no sign of the Halloween effect. Also, the winter returns (November-April) of the index that reflects the price movements of the most liquid stocks listed on the Romanian stock market are not significantly higher than the summer returns (May-October). Further, at sector level, the Halloween effect is not identified.

From a practical point of view, these results show that investors could not use an investment strategy based on the Halloween effect to obtain systematic abnormal returns in the context of Romanian stock market.

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[10] Dragotă and Ţilică (2014) observed that, in general, the Post-Communist East European stock markets have a low level of liquidity.

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