The Extended Holiday Effect on US capital market

Dumitriu, Ramona and Stefanescu, Răzvan

Dunarea de Jos University, Galati, Dunarea de Jos University, Galati

15 May 2020

The Extended Holiday Effect on US capital market

Ramona Dumitriu
Razvan Stefanescu

Abstract: *Studies on the financial markets proved that not all calendar anomalies are persistent in time. Some of them experienced various types of changes, including passing from the classical form to an extended one, with an enlarged specific time interval. This paper approaches the Holiday Effect extended form on the United States capital market. In its classical form, the Holiday Effect refers to abnormal stock returns on a trading day before a public holiday and a trading day after. We study the behavior of stocks returns for a time interval that starts four trading days before a public holiday and it ends four trading days after. In this investigation we employ the daily closing values of four important indexes from the United States capital market: Dow Jones Industrial Average, Standard & Poor's 500, Russell 2000 and NASDAQ Composite. In order to capture the changes experienced in time by the Extended Holiday Effect we analyze the returns of these indexes for three periods: January 1990 - December 1999, January 2000 – December 2009 and January 2010 – April 2020. The investigation revealed, for some trading days from the enlarged specific time interval, returns that were, in average, significant larger or smaller than those of the days outside of this interval. We found especially high abnormal returns on four or three trading days before public holidays and low abnormal returns on one or two trading days after public holidays. The results also suggest that the Extended Holiday Effect was more visible in relative quiet periods than in the turbulent ones and it influences especially the stock returns of small cap companies.*

Keywords: Calendar Anomalies, Extended Holiday Effect, US capital markets

JEL Classification: G14, G40, G41

1. Introduction

In the last decades, several studies revealed various types of changes experienced by some calendar anomalies associated to the financial markets (Cadsby & Ratner, 1992; Dimson & Marsh, 1999; Chong et al., 2005; Holden et al., 2005; Marquering et al., 2006; Wong et al., 2006; Worthington, 2010). A particular type of such changes is represented by enlargement of the time interval with abnormal returns. Among the calendar anomalies exposed to enlargement of the specific time interval there is the well-known Holiday Effect (Fields, 1934; Lakonishok & Smidt, 1988; Ariel, 1990). In its classical form, this calendar anomaly consists in abnormal large returns occurring in a time interval that include two trading days:
- PH-1, a day that precedes a public holiday (The pre-holiday effect);
- PH+1, a day that follows a public holiday (The post-holiday effect).

The pre-holiday effect was explained by an optimist mood induced among investors by the holiday euphoria (Brockman & Michayluk, 1998; Vergin & McGinnis, 1999). In the case of public holidays linked to religious events, the religiosity heightening could also lead to an optimist mood of the traders (Canepa & Ibnrubbian, 2014; Satt, 2016). However, the uncertainty about the changes that could occur during a public holiday inhibits sometimes the investors with a high risk adversity (Meneu & Pardo, 2004). The post-holiday effect was linked to the prolonging of the holiday euphoria a day after a public holiday.

The Extended Holiday Effect refers to abnormal stocks returns for a time interval that starts some trading days before a public holiday and it ends some trading days after ([PH-m; PH+n], where m and n are greater than one). We could associate two main explanations to these abnormal returns. First, the holiday euphoria could start more than one trading day before a public holiday and it could last for more than one trading day after. The second explanation is linked to behavior of the traders who became aware of the classical Holiday Effect. Some of them could avoid buying stocks in PH-1 or PH+1 when the prices are supposed to be high. Instead, they would buy some trading days before [PH-m; PH-m-1] or some trading days after [PH+2; PH+n], increasing the demand and raising the prices in these time intervals. Other investors could try to exploit the classical Holiday Effect by setting the sale of stocks in PH-1 or PH+1. Their transactions would increase the offer in these days attenuating the classical Holiday Effect.

In this paper we investigate the presence of an Extended Holiday Effect, with a specific time interval of [PH-4; PH+4], in the United States capital market. In order to capture the changes experienced by this calendar anomaly, we perform our analysis for three periods:
- January 1990 – December 1999;
- January 2000 – December 2009;
- January 2010 – April 2020.

The rest of this paper is organized as it follows: the second part presents the data and methodology employed in the Extended Holiday Effect identification, the third part reports the empirical results and the fourth part concludes.

2. Data and Methodology

2.1. Description of the Data

This investigation on the presence of the Extended Holiday Effect in the US capital market employs the daily closing values, provided by Yahoo! Finance, of four major indexes: Dow Jones Industrial Average (DJIA), Standard & Poor's 500 (S&P 500), Russell 2000 (RUT) and NASDAQ Composite (NASDAQ). The sample of data was divided into three sub-samples associated to the three periods mentioned before:
- the first sub-sample, from January 1990 to December 1999;
- the second sub-sample, from January 2000 to December 2009;
- the third sub-sample, from January 2010 to April 2020.

We compute, for each of the four indexes, the logarithmic returns ($r_{i,t}$) using the formula:

$$r_{j,t} = [\ln(P_{j,t}) - \ln(P_{j,t-1})] \times 100 \qquad (1)$$

in which $P_{j,t}$ and $P_{j,t-1}$ are the closing prices of the index j on the days t and t-1, respectively.

The main indicators of the descriptive statistics for the four indexes are presented in the Table 1. For first sub-sample, the averages of returns were positive for all the indexes. We could consider the period of January 1990 – December 1999 as relatively quiet. The averages of returns decreased drastically, even becoming negative in the case of three indexes, during the period of January 2000 – December 2009. The range of returns and their standard deviations increased considerably, meaning the period of second sub-sample was more turbulent than the first one. For the third sub-sample, the averages of returns increased, becoming positive for all four indexes although they didn't reach the levels from the period of January 1990 – December 1999. Comparing to the second sub-sample, the ranges increased as a results of the negative shocks caused by the Covid-19 in the spring of 2020. However, the values of standard deviations decreased, meaning that period of the third sub-sample could be considered as quieter than the period of January 2000 – December 2009. For all the indexes, Jarque-Bera tests indicated that returns didn't follow normal distributions during the three periods.

Table 1. Descriptive statistics of the returns

Variable	Mean	Median	S.D.	Min	Max	Jarque-Bera test
First sub-sample						
DJIA	0.057	0.061	0.892	-7.454	4.861	2899.18***
S&P 500	0.056	0.053	0.889	-7.113	4.989	2946.02***
RUT	0.043	0.112	0.791	-6.318	4.192	3738.07***
NASDAQ	0.087	0.139	1.114	-8.954	5.848	2442.43***
Second sub-sample						
DJIA	-0.004	0.037	1.316	-8.201	10.508	5943.11***
S&P 500	-0.011	0.047	1.401	-9.470	10.957	6128.07***
RUT	0.009	0.056	1.693	-12.614	8.861	1944.19***
NASDAQ	-0.023	0.058	1.927	-10.168	13.255	1778.15***
Third sub-sample						
DJIA	0.033	0.057	1.085	-13.842	10.764	62702.0***
S&P 500	0.037	0.059	1.098	-12.765	8.968	33613.3***
RUT	0.028	0.096	1.411	-15.399	8.976	19938.0***
NASDAQ	0.053	0.093	1.216	-13.149	8.935	15629.1***

Note: *** means significant at 0.01 levels.

We investigated if the returns were stationary by employing the Augmented Dickey – Fuller unit root tests for two variants: with and without constant (Dickey & Fuller, 1979; Dickey & Fuller, 1981). The results, reported in the Table 2, indicated that returns of the four indexes were stationary for all three periods.

Table 2. Results of ADF tests

Index	Test without constant		Test with constant	
	Number of lags	Test statistic	Number of lags	Test statistic
First sub-sample				
DJIA	11	-14.4953***	11	-14.5626***
S&P 500	6	-21.4210***	6	-21.5097***
RUT	2	-24.5113***	2	-24.5132***
NASDAQ	2	-27.5282***	2	-27.6275***
Second sub-sample				
DJIA	11	-14.4597***	11	-14.4608***
S&P 500	11	-14.4553***	11	-14.4628***
RUT	2	-29.4911***	2	-29.4852***
NASDAQ	12	-12.8236***	12	-12.8980***
Third sub-sample				
DJIA	8	-16.7844***	8	-16.7884***
S&P 500	12	-14.1183***	12	-14.1202***
RUT	12	-13.2165***	12	-13.2452***
NASDAQ	8	-17.6011***	8	-17.5973***

Notes: Akaike (1974) Information Criterion was used to identify the optimum number of lags; *** means significant at 0.01 levels.

The capital markets from United States are closed in some religious (Good Friday and Christmas Day) and secular (New Year's Day, Martin Luther King, Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day and Thanksgiving Day) public holidays. In this paper we investigate an extended form of the Holiday Effect, with a specific time interval that starts four trading days before a public holiday (PH-4) and it ends four trading days after (PH+4):

$$\left(PH_{-4}; PH_{-3}; PH_{-2}; PH_{-1}; PH_{+1}; PH_{+2}; PH_{+3}; PH_{+4}\right)$$

For the trading days that preceed a public holiday we define a category of dummy variables as:

$$DPH_{-k,t} = \begin{cases} 1, \text{ if the day } t \text{ is with } k \text{ trading days before a public holiday} \\ 0, \text{ otherwise} \end{cases}$$

We also define a category of dummy variables for the trading days that follow a public holiday as:

$$DPH_{+k,t} = \begin{cases} 1, \text{ if the day } t \text{ is with } k \text{ trading days after a public holiday} \\ 0, \text{ otherwise} \end{cases}$$

The Table 3 reports average returns for the trading days within [PH-4; PH+4] time interval. For the first sub-sample we found that all four indexes have large average returns in the trading days of PH-4 and PH-3. During the turbulent period of January 2000 – December 2009, all indexes have negative average returns in the trading days of PH+1 and PH+4. In the case of third sub-sample, large average returns came back for the trading days of PH-4 and PH-3.

Table 3. Average returns for the trading days of [PH-4; PH+4] time interval

Trading day	PH-4	PH-3	PH-2	PH-1	PH+1	PH+2	PH+3	PH+4
First sub-sample								
DJIA	0.254	0.237	−0.056	0.036	0.069	0.163	0.008	0.003
S&P 500	0.277	0.234	−0.039	0.041	0.019	0.122	−0.001	0.027
RUT	0.197	0.249	0.053	0.241	−0.085	0.041	0.190	0.277
NASDAQ	0.339	0.301	0.125	0.168	0.004	0.083	0.243	0.289
Second sub-sample								
DJIA	0.030	0.057	−0.042	0.078	−0.036	−0.028	−0.086	−0.213
S&P 500	−0.011	0.086	0.002	0.097	−0.064	0.011	−0.024	−0.142
RUT	0.063	0.243	0.203	0.088	−0.025	0.036	−0.034	−0.005
NASDAQ	−0.101	0.155	0.168	0.046	−0.190	0.130	0.016	−0.103
Third sub-sample								
DJIA	0.248	0.132	0.110	0.049	0.032	0.036	0.025	0.055
S&P 500	0.251	0.166	0.141	0.051	0.076	0.059	0.048	0.056
RUT	0.293	0.236	0.223	0.157	−0.029	0.003	0.022	0.027

NASDAQ	0.268	0.188	0.184	0.063	0.193	0.060	0.088	0.080

2.2. Methodology

We try to identify the Extended Holiday Effect in the framework of Engle (1982) and Bollerslev (1986) GARCH (1,1) model defined by two equations:
- the conditional mean equation;
- the conditional variation equation.

The conditional mean equation has the form:

$$r_{j,t} = \mu_0 + \sum_{k=1}^{4} \lambda_k \times DPH_{-k,t} + \sum_{k=1}^{4} \rho_k \times DPH_{+k,t} + \sum_{i=1}^{n} \xi_i \times r_{j,t-i} + \varepsilon_t \qquad (2)$$

where:
- μ_0 is a constant term;
- λ_k represents a coefficient associated to the dummy variable DPH_{-k} which captures the influence on the returns of k[th] trading days before a public holiday;
- ρ_k represents a coefficient associated to the dummy variable DPH_{+k} which captures the influence on the returns of k[th] trading days after a public holiday;
- ξ_i is a coefficient of the i-order lagged returns of the dependent variable;
- n represents the number of lagged returns;
- ε_t is the error term follows a normal distribution with zero mean and a time varying variance h_t:

$$\varepsilon_t \mid I_{t-1} \sim N(0, h_t)$$

The conditional variation equation expresses how the variance h_t behaves in time:

$$h_t = \omega + \alpha_1 \times \varepsilon_{t-1}^2 + \beta_1 \times h_{t-1} \qquad (3)$$

where:
- ω is a constant term;
- α_1 represents a coefficient associated to the lagged squared residuals;
- β_1 represents a coefficient associated to the lagged variance.

3. Empirical Results

The parameters of GARCH equations for the first sub-sample are presented in the Table 4. For all four indexes resulted significant positive values of the coefficients λ_4. In the case of three of the four indexes (Standard & Poor's 500, Russell 2000 and NASDAQ Composite) we obtained significant negative values of the coefficients ρ_1. For Russell 2000 we found significant positive values for other coefficients: λ_3, λ_1, ρ_2, ρ_3 and ρ_4.

Table 4. Parameters of the GARCH equations for the first sub-sample

Index	DJIA	S&P 500	RUT	NASDAQ
μ_0	0.050*** (0.017)	0.054*** (0.016)	0.031** (0.014)	0.054*** (0.019)
λ_4	0.207** (0.088)	0.227*** (0.083)	0.164** (0.067)	0.267*** (0.096)
λ_3	0.095 (0.087)	0.051 (0.083)	0.182*** (0.068)	0.153 (0.095)
λ_2	−0.050	−0.049	−0.034	0.059

	(0.087)	(0.084)	(0.069)	(0.098)
λ_1	−0.029 (0.087)	−0.073 (0.083)	0.186*** (0.068)	0.036 (0.099)
ρ_1	−0.051 (0.085)	−0.139* (0.080)	−0.231*** (0.066)	−0.249*** (0.094)
ρ_2	0.138 (0.087)	0.112 (0.083)	0.123* (0.069)	0.133 (0.095)
ρ_3	0.014 (0.086)	0.006 (0.082)	0.156** (0.068)	0.234 (0.095)
ρ_4	−0.004 (0.087)	−0.056 (0.083)	0.201*** (0.068)	0.112 (0.098)
ξ_1	0.049** (0.021)	0.045** (0.021)	0.272*** (0.021)	0.175*** (0.021)
ω	0.008*** (0.003)	0.005*** (0.002)	0.044*** (0.007)	0.041*** (0.010)
α_1	0.050*** (0.010)	0.051*** (0.009)	0.184*** (0.024)	0.139*** (0.022)
β_1	0.941*** (0.012)	0.944*** (0.010)	0.739*** (0.031)	0.829*** (0.027)

The Table 5 reports the parameters of GARCH equations for the second sub-sample. We found, for all four indexes, significant positive values of the coefficients λ_3.

Table 5. Parameters of the GARCH equations for the second sub-sample

Index	DJIA	S&P 500	RUT	NASDAQ
μ_0	0,036* (0,020)	0,025 (0,021)	0,033 (0,029)	0,033 (0,028)
λ_4	0,044 (0,092)	0,036 (0,096)	0,104 (0,135)	−0,026 (0,132)
λ_3	0,160* (0,090)	0,188** (0,095)	0,277** (0,132)	0,273** (0,130)
λ_2	0,022 (0,091)	0,015 (0,096)	0,138 (0,133)	0,013 (0,130)
λ_1	−0,019 (0,094)	0,017 (0,098)	−0,039 (0,137)	0,035 (0,133)
ρ_1	−0,038 (0,091)	−0,016 (0,094)	0,015 (0,133)	0,017 (0,129)
ρ_2	0,091 (0,092)	0,066 (0,097)	0,097 (0,135)	0,026 (0,131)
ρ_3	−0,105 (0,095)	−0,060 (0,099)	−0,085 (0,137)	−0,055 (0,133)
ρ_4	−0,078 (0,093)	−0,023 (0,098)	0,014 (0,136)	−0,017 (0,132)
ξ_1	−0,059*** (0,021)	−0,068*** (0,021)	x	x
ω	0,011*** (0,003)	0,011*** (0,003)	0,037*** (0,010)	0,011*** (0,004)
α_1	0,079*** (0,010)	0,073*** (0,009)	0,079*** (0,011)	0,063*** (0,009)

β_1	0,914*** (0,010)	0,920*** (0,009)	0,904*** (0,013)	0,933*** (0,009)

For the third sub-sample we found, for three indexes (Standard & Poor's 500, Russell 2000 and NASDAQ Composite) significant positive values of the coefficients λ_3 and significant negative values of the coefficients ρ_2 (Table 6). In the case of Russell 2000 index there also resulted significant positive values of the coefficients λ_1.

Table 6. Parameters of GARCH equations for the third sub-sample

Index	DJIA	S&P 500	RUT	NASDAQ
μ_0	0,071*** (0,015)	0,073*** (0,016)	0,045* (0,023)	0,082*** (0,020)
λ_4	0,071 (0,069)	0,100 (0,072)	0,169 (0,106)	0,097 (0,090)
λ_3	0,111 (0,071)	0,158** (0,074)	0,256** (0,106)	0,216** (0,091)
λ_2	0,008 (0,070)	0,036 (0,073)	0,139 (0,104)	0,082 (0,091)
λ_1	0,073 (0,071)	0,083 (0,075)	0,197* (0,106)	0,096 (0,094)
ρ_1	−0,018 (0,069)	0,009 (0,072)	−0,016 (0,102)	0,120 (0,090)
ρ_2	−0,114 (0,071)	−0,122* (0,074)	−0,219** (0,102)	−0,162* (0,089)
ρ_3	0,052 (0,071)	0,088 (0,074)	0,063 (0,106)	0,060 (0,091)
ρ_4	0,012 (0,069)	0,012 (0,069)	−0,020 (0,101)	−0,008 (0,087)
ξ_1	x	−0,053** (0,022)	x	x
ω	0,036*** (0,005)	0,038*** (0,005)	0,054*** (0,011)	0,056*** (0,009)
α_1	0,186*** (0,019)	0,189*** (0,019)	0,129*** (0,015)	0,150*** (0,016)
β_1	0,778*** (0,019)	0,777*** (0,019)	0,837*** (0,019)	0,806*** (0,018)

4. Conclusions

The results of this investigation suggest that there were some significant abnormal returns in some trading days of the time interval of [PH-4; PH+4], but they experienced some changes during the three periods. For the relative quiet period of January 1990 - December 1999, we found, for all four indexes, significant positive values of the coefficients λ_4, meaning that in PH-4 the returns were, in average, greater than those from the other days. We also found, for three indexes, significant negative values of the coefficients ρ_1 meaning that in PH+1 the returns were, in average, smaller than those from the other days. In the more turbulent period of January 2000 – December 2009 we obtained, for all four indexes, significant positive values of the coefficients λ_3, meaning that in PH-3 the returns were, in average, larger than those from the other days. The passing to the quieter period of January 2010 – April 2020 induced some changes. Significant positive values of the coefficients λ_3 maintained for only three indexes, for which we also found significant positive values of the coefficients ρ_2 that indicate that in PH+2 the returns were, in average, smaller than those from the other days.

The abnormal large returns from PH-4 and PH-3 could be explained by transactions of the investors who buy stocks in these days in order to avoid PH-1 and PH+1 when, if the classical form of the Holiday Effect resisted, the prices were supposed to be at high levels. The abnormal small returns from PH+1 and PH+2 could be interpreted as correction of stock prices after high levels from the days that preceded public holidays.

In the case of Russell 2000 index we found abnormal returns for more trading days the time interval of [PH-4; PH+4] comparing to the other three indexes. These results could be viewed as a confirmation that, very often, the stock prices of the small cap companies stocks are sensitive to the factors that generate the Holiday Effect (Cao at al., 2009; Marrett & Worthington, 2009).

This investigation on the Extended Holiday Effect could be continued with studies on other developed or emerging capital markets.

References

Akaike, H. (1974). A new look at the statistical model identification. *IEEE transactions on automatic control*, *19*(6), 716-723.

Ariel, R. A. (1990). High stock returns before holidays: Existence and evidence on possible causes. *The Journal of Finance*, *45*(5), 1611-1626.

Brockman, P., & Michayluk, D. (1998). The persistent holiday effect: Additional evidence. *Applied Economics Letters*, *5*(4), 205-209.

Cadsby, C. B., & Ratner, M. (1992). Turn-of-month and pre-holiday effects on stock returns: Some international evidence. *Journal of Banking & Finance*, *16*(3), 497-509.

Canepa, A., & Ibnrubbian, A. (2014). Does faith move stock markets? Evidence from Saudi Arabia. *The Quarterly Review of Economics and Finance*, *54*(4), 538-550.

Cao, X. L., Premachandra, I. M., Bhabra, G. S., & Tang, Y. P. (2009). Firm size and the pre-holiday effect in New Zealand. *International Research Journal of Finance and Economics*, *32*, 171-187.

Carchano, Ó., & Pardo, Á. (2015). The pan-European holiday effect. *Spanish Journal of Finance and Accounting/Revista Espanola de Financiacion y Contabilidad*, *44*(2), 134-145.

Chancharat, S., Maporn, S., Phuensane, P., & Chancharat, N. (2018). Volatility of holiday effects in Thai stock market. *Kasetsart Journal of Social Sciences*.

Chong, R., Hudson, R., Keasey, K., & Littler, K. (2005). Pre-holiday effects: International evidence on the decline and reversal of a stock market anomaly. *Journal of International Money and Finance*, *24*(8), 1226-1236.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, *74*(366a), 427-431.

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: journal of the Econometric Society*, 1057-1072.

Dimson, E., & Marsh, P. (1999). Murphy's law and market anomalies. *The Journal of Portfolio Management*, *25*(2), 53-69.

Dumitriu, R., Stefanescu, R., & Nistor, C. (2012). Holiday effects during quiet and turbulent times. International Conference of Scientific Paper Afases 2012 Brasov, 24-26 May 2012.

Dzhabarov, C., & Ziemba, W. T. (2010). Do seasonal anomalies still work?. *The Journal of Portfolio Management*, *36*(3), 93-104.

Fields, M. J. (1934). Security prices and stock exchange holidays in relation to short selling. *The Journal of Business of the University of Chicago*, *7*(4), 328-338.

Hansen, P. R., & Lunde, A. (2003). *Testing the significance of calendar effects.* Brown University, Department of Economics, Providence, Working Paper, No. 2003-03. https://www.econstor.eu/bitstream/10419/80086/1/363066365.pdf

Holden, K., Thompson, J., & Ruangrit, Y. (2005). The Asian crisis and calendar effects on stock returns in Thailand. *European Journal of Operational Research*, *163*(1), 242-252.

Keef, S. P., & Roush, M. L. (2005). Day-of-the-week effects in the pre-holiday returns of the Standard & Poor's 500 stock index. *Applied Financial Economics*, *15*(2), 107-119.

Kim, C. W., & Park, J. (1994). Holiday effects and stock returns: Further evidence. *Journal of Financial and Quantitative Analysis*, *29*(1), 145-157.

Lakonishok, J., & Smidt, S. (1988). Are seasonal anomalies real? A ninety-year perspective. *The Review of Financial Studies*, *1*(4), 403-425.

Lucey, B. M. (2005). Are local or international influences responsible for the pre-holiday behaviour of Irish equities?. *Applied Financial Economics*, *15*(6), 381-389.

Marquering, W., Nisser, J., & Valla, T. (2006). Disappearing anomalies: a dynamic analysis of the persistence of anomalies. *Applied Financial Economics*, *16*(4), 291-302.

Marrett, G. J., & Worthington, A. C. (2009). An empirical note on the holiday effect in the Australian stock market, 1996–2006. *Applied Economics Letters*, *16*(17), 1769-1772.

Meneu, V., & Pardo, A. (2004). Pre-holiday effect, large trades and small investor behaviour. *Journal of Empirical Finance*, *11*(2), 231-246.

Pettengill, G. N. (1989). Holiday closings and security returns. *Journal of Financial Research*, *12*(1), 57-67.

Rozeff, M. S., & Kinney Jr, W. R. (1976). Capital market seasonality: The case of stock returns. *Journal of Financial Economics*, *3*(4), 379-402.

Satt, H. (2016). Religious holidays and analysts forecast optimism: Evidence from MENA countries. *Journal of Economic & Financial Studies*, *4*(04), 01-11.

Stefanescu, R., & Dumitriu, R. (2018). Changes in the stocks prices behavior before and after the public holidays: case of Bucharest Stock Exchange. International Conference *Risk in Contemporary Economy*, 189-202.

Stefanescu, R., & Dumitriu, R. (2019). The extended Friday the 13th effect in the London Stock Exchange, The *XIIth International & Interdisciplinary Scientific Conference VANGUARD SCIENTIFIC INSTRUMENTS IN MANAGEMENT 2019.* Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3484517

Thaler, R. H. (1987). Anomalies: weekend, holiday, turn of the month, and intraday effects. *Journal of Economic Perspectives*, *1*(2), 169-177.

Vergin, R. C., & McGinnis, J. (1999). Revisiting the holiday effect: is it on holiday?. *Applied Financial Economics*, *9*(5), 477-482.

Wong, W. K., Agarwal, A., & Wong, N. T. (2006). The disappearing calendar anomalies in the Singapore stock market.

Worthington, A. C. (2010). The decline of calendar seasonality in the Australian stock exchange, 1958 - 2005. *Annals of Finance*, *6*(3), 421-433.

Ziemba, W. T. (1991). Japanese security market regularities: Monthly, turn-of-the-month and year, holiday and golden week effects. *Japan and the world Economy*, *3*(2), 119-146.