ERASMUS UNIVERSITY ROTTERDAM
Erasmus School of Economics

Bachelor Thesis Financial Economics

Does research diminish the day of the week effect?

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Date: 20 February 2022

Abstract

This paper investigates the day of the week effect and its relation to the amount of research on this topic. The three biggest markets of North America, Europe, and Asia are considered over four different periods from 1964 through 2012. Though some evidence is found, there was not enough evidence to support the claims that the amount of research on the day of the week effect diminished the day of the week effect itself. In the Results, the only control variable that was significant across the dataset was the turn of the month effect.

Keywords: Day of the week effect, Monday effect, research & Turn of the month effect.

Contents

Introduction

The day of the week effect is very widely and repeatedly researched. It has been proven to exist in many papers, but does it still exist? The fact that there has been a lot of research on this topic makes it a broadly known price anomaly within the stock markets. So, it can be expected that most traders know about the day of the week effect and anticipate this when interacting on the stock market.

After Osborne (1962) researched seasonality and the day of the week effect on stocks, Cross (1973) was one of the first to find an existing pattern within the stock markets. Returns on Mondays were significantly negative within the stock markets. Since then, there has been a lot of research on time-specific anomalies in the stock market. French (1980) proved that not only Mondays were significantly negative, but the last trading days of the week were significantly positive. After French did his research, many papers in the ’80s, ’90s, and early ’00s followed on this topic. The North American stock markets were researched, and European, Asian markets followed.

The day of the week effect is a proven effect. At least that was the case until the ’00. Mehdian and Perry have researched the Monday effect in 2001. They concluded that after doing Chow breakpoint tests and recursive coefficient estimations that Monday returns are not structurally stable over the entire sample, but the returns are stable over the pre-1987 and post-1987 subsamples. So, the Monday effect did not disappear, but it decreased. Research on the day of the week effect by Dicle and Levendis (2014) concluded that the day of the week effect in many markets has disappeared to the point that it cannot be detected using market averages.

This paper tries to determine whether the day of the week effect still exists, or if the day of the week effect diminished. This paper investigates the possibility that, if the day of the week effect got diminished, this is caused by the abundance of research on this topic. The main goal of this paper is to research the following question: *Does research diminish the day of the week effect on stocks?*

I expect that this paper will conclude that there used to be a significant day of the week effect and nowadays there might still be some difference within average returns of the days of the week. However, this will be insignificant. Furthermore, I expect that the disappearance of the

day of the week effect will start after 1990, once the amount of research on this topic was peaking. For now, it is uncertain whether the day of the week effect returns after the amount of research reduced on this topic.

Literature

Day of the week effect

As mentioned in the introduction, Osborne (1962) researched seasonality in the stock market. Cross (1973) reported Mondays were significantly negative. French (1980) reported negative returns on Mondays, as well as significantly positive returns on the last trading days of the week. Other studies found a similar pattern (Gibbons & Hess (1981), Keim & Stambaugh (1983), Rogalski (1984), and Smirlock and Starks (1986)). Jaffe and Westerfield (1985) and Lee et al. (1990) both found an existing day of the week effect in the Japanese stock market. Santesmeses (1986) reported no day of the week pattern for the Spanish stock market, as did Jennergren and Sorensen (1989) for the Danish stock markets. Cadsby (1989) reported a Monday effect for the Canadian stock markets, as did Theobold and Price (1984) for the Londen stock exchange. A day of the week effect on returns was found even outside the stock markets. McFarl et al. (1982), Hsieh (1988), Corhay et al. (1995), Yamori & Kurihara (2004), Berument et al. (2007), and Ke et al. (2007) all reported day of the week effect returns on foreign exchange markets, Gay and Kim (1987), Ma (1986) and Aydogan & Booth (2003) reported this for the gold markets, as did Yu and Shih (2011) for the crude oil market.

Dubois & Louvet (1996) researched different American and European stock markets. They concluded negative returns at the beginning of the week. They also reported the effect disappeared in recent years, in the US. Fortune (1998) and Mehdian & perry (2001) reported that the weekend effect on stock returns in the US existed before 1987, but after black Monday in 1987, there was no evidence of a weekend effect anymore. Yamori & Kurihara (2004) reported that there was no significant day of the week effect in the 1990s in both the European and American markets. Hikaki & Maberly (2003) reported a shift in daily returns after 1987 on the Tokyo Stock Exchange.

So far, research only reported patterns of the day of the week effect on returns and volatility. This paper looks at the day of the week effect differently. Previous research was focused on

reporting the effect on a specific market. After the existence of the day of the week effect was proven. Some papers researched if the day of the week effect was still there in later years. The day of the week effect got diminished and was no longer significant. There are some explanations for the disappearance of the day of the week effect, but these were not yet proven. Therefore, this paper will investigate the possibility that research has diminished the day of the week effect.

January effect

Gultekin and Gultekin (1983) found evidence of a seasonal pattern in most major industrial countries' stock returns. The seasonality is usually manifested in a significantly large mean return at the turn of the tax year. For most countries, this large return occurs in January. Since 1983 the January effect has been reported by Haugen and Jorion (1996), Haug and Hirschey (2006), and Asteriuo and Kavetsos (2006) in many different markets and countries

Holiday effect

Lakonishok and Smidt (1988) reported abnormal pre-holiday returns from 1897 until 1986. Ariel (1990) Found that stock returns were 9 to 14 times higher in the 2 days before a holiday. These returns were not caused by the January or the weekend effect. In this paper, the holidays that were chosen are national holidays only.

Halloween effect

Bouman and Jacobsen (2002) found a substantial difference between returns in the May-October period and the rest of the year. Between November and April returns are large in most countries they researched and average returns of the May-October period are not significantly different from zero, or even negative. This paper was an analysis of 37 countries from January 1970 through August 1998. Later Haggard and White (2010) also reported the Halloween effect throughout 1954-2008 in North American stock returns.

Turn of the month effect

Cadsby and Radner (1992) first reported the turn of the month effect. They reported a turn of the month effect on 6 of the 10 markets researched between 1962 and 1989. However, this conclusion could be due to spillover from the U.S. markets. Kunkel, R & Compton, S (2003) later proved that the turn of the month effect excited, regardless of the U.S. market spillover. A

positive and significant different return from zero return was found across all countries on the last day and the first 3 days after the turn of the month.

December effect

Chen and Singal (2003) reported an opposite effect of the January effect. Researched were 3 U.S. markets from 1963 through 2001. They concluded that the last 5 days of December had abnormal returns due to tax-loss and tax-gain selling. Parikh (2009) later found a December effect on the Indian stock market between 1999 and 2008. This was largely due to window dressing of traders for a bonus and to make the portfolios look more profitable.

First and last days of the month

Ariel (1987) reported that the last trading day and first nine trading days of the month were significantly positive and had unusually high returns. The last 8 trading days before the last day of the month had significantly low returns. This was reported for all the 19 years of the study, between 1963 and 1981.

Data

To answer the main question, this paper will research the day of the week effect of the 3 largest U.S, 3 largest European, and 3 largest Asian stock exchanges according to market cap. This will be the New York stock exchange, the NASDAQ, and the Toronto Stock Exchange for the North American markets. The European markets are the European New Exchange Technology, the London Stock Exchange, and the Deutsche Börse Frankfurt Stock Exchange. The Asian markets are the Shanghai Stock Exchange, the Hong Kong Stock Exchange, and the Shenzhen Stock Exchange.

Dataset

The data is split into 4 groups, divided over different time periods. The first period of the data will be 1962-1974. There was little to no research or evidence on the day of the week effect in this time frame. The second time frame, 1975-1987 is when the research started to increase, and more and more evidence was found to prove the day of the week effect. The second to last time frame will be 1988-2000, there was a lot of information out there. The amount of research on the day of the week effect was now at its highest. The day of the week effect was proven by a lot of

researchers for a wide variety of different countries and markets. The last time frame will be 2000-2012. This is when the day of the week effect was well known and proven. There was not a lot of research on the topic anymore.

The specific timeline that is used for this paper matches the findings of Fortune (1998) and Mehdian and Perry (2001). Fortune (1998) researched the weekend effect, he had the following conclusion: The results for the full sample and a pre-October 1987 subsample confirm the negative weekend returns found in earlier studies. However, after 1987 there is no evidence of a negative weekend return (Fortune 1998). These results were very similar to the studies of Mehdian & Perry (2001) and Hikaki & Maberly (2003). Mehdian and Perry (2001) briefly hinted at the possibility that academic research could be connected to the findings.

Descriptive statistics

Descriptive statistics for the natural logarithmic daily return of each index are reported in Table 1. The number of observations, the mean, the standard deviation, the minimum and the maximum logarithmic daily return are reported. There are a few outliers in the data which have been accounted for. The maximum of the Shanghai market daily return is on May 21, 1992. This was the largest single-day rise of the index, with 105 percent. This was due to the government allowing free trading on the market and deregulating stock prices. The market of Hong Kong had 2 severe daily return outliers. One outlier following black Monday in Hong Kong, the 26th of October in 1987, and the other outlier after the Tiananmen Square protests on the 5th of June 1989.

Table 1

Descriptive statistics

		Observations	Mean	Std. Dev.	Min	Max
North America						
	Nasdaq	10,569	0.00032	0.01262	-0.12043	0.13255
	NYSE	11,828	0.00024	0.01024	-0.21286	0.11526
	Toronto	8,400	0.00024	0.00100	-0.11796	0.09370
Europe						
	London	12,306	0.00045	0.01047	-0.12117	0.08977
	Börse	6,312	0.00032	0.01461	-0.14091	0.10798
	Swiss	6,298	0.00026	0.01183	-0.11112	0.10788

Asia						
	Shenzen	5,151	0.00042	0.23616	-0.23361	0.27221
	Hong Kong	10,664	0.00047	0.01887	-0.14734	0.17247
	Shanghai	5,392	0.00058	0.24577	-0.17905	0.28861

Notes: This table describes the logarithmic return of the markets being used throughout all the time periods.

Heteroscedasticity

One of the assumptions of Ordinary Least Square (OLS) regressions is homoscedasticity, where the variance of the residuals is constant among all observations. If this is not the case, this leads to incorrect coefficients and p-values. This is called heteroskedasticity. The individual time periods are tested for heteroskedasticity using the White test (1980). The results of this test are in Table 2. When needed there was accounted for Heteroscedasticity by using robust standard error. This was the case for the New York stock exchange from 1964 through 1976, and 1988 through 1999, for the NASDAQ from 1988 through 2012, for the Toronto stock exchange from 1988 through 1999, for the Frankfurt stock exchange from 1988 through 1999, for the Swiss stock exchange from 1988 through 2000, for the London stock exchange from 1964 through 1975, for the Hong Kong stock exchange from 1964 through 1978, for the Shanghai stock exchange from 2000 through 2012 and for the Shenzhen stock exchange from 1988 through 2012.

Table 2

White test for heteroscedasticity

		1964-1975	1976-1987	1988-1999	2000-2012
North America					
	New York	0.016*	1.000	0.000*	0.090
	NASDAQ	0.148	1.000	0.000*	0.046*
	Toronto		1.000	0.007*	0.326
Europe					
	London	0.000*	1.000	0.072	0.582
	Börse			0.000*	0.298
	Swiss			0.005*	0.170
Asia					
	Hong Kong	0.000*	0.193	0.185	0.902
	Shenzhen			0.005*	0.000*
	Shanghai			0.350	0.000*

*Notes: This table reports the p-values of the White (1980) test. * Stands for homoscedasticity being rejected at the 5% significance level.*

Methodology

The returns in each market R_t will be expressed in local currency. The returns will be calculated as the first differences in the first natural logarithms of the stock market indexes. $R_t = Ln(P_t) - Ln(P_{t-1})$ where P_t is the price level of an index at time t. To examine the day of the week effect a standard OLS regression is made:

$$Ln(R_t) = \beta_m D_{mt} + \beta_{tu} D_{tut} + \beta_w D_{wt} + \beta_{th} D_{tht} + \beta_f D_{ft} + \varepsilon_t$$

Where D_{jt} is a dummy variable for each day(j) of the week. Note that the constant is excluded to avoid the dummy variable trap.

To see whether the amount of research on the topic has had a significant impact on the day of the week effect. The amount of research per year has been counted and added to the data as a cumulative variable. To match the proxy of the daily return the natural logarithm of the cumulative amount of research had been divided by the first lag of the cumulative amount of research.

$$Y_{CR} = Ln(X_{CRt}) - Ln(X_{CRt-1})$$

Where X_{CR} is the cumulative amount of research at time t, and Y_{CR} is the proxy used.

With the variable for the cumulative amount of research per year added, the regression becomes as follows:

$$Ln(R_t) = \beta_m D_{mt} + \beta_{tu} D_{tut} + \beta_w D_{wt} + \beta_{th} D_{tht} + \beta_f D_{ft} + \beta_{Re} X_{Re} + \varepsilon_t$$

Where X_{Ret} is the variable for the amount of cumulative research.

The regression will be corrected with control variables. The January effect, the December effect, the Holiday effect, The Halloween effect, the first and last nine trading days of the month, and a dummy variable for the last and first 3 days of the month.

$$Ln(R_t) = \beta_m D_{mt} + \beta_{tu} D_{tut} + \beta_w D_{wt} + \beta_{th} D_{tht} + \beta_f D_{ft} + \beta_{Re} X_{Ret} + D_{jan} + D_{dec} + D_{preH} + D_{hall} + D_{fn} + D_{ln} + D_{d0} + D_{d1} + D_{d2} + D_{d3} + \varepsilon_t$$

Where D_{jan} is the dummy variable for the January effect. D_{preH} is the dummy variable for the 2 days before a local holiday is the dummy variable for the Halloween effect, this will be 1 for the months May through October and 0 otherwise. D_{fn} and D_{ln} are the dummy variables for the first and last nine trading days of the month respectively. D_{d0}, D_{d1}, D_{d2} and D_{d3} are the dummy variables for the last and first, second and third day of the month respectively.

Results

This section will present and discuss the results per market. The following topics will be discussed per market. First will be discussed whether there was a day of the week effect and if this matches the previous literature. Second will be discussed whether the day of the week effect got diminished. Third will be discussed if the research parameter was significant and matches the hypothesis of this paper. In the last place, other significant parameters will be discussed. All results can be found in table 3 in the appendix.

Day of the week effect

For the New York Stock exchange, in the years between 1962 and 1987 returns on Mondays were significantly negative. Wednesday had significantly positive returns in the same time period. For the time period of 1976-1987, Wednesdays and Fridays returns were significantly positive. For the years 1988 through 1999 the returns of Monday, Tuesday, Wednesday, and Friday all are significantly positive and different from zero. In the last time period, none of the days were significantly different from zero.

For the NASDAQ, the first period only had significantly low returns on Monday. The years 1976 through 1987 had significantly negative returns on Monday and significantly positive returns Wednesday Thursday and Friday. The 3rd timeframe had significant positive returns on Wednesday and Friday. Thursdays were also significant at the 10% level. In the last period, only Mondays had significantly negative returns.

On the Toronto stock exchange between 1976 and 1987, Wednesdays were significantly positive. For the years 1988 through 1999 Mondays, Wednesdays, Thursdays and Fridays had

significantly positive Returns. In the last time period, the returns of none of the weekdays were significantly different from zero.

For the Frankfurt stock exchange (Börse), the returns on Mondays, Tuesdays, Wednesdays, and Fridays were significantly positive in the years between 1988-1999. In the last time period, none of the weekdays had average returns that were significant from zero.

The London stock exchange had significantly positive returns on Wednesdays in the years 1964 through 1975. The other days were not significantly different from zero. For the 2nd time period, none of the weekdays had significantly different returns from zero. The years 1988 through 1999 had positive significant returns for all weekdays. For the 4th time period, none of the weekdays were significantly different from zero.

For the Swiss stock exchange, the 3rd time period had significant positive returns for Wednesdays and Fridays. Also, Tuesdays had significantly positive returns at the significance level of 10%. In the last period, there were no days that had returns that are significantly different from zero.

The Hong Kong stock exchange market had no significant day of the week effect in the years 1964 through 1975. In the 2nd period, only Wednesdays had average returns that were significantly positive at a 10% significance level. In the years 1988 through 1999, Tuesdays, Wednesdays, and Fridays had significant positive returns. In the last time period, there was no day of the week effect found.

For the Shenzhen stock exchange market and the Shanghai stock exchange market, there were no days that had significantly different returns from zero.

In the early years of this data set, the returns were significantly negative on Mondays and significantly positive on Wednesdays and Fridays. This matches the findings of Dubois & Louvet (1996) closely. In the 4th timeframe, there were almost no days that were significantly different from zero. For the North American and EU stock markets all days in the 3rd time period except for some Tuesdays and Thursdays had significantly positive returns. The coefficient for most of the Mondays were lower than the other days. Which could indicate that even though there was a lot of growth, there was still a day of the week effect where Mondays had lower returns, and Wednesdays and Fridays had higher returns.

The North American and EU markets follow a similar pattern, in the first 3 time periods, there was a day of the week effect. This diminished in the last time period, where almost no days had significantly different returns from zero. The day of the week effect got diminished and is no longer significant in any of the markets in the dataset. Contrary to the findings of Hikaki & Maberly (2003) and Yamori & Kurihara (2004) this paper reports a significant day of the week effect in the late '80s and the '90s.

Research

The research proxy was significantly negative in the EU only in London from 1964 through 1975, and significantly positive from 1976 through 1987, this was at a 10% significance level. In North America, the proxy was significantly negative for the first 3 time periods at the NASDAQ, and significantly positive for the last period. In the last 2 time periods, the significance level was 10%. In summary, although some results show a significant relationship between the diminishing of the Day of the week effect and the amount of research being done. There is not enough evidence across the different markets and time periods. For the last time period, these results could be because there was no day of the week effect. For the other 3 time periods the coefficients were almost exclusively negative across all the markets in the first 3 periods, there are not enough significant results to support this paper's claim.

Turn of the month effect

The turn of the month effect was not found in the first time period. From the 2nd period onwards, depending on the market, the last day of the month and the first 3 days of the month had significantly positive returns. In the European markets, the first and second day of the month had significant positive returns. For the North American markets, the second day of the month was significantly positive in all three markets in the years from 1988 through 1999, also for the Toronto stock exchange market in the time period prior to this. The last day of the month was significantly positive in the Toronto stock exchange for the last 2 time periods. The Hong Kong stock exchange and the Shenzhen stock exchange both saw significantly positive returns for the first day of the month in the years from 2000 through 2012. For the Shenzhen market, the third day of the month was significantly positive for the same time period. The Hong Kong stock market saw significant positive returns for the last day of the month in the third time period. The findings of this paper match the previous literature closely.

First and last days of the month

In the third time period the Ney York stock exchange, the Toronto stock exchange, the London stock exchange, and the Hong Kong stock exchange all had significantly negative returns for the first nine and last nine working days. This paper concludes, contrary to the research of Ariel (1987) that there was no evidence for this effect in the years from 1964 through 1987. For the years from 1988 through 1999, 4 out of the 9 markets researched in this paper, there had negative returns in both the first and last 9 days of the month.

Conclusion and discussion

To conclude, this paper found evidence for a day of the week effect until 1999. Although some results support the claim of this paper, that research diminished the day of the week effect, there is not enough evidence across the researched markets. There is evidence found for a turn of the month effect, either the last day of the month or the first, second, or third day of the month have positive returns depending on the market. There is also evidence found for negative returns in 4 out of the 9 markets for the first and last nine days of the month in the years 1988 through 1999.

This paper cannot conclude that academic research was a factor behind the disappearance of the day of the week effect, there needs to be more research before this can be ruled out as a possibility. For further research recommended is to investigate another method to account for the amount of research on this topic. This paper used the date of publication, but the publication date is not always equal to the date papers start having an impact on the market. Publishing of some papers can take years, or papers are preprinted. After a paper is published it does not always impact behavior right away. The method used in this paper also suggests that changes appear smoothly, while as seen in previous literature, changes can happen drastically. So, to account a paper to a specific year of publication could not be the most accurate.

Another recommendation is to investigate the number of viewings per paper. Each paper published is counted equally, while not all papers have the same impact on the market or behavior of people. Some writers are more well known, or some research has more data than others.

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Appendix

Table 3

Logarithmic return in every market per period

New York	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday	-0.00188***	(-3.11)	-0.00094	(-1.37)	0.00159**	(2.08)	-0.00147	(-0.78)
Tuesday	1.89E-06	(0.00)	0.00073	(1.05)	0.00157**	(2.07)	-0.00072	(-0.38)
Wednesday	0.0010831*	(1.89)	0.00142**	(-2.04)	0.00173**	(2.39)	-0.00116	(-0.61)
Thursday	0.000578	(1.05)	0.00078	(-1.12)	0.00074	(0.96)	-0.00075	(-0.36)
Friday	0.000822	(1.50)	0.00116*	(1.68)	0.00159**	(2.13)	-0.00131	(-0.63)
Research	-0.00078	(-0.95)	-0.00123	(-1.09)	-0.00124	(-0.41)	0.01297	(1.01)
Jan	0.000708	(1.24)	0.00053	(0.81)	-0.00016	(-0.26)	-0.00131	(-1.43)
Dec	0.000295	(0.47)	-0.00008	(-0.13)	0.00047	(0.99)	0.00064	(0.71)
PreHol	0.0011681*	(1.74)	0.00015	(0.24)	0.00012	(0.22)	-0.00066	(-0.72)
Hallo	-0.00033	(-0.91)	-0.00043	(-1.14)	-0.00038	(-1.20)	-0.00063	(-1.19)
Fini	8.17E-05	(0.16)	0.00015	(0.28)	-0.00106**	(-2.29)	-0.00066	(-0.91)
Lani	-0.00059	(-1.25)	0.00002	(0.03)	-0.00089**	(-2.02)	-0.00026	(-0.38)
Totm0	0.000971	(1.27)	0.00085	(1.02)	0.00137*	(1.67)	0.00136	(1.19)
Totm1	0.000191	(0.21)	0.00073	(0.85)	0.00229***	(3.10)	0.00260**	(2.22)
Totm2	4.77E-05	(0.06)	0.00111	(1.29)	0.00176**	(2.48)	0.00052	(0.44)
Totm3	0.001129	(1.30)	0.00113	(1.32)	0.00031	(0.48)	0.00019	(0.16)

NASDAQ	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday	-0.0026***	(-3.30)	-0.00126**	(-2.15)	0.00125	(1.17)	-0.00429*	(-1.86)
Tuesday	-0.00110	(-1.34)	0.00028	(0.47)	0.00156	(1.49)	-0.00304	(-1.30)
Wednesday	0.00010	(0.12)	0.00239***	(4.02)	0.00332***	(3.28)	-0.00335	(-1.42)
Thursday	0.00080	(1.02)	0.00243***	(4.06)	0.00171*	(1.65)	-0.00231	(-1.00)
Friday	0.00120	(1.54)	0.00292***	(4.97)	0.00231**	(2.30)	-0.00399*	(-1.71)
Research	-0.00406***	(-2.87)	-0.00176*	(-1.83)	-0.00700*	(-1.85)	0.02914*	(1.89)
Jan	0.00294***	(3.08)	0.00096*	(1.70)	0.00096	(1.33)	-0.00040	(-0.30)
Dec	0.00030	(0.34)	-0.00018	(-0.32)	0.00125*	(1.84)	0.00019	(0.16)
PreHol	0.00056	(0.67)	0.00024	(0.44)	0.00041	(0.57)	-0.00120	(-1.02)
Hallo	-0.00028	(-0.55)	-0.00080***	(-2.56)	-0.00026	(-0.62)	-0.00022	(-0.31)
Fini	0.00074	(1.03)	5.18E-05	(0.11)	-0.00023	(-0.40)	-0.00082	(-0.86)
Lani	-0.00019	(-0.28)	-0.00060	(-1.40)	-0.00042	(-0.75)	-0.00066	(-0.74)
Totm0	0.00171	(1.50)	0.001561**	(2.16)	0.00222	(2.22)	0.00083	(0.65)
Totm1	-0.00087	(-0.74)	0.00089	(1.20)	0.00138	(1.50)	0.00198	(1.12)
Totm2	-0.00041	(-0.35)	0.00099	(1.35)	0.00191**	(2.00)	0.00074	(0.41)
Totm3	0.00108	(0.93)	0.00115	(1.56)	0.00067	(0.71)	0.00125	(0.78)

Toronto	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday			-0.00124	(-1.26)	0.00136**	(2.09)	-0.00155	(-0.90)
Tuesday			0.00077	(0.77)	0.00142**	(2.22)	-0.00098	(-0.57)
Wednesday			0.00225**	(2.25)	0.00164***	(2.66)	-0.00136	(-0.79)
Thursday			0.00133	(1.32)	0.00101	(1.53)	-0.00065	(-0.38)
Friday			0.00207**	(2.10)	0.00166***	(2.72)	-0.00078	(-0.45)
Research			-0.00274	(-1.43)	-0.00389	(-1.57)	0.01415	(1.21)
Jan			0.00037	(0.45)	-3.5E-05	(-0.07)	-0.00019	(-0.23)
Dec			-8.6E-05	(-0.11)	0.00088*	(1.90)	0.00051	(0.60)
PreHol			0.00077	(1.03)	0.00096**	(2.27)	-0.00051	(-0.64)
Hallo			-0.00090*	(-1.93)	-0.00019	(-0.67)	-0.00042	(-0.89)
Fini			0.00043	(0.66)	-0.00065**	(-1.70)	-0.00135**	(-2.03)
Lani			0.00033	(0.54)	-0.00092**	(-2.55)	-0.00061	(-0.98)
Totm0			0.00126	(1.23)	0.00167**	(2.40)	0.00291***	(3.76)
Totm1			0.00139	(1.33)	0.00079	(1.18)	0.00207*	(1.93)
Totm2			0.00189*	(1.82)	0.00186***	(3.01)	0.00151	(1.41)
Totm3			0.00078	(0.75)	0.00060	(1.02)	0.00020	(0.19)

Börse	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday					0.00298***	(2.66)	-0.00142	(-0.63)
Tuesday					0.00219**	(1.99)	-0.00119	(-0.52)
Wednesday					0.00212**	(2.01)	-0.00205	(-0.90)
Thursday					0.00174	(1.59)	-0.00095	(-0.42)
Friday					0.00248**	(2.32)	-0.00158	(-0.70)
Research					-0.00391	(-0.88)	0.01309	(0.85)
Jan					-0.00017	(-0.18)	-0.00073	(-0.67)
Dec					0.00094	(1.10)	0.00037	(0.33)
PreHol					0.00093	(0.82)	0.00150	(1.16)
Hallo					-0.00097**	(-2.00)	-0.00080	(-1.35)
Fini					-0.00101	(-1.37)	-0.00060	(-0.69)
Lani					-0.00106	(-1.47)	-4.6E-05	(-0.06)
Totm0					-0.00045	(-0.45)	0.00170	(1.20)
Totm1					0.00280**	(2.05)	0.00367***	(2.58)
Totm2					0.00309***	(2.86)	0.00063	(0.45)
Totm3					0.00164	(1.45)	0.00210	(1.48)

London	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday	-0.00011	(-0.15)	-0.00069	(-1.00)	0.00164**	(2.34)	-0.00197	(-1.14)
Tuesday	0.00101	(1.40)	0.00072	(1.02)	0.00214***	(3.06)	-0.00191	(-1.08)
Wednesday	0.00199**	(2.37)	0.00108	(1.53)	0.00185***	(2.76)	-0.00223	(-1.27)
Thursday	0.00072	(0.98)	0.00014	(0.20)	0.00163**	(2.32)	-0.00170	(-0.97)
Friday	0.00094	(1.38)	0.00085	(1.23)	0.00154**	(2.20)	-0.00152	(-0.86)
Research	-0.00187**	(-2.18)	0.00199*	(1.75)	-0.00192	(-0.71)	0.01488	(1.25)
Jan	0.00192**	(1.88)	0.00089	(1.33)	0.00044	(0.80)	-0.00167**	(-1.95)
Dec	0.00028	(0.34)	0.00022	(0.33)	0.00067	(1.21)	0.00036	(0.41)
PreHol	0.00094	(1.13)	-0.00071	(-0.86)	-0.00012	(-0.21)	0.00133	(1.15)
Hallo	-0.00043	(-0.92)	-0.00114***	(-2.94)	-0.00056*	(-1.80)	-0.00058	(-1.18)
Fini	-0.00059	(-0.97)	0.00045	(0.85)	-0.00088**	(-1.98)	-0.00006	(-0.09)
Lani	-0.00043	(-0.72)	-0.00021	(-0.41)	-0.00110***	(-2.62)	0.00022	(0.34)
Totm0	-0.00085	(-0.87)	0.00085	(0.97)	0.00140**	(2.21)	0.00075	(0.68)
Totm1	-0.00019	(-0.16)	0.00046	(0.51)	0.00120	(1.46)	0.00285***	(2.57)
Totm2	7.61E-05	(0.07)	0.00011	(0.13)	0.00100	(1.54)	0.00207**	(1.88)
Totm3	0.00163	(1.45)	0.00131	(1.48)	0.00088	(1.13)	0.00024	(0.22)

Swiss	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday					0.00095	(1.01)	-0.00114	(-0.65)
Tuesday					0.00156*	(1.66)	-0.00041	(-0.24)
Wednesday					0.00217**	(2.33)	-0.00062	(-0.36)
Thursday					0.00130	(1.34)	-6.9E-05	(-0.04)
Friday					0.00201**	(2.21)	-0.00091	(-0.58)
Research					-0.00422	(-1.09)	0.00659	(0.56)
Jan					0.00028	(0.34)	-0.00093	(-1.08)
Dec					0.00075	(1.16)	0.00019	(0.22)
PreHol					0.00013	(0.20)	0.00030	(0.32)
Hallo					-0.00040	(-0.92)	-0.00031	(-0.64)
Fini					-0.00063	(-1.00)	-0.00046	(-0.69)
Lani					-0.00050	(-0.83)	-0.00030	(-0.47)
Totm0					0.00048	(0.54)	0.00159	(1.47)
Totm1					0.00303***	(2.64)	0.00288***	(2.63)
Totm2					0.00326***	(3.46)	0.00065	(0.51)
Totm3					0.00053	(0.50)	-0.00017	(-0.16)

Hong Kong	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday	-0.00185	(-0.78)	-0.00049	(-0.38)	0.00119	(0.79)	-0.00310	(-1.36)
Tuesday	-0.00218	(-1.00)	-0.00040	(-0.31)	0.00283**	(1.87)	-0.00327	(-1.43)
Wednesday	0.00084	(0.37)	0.00211*	(1.63)	0.00361**	(2.38)	-0.00277	(-1.21)
Thursday	0.00186	(0.88)	0.00077	(0.59)	0.00128	(0.84)	-0.00304	(-1.33)
Friday	0.00274	(1.23)	0.00190	(1.49)	0.00292**	(1.94)	-0.00224	(-0.99)
Research	-0.00182	(-0.93)	-0.00165	(-0.79)	-0.00010	(-0.02)	0.01775	(1.15)
Jan	0.00472*	(1.82)	0.00272**	(2.21)	-0.00123	(-1.03)	-0.00114	(-1.02)
Dec	0.00368*	(1.70)	0.00179	(1.46)	0.00047	(0.40)	0.00036	(0.32)
PreHol	-0.00143	(-0.60)	-1.5E-05	(-0.01)	-0.00163	(-1.41)	-0.00027	(-0.26)
Hallo	0.00187	(1.18)	0.00019	(0.26)	-0.00053	(-0.77)	-0.00013	(-0.20)
Fini	-0.00111	(-0.57)	-0.00037	(-0.38)	-0.00217**	(-2.28)	7.61E-05	(0.09)
Lani	-0.00066	(-0.35)	2.95E-05	(0.03)	-0.00188**	(-2.08)	0.00080	(0.97)
Totm0	-0.00272	(-0.94)	0.00141	(0.88)	0.00396***	(2.58)	0.00216*	(1.52)
Totm1	-0.00112	(-0.35)	-6.2E-05	(-0.04)	0.00195	(1.26)	0.00326**	(2.29)
Totm2	-0.00297	(-0.93)	0.00214	(1.35)	0.00336**	(2.19)	0.00257*	(1.81)
Totm3	0.00117	(0.38)	-0.00021	(-0.14)	0.00195	(1.27)	-2.82E-07	(-0.00)

Shenzhen	1964	-1975	1976	-1987	1988	-1999	2000	-2012
Monday					-0.00055	(-0.17)	-0.00177	(-0.62)
Tuesday					-0.00039	(-0.13)	-0.00257	(-0.91)
Wednesday					0.001802	(0.56)	-0.00141	(-0.51)
Thursday					4.48E-05	(0.01)	-0.00374	(-1.32)
Friday					0.002602	(0.80)	-0.00294	(-1.05)
Research					-0.00713	(-0.40)	0.023776	(1.21)
Jan					-0.00229	(-1.30)	-0.00025	(-0.14)
Dec					-0.00402*	(-1.93)	-0.00119	(-1.14)
PreHol					0.003754	(1.31)	0.000149	(0.09)
Hallo					-0.00133	(-0.92)	-0.00175**	(-2.38)
Fini					0.002676	(1.30)	-0.00013	(-0.13)
Lani					0.001723	(0.89)	6.18E-05	(0.06)
Totm0					0.002512	(0.92)	0.000475	(0.29)
Totm1					0.001161	(0.27)	0.006144***	(2.91)
Totm2					-0.00133	(-0.49)	0.002433	(1.59)
Totm3					0.004806	(1.39)	0.002668**	(1.79)

Shanghai	1964 -1975	1976 -1987	1988 -1999		2000 -2012	
Monday			-0.00241	(-0.74)	-0.00092	(-0.38)
Tuesday			-0.00432	(-1.32)	-0.00216	(-0.90)
Wednesday			-0.00432	(-0.12)	-0.00082	(-0.34)
Thursday			-0.00153	(-0.46)	-0.00271	(-1.12)
Friday			0.00272	(1.04)	-0.00126	(-0.53)
Research			0.01168	(0.83)	0.01276	(0.76)
Jan			-0.00029	(-0.12)	-0.00060	(-0.43)
Dec			-0.00267*	(-1.16)	0.00040	(0.44)
PreHol			0.00074	(0.27)	-0.00027	(-0.23)
Hallo			-0.00178	(-1.28)	-0.00132*	(-2.01)
Fini			0.00127	(0.67)	0.00050	(0.55)
Lani			0.00093	(0.53)	0.00035	(0.41)
Totm0			0.00124	(0.41)	0.00089	(0.64)
Totm1			-0.00107	(-0.35)	0.00278	(1.73)
Totm2			-0.00011	(-0.04)	0.00181	(1.26)
Totm3			0.00644**	(2.11)	0.00186	(1.36)

Notes: *, **, and *** stand for the significance of 10%, 5%, and 1% respectively. The coefficients are the daily natural logarithmic returns. The T score is in brackets next to the coefficients. The number of observations is 2,493, 3,033, 3,033, and 3,269 for the time periods of the New York stock exchange respectively. The number of observations is 1,237, 3,032, 3,032, and 3,268 for the time periods of the NASDAQ respectively. The number of observations is 0, 2,109, 3,024, and 3,267 for the time periods of the Toronto stock exchange respectively. The number of observations is 0, 0, 3,006, and 3,306 for the time periods of the Frankfurt stock exchange respectively (Börse). The number of observations is 2,871, 3,132, 3,065, and 3,238 for the time periods of the London stock exchange respectively. The number of observations is 0, 0, 3,006, and 3,292 for the time periods of the Swiss stock exchange respectively. The number of observations is 1,497, 2,955, 2,969, and 3,243 for the time periods of the Hong Kong stock exchange respectively. The number of observations is 0, 0, 2,164, and 2,987 for the time periods of the Shenzhen stock exchange respectively. The number of observations is 0, 0, 2,251, and 3,141 for the time periods of the Shanghai stock exchange respectively.