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A HISTORICAL LOOK AT THE MONDAY EFFECT

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Key Words

Calendar Anomaly; Monday Effect; Earnings Forecast; Investment.

Abstract

This paper provides further evidence on the well-known Monday effect. We show that the Monday effect occurs primarily in the last two weeks (fourth and fifth) of the month. According to the estimated regression model based on the DJIA index this result holds for most of the sub-periods during (1901-1998) sampling period. Furthermore, we found little evidence to support one of the potential explanations for our findings that the Monday effect is largely caused by the highly positive return of the previous trading day, since there was no significant correlation between Monday's return and prior day return. Finally, we also found that although the effect of the Monday anomaly has decreased over the last two decades, however: it is still significantly less than all other days of the week.

Introduction

One of the well-known documented calendar anomalies in the finance literature is the significantly negative average Monday stock return. After Cross (1973) and French's (1980) findings regarding the day-of-the-week effect, many other researchers confirm their findings (Gibbons and Hess, 1981; Keim and Stambaugh, 1984; Kamara, 1997; Wang, Li and Erickson, 1997).

In this paper, we provide further evidence on the Monday effect. First, we find that the turn-of-the-week effect was in existence not only during the last two to three decades, but also during almost the last one hundred years. Moreover, we documented that the turn-of-the-week effect is basically

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concentrated in the fourth and fifth Mondays of the month rather than the first three Mondays of the month.

We also examined one possible explanation for our findings. We did that by providing further evidence on Abraham and Ikenberry (1994) findings with respect to the correlation between Monday's return and prior trading day's return. We find that when the return of Monday's prior trading day is positive, Monday's mean return is not significantly different from zero. Whereas, when the return of Monday's prior trading day is negative, Monday's mean return is significantly different from zero.

The findings of this paper will facilitate the search for a better explanation for the calendar anomalies which cast doubts on the market efficiency. Further, since the negative returns are specific to the last two Mondays of the month then this could eliminate some of the previously documented explanations for the Monday effect. Also, these findings could provide a chance for investors and policy makers to better design their portfolios and trading strategies in terms of profitability.

In general, stock returns have four different inter-day calendar anomalies, turn-of-the-year, turn-of-the-month, turn-of-the-week, and around holidays. Lakonishok and Smidt (1988) find evidence of persistently anomalous return around the turn-of-the-week, the turn-of-the-month, the turn-of-the-year and around holidays.

Further, these documented calendar anomalies are a general worldwide phenomenon. Jaffe and Westerfield (1985) find evidence on the existence of the week end effect in the UK, Japan, Canada, and Australia markets. Kim and Park (1994) report abnormally high returns on the trading day before holidays in the UK and the Japanese stock market. Additionally, Jaffe, Westerfield and Ma (1989) supported the existence of the Monday return pattern in the foreign stock markets.

The calendar anomalies were documented not only in the cash market but also across other markets. Szakmary (1997) finds evidence on the existence of the turn of the month effect in the stock index futures markets.

A series of other studies documented the concentration of positive returns on specific periods. For example, stocks appear to earn positive average returns only a round the beginning and during the first half of the calendar months, and zero average returns during the second half. Ariel (1987) found that stocks' returns are positive only for days immediately before and during the first half of the calendar months, and indistinguishable from zero for days during the last

half of the month. However, other researchers (Lakonishok and Smidt, 1988; Wang *et al.*, 1997) criticized this study. The main reason for the criticism is based on the notion that Ariel's definition of the first part of the month includes the last trading day of the previous month.

Wang *et al* (1997) find that the well-known Monday effect occurs primarily in the last two weeks of the month. Additionally, the mean Monday return of the first three weeks is not significantly different from zero. In this paper, we further investigated the phenomenon of the Monday effect that occurs primarily in the last two weeks as documented by Wang *et al* (1997). Based on the argument that such anomalies are a pure result of the *boredom effect*[1] or a result of data snooping[2], we have used a different time period (from 1901 to 1998) and a different index (DJIA) to overcome the last two effects.[3]

Among our most important findings is that this phenomenon of negative Monday return is persistent over the whole period on average. Further, the last two Mondays in the calendar month are the main source of the Monday effect or the Day-of-the-week effect. This finding is consistent with Wang's *et al* (1997) results; however, it is to some extent inconsistent with Ariel's (1987) findings that the mean return for stocks is indistinguishable from zero for days during the last half of the month. Accordingly, we conclude that the negative return is not concentrated in the whole second half of the month, however, it is specific to the last two Mondays of the month.

Work by Abraham and Ikenberry (1994) indicates that when Friday's return is negative, Monday's return is negative nearly 80% of the time with a mean return of -0.61%. Whereby, when Friday's return is positive, the subsequent Monday's mean return is positive and equal to 0.11%. In this paper, we examined the above notion and find that it is only valid for the period that was examined. That is, across the five sub-periods in our sample, Abraham and Ikenberry's (1994) findings were persistent only in our fourth sub-sample.

This study is different from previous work in three major areas. First, the data that is used covered 98 years. Second, the market index that is used

(1) The boredom effect means that only studies that have found some type of anomalies are published whereas studies that did not find any type of anomalies are not published.

(2) Data snooping means that the same set of data have been used by many studies and thereby such anomalies are a pure coincident.

(3) Wang *et al* (1997), Abraham and Ikenberry (1994) have used a time period from 1963 to 1990.

to analyze this specific anomaly was the Dow Jones Industrial Average (DJIA). Finally, the definition of the Monday that we have used is different from previous studies.

Possible Explanations

Many explanations have been proposed as potential reasons behind the calendar puzzling anomalies in general. These explanations could be categorized into two groups: Behavioral; a. Institutional or b. Individual (Sias and Starks, 1995, 1997; Miller, 1988; Lakonishok and Maberly, 1990; Tinic, Barone-Adesi, and West, 1987), and Informational (Lo and Mackinlay, 1990; Merton, 1987; Badrinath, Kale, and Noe, 1995). For example, the turn-of-the-year is a special time for the stock market. Individuals have calendar tax years, and firms close their books at the end of the year. Moreover, the turn-of-the-year is a regular time for budgeting for government, businesses, and consumers. Additionally, January is associated with special cash flows such as bonuses, pension contributions and holiday liquidity needs. According to Rozeff and Kinney (1976) stocks exhibit both higher returns and higher risk premiums in January.

Two plausible hypotheses have been proposed in the literature as potential reasons for the January effect; the *Tax-loss-selling hypothesis* and the *Window-dressing hypothesis*. The *Tax-loss-selling rebound* hypothesis (Givoly and Ovadia ,1983) states that taxable investors dump losers in December for tax purposes, and the subsequent abatement of selling pressure in January explains the higher returns. Such hypothesis depends on the tax-motivated trading of individual investors. Specifically, according to Sias and Starks (1997) this hypothesis posits that prior to the calendar year-end, individual investors sell stocks that have declined in value in order to realize tax losses. Such selling result in a tendency for late December transactions to close at bid prices. Thus, recorded returns over the last few days of December are small or negative. Immediately following the prices move from the bid toward the midpoint of the spread, resulting in a positive recorded return.

The second hypothesis (*Window-dressing*) suggests that the year-end portfolio rebalancing of institutional investors is responsible for the January anomaly. Such hypothesis posits that because institutional investors are evaluated in relation to their peers prior to the closing of the calendar year, they buy winners and sell losers in order to hold respectable year-end portfolio holdings.

Lakonishok and Maberly (1990) provide a behavioral explanation for

the weekend effect. Specifically, they documented some regularity in trading patterns of individuals and institutions investors that are related to the day of the week. Specifically, they found that NYSE trading volume on Mondays is lower than that on other days of the week. On the contrary to such low trading they found that individuals tend to trade more on Mondays, which implies that such low trading volume on Mondays is a result of less trading by institutions. Thus, such increases in the selling activity by individuals on Mondays could be one of the potential explanations for the weekend effect. Furthermore, studies supported previous findings of Lakonishok and Maberly (1990) which attribute the day-of-the-week effect to individual trading patterns.

Sias and Starks (1995, 1997) have also attributed the day-of-the-week return to institutional behavioral patterns. Specifically, they find that day-of-the-week patterns in returns and volumes are more pronounced in securities in which institutional investors play a greater role. However, other researchers have reached different conclusions. Further, Kamara's (1997) study supported the evidence that individual trading is an important cause for the Monday effect.

Abraham and Ikenberry (1994) find that individual investors are more active sellers of stocks on Monday, particularly following bad news. Another study by Ritter (1988) finds that individual investors are unusually heavy net buyers of stocks around the turn of the year.

Another stream of papers attributed the existence of such anomalies, whether they are of calendar or non-calendar nature, to informational components. Merton (1987) argued that the information setup costs and the legal restrictions arising from the prudent man rule. Specifically, he argues that informed investors invest only in firms which have good prospects and available public information. As a result, uninformed investors can use past available prices of such stocks to predict prices of other stocks. Consequently, such information costs and legal restrictions may cause considerable differences in the time scales over which many anomalies are produced in the market place. Badrinath et al. (1995) combine models presented by both Merton (1987), and Lo and Mackinlay (1990), and find that the returns on the portfolio of stocks with the highest level of institutional ownership will lead portfolios of stocks with the lowest level of institutional ownership. Thus, such hypothesis is based on the notion that different levels of institutional ownership can induce cross-autocorrelation in stocks returns.

Damodaran (1989) attributed the Monday effect to news releases, since corporations tend to release bad news over the weekend. He showed that firms tend to report bad news in the period from Friday's close to Monday's open which may cause some portion of the negative Monday effect.

In this paper we investigated one of the potential reasons for the day-of-the-week effect. This potential explanation posits that the day-of-the-week anomaly might be largely caused by the fact that Friday's close tend to be highly correlated with Monday's return. However, our results were not consistent with the above explanation.

The paper is organized as follows. The next Section of this article reports the set of data and the methodology. The third Section reports the empirical findings using the Dow Jones Industrial Average Index. The fourth Section explores one of the potential explanations for our findings. Finally, in the last Section we conclude.

Data and Methodology

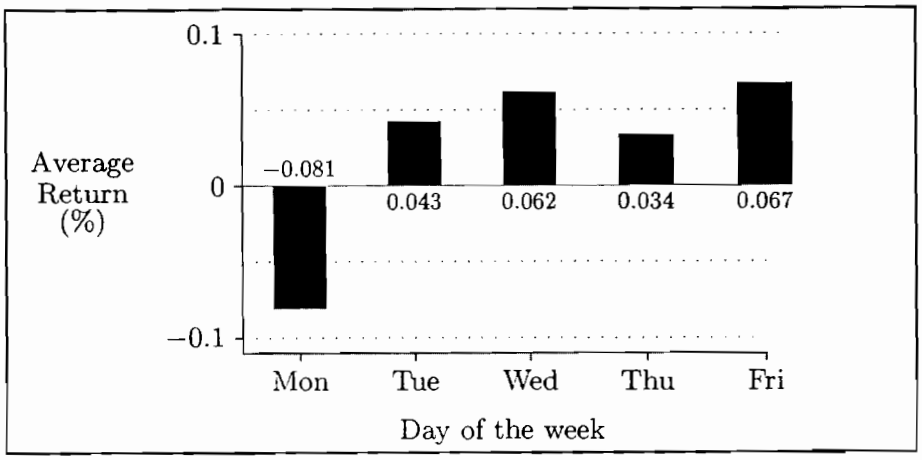
Following Lakonishok and Smidt (1988) we employ the Dow Jones Industrial Average (DJIA) stock index. The Data span the time period from 1/1/1901 to 9/1/1998. The Dow Jones is a reasonable proxy for the large capitalization industrial company component of the market portfolio. The thirty stocks included in the index represent about 25% of the market value of all NYSE stocks. Using this index will reduce problems associated with non-synchronous trading. For the period before October 3, 1916 the (DJIA) index stock's list included the returns of 12 large firms. However, the list was expanded to include the returns of 30 stocks on October 1, 1928 (O'Higgins and Downes, 1992).

The following precautions were considered before calculating the average return. First, the stock market was close in the period from August 1, 1914 until December 12, 1914 because of World War I. Second, in the period between 1945 and 1952 the stock market was open on Saturdays. For conveniency, Saturday's data were eliminated from data used in the study.

The following definition for the Monday was used in this paper. The first Monday of the month is the Monday for the first week of the month as defined by Wang et al. (1997). The first week of the month is defined as the week that contains the first trading day of the month. If the first trading day of the month is a Monday, then it will be the Monday of the first week of the month.

Throughout this paper instead of reporting the test statistics for various

Figure 1
Average Return for the Days of the Week



tests, which needs an indication of the levels of significance; we will only report the *p*-values of such tests. Furthermore, we will use the terms significant and highly significant, if the *p*-value of the test is less than 0.05 or 0.01, respectively.

Furthermore, the data was divided into five major sub-groups. The main reason for dividing the sample into sub-periods is to be able to distinguish and/or observe any changes that have occurred through time. In fact, we observe that the original Monday anomaly is less significant in the last sub-group. Providing evidence on the notion that the Monday anomaly is no more there, and thus, investors will no longer be able to exploit such opportunities in their investment strategies.

The return of day i (R_i) is calculated based on the following formula

$$R_i = \frac{P_i - P_{i-1}}{P_{i-1}} \times 100,$$

where P_i is the closed DJIA price of day *i*. That is, R_i is the percentage of change in the closed DJIA price compared to the previous day.

The data were partitioned into five major sub-periods of approximately 20 years each. Table 1, reports the summary statistics for the data using the DJIA index, as can clearly be observed in Figure 1. When all Monday returns are aggregated, the result is the well-known day-of-the week effect. As documented in earlier studies, the Monday mean return is significantly negative. The mean of the Monday for the whole period aggregate in this study was (mean = -0.0808%).

Table 1
Summary Statistics for the Monday Return, Categorized by Week Using the DJIA Index for the Period 1901-1998 and for Five subperiods Within the Main Period

	First Monday	Second Monday	Third Monday	Fourth Monday	Fifth Monday
	All periods: From 1/2/1901 to 9/1/1998				
Mean	0.056%	-0.027%	-0.020%	-0.167%	-0.175%
p-value$^{\alpha}$	(.459)	(.496)	(.594)	(.000)	(.000)
Percentage positive	54.4%	51.9%	52.1%	42.8%	48.1%
No. of observations	454	1084	1118	1127	972
	Period 1: From 1/2/1901 to 12/31/1921				
Mean	0.026%	-0.036%	0.032%	-0.146%	0.024%
p-value$^{\alpha}$	(.916)	(.702)	(.718)	(.110)	(.804)
Percentage positive	56.1%	55.2%	53.6%	43.2%	54.3%
No. of observations	98	230	239	241	208
	Period 2: From 1/1/1922 to 12/31/1941				
Mean	-0.020%	-0.051%	-0.212%	-0.107%	-0.433%
p-value$^{\alpha}$	(.921)	(.694)	(.091)	(.419)	(.002)
Percentage positive	51.1%	51.1%	49.3%	48.1%	48.3%
No. of observations	92	223	223	235	205
	Period 3: From 1/1/1942 to 12/31/1961				
Mean	0.177%	-0.022%	-0.125%	-0.197%	-0.084%
p-value$^{\alpha}$	(.023)	(.706)	(.014)	(.000)	(.203)
Percentage positive	66.7%	50.9%	46.5%	39.4%	48.8%
No. of obsdrvations	93	222	230	231	205
	Period 4: From 1/1/1962 to 12/31/1981				
Mean	-0.142%	-0.104%	-0.030%	-0.217%	-0.235%
p-value$^{\alpha}$	(.166)	(.101)	(.599)	(.000)	(.000)
Percentage positive	39.6%	45.7%	46.6%	39.6%	33.9%
No. of observations	91	223	234	230	198
	Period 5: From 1/1/1982 to 9/1/1998				
Mean	0.262%	0.100%	0.276%	-0.171%	-0.080%
p-value$^{\alpha}$	(.028)	(.138)	(.000)	(.220)	(.468)
Percentage positive	58.8%	57.5%	66.7%	43.7%	56.4%
No. of observations	80	186	192	190	156

α The exact level for testing zero mean.

Furthermore, we tested whether or not there is a difference between the mean return of the first three Mondays and the last two Mondays for the whole period and the five sub-periods as reported in Table 3. Moreover, we investigated the findings of Abraham and Ikenberry (1994) for the all the sub-period as reported in Table 4.

The *p*-values shown in Table 1 test whether, the mean return for the Monday of a specific week is significantly different from zero (with no reference to all other days).

The following regression model was estimated to test the hypothesis of whether the average return in the last two Mondays of the month are significantly lower than the average return in the first three Mondays of the month (See Table 2).

$$\text{Return}_t = \beta_0 + \beta_1 m_{1t} + \beta_2 m_{2t} + \beta_i m_{3i} + \varepsilon_i$$

where,

$$m_{1t} = \begin{cases} 1 & \text{if Return}_t \text{ is for 1st or 2nd Monday,} \\ 0 & \text{otherwise} \end{cases}$$

$$m_{2t} = \begin{cases} 1 & \text{if Return}_t \text{ is for 3rd Monday,} \\ 0 & \text{otherwise} \end{cases}$$

and

$$m_{3t} = \begin{cases} 1 & \text{if Return}_t \text{ is for 4th or 5th Monday,} \\ 0 & \text{otherwise} \end{cases}$$

The *p*-values in Table 2 tests whether the parameter of the specified independent variable is significantly different from zero. That is, whether the specified variable (the first and second, third or fourth and fifth Mondays) is significantly different from all other days in determining the mean value of return.

Empirical Findings

Wang *et al* (1997) report that the Monday effect is concentrated in the last two weeks of the month. However, their study covered the period from 1962-1993. The tests reported in this paper covered the period from 1901 through 1998. We find that the anomaly of the Monday effect was persistent through the whole period. That is, the negative returns that are associated with the Monday were highly significant in the last two weeks compared to the first three weeks. According to Table 2, the month was divided into three parts (first two Mondays, third Monday, and last three Mondays). The anomaly was almost significant in the first sub-period during the last two weeks (*p*-value = 0.0521). As for the first three Mondays, the results were inconsistent among the five sub-periods. The first two Mondays were insignificant in 4 sub-periods out of the five. Furthermore, the third Monday was significant in the second period (β_2 = -0.28, *p*-value = 0.014), significant in the third sub-period

(β_2 = -0.19, *p*-value = 0.000), and in contrast, it was highly significant in the last sub-period (β_2 = 0.22, *p*-value = 0.004) with an unexpected positive

coefficient. Thus, we conclude that the Monday anomaly is restricted and consistent in the last two Mondays of the month.

However, according to the t-tests reported in Table1 and Table 3, the mean return on the first three weeks of the month in the fifth sub-period was significantly positive (mean = 0.202% and *p*-value = .000). Moreover, if we look at Table 2, we will see that the coefficient of the regression model of the fifth sub-period for the third week was highly significant with a value of 0.2196%. The mean return of the last two Mondays in the month in the fifth sub-period was negative (mean = -0.130%) as in Table 3. Despite the fact that the negative mean return of the last two Mondays was not significantly (*p*-value = .154) different from zero, the coefficient for the last two weeks in the regression model was highly significantly nega-

Table 2
Results of Regressing Model (2) for the Five Subperiods

	Intercept	**First Two Mondays**	**Third Monday**	**Last Two Mondays**
	All periods: From 1/2/1901 to 9/1/1998			
Parameter	0.0514	-0.0539	-0.0712	-0.2220
p-value	0.0000	0.0699	0.0393	0.0000
	Period 1: From 1/2/1901 to 12/31/1921			
Parameter	0.0206	-0.0380	0.0118	-0.1100
p-value	0.2430	0.5612	0.8762	0.0521
	Period 2: From 1/1/1922 to 12/31/1941			
Parameter	0.0685	-0.1107	-0.2804	-0.3272
p-value	0.0090	0.2551	0.0142	0.0001
	Period 3: From 1/1/1942 to 12/31/1961			
Parameter	0.0696	-0.0325	-0.1942	-0.2133
p-value	0.0000	0.4271	0.0000	0.0000
	Period 4: From 1/1/1962 to 12/31/1981			
Parameter	0.0433	-0.1585	-0.0735	-0.2687
p-value	0.0009	0.0011	0.1863	0.0000
	Period 5: From 1/1/1982 to 9/1/1998			
Parameter	0.0568	0.0919	0.2196	-0.1870
p-value	0.0011	0.1563	0.0037	0.0011

tive (p-value = .001), which indicates that the mean return in those two Mondays is significantly less than all other days.

When the Monday returns are categorized by the first three weeks and the last two weeks of the month, we observe the following pattern in the results. For the first three weeks, none of the average Monday returns are significantly negative (see Table 3 and Figure 2) for the first four sub-periods. In fact, during the last sub-period 1982-1998 the mean return was significantly positive, as was mentioned earlier. As for the last two Mondays, although the mean return was negative in all sub-periods, however it was not significantly different from zero in the first and the last sub-periods. This does not affect the consistency of our findings since this only tests whether or not the mean return is significantly different from zero rather than different the mean return of the other days.

In contrast to the first three weeks of the month, the average Monday return of the fourth and the fifth weeks of the month are significantly negative. Figure 3 shows a histogram of the arithmetic mean returns for the first three trading Mondays compared to the last two trading Mondays. The resulting histogram shows -0.01% returns at the first three weeks of the month followed by -0.17% returns in the last two weeks of the month.

The difference in the average Monday returns between the first three weeks and the last two weeks is large and significant. The average Monday

Figure 2
Average Return for the First Three Mondays (black bars) Compared to the Last Two Mondays (white bars).

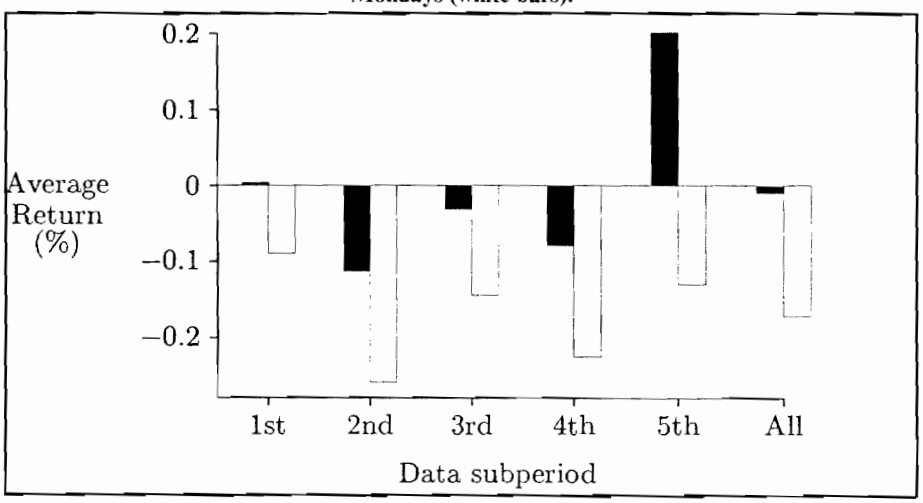
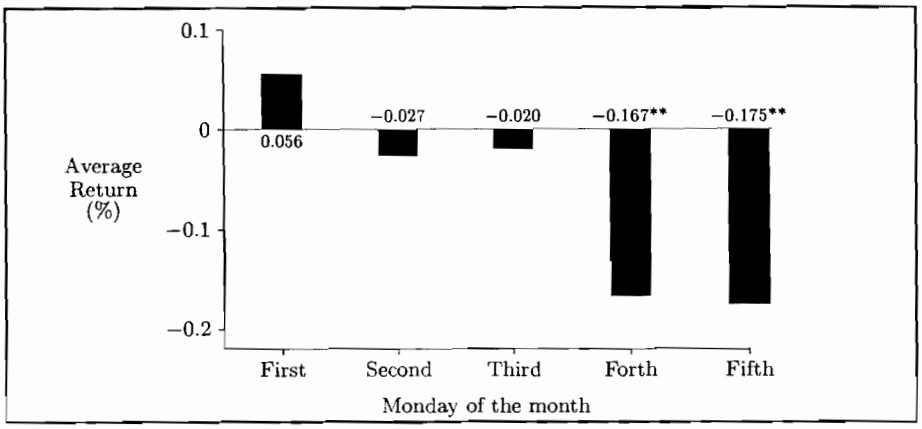


Table 3

Summary Statistics and Results of t-tests for the Effect of the First Three Mondays, the Last Two Monday,Their Difference and all Mondays, on Daily Stock Returns - using the DJIA Index for the Period 1901-1998 and Five Subperiods.

	First Three Mondays	Last Two Mondays	Difference in the Two Periods	All Mondays
	All periods: From 1/2/1901 to 9/1/1998			
Mean	-0.010%	-0.171%	0.161%	-0.0808%
p-value	(.704)	(.000)	(.000)	(.000)
Percentage positive	52.4%	45.2%	-	49.2%
No. of observations	2656	2099	-	4755
	Period 1: From 1/2/1901 to 12/31/1921			
Mean	0.004%	-0.089%	0.093%	-0.037%
p-value	(.958)	(.175)	(.337)	(.436)
Percentage positive	54.7%	48.3%	-	51.9%
No. of observations	567	449	-	1016
	Period 2: From 1/1/1922 to 12/31/1941			
Mean	-0.113%	-0.259%	-0.146%	-0.178%
p-value	(.172)	(.007)	(.243)	(.004)
Percentage positive	50.4%	48.2%	-	49.4%
No. of observations	538	440	-	978
	Period 3: From 1/1/1942 to 12/31/1961			
Mean	0.031%	-0.144%	-0.113%	-0.0812%
p-value	(.367)	(.001)	(.035)	(.002)
Percentage positive	51.7%	43.8%	-	48.2%
No. of obsdrvations	545	436	-	981
	Period 4: From 1/1/1962 to 12/31/1981			
Mean	-0.079%	-0.225%	-0.146%	-0.143%
p-value	(.045)	(.000)	(.012)	(.000)
Percentage positive	45.1%	36.9%	-	41.5%
No. of observations	548	428	-	976
	Period 5: From 1/1/1982 to 9/1/1998			
Mean	0.202%	-0.130%	0.332%	0.059%
p-value	(.000)	(.154)	(.000)	(.205)
Percentage positive	61.6%	49.4%	-	56.3%
No. of observations	458	346	-	804

Figure 3
Average Return for the Mondays of the Month. The Symbols, * and **, Indicates that the Mean is Significantly Different from zero at α-Levels 0.5 and 0.1, Respectively



return for the last two weeks is approximately 0.332% points lower than that of the first three weeks with a p-value of 0.000 (see Table 3).

To summarize, our results indicate that the well-known Monday effect is caused largely by the Mondays of the last two weeks of the month. The mean Monday return of the first three weeks of the month is not significantly different from zero and generally significantly higher than the mean Monday return of the last two weeks.

Correlation between Monday's Return and Prior Trading Day's Return

It is well documented in the literature that Monday's return is positively correlated with the return of the prior trading day. Subsequently, we investigated whether the significantly lower returns for the last two Mondays of the month can be explained by the return of the previous trading day. Abraham and Ikenberry (1994) find that when Friday's return is negative, Monday's return is negative nearly 80% of the time. Whereby, when Friday's return is positive, the subsequent Monday's mean return is positive and equal to 0.11%. Accordingly, we performed t-tests for the mean returns of each day of the week conditioned on the sign of the return of the prior trading day. Table 4 reports the results over the entire period from 1901-1998.

When the return of Monday's prior trading day is positive, Monday's mean return is not significantly different from zero. The result is not consistent within the sub-periods. The Monday's return, conditioned on po-

sitive prior return, was significantly negative in the second sub-period, significantly positive in the third and fifth sub-periods, and insignificantly different from zero in the other sub-periods. In contrast, when the return of Monday's prior trading day is negative, Monday's mean return is significantly different from zero with a value of -0.218 and p-value of 0.000. This result holds for the first, third and forth sub-periods. However, the fifth sub-period was almost significantly negative (p-value = .050). The main reason for this result was driven by the extremely positive return of the third Monday of the month reported earlier. Moreover, for all other days of the week (Tuesday, ..., Friday), when the return of the prior trading day is positive, the mean return of that day is significantly positive. In contrast, when the return of the prior trading day is negative, the mean return of that day is insignificantly different from zero as can be further noticed from Figure 4. These findings were only valid for the full period. However, across the sub-periods we did not detect such behavior.

The findings of Abraham and Ikenberry-regarding the percentage of negative Monday returns conditioned on negative prior return-exist in the third and fourth sub-periods only. That is, when the return of Monday's prior trading day is negative, Monday's return is negative 71% of the time in the fourth sub-period and 62% of the time in the third sub-period (see the lower part of Table 4).

Figure 4

Average Return for the Day of the Week, Conditioned on Positive Prior-day return (Black Bars) and Negative Prior-Day Return (White Bars). The Symbols, * and ** - Under or Over the Bar - Indicates that the Mean is Significantly Different from Zero at α-Levels 0.05 and 0.01, Respectively.

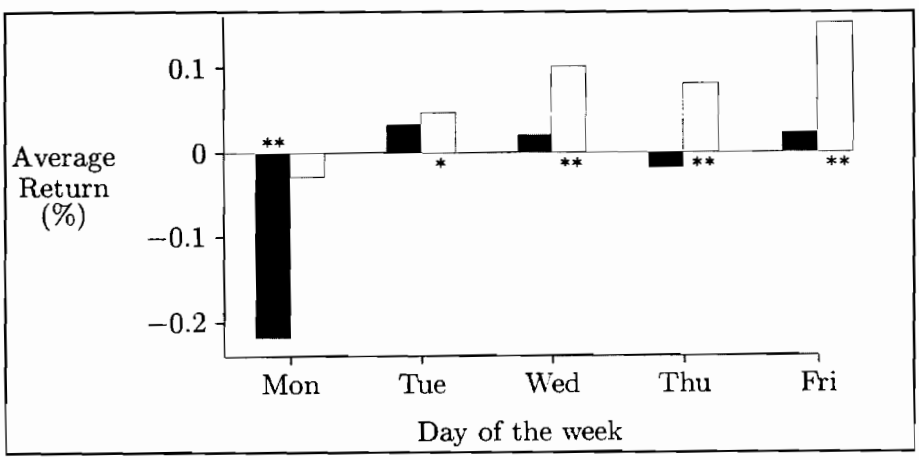


Table 4
Mean Weekday Returns Conditional on the Prior Trading Day Return in the Period of 1901 - 1998.

Period		Monday	Tuesday	Wednesday	Thursday	Friday
		Positive Prior Return				
All Periods	Mean (%)	-0.0280	0.0472	0.1011	0.0814	0.1518
1901-1998	*p*-value	(.245)	(.011)	(.000)	(.000)	(.000)
	% positive	53.4	51.5	54.5	53.0	58.7
Period 1	Mean (%)	0.0663	0.0171	-0.0171	0.0774	0.1464
1901-1921	*p*-value	(.235)	(.631)	(.670)	(.081)	(.001)
	% positive	53.4	47.9	47.1	51.5	56.1
Period 2	Mean (%)	-0.2138	0.0044	0.1183	0.0041	0.0949
1922-1941	*p*-value	(.010)	(.941)	(.084)	(.940)	(.140)
	% positive	49.4	50.8	55.9	48.9	56.2
Period 3	Mean (%)	-0.0801	0.1129	0.1464	0.1466	0.1844
1942-1961	*p*-value	(.011)	(.000)	(.000)	(.000)	(.000)
	% positive	55.7	58.1	58.8	59.6	62.6
Period 4	Mean (%)	0.0655	0.0579	0.1810	0.1271	0.1829
1962-1981	*p*-value	(.065)	(.130)	(.000)	(.000)	(.000)
	% positive	51.1	53.0	58.4	55.7	60.2
Period 5	Mean (%)	0.1623	0.0491	0.0725	0.0437	0.1485
1982-1998	*p*-value	(.001)	(.222)	(.110)	(.318)	(.002)
	% positive	58.1	48.0	51.9	48.3	57.8
		Positive Prior Return				
All Periods	Mean (%)	-0.2176	0.0342	0.0213	-0.0181	0.0239
1901-1998	*p*-value	(.000)	(.143)	(.378)	(.433)	(.292)
	% positive	43.8	51.8	51.9	49.7	50.9
Period 1	Mean (%)	-0.1732	0.0438	-0.0480	0.0311	0.0109
1901-1921	*p*-value	(.038)	(.393)	(.339)	(.538)	(.818)
	% positive	49.0	50.7	50.6	49.7	52.5
Period 2	Mean (%)	-0.1346	0.1046	0.0902	0.0139	-0.0327
1922-1941	*p*-value	(.159)	(.176)	(.309)	(.073)	(.378)
	% positive	49.2	59.4	51.9	54.9	53.1
Period 3	Mean (%)	-0.3087	-0.0936	0.0321	-0.0457	0.0273
1942-1961	*p*-value	(.000)	(.010)	(.347)	(.146)	(.369)
	% positive	37.7.7	46.4	52.3	48.2	53.1
Period 4	Mean (%)	-0.4045	-0.0296	-0.0259	-0.1073	-0.0452
1962-1981	*p*-value	(.000)	(.403)	(.537)	(.003)	(.207)
	% positive	29.3	47.2	50.3	45.0	48.5
Period 5	Mean (%)	-0.0562	0.1970	0.0721	-0.0500	-0.0865
1982-1998	*p*-value	(.502)	(.000)	(.00)	(.282)	(.059)
	% positive	54.5	47.3	54.8	50.9	47.1

As for the other sub-periods, this anomaly failed to exist. Moreover, no anomaly for the percentages of positive returns was found when the prior trading day is positive, as it can be noticed form the percentages in the upper part of Table 4.

Conclusion

This paper provides further investigation on the calendar time anomalies. We examine the well-known Monday effect that is largely caused by the Mondays of the fourth and the fifth weeks of the month during the 1901-1998 period. This paper shows that on average the turn-of-the-week effect is largely caused by the Mondays of the fourth and the fifth week of the month. When the data was divided into five smaller sub-periods, the result holds for all the sub-periods (1901-1998).

Our results, on average, hold for each of the sub-samples during the sample period. After using the regression model, the observation of the mean Monday return of the last two weeks of the month was highly significantly lower than that of the first three weeks of the month. Furthermore, the tests conducted in this paper revealed another new fact about the last sub-period, that the third Monday of the month have a highly significant positive return in contrast to the well known Monday anomaly documented in the literature (mean = 0.276%). One possible explanation for this result is that, favorable information could be released by corporation over the third Monday of the month (around the middle of the month).

We further explored one possible explanation for the findings regarding the concentration of the Monday effect in the fourth and fifth weeks of the month. An examination of whether such low return can be explained by the return of the previous trading day was conducted. Conditional on the sign of return of the prior day, no anomalies were found that would further support the findings of Abraham and Ikenberry. That is, it is clear that the return of the previous trading day cannot fully explain the main findings of this research.

Finally, findings of this paper of persistently negative returns in the last two Mondays of the month could be used to provide further insight on the subject of market efficiency.

Directions for Future Research

This research could be further extended to examine other indexes. Potential indexes that can be examined include Russell[4] 2000, Russell 3000, Russell 1000, Wilshire 5000, S&P

(4) The Russell 2000 is a US stock index that is put together by the Frank Russell Company. It comprised of the stock prices of the 3000 US companies with the highest market capitalization. After excluding the top 1000 with the highest market capitalized companies the 2000 companies left over with the lower market capitalizations are used to construct the Russell 2000.

MidCap 400, Nasdaq composite, and NYSE composite.

Examining other indexes will give us an indication of whether the previously documented anomalies are persistent for all stock types or are limited to certain stocks. By doing so, we can further specify the ambiguous reasons behind the calendar anomalies in general.

Another way to extend this research is to examine the existence of such anomalies in the local capital markets. It was previously documented that the calendar anomalies are a general worldwide phenomenon. Therefore, it is of interest to examine such anomalies in a local setting which is beyond the scope of this study.

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الملخص

نظرة تاريخية في ظاهرة الاثنين

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الهيئة العامة للتعليم التطبيقي

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تهدف هذه الدراسة إلى تقديم دليل إضافي يفسر ظاهرة وجود عائد منخفض على الأسهم في اليوم الأول من أسبوع التداول، وهو ما يعرف بظاهرة الاثنين، والتي تحدث بشكل رئيسي في الأسبوعين الأخيرين من الشهر. وبناء على التقدير الخطي الانحداري الذي يستخدم مؤشر الداوجونز فإن هذه الظاهرة استمرت في التواجد بقوة في كل الفترات الزمنية المستخدمة من ١٩٠١ إلى ١٩٩٨. ولم تكشف هذه الدراسة عن دليل معنوي للتفسير المقترح لظاهرة الاثنين بوجود عائد عال في يوم التداول السابق، وذلك لغياب الارتباط بين عوائد الاثنين وعوائد اليوم السابق للتداول مباشرة. والجدير بالذكر أنه على الرغم من انخفاض حدة ظاهرة الأثنين خلال العشرين سنة الماضية، إلا أن عوائد يوم الاثنين تقل نسبياً مقارنة مع عوائد باقي أيام الأسبوع.

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