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Holiday Effect on Large Stock Price Changes

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The study documents that both positive and negative large stock price moves occurring immediately before public holidays are followed by significant post-holiday price drifts, whose magnitude increases over longer time windows, while large stock price moves taking place on other days are followed by either non-significant or marginally significant price reversals. This holiday effect is more pronounced for small and more volatile stocks and remains robust after accounting for additional company- and event-specific factors. The findings may be attributed to investors' unwillingness to make influential trading decisions before holidays, which leads to underreaction to company-specific shocks.

Key Words: Behavioral finance; Holiday effect; Mood maintenance hypothesis; Large price changes; Stock price drifts.
JEL Classification Numbers: G11, G14, G19.

1. INTRODUCTION

Price shocks are an integral part of the stock market. The flow of news is continuous and practically infinite, and from time to time some of them may be very influential for a given stock, a group of stocks or the stock market in general, and lead to large stock price changes, representing both a serious risk and a great opportunity for stock market investors.

A vast strand of financial literature deals with large one-day stock price changes and their consequences. The major research question of these studies is: What are the patterns of stock returns following large price changes and can we predict these returns in order to build a profitable investment strategy? The answers to this question vary as a function of the samples analyzed by the authors and the research approaches applied by them. A number of studies (e.g., Zarowin, 1989; Bremer and Sweeney, 1991; Cooper, 1999; Sturm, 2003) document price reversals following initial price moves, and therefore, suggest that the latter contain some element of overreac-

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tion. Another cohort of studies either does not detect any significant price patterns following major price changes (e.g., Ratner and Leal, 1998; Lasfer et al., 2003; Mazouz et al., 2009), or finds some evidence of reversals, but concludes that they are relatively small and cannot be practically used for generating profitable investment opportunities (e.g., Atkins and Dyl, 1990; Park, 1995; Fehle and Zdorovtsov, 2003). The third influential group of studies (e.g., Pritamani and Singal, 2001; Chan, 2003; Tetlock, 2010; Savor, 2012) suggests that large stock price moves should be analyzed in a wider company-specific context, and concentrates on the role of public information in determining subsequent price patterns. The general conclusion arising from this literature is that large price moves accompanied by public information releases result in price drifts, indicating that investors tend to underreact to news about fundamentals, while those that are not accompanied by any public news are followed by reversals, suggesting that investors tend to overreact to other shocks that move stock prices, such as shifts in investor sentiment or liquidity shocks.

But what about the timing of large stock price moves? Could there be systematic differences in stock returns following large price moves taking place in different periods, and if the answer is positive, could these differences be used for obtaining investment profits? This study sheds some light on this question by differentiating the price moves taking place before public holidays from other price moves.

The holiday effect is one of the most widely analyzed calendar anomalies in stock markets. Its best known aspect refers to the observed fact that stock returns typically exhibit consistent patterns around holidays, with systematically higher returns on days prior to major holidays. The holiday effect is well-documented both in the US (e.g., Lakonishok and Smidt, 1988; Kim and Park, 1994; Brockman and Michayluk, 1998) and worldwide (e.g., Agrawal and Tandon, 1994; Marrett and Worthington, 2009; Bley and Saad, 2010; Dodd and Gakhovich, 2011) stock markets. The dominating explanation for the existence of the holiday effect lies in investor psychology (e.g., Brockman and Michayluk, 1998; Vergin and McGinnis, 1999), suggesting that investors tend to buy stocks before holidays because of 'high spirits' and 'holiday euphoria' (e.g., Frieder and Subrahmanyam, 2004; Bergsma and Jiang, 2015), which cause them to expect positive returns in the sequel.

Another aspect of the holiday effect refers to the fact that stock trading volumes before public holidays tend to be lower than on "regular" days, and the bid-ask spreads before holidays tend to be higher than usual, indicating that on these days, stocks tend to be less liquid (e.g., Meneu and Pardo, 2004; Cao et al., 2009; Dodd and Gakhovich, 2011). Potential explanation for lower trading activity before holidays also emanates from investors' psychology and is based on the Mood Maintenance Hypothesis (Isen, 1984, 2000), which is a well-documented psychological pattern suggesting that people are highly motivated to maintain their positive mood states, and therefore, being in positive mood, tend to think less critically and to process information in a less detailed way, in order not to undermine their pleasant mood states (e.g., Mackie and Worth, 1989; Kuykendall and Keating, 1990; Erber and Tesser, 1992; Schwarz, 2001). In the context of the holiday effect, this means that before holidays, investors, who strive to maintain their positive mood, may be less willing to make complicated trading decisions, and therefore, trade less.

Following the above-mentioned arguments and findings, I hypothesize that if a company-specific shock, either public or unobserved, occurs on a trading day before a holiday, then, in order not to undermine their positive pre-holiday mood, investors, or at least a part of them, may tend to "postpone influential trading decisions until the holidays are over", and thus, to underreact to the shock, making the respective price move, though still large, yet, relatively smaller than it "should have been". Respectively, I expect the large stock price changes taking place on the trading days immediately preceding public holidays to be followed by post-holiday price drifts.

I analyze daily price data for all the constituents of S&P 500 Index over the period from 1993 to 2017, and define large daily stock price moves according to a number of alternative proxies, based on both raw and market-adjusted stock returns. In support of the study's hypothesis, I document that both positive and negative stock price moves taking place before holidays are followed by significant price drifts on each of the next two trading days and over five- and twenty-day intervals following the initial price move, the magnitude of the drifts increasing over longer post-event windows. On the other hand, large price moves taking place on "regular" trading days are followed by either non-significant or marginally significant price reversals. The holiday effect on stock returns following large price changes is found to be stronger for low capitalization and high volatility stocks, and remains robust after accounting for additional company-specific (size, CAPM beta, historical volatility) and event-specific (stock's absolute return and abnormal trading volume on the event day) factors.

The rest of the paper is structured as follows. Section 2 briefly reviews the literature dealing with large stock price changes and subsequent stock return patterns, as well as the literature on the holiday effect. Section 3 defines the study's research hypothesis. Section 4 presents the database and the methodology. Section 5 describes the empirical tests and the results. Section 6 concludes and provides a brief discussion.

2. LITERATURE REVIEW

2.1. Stock returns following large price changes

Many studies have analyzed stock returns following large price changes. Some of them document stock price reversals following large price moves, and therefore, conclude that the latter contain some element of overreaction to unobserved stimuli. Renshaw (1984) and Bremer and Sweeney (1991) document that following price declines of at least 10% stock price tend to exhibit reversals and significantly outperform the market as a whole. Zarowin (1989) tests the short-run market overreaction following the approach employed by DeBondt and Thaler (1985, 1987) in their studies of stock price overreactions and reversals. He confirms the evidence regarding the existence of stock market overreaction in the short run. Conrad et al. (1994) demonstrate that return reversals for relatively small stocks decrease with trading volume, while Cooper (1999) argues that return reversals for larger stocks increase with trading volume. Sturm (2003) documents that negative price shocks generally trigger positive post-event abnormal returns, but this relationship depends on the characteristics of the shocks, which may serve as a proxy for investor confidence. Additionally, he suggests that post-event reversals are smaller for larger price shocks, since investors are more likely to attribute the latter to stable causes. Avramov et al. (2006) find that return reversals increase with stock illiquidity.

On the other hand, Atkins and Dyl (1990), who also look for for excess profits during the first few days after extreme price declines, do not find evidence that would contradict the Efficient Market Hypothesis. Employing bid-ask spreads, they demonstrate that the positive abnormal returns resulting from reversals are not sufficient to generate profitable arbitrage. Lehmann (1990) argues that there exist short-term corrections to negative events for weekly returns, but after accounting for transaction costs, these positive returns actually disappear. Cox and Peterson (1994) investigate the role of the bid-ask bounce and market liquidity in explaining price reversals. They show that large one-day price declines are associated with strong selling pressure, which increases the probability that the closing transaction is made at the bid price. The reversal found for the next day is therefore set about by the bid-ask bounce. Furthermore, they document that the degree of the reversals following large price declines decreases for longer post-event windows, changing their sign (that is, becoming negative) over 4-20 days following the initial price decline. Park (1995) uses the mid-point of bid-ask prices and detects that predictable variation in stock returns following large price changes is in part driven by the bid-ask bounce. Controlling for this effect, he finds that the short-run price reversals cannot serve as a source of abnormal incomes. Similarly, Hamelink (1999) and Fehle and Zdorovtsov (2003) document significant post-extreme return patterns, but taking the bid-ask spread into account, cannot suggest that there is an overreaction to the company-specific shocks. Ratner and Leal (1998) find no evidence of any price reversals for emerging markets of Latin America and Asia. Bremer et al. (1997) detect the reversal pattern for the Japanese stock market, but conclude that investors cannot employ the former to earn arbitrage profits. Their results suggest that the market rapidly absorbs the relevant information, so that stock prices react almost immediately. Lasfer et al. (2003) analyze the daily price behavior of market indices of both developed and emerging markets, and also do not manage to obtain any significant evidence in favor of the price reversal hypothesis. Mazouz et al. (2009) calculate abnormal returns following large price moves according to three alternative stock pricing models, and find no evidence in support of overreaction. They even present some evidence of price drifts following positive price shocks.

More recently, the emphasis of the research has been shifted to the connection between the large stock price changes and the public information. Pritamani and Singal (2001) analyze a sample of NYSE and AMEX stocks that experienced large price changes, and also collect for these stocks daily news stories from the Wall Street Journal and the Dow Jones News Wire. They find that conditional on a public announcement or volume increase associated with a large price change, these stocks' returns exhibit momentum, yet, unconditional post-event abnormal returns are usually insignificant, and in any case, cannot provide any ground for profitable investment strategy. Chan (2003) constructs an index of news headlines for a random sample of stocks that have experienced large price changes, and detects momentum after the price changes accompanied by news, which is consistent with a number of previous studies suggesting that investors tend to underreact to news about fundamentals (e.g., Michaely and Womack, 1999; Ikenberry and Ramnath, 2002; Vega, 2006), and reversals after the price changes unaccompanied by news, especially for loser stocks. These reversals are statistically significant, even after controlling for size and book-to-market value. He also documents that the effects are stronger among smaller and less liquid stocks. He suggests that these findings may be driven by the fact that some investors react slowly to information, while transaction costs prevent arbitrageurs from eliminating the lag. Larson and Madura (2003) argue that large price changes unaccompanied by public (newspaper) announcements support the overreaction hypothesis, while extreme price declines after news being revealed publicly, display price continuation. Tetlock (2010) employs the entire daily Dow Jones news archive from 1979 to 2007 to investigate how presence of public news affects subsequent stock returns, and discovers that reversals are significantly lower after news days and that for many stocks, volume-induced momentum exists only on these days. In line with Chan (2003), Savor (2012) documents that price shocks accompanied by publicly available information (analyst recommendation revisions) are followed by drifts, while no-information ones lead to reversals. The drifts are present only when the direction of the price move corresponds to the direction of the change in analyst recommendation. He interprets these results by investors' underreaction to news about fundamentals and overreaction to other shocks leading to stock price moves (such as shifts in investor sentiment or liquidity shocks). Savor also suggests that on the one hand, analysts can distinguish between these two potential drivers of stock returns, but on the other hand, the market does not fully take into consideration the information (or lack thereof) provided by analysts.

2.2. Holiday effect: Psychological background and financial implications

The holiday, or the pre-holiday effect, refers to the observed fact that stock returns typically exhibit consistent patterns around holidays, with systematically high returns on days prior to major holidays. The effect has been initially examined in the context of the US. In their seminal study, Lakonishok and Smidt (1988), looking at a ninety year dataset, document that the average pre-holiday rate of return equals 0.22 percent, compared with a regular daily rate of return of less than 0.01 percent. This means that pre-holiday returns are about twenty two times larger than returns on normal days, with some 63.9 percent of all returns being positive on the days before holidays. Similarly, Ariel (1990) reports that the average pre-holiday returns in the US, over the period 1963-1982, are 10 times higher than returns over the remaining days of the year. Parametric and non-parametric tests indicate that these differences are statistically significant. Likewise, Pettengill (1989) finds that returns on days immediately preceding holidays are unusually high regardless of firm size, though being more pronounced for small firms. Kim and Park (1994) likewise document the holiday effect using market indicators from all the major US stock exchanges. Brockman (1995), Brockman and Michayluk (1997) and Brockman and Michayluk (1998) demonstrate the resilience of the holiday effect, showing its persistence across market types (auction versus dealer) and size portfolios. Hirshleifer et al. (2016) point out that at the level of individual stocks, there is pre-holiday cross-sectional seasonality, wherein stocks that historically have earned higher pre-holiday returns on average earn higher pre-holiday returns for the same holiday over the next ten years.

The holiday effect has also received an increasing amount of attention outside the US, and has been documented in different countries, precluding the possibility that it reflects the idiosyncratic market characteristics of any one exchange. Cadsby and Ratner (1992) consider Canada, Japan, Hong Kong and Australia from 1962 to 1989 and test for local holidays, US holidays and joint (local-US) holidays using market indices from each country. The results indicate significant holiday effects in all of the sample markets, with the highest returns appearing on days just prior to joint holidays. Barone (1990) finds that the Italian stock market exhibits a strong holiday effect, with an average return of 0.27% versus an average non-holiday return of −0.01%. In a broader study, Agrawal and Tandon (1994) examine the holiday effect in seventeen national markets, and detect significant pre-holiday strength in 65 percent of them. Marrett and Worthington (2009) document the holiday effect for Australian stock market, the magnitude of the former being higher in the retail industry. Dodd and Gakhovich (2011) show that the holiday effect is present in emerging Central and East European markets, being more pronounced in the earlier years of financial market operations.

The magnitude and statistical significance of pre-holiday returns may vary on specific holidays. Returns prior to religious holidays tend to be higher than returns before other holidays. Chan et al. (1996) demonstrate significant holiday effects before cultural holidays in Asia. More specifically, they show that in India there is a holiday effect before Hindu holidays; in Malaysia there are significant returns before Islamic New Year and Vesak; Singapore sees abnormal returns before Chinese New Year; and in Thailand small companies have significant abnormal returns before Chinese New Year. In New Zealand, the most significant returns are registered before the Easter holidays (Cao et al., 2009). Bley and Saad (2010) show significant returns before the Middle Eastern religious holidays in the Middle East.

The previous literature suggests a number of potential explanations for the existence of the holiday effect. The first one is the potential relationship between this effect and other calendar anomalies, such as the day-of-the-week effect, the monthly effect and the turn-of-the-year effect (e.g., Lakonishok and Smidt, 1988; Liano et al., 1992). These studies indicate that the high returns observed on pre-holidays are not a manifestation of other calendar anomalies. Another explanation is based on the existence of a link between the holiday effect and the small firm effect, since the former is more pronounced for small firms (e.g., Pettengill, 1989; Keef and Roush, 2005; Marrett and Worthington, 2009). Yet another explanation of the holiday effect is based on a set of different and systematic trading patterns. Keim (1989) suggests that the pre-holiday return may be, in part, due to movements from the bid to the ask price. Ariel (1990) points out that pre-holiday strength can be attributed to short-sellers who desire to close short but not long positions in advance of holidays or, simply, to some clientele which preferentially buys (or avoids selling) on pre-holidays.

Yet, arguably, the most promising explanation for abnormal positive returns prior to public holidays lies in investor psychology (e.g., Brockman and Michayluk, 1998; Vergin and McGinnis, 1999). This explanation stems from two psychology-based facts: first, that anticipation of holidays is associated with rising investors' mood (e.g., Frieder and Subrahmanyam, 2004; Bergsma and Jiang, 2015), and second, that people in good mood tend to believe in more positive outcomes (e.g., Kavanagh and Bower, 1985; Thaler, 1999). Following this line of reasoning, this group of studies suggests that investors tend to buy stocks before holidays because of 'high spirits' and 'holiday euphoria', which cause them to expect positive returns in the sequel.

An additional, less known and much less reported aspect of the holiday effect refers to the stock trading volumes before holidays. Meneu and Pardo (2004) show that abnormal trading volumes before public holidays tend to be lower than on "regular" days, and the bid-ask spreads before holidays tend to be higher than usual, indicating that on these days, stocks tend to be less liquid. Similarly, Cao et al. (2009) report that the daily de-trended trading volumes on pre-holiday trading days are generally lower than on other trading days, and subsequently conclude that investors may not be able to capture abnormal returns prior to holidays due to the low trading volume. Dodd and Gakhovich (2011) document similar results for Central and East European markets.

Potential explanation for lower trading activity before holidays also emanates from investors' psychology and is based on the Mood Maintenance Hypothesis (MMH, Isen, 1984, 2000), which is a documented psychological pattern suggesting that people are highly motivated to maintain positive mood states. Psychological literature reports that people tend to be concerned with the fact that detailed information processing might undermine pleasant mood states, and therefore, in line with the MMH, positive mood may be associated with less critical thinking and reduced information processing (Mackie and Worth, 1989; Kuykendall and Keating, 1990; Erber and Tesser, 1992; Schwarz, 2001). In the context of the holiday effect, this means that before holidays, investors, who strive to maintain their positive mood, may be less willing to make trading decisions, which are associated with information processing, and therefore, trade less.

3. RESEARCH HYPOTHESIS

I concentrate on the timing of large stock price moves, suggesting that it may have an effect on their magnitude. Namely, I differentiate the price moves occurring prior to holidays from other ones.

In line with the above-mentioned literature, which documents less intense trading activity before holidays, I hypothesize that if a company-specific shock, either public or unobserved, takes place on a trading day before a holiday, then, in order not to undermine their positive pre-holiday mood, investors, or at least a part of them, may be less willing to process significant company-specific information and make influential trading decisions, and therefore, may react relatively more weakly to the shock. In other words, I expect that investors may tend to “postpone important decisions until the holidays are over”, and thus, to underreact to company-specific shocks arriving before holidays, making the respective price moves, though still large, yet, relatively smaller than they “should have been”.

Since stock price underreaction to news may be expected to result in subsequent price drifts (after the holidays), this study’s main hypothesis may be formulated as:

Hypothesis: Large daily stock price changes taking place on the trading days, which immediately precede public holidays, should be followed by post-holiday price drifts.

4. DATA DESCRIPTION AND METHODOLOGY

In order to test the research hypothesis, I use the adjusted daily price and volume data for all the constituents of S&P 500 Index over the period from 1993 to 2017, as recorded at www.finance.yahoo.com by February 2018. I define large daily stock price changes similarly to Kudryavtsev (2018), employing three alternative proxies, and two return thresholds for each of them:

Proxy A: Daily raw stock returns with absolute values exceeding 8% ($|SR0_i| > 8\%$) and 10% ($|SR0_i| > 10\%$), where $SR0_i$ represents the event-day (Day 0) stock return corresponding to event (large stock price move) i: The 10-percent threshold is commonly used in previous literature (e.g., Shleifer, 2000), since it is sufficiently enough to screen out most price movements that do not reflect either substantial changes in fundamentals or in investor sentiment. The 8-percent threshold allows to substantially expand the working sample[1].

Proxy B: Daily raw stock returns with absolute values exceeding three ($|SR0_i| > 3\sigma_i$) and four standard deviations ($|SR0_i| > 4\sigma_i$) of the respective stock’s daily returns over 250 trading days (approximately a year) preceding the event: This approach is employed in a number of studies (e.g., Pritamani and Singal, 2001). The idea is that the same percentage change in the stock price may constitute a large price change for a low-volatility stock, but not for a high-volatility stock.

Proxy C: Daily abnormal stock returns (ARs) with absolute values exceeding 8% ($|AR0_i| > 8\%$) and 10% ($|AR0_i| > 10\%$), where $AR0_i$ (Day-0 AR corresponding to event i) is calculated using Market Model Adjusted

[1]For all the three proxies for defining the large stock price moves, I employ a number of additional thresholds. The results for all of these thresholds (available upon request from the author) are qualitatively similar to those reported in Section 5.

Returns (MMAR)[2] with beta estimated for the respective stock over 250 trading days preceding event i: Similarly to Proxy A, the 10-percent threshold is the one widely used in the previous literature (e.g., Atkins and Dyl, 1990; Bremer and Sweeney, 1991), while the 8-percent threshold increases the working sample.

In addition, for each large price change, I match the respective firm's market capitalization, as recorded on a quarterly basis at http://ycharts.com/, for the closest preceding announcement date.

I include large stock price changes in my working sample, if the following conditions are fulfilled: (i) there exist historical trading data for at least 250 trading days before, and 20 days after the event; (ii) market capitalization information is available for the respective stocks; and (iii) the absolute value of the price change does not exceed 50%. The intersection of these filtering rules yields a working sample of the following sizes for the three event definition proxies and according to the second (first) threshold:

- For proxy A: 6,412 (4,024) large price moves, including 2,841 (1,713) increases and 3,571 (2,311) decreases.
- For proxy B: 6,857 (4,202) large price moves, including 3,132 (1,720) increases and 3,725 (2,482) decreases.
- For proxy C: 5,986 (3,851) large price moves, including 2,768 (1,627) increases and 3,218 (2,224) decreases.

US holidays examined include President's Day, Good Friday, Memorial Day, Independence Day, Thanksgiving Day, Christmas and New Year's Day.

5. RESULTS DESCRIPTION

5.1. Stock returns following large price moves: Total sample

First of all, for the total sample of large stock price moves, I analyze post-event returns of the stocks that have experienced the price moves. For the period of up to 20 trading days following large stock price increases and decreases, defined according to the three above-mentioned proxies and two thresholds for each of them, and employing the MMAR approach[3], I calculate average ARs and their statistical significance. Table 1 reports the results, where Day 1 refers to the first trading day after the initial price move.

[2] Alternatively, I calculate ARs using Market Adjusted Returns (MAR) — return differences from the market index, and the Fama-French three-factor plus momentum model. The results (available upon request from the author) remain qualitatively similar to those reported in Section 5.

[3] The Market-Model beta is estimated for each stock over 250 trading days preceding the large price change.

TABLE 1.
Abnormal stock returns following large stock price increases and decreases:
Total sample

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (2,841 events)	$\|SR0_i\| > 10\%$ (1,713 events)	$\|SR0_i\| > 3\sigma_i$ (3,132 events)	$\|SR0_i\| > 4\sigma_i$ (1,720 events)	$\|AR0_i\| > 8\%$ (2,768 events)	$\|AR0_i\| > 10\%$ (1,627 events)
1	−0.13	−0.14	−0.14	−0.15	−0.13	−0.16
	(29.38%)	(33.28%)	(30.64%)	(22.44%)	(25.87%)	(23.11%)
2	−0.11	−0.12	−0.12	−0.11	−0.12	−0.11
	(32.07%)	(37.64%)	(38.55%)	(41.52%)	(36.41%)	(37.61%)
1 to 5	−0.16	−0.21	−0.18	−0.19	−0.18	−0.17
	(30.87%)	(29.61%)	(30.01%)	(27.16%)	(34.29%)	(43.65%)
1 to 20	−0.18	−0.22	−0.19	−0.21	−0.20	−0.22
	(31.92%)	(27.30%)	(28.66%)	(24.34%)	(25.37%)	(27.99%)
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (3,571 events)	$\|SR0_i\| > 10\%$ (2,311 events)	$\|SR0_i\| > 3\sigma_i$ (3,725 events)	$\|SR0_i\| > 4\sigma_i$ (2,482 events)	$\|AR0_i\| > 8\%$ (3,218 events)	$\|AR0_i\| > 10\%$ (2,224 events)
1	0.18	0.17	0.19	0.18	0.17	0.18
	(22.03%)	(21.46%)	(19.21%)	(20.19%)	(26.84%)	(22.54%)
2	0.13	0.14	0.13	0.14	0.15	0.14
	(30.71%)	(33.42%)	(34.61%)	(34.77%)	(35.54%)	(34.23%)
1 to 5	0.36	0.37	0.41	0.38	0.41	0.42
	(18.36%)	(17.28%)	(15.84%)	(21.43%)	(14.73%)	(12.74%)
1 to 20	0.43	0.44	0.46^*	0.47^*	0.43	0.46^*
	(13.74%)	(11.47%)	(9.74%)	(9.67%)	(12.44%)	(9.87%)

Asterisks denote 2-tailed p-values: $p^* < 0.10$.

The results in the Table are in line with most of the previous literature. If the total sample is considered, then positive price moves are followed by non-significant reversals, while negative price moves are followed by either non-significant or marginally significant reversals. The magnitude of the reversals is slightly greater for the time window 1 to 20. All the event-definition proxies and all the thresholds yield similar post-event results. One more noteworthy result is that the magnitude of the post-event reversals appears not to be connected to the magnitude of the initial price shocks.

5.2. Holiday effect on stock returns following large price moves

In order to test if the pre-holiday timing of large stock price moves affects the respective stocks' post-event (and in this case, post-holiday) returns, I divide the total sample of the price moves in two major subsamples: (i) large price moves that took place on a trading day immediately preceding a public holiday; (ii) all the other large price moves, that is, those that took place on "regular" trading days.

TABLE 2A.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases: Proxy A for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$			$\|SR0_i\| > 10\%$		
	Pre-holiday (131 events)	Regular (2,710 events)	Difference	Pre-holiday (103 events)	Regular (1,610 events)	Difference
1	0.85**	−0.14	0.99***	0.86**	−0.15	1.01***
	(2.31%)	(35.42%)	(0.15%)	(2.12%)	(23.47%)	(0.13%)
2	0.36	−0.12	0.48*	0.37	−0.13	0.50*
	(18.74%)	(38.98%)	(7.12%)	(19.03%)	(38.49%)	(5.87%)
1 to 5	1.63***	−0.18	1.81***	1.66***	−0.24	1.90***
	(0.45%)	(32.17%)	(0.04%)	(0.67%)	(21.31%)	(0.02%)
1 to 20	1.76***	−0.20	1.96***	1.75***	−0.26	2.01***
	(0.28%)	(28.45%)	(0.00%)	(0.25%)	(20.47%)	(0.00%)
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$			$\|SR0_i\| > 10\%$		
	Pre-holiday (185 events)	Regular (3,386 events)	Difference	Pre-holiday (142 events)	Regular (2,169 events)	Difference
1	−0.91**	0.19	−1.10***	−0.93**	0.18	−1.11***
	(2.01%)	(34.25%)	(0.10%)	(2.31%)	(39.62%)	(0.13%)
2	−0.38	0.15	−0.53*	−0.37	0.15	−0.52*
	(18.61%)	(39.58%)	(6.23%)	(19.20%)	(37.68%)	(5.67%)
1 to 5	−1.73***	0.38	−2.11***	−1.74***	0.39	−2.13***
	(0.18%)	(20.48%)	(0.02%)	(0.20%)	(18.62%)	(0.00%)
1 to 20	−1.87***	0.45	−2.32***	−1.90***	0.46	−2.36***
	(0.12%)	(12.67%)	(0.00%)	(0.09%)	(10.99%)	(0.00%)

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0$.

Tables 2A, 2B and 2C comprise average ARs following pre-holiday and regular large price moves, as well as the respective AR differences and their statistical significance, for event definition proxies A, B and C, respectively. The results corroborate my research hypothesis with respect to the availability on stock returns following large price moves. The first thing to note is that with all the proxies, both large price increases and decreases, which take place prior to holidays, are followed by significant post-holiday price drifts. The magnitude of these price drifts increases for longer post-event periods, so that for the post-event window 1 to 20, average ARs following pre-holiday large price increases reach 1.76%, 1.76% and 1.79%, for the lower threshold, according to proxies A, B and C, respectively, while average ARs following pre-holiday large price decreases are even more pronounced and equal −1.87%, −1.85% and −1.90%, according to proxies A, B and C, respectively, all the ARs being highly statistically significant.

TABLE 2B.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases: Proxy B for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|SR0_i\| > 3\sigma_i$			$\|SR0_i\| > 4\sigma_i$		
	Pre-holiday (167 events)	Regular (2,965 events)	Difference	Pre-holiday (105 events)	Regular (1,615 events)	Difference
1	0.85**	−0.12	0.97***	0.86**	−0.16	1.02***
	(2.12%)	(31.20%)	(0.12%)	(2.30%)	(22.55%)	(0.11%)
2	0.37	−0.11	0.48*	0.38	−0.12	0.50*
	(16.21%)	(35.74%)	(6.93%)	(15.21%)	(30.87%)	(5.63%)
1 to 5	1.62***	−0.20	1.82***	1.65***	−0.21	1.86***
	(0.51%)	(37.94%)	(0.05%)	(0.64%)	(29.89%)	(0.09%)
1 to 20	1.76***	−0.21	1.97***	1.74***	−0.23	1.97***
	(0.24%)	(26.82%)	(0.00%)	(0.23%)	(22.46%)	(0.00%)
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|SR0_i\| > 3\sigma_i$			$\|SR0_i\| > 4\sigma_i$		
	Pre-holiday (203 events)	Regular (3,522 events)	Difference	Pre-holiday (163 events)	Regular (2,319 events)	Difference
1	−0.88**	0.20	−1.08***	−0.91**	0.19	−1.10***
	(2.14%)	(28.96%)	(0.11%)	(2.52%)	(35.19%)	(0.10%)
2	−0.37	0.14	−0.51*	−0.35	0.15	−0.50*
	(14.82%)	(35.42%)	(7.07%)	(19.86%)	(41.08%)	(6.64%)
1 to 5	−1.71***	0.43	−2.14***	−1.72***	0.40	−2.12***
	(0.23%)	(15.65%)	(0.00%)	(0.19%)	(17.48%)	(0.00%)
1 to 20	−1.85***	0.48*	−2.33***	−1.87***	0.48*	−2.35***
	(0.09%)	(9.62%)	(0.00%)	(0.08%)	(9.87%)	(0.00%)

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

On the other hand, large price increases and decreases registered on regular days are followed by non-significant or marginally significant stock price reversals over all the event windows. Post-event period AR differences between the pre-holiday and regular price moves are highly significant and also become more pronounced for longer post-event windows. According to the three event definition proxies, for the Days 1 to 20, AR differences between the two groups of events equal 1.96%, 1.97% and 2.01%, following large price increases, and even more impressive −2.32%, −2.33% and −2.37%, following large price decreases.[4]

TABLE 2C.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases: Proxy C for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|AR0_i\| > 8\%$			$\|AR0_i\| > 10\%$		
	Pre-holiday (125 events)	Regular (2,643 events)	Difference	Pre-holiday (98 events)	Regular (1,529 events)	Difference
1	0.86**	−0.14	1.00***	0.87**	−0.17	1.04***
	(2.19%)	(37.02%)	(0.13%)	(2.43%)	(28.47%)	(0.09%)
2	0.37	−0.13	0.50*	0.38	−0.12	0.50*
	(17.36%)	(39.55%)	(5.77%)	(16.15%)	(40.11%)	(6.08%)
1 to 5	1.65***	−0.19	1.84***	1.67***	−0.19	1.86***
	(0.40%)	(27.68%)	(0.01%)	(0.71%)	(26.14%)	(0.07%)
1 to 20	1.79***	−0.22	2.01***	1.78***	−0.24	2.02***
	(0.23%)	(24.47%)	(0.00%)	(0.23%)	(19.67%)	(0.00%)
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes, % (2-tailed p-values)					
	$\|AR0_i\| > 8\%$			$\|AR0_i\| > 10\%$		
	Pre-holiday (163 events)	Regular (3,055 events)	Difference	Pre-holiday (131 events)	Regular (2,093 events)	Difference
1	−0.92**	0.18	−1.10***	−0.94**	0.19	−1.13***
	(1.98%)	(28.43%)	(0.12%)	(2.38%)	(27.40%)	(0.12%)
2	−0.39	0.16	−0.55*	−0.38*	0.15	−0.53*
	(13.48%)	(35.19%)	(5.10%)	(9.36%)	(38.37%)	(5.86%)
1 to 5	−1.75***	0.42	−2.17***	−1.76***	0.43	−2.19***
	(0.16%)	(15.48%)	(0.00%)	(0.23%)	(15.04%)	(0.00%)
1 to 20	−1.90***	0.47*	−2.37***	−1.93***	0.48*	−2.41***
	(0.07%)	(9.83%)	(0.00%)	(0.08%)	(9.71%)	(0.00%)

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$.

[4] As a robustness check, I have repeated the analysis employing two additional sample filtering criteria. Namely, I have alternatively excluded from the working sample: (i) overlapping price moves, defined as those that took place for the same stock within a 20-trading days window; and (ii) price moves for the stocks whose prices prior to the moves were lower than ten dollars. The results (available upon request from the author) are qualitatively similar, representing an additional support for the existence of the holiday effect on stock returns following large price moves.

5.3. Holiday effect on the post-event stock returns within different stock groups

Having detected the holiday effect on stock returns following large price changes, I proceed to analyzing its magnitude for different categories of stocks. Namely, I classify the stocks by the firm size (market capitalization) and by historical volatility of stock returns. The motivation for this analysis arises from the findings by Baker and Wurgler (2006), who argue that low capitalization and highly volatile are especially likely to be disproportionately sensitive to broad waves of investor sentiment.

First, I analyze the magnitude of the effect by firm size. For each of the three event definition proxies and separately for large price increases and decreases, I split the samples of pre-holiday and regular price moves into three roughly equal parts by the firms' market capitalization (high, medium and low) reported for the end of the quarter preceding each large price move. Tables 3A, 3B and 3C depict, for proxies A, B and C, average post-event ARs, following pre-holiday and regular price moves, as well as the respective AR differences and their statistical significance, for high and low market capitalization firms.

TABLE 3A.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases, for high and low market capitalization firms: Proxy A for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes for high/low market capitalization firms, %					
	$\|SR0_i\| > 8\%$			$\|SR0_i\| > 10\%$		
	Pre-holiday (44/44 events)	Regular (903/904 events)	Difference	Pre-holiday (34/35 events)	Regular (536/536 events)	Difference
1	$0.45/1.09^{***}$	$-0.10/-0.19$	$0.55^{*}/1.28^{***}$	$0.46/1.11^{***}$	$-0.07/-0.24$	$0.53^{*}/1.35^{***}$
2	$0.21/0.47$	$-0.09/-0.13$	$0.30/0.60^{*}$	$0.22/0.48$	$-0.10/-0.16$	$0.32/0.64^{*}$
1 to 5	$0.90^{**}/2.15^{***}$	$-0.12/-0.23$	$1.02^{**}/2.38^{***}$	$0.946{*}{*}/2.17^{***}$	$-0.20/-0.29$	$1.14^{***}/2.46^{***}$
1 to 20	$1.07^{**}/2.41^{***}$	$-0.15/-0.31$	$1.22^{***}/2.72^{***}$	$1.05^{**}/2.42^{***}$	$-0.18/-0.34$	$1.23^{***}/2.76^{***}$
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes for high/low market capitalization firms, %					
	$\|SR0_i\| > 8\%$			$\|SR0_i\| > 10\%$		
	Pre-holiday (62/62 events)	Regular (1,128/1,128 events)	Difference	Pre-holiday (47/48 events)	Regular (723/723 events)	Difference
1	$-0.51^{*}/-1.22^{***}$	$0.14/0.24$	$-0.65^{*}/-1.46^{***}$	$-0.53^{*}/-1.23^{***}$	$0.10/0.25$	$-0.63^{*}/-1.48^{***}$
2	$-0.19/-0.57^{*}$	$0.11/0.22$	$-0.30/-0.79^{*}$	$-0.18/-0.56^{*}$	$0.10/0.21$	$-0.28/-0.77^{*}$
1 to 5	$-1.01^{**}/-2.31^{***}$	$0.29/0.48$	$-1.30^{***}/-2.79^{***}$	$-1.01^{**}/-2.32^{***}$	$0.27/0.49$	$-1.28^{***}/-2.81^{***}$
1 to 20	$-1.12^{**}/-2.62^{***}$	$0.31/0.59^{*}$	$-1.43^{***}/-3.21^{***}$	$-1.13^{**}/-2.64^{***}$	$0.32/0.60^{*}$	$-1.45^{***}/-3.24^{***}$

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

TABLE 3B.
Abnormal stock returns following pre-holiday and regular large stock price increases and decreases, for high and low market capitalization firms: Proxy B for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes for high/low market capitalization firms, %					
	$\|SR0_i\| > 3\sigma_i$			$\|SR0_i\| > 4\sigma_i$		
	Pre-holiday (56/56 events)	Regular (988/989 events)	Difference	Pre-holiday (35/35 events)	Regular (538/539 events)	Difference
1	$0.44/1.07^{***}$	$-0.08/-0.18$	$0.52^{*}/1.25^{***}$	$0.45/1.09^{***}$	$-0.07/-0.23$	$0.52^{*}/1.32^{***}$
2	$0.20/0.46$	$-0.07/-0.12$	$0.27/0.58^{*}$	$0.21/0.47$	$-0.08/-0.12$	$0.29/0.59^{*}$
1 to 5	$0.88^{**}/2.11^{***}$	$-0.13/-0.24$	$1.01^{**}/2.35^{***}$	$0.91^{**}/2.13^{***}$	$-0.17/-0.28$	$1.08^{**}/2.41^{***}$
1 to 20	$1.04^{**}/2.37^{***}$	$-0.14/-0.30$	$1.18^{***}/2.67^{***}$	$1.02^{**}/2.39^{***}$	$-0.17/-0.32$	$1.19^{***}/2.71^{***}$
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes for high/low market capitalization firms, %					
	$\|SR0_i\| > 3\sigma_i$			$\|SR0_i\| > 4\sigma_i$		
	Pre-holiday (67/67 events)	Regular (1,174/1,174 events)	Difference	Pre-holiday (54/55 events)	Regular (773/773 events)	Difference
1	$-0.50/-1.20^{***}$	$0.13/0.25$	$-0.63^{*}/-1.45^{***}$	$-0.52^{*}/-1.21^{***}$	$0.11/0.25$	$-0.63^{*}/-1.46^{***}$
2	$-0.18/-0.56^{*}$	$0.09/0.21$	$-0.27/-0.77^{*}$	$-0.17/-0.57^{*}$	$0.10/0.22$	$-0.27/-0.79^{*}$
1 to 5	$-0.99^{**}/-2.28^{***}$	$0.30/0.49$	$-1.29^{***}/-2.77^{***}$	$-1.00^{**}/-2.30^{***}$	$0.28/0.48$	$-1.28^{***}/-2.78^{***}$
1 to 20	$-1.08^{**}/-2.58^{***}$	$0.32/0.60^{*}$	$-1.40^{***}/-3.18^{***}$	$-1.10^{**}/-2.61^{***}$	$0.33/0.61^{*}$	$-1.43^{***}/-3.22^{***}$

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

In line with Baker and Wurgler (2006), the holiday effect on the stock ARs following both large price increases and large price decreases is stronger for low capitalization stocks. This result is twofold: (i) for small stocks, the magnitude of the price drifts following pre-holiday price moves is larger (e.g., according to the two thresholds of proxy A, for post-event window 1 to 20, average ARs following pre-holiday large price increases equal 1.07% and 1.05% for high capitalization stocks, and 2.41% and 2.42% for low capitalization stocks, while average ARs following pre-holiday large price decreases equal −1.12% and −1.13% for high capitalization stocks, and −2.62% and −2.64% for low capitalization stocks); and (ii) for small stocks, AR differences for the post-event period between the two groups of events are greater (e.g., according to the two thresholds of proxy A, for post-event window 1 to 20, following large price increases, average AR differences between the pre-holiday and regular price moves are 1.22% and 1.23% for high capitalization stocks, and 2.72% and 2.76% for low capitalization stocks, while following large price decreases, average AR differences between the pre-holiday and regular price moves are −1.43% and −1.45% for high capitalization stocks, and −3.21% and −3.24% for low capitalization stocks)[5].

TABLE 3C.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases, for high and low market capitalization firms: Proxy C for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes for high/low market capitalization firms, %					
	$\|AR0_i\| > 8\%$			$\|AR0_i\| > 10\%$		
	Pre-holiday (42/42 events)	Regular (881/881 events)	Difference	Pre-holiday (33/33 events)	Regular (510/510 events)	Difference
1	$0.46/1.11^{***}$	$-0.08/-0.19$	$0.54^{*}/1.30^{***}$	$0.47/1.12^{***}$	$-0.08/-0.24$	$0.55^{*}/1.36^{***}$
2	$0.22/0.48$	$-0.09/-0.16$	$0.31/0.64^{*}$	$0.23/0.49$	$-0.09/-0.16$	$0.32/0.65^{*}$
1 to 5	$0.92^{**}/2.20^{***}$	$-0.13/-0.26$	$1.05^{**}/2.46^{***}$	$0.95^{**}/2.21^{***}$	$-0.14/-0.26$	$1.09^{***}/2.47^{***}$
1 to 20	$1.10^{**}/2.46^{***}$	$-0.15/-0.34$	$1.25^{***}/2.80^{***}$	$1.09^{**}/2.47^{***}$	$-0.17/-0.32$	$1.26^{***}/2.79^{***}$

Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes for high/low market capitalization firms, %					
	$\|AR0_i\| > 8\%$			$\|AR0_i\| > 10\%$		
	Pre-holiday (54/55 events)	Regular (1,018/1,019 events)	Difference	Pre-holiday (44/44 events)	Regular (698/698 events)	Difference
1	$-0.52^{*}/-1.23^{***}$	$0.13/0.25$	$-0.65^{*}/-1.48^{***}$	$-0.53^{*}/-1.24^{***}$	$0.11/0.26$	$-0.64^{*}/-1.48^{***}$
2	$-0.19/-0.58^{*}$	$0.10/0.22$	$-0.29/-0.80^{*}$	$-0.18/-0.57^{*}$	$0.09/0.21$	$-0.27/-0.78^{*}$
1 to 5	$-1.03^{**}/-2.34^{***}$	$0.26/0.49$	$-1.29^{***}/-2.83^{***}$	$-1.04^{**}/-2.35^{***}$	$0.29/0.52$	$-1.33^{***}/-2.86^{***}$
1 to 20	$-1.15^{**}/-2.66^{***}$	$0.33/0.59^{*}$	$-1.48^{***}/-3.25^{***}$	$-1.16^{**}/-2.68^{***}$	$0.33/0.61^{*}$	$-1.49^{***}/-3.29^{***}$

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

Furthermore, I concentrate on the effect of historical stock volatility. For each of the three event definition proxies and separately for large price increases and decreases, I split the samples of pre-holiday and regular price moves into three roughly equal parts by the standard deviation of stock returns over Days −250 to −1 (high, medium and low volatility stocks)[6]. Tables 4A, 4B and 4C present relevant AR statistics for high and low volatility stocks. Once again, consistently with the previous literature, the magnitude of the holiday effect on stock returns following large price

[5]The results for medium capitalization stocks for both large price increases and decreases, for all the post-event windows and according to all the proxies and thresholds, indicate that these stocks are less influenced by the holiday effect than low capitalization stocks, and more influenced by the holiday effect than high capitalization stocks. The detailed results are available upon request from the author. Overall, the results demonstrate that the holiday effect on stock ARs following large price moves decreases with market capitalization.

[6]The sample partition approach by both market capitalization and historical stock volatility is similar to the one employed by Kliger and Kudryavtsev (2010).

moves, as expressed by the magnitude of post-event price drifts and the AR differences between the pre-holiday and regular price moves, is stronger pronounced for more volatile stocks[7].

TABLE 4A.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases, for high and low volatility stocks: Proxy A for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes for high/low volatility stocks, %					
	$\|SR0_i\| > 8\%$			$\|SR0_i\| > 10\%$		
	Pre-holiday (44/44 events)	Regular (903/904 events)	Difference	Pre-holiday (34/35 events)	Regular (536/536 events)	Difference
1	$0.87^{**}/0.54^{*}$	$-0.18/-0.12$	$1.05^{**}/0.66^{*}$	$0.88^{**}/0.55^{*}$	$-0.19/-0.12$	$1.07^{**}/0.67^{*}$
2	$0.40/0.26$	$-0.14/-0.10$	$0.54^{*}/0.36$	$0.40/0.28$	$-0.15/-0.10$	$0.55^{*}/0.38$
1 to 5	$1.79^{**}/1.31^{**}$	$-0.21/-0.14$	$2.00^{***}/1.45^{***}$	$1.81^{**}/1.32^{**}$	$-0.29/-0.19$	$2.10^{***}/1.51^{***}$
1 to 20	$2.05^{***}/1.42^{**}$	$-0.26/-0.14$	$2.31^{***}/1.56^{***}$	$2.04^{***}/1.40^{**}$	$-0.33/-0.20$	$2.37^{***}/1.60^{***}$
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes for high/low volatility stocks, %					
	$\|SR0_i\| > 8\%$			$\|SR0_i\| > 10\%$		
	Pre-holiday (62/62 events)	Regular (1,128/1,128 events)	Difference	Pre-holiday (47/48 events)	Regular (723/723 events)	Difference
1	$-1.04^{**}/-0.62^{*}$	$0.23/0.15$	$-1.27^{**}/-0.77^{*}$	$-1.06^{**}/-0.63^{*}$	$0.22/0.14$	$-1.28^{**}/-0.77^{*}$
2	$-0.49/-0.27$	$0.21/0.12$	$-0.70^{*}/-0.39$	$-0.48/-0.27$	$0.20/0.11$	$-0.68^{*}/-0.38$
1 to 5	$-2.02^{***}/-1.35^{**}$	$0.45/0.31$	$-2.47^{***}/-1.66^{***}$	$-2.04^{***}/-1.36^{**}$	$0.45/0.32$	$-2.49^{***}/-1.68^{***}$
1 to 20	$-2.31^{***}/-1.50^{***}$	$0.56^{*}/0.38$	$-2.87^{***}/-1.88^{***}$	$-2.36^{***}/-1.48^{**}$	$0.57^{*}/0.37$	$-2.93^{***}/-1.85^{***}$

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

The overall conclusion of this Subsection is that for low market capitalization and more volatile stocks, price reactions to company-specific shocks are more affected by investors' unwillingness to make influential decisions before holidays, possibly due to the reduced amount of information on these stocks and their higher risk levels. As a result, the post-event price drifts for these stocks are more pronounced[8].

[7]The results for medium volatility stocks for both large price increases and decreases, for all the post-event windows and according to all the proxies and thresholds, indicate that these stocks are less influenced by the holiday effect than high volatility stocks, and more influenced by the holiday effect than low volatility stocks. The detailed results are available upon request from the author. Overall, the results demonstrate that the holiday effect on stock ARs following large price moves increases with historical stock volatility.

[8]I have also performed the analysis of post-event ARs for three subsamples partitioned by the CAPM stock beta calculated over Days −250 to −1. In line with Baker and Wurgler (2006), I have documented that the holiday effect on stock ARs following large

TABLE 4B.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases, for high and low volatility stocks: Proxy B for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes for high/low volatility stocks, %					
	$\lvert SR0_i\rvert > 3\sigma_i$			$\lvert SR0_i\rvert > 4\sigma_i$		
	Pre-holiday (44/44 events)	Regular (903/904 events)	Difference	Pre-holiday (34/35 events)	Regular (536/536 events)	Difference
1	$0.85^{**}/0.52^{*}$	$-0.15/-0.10$	$1.00^{**}/0.62^{*}$	$0.87^{**}/0.54^{*}$	$-0.20/-0.13$	$1.07^{**}/0.67^{*}$
2	$0.39/0.24$	$-0.13/-0.08$	$0.52^{*}/0.32$	$0.38/0.26$	$-0.16/-0.09$	$0.54^{*}/0.35$
1 to 5	$1.77^{**}/1.29^{**}$	$-0.23/-0.15$	$2.00^{***}/1.44^{***}$	$1.79^{**}/1.30^{**}$	$-0.28/-0.17$	$2.07^{***}/1.47^{***}$
1 to 20	$2.02^{***}/1.40^{**}$	$-0.27/-0.15$	$2.29^{***}/1.55^{***}$	$2.03^{***}/1.37^{**}$	$-0.31/-0.18$	$2.34^{***}/1.55^{***}$
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes for high/low volatility stocks, %					
	$\lvert SR0_i\rvert > 3\sigma_i$			$\lvert SR0_i\rvert > 4\sigma_i$		
	Pre-holiday (62/62 events)	Regular (1,128/1,128 events)	Difference	Pre-holiday (47/48 events)	Regular (723/723 events)	Difference
1	$-1.03^{**}/-0.61^{*}$	$0.24/0.15$	$-1.27^{**}/-0.76^{*}$	$-1.05^{**}/-0.62^{*}$	$0.23/0.15$	$-1.28^{**}/-0.77^{*}$
2	$-0.47/-0.26$	$0.20/0.10$	$-0.67^{*}/-0.36$	$-0.48/-0.25$	$0.21/0.11$	$-0.69^{*}/-0.36$
1 to 5	$-2.00^{***}/-1.34^{**}$	$0.47/0.38$	$-2.47^{***}/-1.72^{***}$	$-2.01^{***}/-1.35^{**}$	$0.46/0.33$	$-2.47^{***}/-1.68^{***}$
1 to 20	$-2.28^{***}/-1.47^{***}$	$0.55^{*}/0.39$	$-2.83^{***}/-1.86^{***}$	$-2.31^{***}/-1.46^{**}$	$0.57^{*}/0.39$	$-2.88^{***}/-1.85^{***}$

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

5.4. Multifactor analysis

In this Subsection, I check the persistence of the holiday effect on stock returns following large price moves, controlling for additional firm-specific and event-specific factors. To do so, separately for large price increases and decreases, for the windows 1, 1 to 5 and 1 to 20 following the events, and according to all the proxies and thresholds, I run the following regressions:

$$\begin{aligned} AR_{it} &= \beta_0 + \beta_1 HOLIDAY_i + \beta_2 MCap_i + \beta_3 Beta_i + \beta_4 SRVolat_i \\ &+ \beta_5 |SR0|_i + \beta_6 AbVol_i + \varepsilon_{it} \end{aligned} \quad (1)$$

where: AR_{it} is the abnormal stock return following event i for post-event window t (Days 1, 1 to 5, or 1 to 20); $HOLIDAY_i$ is the dummy variable, taking the value 1 if the event I takes place immediately before a public holiday, and 0 otherwise; $MCap_i$ is the natural logarithm of the firm's market capitalization corresponding to event i, normalized in the cross-section; $Beta_i$ is the estimated CAPM beta for event i, calculated over

price moves increases with stock beta. The detailed results are available upon request from the author.

TABLE 4C.

Abnormal stock returns following pre-holiday and regular large stock price increases and decreases, for high and low volatility stocks: Proxy C for defining large price moves

Panel A: Large stock price increases						
Days relative to event	Average AR following initial price changes for high/low volatility stocks, %					
	$\lvert AR0_i\rvert > 8\%$			$\lvert AR0_i\rvert > 10\%$		
	Pre-holiday (44/44 events)	Regular (903/904 events)	Difference	Pre-holiday (34/35 events)	Regular (536/536 events)	Difference
1	$0.88^{**}/0.54^{*}$	$-0.18/-0.11$	$1.06^{**}/0.65^{*}$	$0.89^{**}/0.55^{*}$	$-0.20/-0.13$	$1.09^{**}/0.68^{*}$
2	0.41/0.27	$-0.15/-0.10$	$0.55^{*}/0.37$	0.40/0.29	$-0.16/-0.10$	$0.56^{*}/0.39$
1 to 5	$1.82^{***}/1.33^{**}$	$-0.23/-0.14$	$2.05^{***}/1.47^{***}$	$1.84^{**}/1.34^{**}$	$-0.26/-0.16$	$2.10^{***}/1.50^{***}$
1 to 20	$2.08^{***}/1.44^{**}$	$-0.27/-0.15$	$2.35^{***}/1.59^{***}$	$2.09^{***}/1.43^{**}$	$-0.31/-0.19$	$2.40^{***}/1.62^{***}$
Panel B: Large stock price decreases						
Days relative to event	Average AR following initial price changes for high/low volatility stocks, %					
	$\lvert AR0_i\rvert > 8\%$			$\lvert AR0_i\rvert > 10\%$		
	Pre-holiday (62/62 events)	Regular (1,128/1,128 events)	Difference	Pre-holiday (47/48 events)	Regular (723/723 events)	Difference
1	$-1.05^{**}/-0.63^{*}$	0.23/0.14	$-1.28^{**}/-0.77^{*}$	$-1.07^{**}/-0.64^{*}$	0.23/0.14	$-1.30^{**}/-0.78^{*}$
2	$-0.50/-0.27$	0.20/0.12	$-0.70^{*}/-0.39$	$-0.49/-0.28$	0.20/0.10	$-0.69^{*}/-0.38$
1 to 5	$-2.05^{***}/-1.37^{**}$	0.47/0.33	$-2.52^{***}/-1.70^{***}$	$-2.06^{***}/-1.38^{**}$	0.48/0.35	$-2.54^{***}/-1.73^{***}$
1 to 20	$-2.35^{***}/-1.52^{***}$	$0.57^{*}/0.38$	$-2.92^{***}/-1.90^{***}$	$-2.40^{***}/-1.51^{**}$	$0.58^{*}/0.37$	$-2.98^{***}/-1.88^{***}$

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

the Days −250 to −1 and normalized in the cross-section; $SRVolat_i$ is the standard deviation of stock returns over the Days −250 to −1 corresponding to event i, normalized in the cross-section; $|SR0|_i$ is the absolute Day-0 stock return representing event i; and $AbVol0_i$ is the abnormal Day-0 stock trading volume corresponding to event i, calculated as the difference between the stock's actual Day-0 trading volume and its average trading volume over Days −250 to −1, normalized by the standard deviation of its trading volume over the same estimation window.

Tables 5, 6 and 7 report the regression coefficients for post-event windows 1, 1 to 5 and 1 to 20, respectively, indicating the following results:

• For positive (negative) large price moves, the regression coefficients on HOLIDAY are positive (negative) and highly significant for all the post-event windows, which means that post-event price drifts following large price moves of both directions are greater if the latter take place on the trading days preceding public holidays. This result indicates that the holiday effect on stock returns following large price changes remains significant even after controlling for additional factors affecting post-event ARs.

TABLE 5.

Multifactor regression analysis of ARs following large stock price increases and decreases: Dependent variable — Stock AR for Day 1 following the event

Panel A: Large stock price increases						
Days relative to event	Coefficient estimates, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (2,841 events)	$\|SR0_i\| > 10\%$ (1,713 events)	$\|SR0_i\| > 3\sigma_i$ (3,132 events)	$\|SR0_i\| > 4\sigma_i$ (1,720 events)	$\|AR0_i\| > 8\%$ (2,768 events)	$\|AR0_i\| > 10\%$ (1,627 events)
Intercept	0.05^{**}	0.06^{**}	0.05^{**}	0.04^{**}	0.05^{**}	0.04^{**}
	(3.87%)	(3.15%)	(3.48%)	(4.74%)	(3.62%)	(4.07%)
HOLIDAY	0.98^{***}	0.99^{***}	0.97^{***}	0.98^{***}	1.00^{***}	1.01^{***}
	(0.18%)	(0.14%)	(0.19%)	(0.16%)	(0.10%)	(0.09%)
MCap	0.26^{**}	0.25^{**}	0.27^{**}	0.26^{**}	0.24^{**}	0.26^{**}
	(2.10%)	(2.46%)	(1.95%)	(2.35%)	(4.77%)	(3.10%)
Beta	-0.11^{*}	-0.12^{*}	-0.10^{*}	-0.09	-0.11^{*}	-0.12^{*}
	(9.11%)	(8.94%)	(9.69%)	(10.53%)	(8.34%)	(8.47%)
SRVolat	-0.17^{*}	-0.18^{*}	-0.18^{*}	-0.16^{*}	-0.19^{*}	-0.17^{*}
	(6.41%)	(6.08%)	(5.88%)	(8.64%)	(5.28%)	(8.69%)
$\|SR0\|$	-0.03	-0.04	-0.03	-0.02	-0.01	-0.03
	(41.08%)	(39.66%)	(38.51%)	(49.38%)	(73.68%)	(43.34%)
AbVol0	0.04	0.02	0.03	0.05	0.05	0.04
	(36.71%)	(50.69%)	(44.29%)	(37.18%)	(37.16%)	(48.67%)
Panel B: Large stock price decreases						
Days relative to event	Coefficient estimates, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (3,571 events)	$\|SR0_i\| > 10\%$ (2,311 events)	$\|SR0_i\| > 3\sigma_i$ (3,725 events)	$\|SR0_i\| > 4\sigma_i$ (2,482 events)	$\|AR0_i\| > 8\%$ (3,218 events)	$\|AR0_i\| > 10\%$ (2,224 events)
Intercept	-0.10^{**}	-0.11^{**}	-0.11^{**}	-0.10^{**}	-0.10^{**}	-0.12^{**}
	(1.68%)	(1.65%)	(1.51%)	(2.13%)	(1.84%)	(1.08%)
HOLIDAY	-1.10^{***}	-1.11^{***}	-1.09^{***}	-1.08^{***}	-1.11^{***}	-1.12^{***}
	(0.04%)	(0.05%)	(0.08%)	(0.09%)	(0.03%)	(0.04%)
MCap	-0.22^{**}	-0.21^{**}	-0.23^{**}	-0.22^{**}	-0.20^{**}	-0.21^{**}
	(4.24%)	(4.39%)	(4.03%)	(4.45%)	(4.15%)	(4.32%)
Beta	0.08	0.09^{*}	0.07	0.09^{*}	0.10^{*}	0.08
	(13.57%)	(9.69%)	(14.62%)	(9.97%)	(8.87%)	(16.37%)
SRVolat	0.20^{**}	0.22^{**}	0.19^{*}	0.21^{**}	0.22^{**}	0.21^{**}
	(4.67%)	(4.31%)	(5.87%)	(4.52%)	(3.94%)	(4.31%)
$\|SR0\|$	0.02	0.03	0.01	0.02	-0.01	0.02
	(78.64%)	(54.92%)	(87.11%)	(48.83%)	(91.06%)	(49.67%)
AbVol0	-0.01	-0.02	-0.03	-0.04	0.01	-0.03
	(86.37%)	(51.09%)	(35.50%)	(38.16%)	(87.64%)	(38.37%)

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

TABLE 6.

Multifactor regression analysis of ARs following large stock price increases and decreases: Dependent variable — Stock AR for Days 1 to 5 following the event

Panel A: Large stock price increases						
Days relative to event	Coefficient estimates, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (2,841 events)	$\|SR0_i\| > 10\%$ (1,713 events)	$\|SR0_i\| > 3\sigma_i$ (3,132 events)	$\|SR0_i\| > 4\sigma_i$ (1,720 events)	$\|AR0_i\| > 8\%$ (2,768 events)	$\|AR0_i\| > 10\%$ (1,627 events)
Intercept	0.04^{**}	0.05^{**}	0.05^{**}	0.06^{**}	0.03^{**}	0.04^{**}
	(3.97%)	(3.66%)	(3.12%)	(3.00%)	(4.02%)	(3.97%)
HOLIDAY	1.81^{***}	1.82^{***}	1.79^{***}	1.80^{***}	1.83^{***}	1.85^{***}
	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)
MCap	0.28^{**}	0.29^{**}	0.27^{**}	0.27^{**}	0.28^{**}	0.27^{**}
	(2.24%)	(2.34%)	(3.01%)	(3.42%)	(3.70%)	(3.89%)
Beta	-0.13^{*}	-0.14^{*}	-0.11	-0.14^{*}	-0.13^{*}	-0.12^{*}
	(8.87%)	(8.32%)	(10.32%)	(8.92%)	(9.10%)	(9.34%)
SRVolat	-0.18^{*}	-0.19^{*}	-0.20^{*}	-0.19^{*}	-0.21^{*}	-0.19^{*}
	(6.03%)	(5.84%)	(5.41%)	(5.74%)	(5.13%)	(6.34%)
$\|SR0\|$	-0.04	-0.05	-0.05	-0.04	-0.02	-0.03
	(38.25%)	(40.12%)	(34.20%)	(45.27%)	(61.62%)	(43.26%)
AbVol0	0.05	0.04	0.06	0.07	0.06	0.05
	(33.85%)	(60.37%)	(31.43%)	(30.15%)	(35.24%)	(42.25%)
Panel B: Large stock price decreases						
Days relative to event	Coefficient estimates, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (3,571 events)	$\|SR0_i\| > 10\%$ (2,311 events)	$\|SR0_i\| > 3\sigma_i$ (3,725 events)	$\|SR0_i\| > 4\sigma_i$ (2,482 events)	$\|AR0_i\| > 8\%$ (3,218 events)	$\|AR0_i\| > 10\%$ (2,224 events)
Intercept	-0.08^{**}	-0.09^{**}	-0.10^{**}	-0.09^{**}	-0.11^{**}	-0.12^{***}
	(1.97%)	(1.74%)	(1.42%)	(1.65%)	(1.14%)	(0.92%)
HOLIDAY	-2.09^{***}	-2.11^{***}	-2.07^{***}	-2.09^{***}	-2.12^{***}	-2.14^{***}
	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)
MCap	-0.29^{**}	-0.28^{**}	-0.27^{**}	-0.28^{**}	-0.26^{**}	-0.28^{**}
	(3.84%)	(4.11%)	(4.23%)	(4.17%)	(4.92%)	(4.00%)
Beta	0.10^{*}	0.11^{*}	0.11^{*}	0.09^{*}	0.10^{*}	0.13^{*}
	(8.66%)	(8.49%)	(8.63%)	(9.04%)	(8.34%)	(7.82%)
SRVolat	0.26^{**}	0.28^{**}	0.27^{**}	0.29^{**}	0.28^{**}	0.27^{**}
	(3.77%)	(2.38%)	(3.86%)	(3.51%)	(3.65%)	(3.89%)
$\|SR0\|$	0.04	0.03	0.05	0.04	0.01	0.02
	(56.54%)	(62.59%)	(38.82%)	(49.68%)	(92.30%)	(51.24%)
AbVol0	-0.03	-0.01	-0.04	-0.03	-0.04	-0.02
	(65.37%)	(89.72%)	(48.25%)	(50.13%)	(53.38%)	(54.39%)

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$

TABLE 7.

Multifactor regression analysis of ARs following large stock price increases and decreases: Dependent variable — Stock AR for Days 1 to 20 following the event

Panel A: Large stock price increases						
Days relative to event	Coefficient estimates, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (2,841 events)	$\|SR0_i\| > 10\%$ (1,713 events)	$\|SR0_i\| > 3\sigma_i$ (3,132 events)	$\|SR0_i\| > 4\sigma_i$ (1,720 events)	$\|AR0_i\| > 8\%$ (2,768 events)	$\|AR0_i\| > 10\%$ (1,627 events)
Intercept	0.06^{**}	0.07^{**}	0.05^{**}	0.07^{**}	0.06^{**}	0.05^{**}
	(2.51%)	(2.46%)	(2.81%)	(2.34%)	(2.50%)	(2.84%)
HOLIDAY	1.97^{***}	1.98^{***}	1.94^{***}	1.96^{***}	1.98^{***}	2.00^{***}
	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)
MCap	0.30^{**}	0.29^{**}	0.31^{**}	0.29^{**}	0.30^{**}	0.28^{**}
	(2.03%)	(2.15%)	(1.82%)	(2.45%)	(2.22%)	(2.97%)
Beta	-0.16^{*}	-0.17^{*}	-0.18^{*}	-0.16^{*}	-0.19^{*}	-0.22^{*}
	(8.12%)	(7.96%)	(7.65%)	(8.67%)	(7.61%)	(7.56%)
SRVolat	-0.21^{*}	-0.20^{*}	-0.22^{*}	-0.20^{*}	-0.20^{*}	-0.21^{*}
	(5.72%)	(5.92%)	(5.57%)	(6.12%)	(5.98%)	(5.76%)
$\|SR0\|$	−0.06	−0.05	−0.07	−0.05	−0.02	−0.04
	(30.18%)	(36.43%)	(27.54%)	(36.58%)	(58.32%)	(41.25%)
AbVol0	0.04	0.05	0.06	0.04	0.05	0.04
	(35.29%)	(31.42%)	(28.63%)	(45.57%)	(41.25%)	(38.62%)
Panel B: Large stock price decreases						
Days relative to event	Coefficient estimates, % (2-tailed p-values)					
	$\|SR0_i\| > 8\%$ (3,571 events)	$\|SR0_i\| > 10\%$ (2,311 events)	$\|SR0_i\| > 3\sigma_i$ (3,725 events)	$\|SR0_i\| > 4\sigma_i$ (2,482 events)	$\|AR0_i\| > 8\%$ (3,218 events)	$\|AR0_i\| > 10\%$ (2,224 events)
Intercept	-0.07^{**}	-0.06^{**}	-0.08^{**}	-0.07^{**}	-0.06^{**}	-0.07^{**}
	(2.03%)	(2.34%)	(1.75%)	(2.16%)	(2.29%)	(2.13%)
HOLIDAY	-2.34^{***}	-2.35^{***}	-2.33^{***}	-2.36^{***}	-2.37^{***}	-2.39^{***}
	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)
MCap	-0.31^{**}	-0.30^{**}	-0.29^{**}	-0.29^{**}	-0.28^{**}	-0.27^{**}
	(2.87%)	(3.14%)	(3.35%)	(3.68%)	(3.88%)	(4.22%)
Beta	0.12^{*}	0.13^{*}	0.12^{*}	0.14^{*}	0.13^{*}	0.12^{*}
	(7.88%)	(7.34%)	(7.36%)	(7.01%)	(7.58%)	(8.24%)
SRVolat	0.28^{**}	0.29^{**}	0.29^{**}	0.30^{**}	0.29^{**}	0.30^{**}
	(3.13%)	(2.81%)	(2.94%)	(2.77%)	(3.24%)	(2.96%)
$\|SR0\|$	0.05	0.03	0.04	0.06	0.05	0.04
	(48.67%)	(63.41%)	(50.63%)	(39.60%)	(41.15%)	(46.53%)
AbVol0	−0.02	−0.03	−0.05	−0.04	−0.03	−0.04
	(71.39%)	(62.30%)	(37.72%)	(45.38%)	(43.27%)	(42.29%)

Asterisks denote 2-tailed p-values: $p^{*} < 0.10$; $p^{**} < 0.05$; $p^{***} < 0.01$.

• For all the post-event windows following large price increases (decreases), the regression coefficients on MCap are significantly positive (negative), the regression coefficients on Beta are negative (positive) and marginally significant, and the regression coefficients on SRVolat significantly negative (positive), suggesting that post-event ARs following large price increases (decreases) tend to be lower (higher) for low capitalization, high-beta and highly volatile stocks. A potential reason for these results may be that investors possess less fundamental information on these groups of stocks and therefore, tend to overreact to the respective company-specific shocks, which in turn, leads to post-event price reversals. It should be noted again that the holiday effect on the post-event returns, which is manifested in price drifts after pre-holiday price moves, remains significant after controlling for the above-mentioned factors.

• The coefficients on $|SR0|$ and ABVOL0 are non-significant, demonstrating that post-event stock returns do not depend on the magnitude of the initial shocks, as expressed by both the magnitude of the stock price change itself and the trading volume at the day of the shock.

6. CONCLUSION

In this paper, I explored an additional aspect of the holiday effect. Namely, I analyzed the effect of investors' positive pre-holiday mood on stock returns following large daily stock price changes. Following the Mood Maintenance Hypothesis, I suggested that if a company-specific shock takes place before a holiday, then investors striving to maintain their positive pre-holiday mood may be less willing to make influential trading decisions, and therefore, may react relatively more weakly (in fact, underreact) to the shock. Therefore, since stock price underreaction to news is recognized to result in subsequent price drifts, I hypothesized that the latter should follow the large daily stock price changes taking place before public holidays.

The results of the empirical analysis supported the study's research hypothesis. Analyzing a large sample of major daily stock price moves and defining the latter according to a number of alternative proxies, based on both raw and market-adjusted stock returns, I found that both positive and negative stock price moves occurring immediately before public holidays are followed by significant price drifts on the next two trading days and over five- and twenty-day intervals following the event, the magnitude of the drifts increasing over longer post-event windows, while large stock price changes taking place on other (regular) days are followed by either non-significant or marginally significant price reversals.

Furthermore, I established that the holiday effect on stock returns following large price moves was of higher magnitude for low capitalization firms and stocks with higher volatility of historical returns, implying that that large price moves of low market capitalization and more volatile stocks are more affected by investors' mood, possibly due to the reduced amount of fundamental information on these stocks and their higher risk levels. Moreover, this effect remained significant after accounting for additional company-specific (size, CAPM beta, historical volatility) and event-specific (stock's absolute return and abnormal trading volume on the event day) factors. The results proved to be robust to different return thresholds, both higher and lower, to different methods of adjusting returns, such as market-adjusted returns, market-model excess returns, and Fama-French three-factor model excess returns, and to different sample filtering criteria.

To summarize, at least in a perfect stock market with no commissions, the strategy based on buying (selling short) stocks after pre-holiday large price increases (decreases) looks promising. This may prove a valuable result for both financial theoreticians in their eternal discussion about stock market efficiency, and practitioners in search of potentially profitable investment strategies. Potential directions for further research may include expending the analysis to other stock exchanges, performing a separate analysis for different holidays and for the periods of bull and bear market.

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