SHOULD INVESTORS BE FEARFUL OF THE HALLOWEEN EFFECT?

Phillip Fuller, Jackson State University
Geungu Yu, Jackson State University
Denis Boudreaux, University of Louisiana – Lafayette

ABSTRACT

This study is to determine if a reported seasonal anomaly referred to as the Halloween Effect provides a profit making opportunity for investors. The Halloween Effect hypothesis recommends owning stocks for the period from November through April with the other months avoided, practically making it a Sell-in-May strategy. Studies by Bouman and Jacobsen (2002), Witte (2010), and Swargerman and Novakovic (2010) supported existence of the Halloween Effect. However, this study indicates that stock markets in the United States do not allow exploitable opportunities related to the Halloween Effect, so the stock markets are efficient, dismissing the alleged seasonal anomaly. **JEL Classification: G14**

INTRODUCTION

Most economists believe the financial markets are fairly efficient. In efficient financial markets, assets are fairly priced. Due to the large number of active market participants, asset prices adjust quickly to new information, eliminating any possibility for arbitrage. In situations where inefficiencies would occur, market participants are able to ferret out and exploit inefficiencies and make extraordinary profits. These market participants cause under-priced (over-priced) assets' values to rise (fall) until the assets are once again fairly priced. Although calendar-based anomalies should not exist, several time-based anomalies have been identified. The more popular calendar anomalies are the January Effect, the End of the Month Anomaly, and the Day of the Week Effect.

"Sell in May and Go Away" is an old stock market adage. Bouman and Jacobsen (2002) noted that the existence of the saying was documented as long ago as 1964. The last part of the saying has two different possible endings: 1) "but remember to come back in September" or 2) "buy back on St. Leger Day" (which is the date of a classic horse race in Doncast, England that occurs each September). Bouman and Jacobsen (2002) cited a study by O'Higgins and

Downes (1992) based on a closely related investment strategy referred to as the Halloween indicator or effect for the United States. The Halloween Effect recommends owning stock from November through April and not owning stocks from May through October. The Halloween Effect amounts to be the Sell in May and Go Away strategy (Maberly and Pierce, 2004). Bouman and Jacobsen (2002) found that the Halloween Effect existed in international markets. The economists noted that scholars had not thoroughly examined the Halloween Effect.

Riepe (2003), Maberly and Pierce (2004), Lucey and Zhao (2008), Jones and Lundstrum (2009), Swargerman and Novakovic (2010) and Witte (2010) also examined the Halloween Effect. Riepe (2003), Maberly and Pierce (2004), Lucey and Zhao (2008), and Jones and Lundstrum (2009) concluded that it did not exist. However, Swargerman and Novakovic (2010) and Witte (2010) agreed with Bouman and Jacobsen (2002) that a Halloween Effect did exist.

Prior studies divided the calendar year into two six-month periods: The period from May through October has been defined as the summer trading period, and November through April has been defined as the winter trading period. The Halloween Effect, or the "Sell-in-May" strategy, some believe, is based on the assumption that during the summer, market participants are distracted by the activities that are commonly associated with summer, e.g., vacation and other leisure activities. Consequently, investors allocate less attention, effort, and time managing their portfolios. Bouman and Jacobsen (2002) noted that during the summer, stock prices may decrease because the number of investors decreases; the remaining investors would invest only if they received higher risk premiums. However, they also pointed out that sophisticated investors would take advantage of any arbitrage opportunities. Schneider et al. (1980) proposed that high temperatures would be associated with predominant feeling of indifference and lethargy, and consequently with lower levels of risk-taking.

Since Memorial Day is considered by most Americans the unofficial beginning of the summer, and Labor Day is considered the unofficial end of summer, this research examines a Sell-in-May and Buy-in-September strategy to determine if implementing a Sell-in-May and Buy-in-September strategy produces higher returns than a Buy-and-Hold investment approach. This study will also determine if the Halloween Effect is statistically significant for the S&P 600, S&P 500 and S&P 400.

According to economic theory and the efficient market hypotheses, investors should not be able to earn extra-ordinary profits by managing their portfolios based on the calendar. If the study identifies relevant differences in returns based on the time of the year, investors can use this anomaly to enhance their portfolios' performances.

LITERATURE REVIEW

Bouman and Jacobsen (2002) investigated the Halloween Effect. They assumed that some investors were in the market from November through April and out of the market from May through October. They used value-weighted indices from January 1970 to August 1998 and found the Selling-in-May strategy outperformed the Buy-and-Hold Strategy in 36 of the 37 financial markets. The Halloween Effect was significantly present in both developed and many emerging markets.

Maberly and Pierce (2004) examined S&P 500 future contracts from April 1982 through April 2003 to determine if the Halloween Effect was exploitable. They used data similar to Bouman and Jacobsen (2002) but adjusted it to reflect the January effect and periods of financial disruptions. They found that the Buy-and-Hold

strategy was superior from April 1982 through April 2000 but was inferior during the bear market that started in April 2000.

Lucey and Zhao (2008) used data from 1926 through 2002 and examined the NYSE, AMEX and NADAQ indices. The researchers found weak support at best for a Bouman and Jacobsen (2002) Halloween Effect in the United States' stock markets. They hypothesized that the Halloween Effect may be some type of reflection of the January Effect. Furthermore, they found that a Sell-in-May strategy was not superior to a Buy-and-Hold strategy.

Jones and Lundstrum (2009) focused on a Sell-in-May strategy. Their efforts evaluated the profitability of investing in a Vanguard S&P 500 Index fund from 1976 through 1998 based on: 1) a Buy-and-Hold strategy and 2) a strategy of selling the fund in May and investing the proceeds in T-bills and then selling the T-bills in November and repurchasing the Vanguard fund. The researchers concluded that the Buy-and-Hold strategy generated greater wealth. The Sell-in-May strategy performed better when investors were out of the market during a bear market. Jones and Lundstrum commented that implementing the Sell-in-May strategy could result in undesirable tax consequences when assets were reallocated and may not be as tax efficient as a Buy-and-Hold strategy. Jones and Lundstrum's findings supported Riepe (2003) observation that the Sell-in-May strategy was time sensitive.

Witte (2010) responded to the Maberly and Pierce (2004) and Lucey and Zhao (2008) findings. He argues that Maberly and Pierce's handling of outliers caused them to find results different from Bouman and Jacobsen (2002). He also examined data from 1926 through 2002 and disagreed with Lucey and Zhao. He reported the existence of a Halloween Effect at a similar level as Bouman and Jacobsen (2002).

Swargerman and Novakovic (2010) compared the returns of 31 countries to determine if the returns during the summer months, May through October, were statistically different from the winter months, November through April. They analyzed stock markets in 17 developed and 14 developing countries. The economists found that returns during the winter months were higher than summer returns, even after taking into consideration the January Effect. Their findings also were that the Halloween Effect was more noticeable in developed countries than the developing countries. They concluded that the Sell-in-May strategy was more profitable than the Buy-and-Hold strategy.

METHODOLOGY

The summer trading period will be what is known in the United States as the unofficial summer which begins on Memorial Day (the last Monday in May), and ends on Labor Day, (the first Monday in September). The winter trading period or Non-Summer will be after Labor Day to Memorial Day. A model, similar to the one employed by Bouman and Jacobsen (2002), Swargerman and Novakovic (2010), and others, is used as follows:

$$R_t = \mu + \alpha S_t + \varepsilon_t \quad (1)$$

where R_t is the natural log of the daily return, μ is the constant and ε_t is the error term. S_t is the daily seasonal dummy variable. The seasonal variable is coded similarly as the previously discussed research. Non-Summer days (some previous research

referred to these days as winter) are represented by coding S_t as 1 and summer days as 0.

One of the benefits of using this model is that other variables can be easily added to the equation (Bouman and Jacobsen, 2002). A dummy variable representing the January effect will be added to the model since prior research detected a January effect. Swargerman and Novakovic (2010) stated that a positive relationship between returns and the January dummy means that controlling for the January effect results in lower winter returns. These lower returns will, in turn, lead to a smaller winter-summer gap, which decreases the impact of the Sell-in-May strategy. Moreover, controlling for a possible January effect will make a comparison between summer and non-summer returns more reliable. The January dummy variable is coded 1 for days in January; otherwise it is coded 0.

Prior research indicated that the Sell-in-May strategy and Halloween Effect may be sensitive with respect to bull and bear markets. Bear markets are frequently defined as when either the S&P 500 or Dow Jones index loses 20% in value from a recent peak. In this study, the decline in the S&P 500 which is value-weighted index and more representative of the market is used to identify bear markets rather than the Dow Jones index, which is composed of 30 firms and is a price weighted index. A market dummy variable will be coded either as 1 for bull markets or 0 for bear markets.

The recent 2007-2009 bear market started on October 9, 2007 when the S&P 500 closed at 1565.15 and ended on March 9, 2009 when the S&P 500 closed at 676.15. It should be noted that on October 9, 2007 and October 10, 2007, the Dow Jones and the NASDAQ closed at their respective highs. On March 9, 2009, all three indices closed at their bear market lows.

The 2000-2002 bear market started on March 24, 2000 when the S&P 500 closed at 1527.46 and ended on October 9, 2002 when the S&P 500 closed at 776.75. Once again, it should be noted that on January 14, 2000 and March 10, 2000, the Dow Jones and NASDAQ closed at their respective highs. On October 9, 2002, all three indices closed at their bear market lows.

This study examines large, mid and small cap firms' returns. Large, mid and small cap firms are represented by the three S&P indices: S&P 500, S&P 400 and S&P 600 respectively. Prior studies have utilized S&P 500 and

NASDAQ indices. This study extends prior research by: 1) using daily returns; 2) examining the time period during which most of the United States citizens take their vacations; 3) utilizing the S&P 400 and S&P 600; 4) examining the stock markets in the most recent decade; and 5) using a dummy variable to capture the impact of the 2000 and 2007 bear markets. In addition, this study extends the research on the Halloween Effect by examining the period from 2000 through 2010.

FINDINGS

Table 1 presents findings of a Sell-in-May strategy utilizing the S&P 500. To determine how well the Sell-in-May strategy performed during the Non-Summer days, the constant and the Non-Summer coefficient should be added. A positive sum indicates that a Sell-in-May strategy is better than a Buy-and-Hold strategy. In Panel A, both the constant and coefficient are negative, indicating that the Sell-in-May strategy would have performed poorly. In Panel B, when the January variable is included, the Non-Summer coefficient becomes positive. For Panel C when the Bull variable is included, the Non-Summer coefficient increases slightly. Based on the p-values in Panel C, the coefficients of the Non-Summer and January variables are not statistically significant at the .10 level. The only significant coefficient at the .05 level is the Bull market variable. Table 1 indicates that the market is efficient since both the Non-Summer and January coefficients are not significant at the .10 level. The Sell-in-May strategy is not statistically better than a Buy-and-Hold strategy.

Table 2 presents findings of a Sell-in-May strategy utilizing the S&P 400. In Panel A, the coefficient for the Non-Summer variable is negative. The sum of the constant and the Non-Summer coefficient is greater than 0 indicating that the Sell-in-May strategy may be better than the Buy-and-Hold strategy. However, their p-values are insignificant at the .10 level. In Panel B when the January variable is added, the constant and Non-summer variables' p-values decrease. In Panel C when the Bull variable is added, the January variable's p-value declines to .256. The Bull variable is the only one significant at the .01 level. Overall, Table 2 indicates that the market is efficient since both the Non-Summer and January coefficients are not significant at the .10 level. Again, the Sell-in-May strategy is not statistically better than a Buy-and-Hold strategy.

TABLE 1
REGRESSION ANALYSIS OF DAILY RETURNS OF THE S&P 500 FOR A SELL-IN-MAY STRATEGY YEARS 2000 THROUGH 2010

Panel A	**Intercepts/Coefficients**	**T-values**	**P-values**
Constant	-.00003583	-.071	.943
Non-Summer	-.00002798	-.047	.962
January	N/A	N/A	N/A
Bull	N/A	N/A	N/A
Panel B			
Constant	-.00003583	-.071	.943
Non-Summer	.00007837	.131	.846
January	-.001061	-1.037	.300
Bull	N/A	N/A	N/A
Panel C			

Constant	-.001502	2.462	.014
Non-Summer	.00008374	.140	.888
January	-.001192	-1.169	.240
Bull	.002298	4.216	.000

Table 3 presents findings of a Sell-in-May strategy utilizing the S&P 600. In Panel A, Non-Summers coefficient is positive. In Panel B when the January variable is added, Non-Summer variable's p-values decrease. In Panel C when the Bull variable is added, the constant and January variable's p-values again decrease. However, the only significant variable at the .01 level is the Bull variable. Overall, Table 3 indicates that the market is efficient since both the Non-Summer and January coefficients are not significant at the .10 level. Once more, the Sell-in-May strategy is not statistically better than a Buy-and-Hold strategy.

TABLE 2
REGRESSION ANALYSIS OF DAILY RETURNS OF THE S&P 400 FOR A SELL-IN-MAY STRATEGY YEARS 2000 THROUGH 2010

Panel A	**Intercepts/Coefficients**	**T-values**	**P-values**
Constant	.0004923	.692	.489
Non-Summer	-.0001217	-.360	.719
January	N/A	N/A	N/A
Bull	N/A	N/A	N/A
Panel B			
Constant	.0007938	1.031	.302
Non-Summer	-.0002330	-.657	.511
January	-.001189	-1.026	.305
Bull	N/A	N/A	N/A
Panel C			
Constant	-.0005737	-.669	.503
Non-Summer	-.0002311	-.653	.514
January	-.001308	-1.130	.256
Bull	.002142	3.585	.000

TABLE 3
REGRESSION ANALYSIS OF DAILY RETURNS OF THE S&P 600 FOR A SELL-IN-MAY STRATEGY YEARS 2000 THROUGH 2010

Panel A	**Intercepts/Coefficients**	**T-values**	**P-values**
Constant	.0002657	.355	.722
Non-Summer	.000001439	.004	.997
January	N/A	N/A	N/A
Bull	N/A	N/A	N/A
Panel B			
Constant	.0005633	.696	.586
Non-Summer	-.001085	-.291	.771
January	-.001174	-.963	.335
Bull	N/A	N/A	N/A
Panel C			

Constant	-.0008492	-.942	.346
Non-Summer	-.0001065	-.286	.775
January	-.001297	-1.066	.286
Bull	.002212	3.523	.000

Table 4 presents the findings of the Halloween Effect on the S&P 500 index. In Panel A, the Halloween coefficient's p-value, .565, indicates it does not have a significant effect. In Panel B when the January variable is included, the Halloween coefficient increases and its p-value decreases to .389. In Panel C when the Bull variable is included, the Halloween coefficient and p-value increase slightly and the January p-value decreases. Based on the p-values in Panel C, the coefficients of the Halloween and January variables are not statistically different from zero at the .10 level. Table 4 indicates that the market is efficient since both the Halloween and January coefficients are not statistically significant at the .10 level. The Halloween Effect does not appear to enable investors to earn statistically higher returns than a Buy-and-Hold strategy.

Table 5 presents the findings of the Halloween Effect on the S&P 400 index. In Panel A, the p-values indicate that the Halloween Effect is not significant at the .10 level. The Halloween coefficient's p-value, .212, is relatively low when compared to its previously presented p-values. In Panel B, the January coefficient is negative and has a p-value of .202. Including the January variable causes the Halloween coefficient and p-value to decrease. In Panel C, adding the Bull variable only causes a very minimum change in the Halloween and January coefficients and their p-values. Although the p-values in Panel C of the Halloween and January coefficients are currently the lowest discussed in this study, they are not statistically different from zero at the .10 significance level. The only significant at the .01 level is the Bull variable. Overall, Table 5 indicates that the market is efficient since both the Halloween and January coefficients are not significant at the .10 level. Again, the Halloween Effect does not appear to enable investors to earn statistically higher returns than a Buy-and-Hold strategy.

TABLE 4
REGRESSION ANALYSIS OF DAILY RETURNS OF THE S&P 500 FOR THE HALLOWEEN EFFECT YEARS 2000 THROUGH 2010

Panel A	**Intercepts/Coefficients**	**T-values**	**P-values**
Constant	-.0001930	-.525	.599
Halloween	.0002786	.531	.565
January	N/A	N/A	N/A
Bull	N/A	N/A	N/A
Panel B			
Constant	-.0001930	-.525	.599
Halloween	.0004713	.862	.389
January	-.001297	-.024	.218
Bull	N/A	N/A	N/A
Panel C			
Constant	-.001653	-3.278	.001
Halloween	.0004663	.855	.393
January	-.001423	-1.358	.175
Bull	.002296	4.214	.000

TABLE 5
REGRESSION ANALYSIS OF DAILY RETURNS OF THE S&P 400 FOR THE HALLOWEEN EFFECT YEARS 2000 THROUGH 2010

Panel A	**Intercepts/Coefficients**	**T-values**	**P-values**
Constant	-.00009423	-.234	.815
Halloween	.0007166	1.248	.212
January	N/A	N/A	N/A
Bull	N/A	N/A	N/A
Panel B			
Constant	-.00009423	-.234	.815
Halloween	.0009349	7.561	.119
January	-.001469	-1.276	.202
Bull	N/A	N/A	N/A
Panel C			
Constant	-001455	-2.633	.009
Halloween	.0009302	1.556	.120
January	-.001587	-1.381	.167
Bull	-.002140	3.584	.000

Table 6 presents the findings of the Halloween Effect on the S&P 600 index. In Panel A, their p-values once again indicate that Halloween Effect does not have a statistical discernible impact at the .10 significance level. The Halloween coefficient's p-value, .354, is also relatively low when compared to p-values in previous A Panels. In Panel B, the January coefficient is negative and has a p-value of .217. Including the January variable caused the Halloween coefficient p-value to drop to .215. In Panel C, the Bull variable only causes a small change in the Halloween and January coefficients and their p-values. Panel C indicates that the Halloween and January coefficients are not statistically different from zero at the .10 significance level. The significant variable, at the .01 level, is the Bull market coefficient. Overall, Table 6 indicates that the market is efficient since both the Halloween and January coefficients are not significant at the .10 level. Once more, the Halloween Effect does not appear to enable investors to earn statistically higher returns than a Buy-and-Hold strategy

TABLE 6
REGRESSION ANALYSIS OF DAILY RETURNS OF THE S&P 600 FOR THE HALLOWEEN EFFECT YEARS 2000 THROUGH 2010

Panel A	**Intercepts/Coefficients**	**T-values**	**P-values**
Constant	-.000006362	-.015	.988
Halloween	.0005596	.927	.354
January	N/A	N/A	N/A
Bull	N/A	N/A	N/A
Panel B			
Constant	-.000006362	-.015	.988
Halloween	.0007817	1.241	.215
January	-.001495	-1.235	.217
Bull	N/A	N/A	N/A
Panel C			

Constant	-.001412	-2.430	.015
Halloween	.0007768	1.236	.217
January	-.001617	-1.338	.181
Bull	.002211	3.521	.000

CONCLUSION

The analyses of stock performance using a Sell-in-May strategy during the unofficial summer indicate that the stock markets in the United States are fairly efficient. The Non-Summer (Sell-in-May) variable was never statistically significant at the .10 level in any of the models utilized. Moreover, no seasonal anomaly was found based on examining large, mid or small cap firms using the S&P 500, 400 and 600, respectively as surrogates.

The Halloween Effect was also examined using large, mid or small cap firms. Overall, the markets seem efficient since neither the January nor the Halloween coefficients were significant at the .10 level. Unlike Lucey and Zhao (2008), Witte (2010), and Swargerman and Novakovic (2010), no statistically significant evidence of a January effect was found. From data covering years 2000 through 2010, the January variables had negative values rather than positive values, and its p-values were never less than .10.

Contrary to Bouman and Jacobsen (2002), Swargerman and Novakovic (2010), and Witte (2010), the stock markets are found to be efficient in general. This paper provides additional evidence that supports the conclusions of Riepe (2003), Maberly and Pierce (2004), Lucey and Zhao (2008), and Jones and Lundstrum (2009) that trading strategies based on the Halloween effect or a Sell-in-May strategy do not generate abnormal profits.

However, it was noticed that the Halloween variable's p-values, though statistically insignificant at the .10 level, were noticeably less for the S&P 400 and S&P 600 than the S&P 500. In fact for the S&P 400, the Halloween's p-value was .12 when the January and Bull market variables were included. As other researchers have noticed, something may be going on with a Halloween Effect, in particular with the S&P 400, but at present, the adage "Sell in May and Go Away" appears merely an attention-getting slogan without merit or at best a puzzle. In summation, it appears that stock market investors in the United States should not be fearful of the Halloween Effect.

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