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Testing the Presence of the January Effect in a Developed Economy

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Abstract

The purpose of the current research is to test the efficient market hypothesis keeping in view the January effect for a developed economy, namely the United Kingdom (UK). By incorporating daily return data from 2009 to 2020, robust econometric modelling discloses the presence of anomalous patterns in UK stock returns around the year. Key results/findings confirm the presence of seasonal effects, predominantly the January effect, for the sampled country. Stronger evidences (in terms of statistical significance) for April, July, August, September and November were also obtained. The results are also in favor of the tax-loss selling hypothesis. Furthermore, the presence of January effect anomaly perceived in this research is unlikely to provide any lucrative arbitrage because abnormal returns were not found to be large/adequate enough to offset the associated transactions costs.

Keywords: efficient markets, January effect, stock returns, tax selling hypothesis

Introduction

The existence and the impact of the January effect has been tested by many past researchers. In their influential paper, Rozeff and Kinney (1976) found the existence of seasonal patterns for the prices of equally weighted indices from New York Stock Exchange (NYSE) from 1904 to 1974. They reported monthly average returns for January 7 times higher than the 11 months average returns. Many others tested the effect on monthly returns keeping in view the US stock market during 1963-1979 and found the existence of the January effect on small stocks (Keim, 1983; Lakonishok & Smidt, 1988; Thaler, 1987). The financial market researchers still wonder as to why this

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effect occurs. Abundant evidence is available regarding stock market anomalies, highlighting and justifying the presence of calendar anomalies. (Asteriou & Kavetsos, 2006; Starks et. al., 2006; Moller & Zilca, 2008). Similar other studies have reported the presence of systematic patterns in returns around days of the week, turn of the month, holidays, and special occasions' and so on.

From the point of view of the past researchers, investors cannot gain from past information in a weak and efficient market while trading on such anomalies Their presence rather destabilizes the random walk hypothesis. In addition, it is a market in which the security price or the semi-strong efficiency market fully reflects all the publicly available information. No investor can use published information to obtain long-term abnormal returns in a semi-robust efficient market form. Lastly, for all information, a powerful form of an efficient market or securities price reflects fully in the market (including personal facts) if no one can make excessive profits after adjusting risk and using existing trading strategies, whether an individual investor or an institutional investor, the market is influential (Pradnyaparamita & Rahyuda, 2017).

Abnormal return is the difference between the actual and the anticipated rate of return. In utilizing the January effect phenomenon to achieve abnormal returns, investors try to sell their shares in the year end and buyback them at the start of the year. The act of selling and buying back causes the stock price at the end of the year to fall and again increase at the start of the year to get a high return rate or return at the beginning of the year. Research conducted by Indrayani (2019) shows that at the end of December, there exists a substantial difference between 5th day average above normal return and first five days from January, which indicates existence of the January effect phenomenon on the Indonesian Stock Exchange listed stocks of mining sector during the 2011-2015 period. The same result was also obtained by Pradnyaparamita and Rahyuda (2017) showing that the highest overall abnormal stock returns occurred in January and the lowest in other months. However, the results obtained from research conducted by Pradnyaparamita and Rahyuda (2017) found no difference between January's stock abnormal returns and other months.

Therefore it can be concluded that the January effect phenomenon does not occur in the Indonesian capital market.

Besides the tension in the existing literature regarding the existence and impact of the January effect, more studies contradicting the efficient market hypothesis, mainly conducted with respect to return predictability, are forthcoming (Rossi, 2016). Past studies indicated that monthly anomalies like the January effect denies efficiency of stock market (Khan et al., 2017). Keeping in view the above arguments, the main aim of the present study is to explore the existence of the January effect in the UK stock market. The developed economy of the UK is selected to view whether the January effect persists there or not.

Literature Review

The impact of the anomalies on the stock prices volatility has been widely debated in the existing literature. Many researchers who conducted their studies specifically in the early or mid-nineteen believed: "As goes January, so goes the year". The pioneer work of this seasonal pattern was notified by Wachtel (1942). Following this, Rozeff and Kinney (1976) joined the body of literature by examining these anomalies in the monthly return of NYSE from 1904 to 1974 and found statistically significant differences in the mean returns of months owing to large January returns. Most of the researchers showed positive returns specifically in the developed economies (Gultekin & Gultekin, 1983; Barone, 1990; Agrawal & Tandon, 1994). While strong seasonal pattern in the distribution of returns of stock market were found owing to disproportionately large January returns in most of the countries (Gultekin & Gultekin, 1983). Agrawal and Tandon (1994) concluded the presence of the January anomaly for these sample countries. The presence of negative association between stock returns and the total market value of equity was observed in the studies of (Banz, 1981; Keim, 1983; Roll, 1983). These studies confirm the existence of daily abnormal return distributions for the month of January. They also reported large means comparative to the remaining months of the year. Barone (1990) found seasonal pattern in the Italian Stock Exchange from 1975 to 1989. Fama (1991), in his study explored the performances of S&P 500 during 1941 to 1981 and found average monthly January return. Similarly, by the investigation of eighteen countries data, Wong et al. (2006) examined the cyclic effect keeping in

view Singapore stock market from 1993 to 2005 and found volatilities in stock index returns surrounding January on different days of the week (the day-of-the-week effect), around the turn of, around the month, turn of the month and before holidays. They also reported results indicating that many seasonal patterns vanished in Singapore during many past years. While, Mylonakis and Tserkezos (2008) examined the Athens Stock market (ASE) from 1985 to 2001, Norvaisiene et al., (2015) explored Baltic Stock Market for the period 2003 –2014. Both the studies found higher mean returns during January.

Researchers have extensively explored other types of calendar anomalies. The effect of turn of the month (TOM) was explored by the Ariel (1987) using data from U.S stock exchange. Other studies have also investigated the effect of TOM keeping in view different economies (Penntengill & Jordan, 1988; Barone, 1990;Van der Sar, 2003; McConnell & Xu, 2008). Further, holiday effect was assessed by (Lakonishok & Smidt, 1988; Pettengill 1989; Ariel, 1990; Dodd & Gakhovich, 2011). The religious calendar effect was also explored by (Barmak, 2012; Almudhaf, 2012; Khan et al., (2017). Based on the literature review, it can be concluded that although there have been extensive research keeping in view different anomalies of stock market since then, there exists no single agreement or cohesive point on the relationship of the EMH to calendar effects.

Further, researchers from finance literature recently indicated that the existence of the January effect has either been declined or contracted in major markets. Some of the researchers nevertheless indicated commonness of this anomaly specifically in the global stock market returns. Discussing market anomalies continue to be of interest to researchers as well as practitioners. Therefore the current research aims to contribute to the ongoing discussion on (non)/existence of the January effect in the UK stock returns. This study aims to fill the gap by extending scope of the previous literature keeping in view the UK stock market.

Research Methodology

The data used for econometric analysis consist of daily observations from the UK stock market index. All the data were collected from the UK stock exchange, and the FTSE Index daily return data were employed for analysis from January 2009 to December, 2019.The basic reason for selecting f the

FTSE Stock Index 100 index was its size, efficiency and relative prominence over other indices. Arguments in previous studies regarding why January effect or tax-loss hypothesis doesn't prevail in the UK economy were based on the following grounds:

1. Individual investors have very smaller share of the stock market so it is not possible to influence the stock price by investing at the end of the year; and
2. As the tax year in UK ends on April 5, the tax loss hypothesis cannot explicate the existence of the January effect in the UK markets.

The current research aims to contribute to the ongoing discussion on (non)/existence of the January effect in the UK stock returns. The daily stock data were converted into stock return using traditional formula as follows:

$$\text{Stock Return} = \log (P_t/P_{t-1}) \text{ x}100$$

Majority of the researchers have employed a dummy variable regression methodology (Agrawal & Tandon, 1994; Mills, & Andrew Coutts, 1995; Arsad & Coutts, 1997). For the purpose of this research, the same methodology has been employed.

$$R_t = a_1D_{1t} + a_2D_{2t} + a_3D_{3t} + \ldots\ldots\ldots a_{12}D_{12t} + €_t \qquad \text{eq.….01}$$

And

$$R_t = \alpha + a_1D_{1t} + a_2D_{2t} + a_3D_{3t} + \ldots\ldots\ldots a_{12}D_{12t} + €_t \qquad \text{eq.….02}$$

Where, R_t specifies stock returns at t time, α the intercept signifies the average value of the January returns and a_i specifying (i=1,2,…,12) the coefficients, symbolize the deviation of the return between January and any month denoted by i.

Keeping in view the tax-loss selling hypothesis, the final test is performed to observe the incidence of January effect. The regression employs so far is:

$$R_t = \alpha + \beta D_{1t} + €_t \qquad \text{eq.….03}$$

The research hypothesis is tested using Wald test. The rejection of the null hypothesis is states that the stock returns exhibit seasonal and anomalous pattern. Many past studies on the similar topic (French, 1980; Jaffe & Westerfield, 1989) have employed the OLS regression methodology to reach research conclusion.

Results

The daily movement of FTSE index return for the study period is shown in Figure-1 indicating the presence of the volatility clustering with respect to time variations.

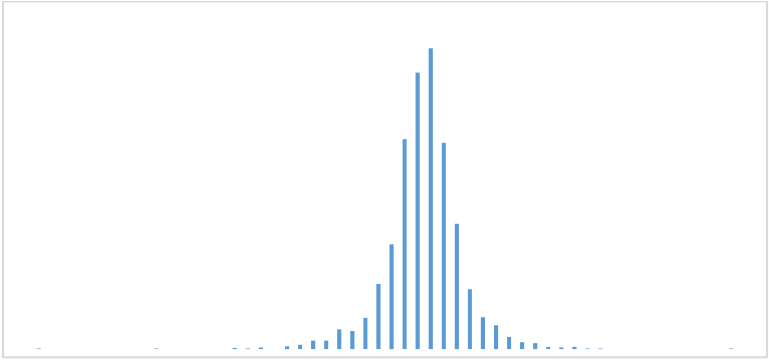
Figure 1

Daily Return Volatalities

Figure-2 shows the histogram, using descriptive statistics for the sample return data. Based on the obtained p-value of Jarque-Bera (0.0035), the study rejects the assumption undertaken in null hypothesis about the normal distribution of data. The histogram shown in figure-2 states that the series of return data is leptokurtic.

Figure 2

Summary Statistics



The regression results regarding the existence of seasonal effects are presented in Table 1-3. Where, Table-1 reports the model summary, Table 2 reports the ANOVA findings and Table-3 the co-efficient estimates for each of the twelve months. In all the cases, OLS is employed as the estimation method and the study reports the values of the estimated coefficients with their t-statistics respectively (table 3). The coefficient of determination for each equation, the tests for serial correlation and s for heteroscedasticity, is also given. For detecting the serial correlation, the Breusch–Godfrey (BG) Lagrange multiplier test is applied for 12 lagged terms of the residual. Whereas, for determining heteroscedasticity, the ARCH–LM test using one degree of freedom is applied. Where residuals are not found to be white noise, to obtain t-statistics, the study also employs the Newey–West heteroskedasticity as well as autocorrelation adjusted standard errors.

Table 1

Model Summary

Regression Statistics	
Multiple R	0.3536
R^2	0.1250
Adj. R^2	0.0365
SE	0.0850

Table 2

ANOVA

	Df	*SS*	*MS*	*F*	*Sig. F*
Regression	12	0.1242	0.0103	1.4296	0.1617
Residual	120	0.8687	0.0072		
Total	132	0.9929			

Table 3

Regression Estimates for Seasonal Effects

Months	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
January	0.0157	0.0257	0.6102	0.5429	-0.0351	0.0664
February	-0.0288	0.0257	-1.1212	0.2644	-0.0796	0.0220
March	0.0330	0.0257	1.2874	0.2004	-0.0178	0.0838
April	-0.0341	0.0257	-1.3282	0.1866	-0.0849	0.0167
May	0.0569	0.0257	2.2166	0.0285	0.0061	0.1077
June	0.0454	0.0257	1.7697	0.0793	-0.0054	0.0962
July	-0.0005	0.0257	-0.0198	0.9842	-0.0513	0.0503
August	-0.0130	0.0257	-0.5085	0.6120	-0.0638	0.0377
September	-0.0388	0.0257	-1.5124	0.1331	-0.0896	0.0120
October	0.0035	0.0257	0.1347	0.8931	-0.0473	0.0542
November	-0.0064	0.0257	-0.2488	0.8040	-0.0572	0.0444
December	0.0307	0.0257	1.1974	0.2335	-0.0201	0.0815

Table 3 states outcomes from all seasonal dummies as the model together in equation 1. The outcomes reveal existence of the significant seasonal effects for the months of May and June only. Importantly, for ten out of twelve months, the study has found insignificant seasonal effects. As the tax year ends in April, the returns are found to be positive in May signifying seasonal effects of May. Further, the average returns of January are found to be lower than the average returns obtained in March, May, June, and December.

Table 4

Model Summary

Regression Statistics	
Multiple R	0.3490
R^2	0.1218
Adj. R^2	0.0413
SE	0.0850

Table 5

ANOVA

	Df	*SS*	*MS*	*F*	*Sig. F*
Regression	11	0.1204	0.0109	1.5131	0.1352
Residual	120	0.8687	0.0072		
Total	131	0.9892			

Table 6

Coefficients Estimates for January Effects

Months	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0157	0.0257	0.6102	0.5429	-0.0351	0.0664	-0.0351	0.0664
February	-0.0444	0.0363	-1.2243	0.2232	-0.1163	0.0274	-0.1163	0.0274
March	0.0174	0.0363	0.4789	0.6329	-0.0545	0.0892	-0.0545	0.0892
April	-0.0497	0.0363	-1.3707	0.1730	-0.1216	0.0221	-0.1216	0.0221
May	0.0412	0.0363	1.1359	0.2583	-0.0306	0.1130	-0.0306	0.1130
June	0.0297	0.0363	0.8199	0.4139	-0.0421	0.1016	-0.0421	0.1016
July	-0.0162	0.0363	-0.4455	0.6567	-0.0880	0.0557	-0.0880	0.0557
August	-0.0287	0.0363	-0.7911	0.4305	-0.1005	0.0431	-0.1005	0.0431
September	-0.0545	0.0363	-1.5010	0.1360	-0.1263	0.0174	-0.1263	0.0174
October	-0.0122	0.0363	-0.3363	0.7373	-0.0840	0.0596	-0.0840	0.0596
November	-0.0220	0.0363	-0.6074	0.5447	-0.0939	0.0498	-0.0939	0.0498
December	0.0151	0.0363	0.4152	0.6787	-0.0568	0.0869	-0.0568	0.0869

Table 6 presents outcomes from the tests conducted to verify the January effect. From the obtained outcomes, it is obvious that except for March, May and June the average values of the January returns found to be higher for all other months of the year. Whereas, the presence of the January effect is found to be greater for the month of June. At the same time, as the results are not found to be statistically significant for the whole calendar year, the study cannot establish the presence of the January effect in the UK stock market. This is so because the tax year ends in April. Therefore the May effect or the June effect seems to be prevalent in the UK data stock returns.

Table 7

Model Summary

Regression Statistics	
Multiple R	0.03608
R^2	0.0013
Adj. R^2	-0.0063
SE	0.0871

Table 8

ANOVA

	Df	*SS*	*MS*	*F*	*Sig. F*
Regression	1	0.0012	0.0012	0.1694	0.6812
Residual	130	0.9879	0.0076		
Total	131	0.9892			

Table 9

Coefficients Estimates for Tax-Loss Selling Hypothesis

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0043	0.0079	0.5493	0.5837	-0.0113	0.0200	-0.0113	0.0200
D_1	0.0113	0.0274	0.4116	0.6812	-0.043	0.0656	-0.043	0.0656

Table 9 indicates outcome of the testing of the tax-loss selling hypothesis. Outcomes from the regression analysis are summarized in Table-10. From the obtained outcome reported in Table-9, it is evident that there exists weak evidence for the presence of the January effects in the UK stock market. It is due to the fact that although January appears to be the month with high average returns (on an average all other months have lower returns), yet no statistically significant impact is recorded claiming the persistence of January effect. It is also clear that apart from January, the statistically significant coefficients are not found for more than two months. Interestingly, the study also carries evidence against the tax-loss selling hypothesis.

Conclusion

The aim of the current research is to testify the efficient market hypothesis, keeping in view the January effect in the economy of the United Kingdom. In contrast to the studies which applied a similar methodology in other countries, the study obtained weak evidence in favor of the presence of the January effect as well as confirmation of the tax-loss selling hypothesis for UK economy. These findings favor the informational efficiency feature from the efficient market hypothesis. Although EMH does not imply that supernormal or abnormal returns can be obtained from these markets due to the higher costs of the transaction and borrowing constrictions faced by investors, the role of dynamic economic conditions, which these countries are facing at the moment, cannot be ignored in this regard. Furthermore, a possible explanation of these results can be that as individual investors have very smal share of the stock market, it is not possible to influence the stock price by making investments at the end of the year. Additionally, as the UK tax year ends on April, 5, the tax loss hypothesis cannot establish the existence of the January effect in its markets. Therefore, the study declares the absence of the January effect in the UK stock market.

These results have significant practical and research implications for the capital market participants. They provide a framework whereby investors can formulate their future investment strategies, and earn abnormal average returns while predicting future stock prices. As the study establishes the presence of the March effect instead of the January effect due to the tax-selling hypothesis, investors must adopt their investment strategies in April as well. This research was conducted from the UK perspective and hence is applicable only to its stock market culture. Therefore, these findings cannot be applied to other countries.

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