Testing the Presence of the January Effect in Developed Economies

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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 developed economies, namely the United Kingdom. By incorporating daily return data from 2009 till 2020, the robust econometric modeling discloses the presence of anomalous patterns in UK stock returns around the year. Key results confirm the presence of seasonal effects predominantly the January effect for the sample country. Stronger evidence (in terms of statistical significance) for April, July, August, September, and November are obtained. The obtained results also propose confirmation in favor of the tax-loss selling hypothesis. Further, the presence of the January effect anomaly perceived in this research was unlikely to provide lucrative arbitrage because abnormal returns were not found to be large enough to offset the associated transactions costs.

Keywords: Efficient Markets, Tax Selling Hypothesis, January Effects, Stock Returns

Introduction

The existence and the impact of the January effect have been tested by many researchers in the past. In their influential paper, Rozeff & Kinney (1976) found the existence of seasonal patterns for the prices of equally-weighted indices from the New York Stock Exchange (NYSE) from 1904 to 1974. They reported the monthly average returns for January to appear to be higher 7 times compared to 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). There was still tension among financial market researchers that why does this effect occur? Abundant evidence is available regarding stock market anomalies highlighting and justifying the calendar the presence of anomalies, (Asteriou & Kavetsos, 2006; Starks et. al., 2006; Moller & Zilca,

2008). Other studies in the same context have reported the presence of systematic patterns in returns around days of the week, turn of the month, holidays, special occasions, and so on.

From the point of view of past researchers, investors cannot gain from past information in a weak and efficient market while trading on such anomalies rather their presence destabilizes the random walk hypothesis. Secondly, it is a market in which the security price or the semi-strong efficiency market fully reflects all publicly available information. No investor can use published information to obtain long-term abnormal returns in a semi-robust efficient market form. Third, 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). Moreover, macroeconomic situations also impact financial indicators (Ali and Naeem, 2017; Ali, 2011; Ali, 2015; Ali, 2018; Ali and Bibi, 2017; Ali and Ahmad, 2014; Ali and Audi, 2016; Ali and Audi, 2018; Ali and Rehman, 2015; Ali and Senturk, 2019; Ali and Zulfiqar, 2018; Ali et al., 2016; Ali et al., 2021; Ali et al., 2021)

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 at the year-end and buy back 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 5^{th} day average above normal return and the first five days from January, which indicates that there is a January effect phenomenon listed stocks of the mining sector from Indonesian Stock Exchange during 2011-2015 period. The same result was also obtained by Pradnyaparamita & Rahyuda, (2017) that the highest overall abnormal stock returns occurred in January and the lowest occurred in other months. However, the results obtained from research conducted by Pradnyaparamita & Rahyuda, (2017) found no difference between January's stock abnormal returns and other months, so 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, the studies contradicting the efficient market hypothesis are increasing, mainly

conducted for return predictability (Rossi, 2016). Past studies indicated that monthly anomalies like the January effect deny the efficiency of the stock market (Khan, Nasir & Rossi, 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 Stockmarket. The developed economy of the UK is selected to view whether the January effect is persistent in the UK market or not.

LITERATURE REVIEW

There has been great debate in existing literature regarding the impact of anomalies on stock prices volatility. Many researchers specifically who conducted their studies in the early or mid-nineteen believed that "As goes January, so goes the year". The pioneering work of this seasonal pattern was notified by Wachtel (1942). Following this, Rozeff & 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 developed economies (Gultekin & Gultekin, 1983; Barone, 1990; Agrawal & Tandon, 1994). While, strong seasonal patterns in the distributions of returns of the stock market were found owing to disproportionately large January returns in most of the countries (Gultekin & Gultekin, 1983). Agrawal & Tandon (1994) concluded the presence of January anomaly for these sample countries. The presence of a negative association between stock returns and total market value of equity was observed in the studies of Banz (1981); Keim (1983) and Roll (1983). These studies provide evidence on the existence of daily abnormal return distributions for January. They also reported large means compared to the remaining months of the year. Barone (1990) found the seasonal pattern in the Italian Stock Exchange from 1975 to 1989. Fama (1991), in his study, explored the performances of the S&P 500 from 1941 to 1981 and found average monthly January return. Similarly, by the investigation of eighteen countries data, Wong, Agarwal & Wong (2006) examined the cyclic effect keeping in view the 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 that many seasonal patterns have vanished in Singapore during many past years. While Mylonakis & Tserkezos (2008) examined the Athens Stock market (ASE) between 1985-2001. Norvaisiene, et al., (2015) explored the Baltic Stock Market between 2003 and 2014. Both of the studies found higher mean returns during January.

Researchers have extensively explored other types of calendar anomalies like the effect of turn of the month (TOM) was explored by Ariel (1987) using data from the 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, the holiday effect was also estimated by Lakonishok & Smidt, 1988; Pettengill (1989); Ariel, 1990; and Dodd & Gakhovich (2011). The religious calendar effect was also explored by Barmak (2012); Almudhaf (2012), and Khan et al., (2017). Based on the explored literature review, it can be concluded that although there has been extensive research keeping in view different anomalies of the 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 aggressively indicated that the existence of the January effect has either been declined or contracted in major markets subject to exceptions from some of the researchers who indicated the commonness of this anomaly specifically in global stock market returns. The discussions on market anomalies continue to remain in researchers' as well as practitioners' interest. So, the current research aims to contribute to the ongoing discussion on (non)/existence of the January effect in UK stock returns. This study aims to fill the gap by extending the 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 FTSE Index daily return data was employed for analysis from January 2009 to December 2019. The reason for the selection of the FTSE Stock Index 100 index was purely due to size, efficiency, and its relative prominence over other indices. Further, there are many arguments built in previous studies regarding why the January effect or tax-loss hypothesis doesn’t prevail in the UK economy. Owing to the ground that:

1. Individual investors have a 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 the UK ended on April, 5, the tax loss hypothesis cannot explicate the existence of the January effect in UK markets.

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

Stock Return = log (P_t/P_{t-1}) x100

The majority of the researchers have employed a dummy variable regression methodology (Agrawal & Tandon, 1994; Coutts & Mills, 1995; Arsad & Coutts, 1997). For this research, the same methodology is being employed.

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

And

$R_t = \alpha + a_1D_{1t} + a_2D_{2t} + a_3D_{3t} + \ldots\ldots\ldots a_{12}D_{12t} + €_t$ 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 the January effect. The regression employs so far is:

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

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

RESULTS

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

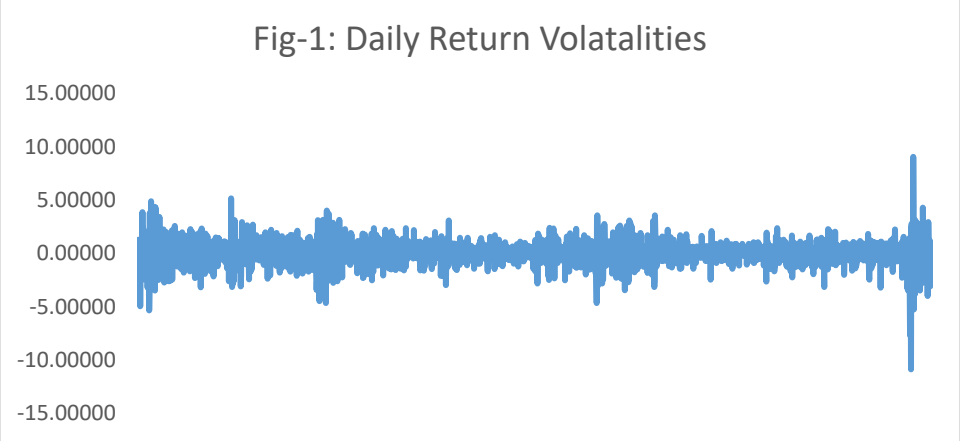
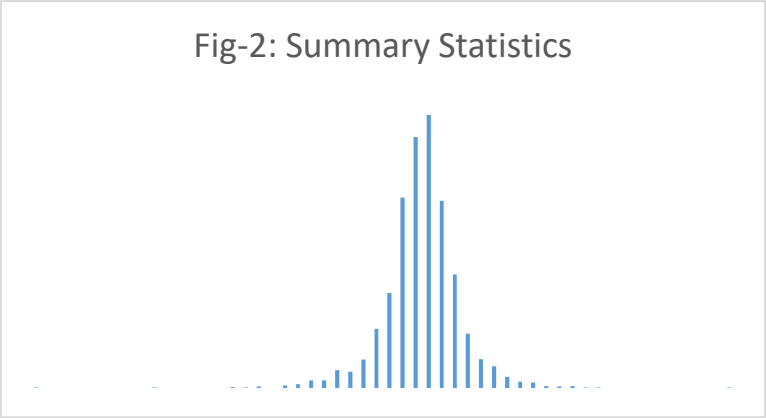


Figure-2 shows the histogram, using descriptive statistics for the sample return data. Based on the obtained p-value of Jarque-Bera (0.0035), the study rejects the assumption undertaken in the null hypothesis about the normal distribution of data. The histogram shown in figure-2 states that the series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



The regression results regarding the existence of seasonal effects are presented in Tables 1-3. Where table-1 reports the model summary, table-2 reports the ANOVA findings and table-3 reports the co-efficient estimates for each of the twelve months. In all 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 tests for heteroscedasticity are also given. For detection of serial correlation, the Breusch–Godfrey (BG) Lagrange multiplier test is applied for 12 lagged terms of the residual. While, for the determination of 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 employed 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 the outcomes from all seasonal dummies as the model together in equation 1. The outcomes reveal the existence of significant seasonal effects for May and June only. Importantly, for ten out of twelve months, the study found insignificant seasonal effects. As the tax year ends in April, the returns are found to be positive in May signifying the seasonal effects of May. Further, the average return of January is found to be lower than the average returns obtained in March, May, June, and December.

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

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-9 reports the outcome obtained for testing the tax-loss selling hypothesis. The 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 because although January appears to be the month with high average returns (on average, all other months have lower returns) still no statistically significant impact is recorded claiming the persistence of the January effect. Further, it is also clear from the obtained outcomes that apart from January, the statistically significant coefficients are not found for more than two months as well. It is interesting that the study also has evidence against the tax-loss selling hypothesis.

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

Conclusion

The current research aims 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 the confirmation of the tax-loss selling hypothesis for the 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, keeping in view the higher costs of the transaction and borrowing constrictions that investors faced, the role of dynamic economic conditions cannot be ignored in this regard which these countries are facing at the moment. Further, the possible explanation for these results might be explained that as individual investors have a 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 the tax year in the UK ended on April, 5, the tax loss hypothesis cannot explicate the existence of the January effect in UK markets. Therefore, the study concludes the absence of the January effect in the UK stock market.

These results have important practical and research implications for capital market participants. These results provide a framework for investors who can formulate their future investment strategies keeping in view these results and tend to earn abnormal average returns by predicting future stock prices. As the study concludes that rather than the January effect there may be the presence of the March effect due to the tax-selling hypothesis, therefore, investors must seek their investment strategies in April as well. This research was conducted from the UK perspective and hence only applicable to UK stock market culture. Therefore, the limitation would be that these findings cannot apply to other countries.

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