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Revisiting the January effect anomaly: evidence from international stock markets

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ABSTRACT

A recurring theme in the literature and discussion of stock market analysis is the concept of the January effect which essentially implies buy in December and sell in January. The January effect is based on the perceived seasonality trend where short term investors hope to take advantage of the arbitrage opportunity between December and January. However, this perceived anomaly continues to be seen as a myth and has been strongly rejected by many market participants in the current dispensation. The purpose of this paper was to investigate the January effect in the Nikkei 225, JSE, CAC 40, DAX, and the NASDAQ Index from February 2019 to February 2024. A F-test statistics was used to explore the phenomenon. The findings indicated that there is no significant difference between the realised returns in January and those of the other month for the most recent five years. This led to the conclusion that, while the January effect may have been observed, it is no longer evident in financial markets, hence market participants should avoid using this type of arbitrage approach because it may result in massive losses.

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Introduction

Unravelling the enigma of the surge in the tapestry of the stock market during the month of January continues to be a prominent area in finance. The phenomenon where stock markets are perceived to experience bull episodes dubbed “the January effect” is a perplexing anomaly where mostly small cap stocks defy the principles of the supposedly random walk and unpredictable nature of stock prices as posited by the efficient market hypothesis. Ever since the 1940s, academics and industry professionals have wrestled with this puzzle as to why some stocks tend to outperform the market in January, a paradox intensified by its contradiction to traditional market theories. The historical background of the January effect reveals that from 1904 to 1974, the average returns in January accounted for about 3,5% which was eight times higher than the monthly average returns of the other months of the year (Wachtel, 1942). Numerous elusive reasons behind the proposed January effect continue to evade a definitive explanation. Some of these explanations range from tax loss selling to window dressing (Asteriou & Kavetsos, 2006).

The tax loss theory contends that investors engage in significant selling of underperforming stocks in December and repurchase the same in January (Almansour et al., 2023). This strategic move aims to generate losses which in turn can be wielded as a tool to reduce taxable income and subsequently lower the payable tax (Cristiana, 2021). Hence, stock markets tend to experience an abnormal downward pressure in December only to rebound in January providing a peculiar boast. Conversely, window dressing is a form of portfolio aesthetics which suggests that professional money managers purge their portfolios of poor performing stocks in December which shields them from disclosing embarrassing holdings in their annual reports (Adil et al., 2022). In January, these stocks are repurchased, injecting a positive momentum into the market. However, despite these compelling narratives, before the introduction of income tax in the 1913s, several different countries with different tax systems experienced similar phenomenon (Dom & Miller, 2018). Also, beyond the numerical intricacies, there is a fascinating aspect in trading which is related to the psychology of an investor

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known as behavioral finance. Some behavioral economists argue that the January effect is a manifestation of optimism as a new year unfolds.

According to Kumari, Goyal, and Kumar (2022), financial markets may at time experience significant higher returns in January because of a new calendar year which injects some positive momentum. However, it is still not clear whether the higher returns that may be evident in January should constitute a concept in financial markets.

Therefore, the aim of this study was to examine a subset of the two main paradigms that govern investing in stock markets which are the traditional finance and behavioral anomalies. Evidence of the January effect may confirm prior claims on the predictability of stock markets and the proliferation of algorithm which can be used to predict stock price movements. This paper also contributes to the debate on market anomalies by advancing the frontier of knowledge in financial markets. In so doing, the main research question to be addressed reads, “Is there adequate evidence of the existence of the January effect in financial markets using the most recent data?” The section below highlights the literature and the theoretical stance of the January effect.

Literature Review

The merits of the January effect remain a riddle as financial strategies and portfolio aesthetics offer plausible explanation partly because January provides an ambiance of a new beginning for the year. The theoretical relevance of the January effect may be associated with the notion that stock prices take a dive in December and experience a surge in January because of mass selling and buying in the respective months (Kartini, & Nahda, 2021).

It is widely believed that portfolio and fund managers tend to sell off low performing stocks at the end of each year and later repurchase these stocks in January (Kamran & Ashok, 2022). The subsequent effect of these trading patterns provides a hypothesis that governs seasonal anomalies in financial markets as stock prices take an exuberant turnover. It is also believed that the January effect provides an exceptional arbitrage opportunity for short-term traders (Kamran & Ashok, 2022).

The January market anomaly was first observed by Wachtel (1942) in the early 1900 where small cap stocks had outperformed the market by a wide margin. However, ever since the emergence of the supposed anomaly, empirical data suggest that the effect may no longer exist due to the existence of market efficiency hypothesis.

The efficient market hypothesis also known as the EMH contends that all known information about a stock is fully and correctly reflected in the stock price (Enow, 2023). The resulting effect is that investors and market participants cannot realize sustainable long-term profit. Accordingly, Fama (1965) proposed that financial markets have the tendency to swiftly reflect all available information in the short and long run eliminating sustained abnormal return. In essence, financial markets cannot be seen as biased because the current market value reflects the fair value aligning with the principle that the expected value of the security is very unpredictable (Fada, 2019). However, the emergence of behavioural finance and the psychology of investing tends to indicate otherwise.

There have been evidence of value investing where stocks with lower price to earnings ratios (P/E ratio) have proved too often to generate higher returns. The table below highlights some empirical findings on the January effect from 2016.

It is evident from the findings in table 1 that the January effect is still a puzzle where some authors (Patel, 2016; Perez, 2018; Sahoo, 2021) suggest that there is no evidence of the January effect hence the possibility of efficient markets (Enow, 2022). Other authors (Hendrawaty & Huzaimah, 2019; Nisar, Asif & Ali, 2021) advocate the existence of January effect due to the significant higher returns realised in January. From the two school of thought above, this study seeks to fill in the gap in the literature and contribute to the rich debate prior studies. The section below highlights the research method applied to investigate the January effect.

Table 1: Summary of prior studies on January effect from 2016

Author	Model	Period	Country	Findings
Patel (2016)	Regression analysis and standard monthly returns	1997 - 2014	USA, Latin America, Asia	No evidence of the January effect during the period under consideration.
Perez (2018)	Augmented Dicky fuller and Lillie test	2002 - 2017	86 countries around the globe	There appears to be an inverted January effect where returns in January seems to be lower than that of the other months.
Hendrawaty & Huzaimah, (2019)	Regression	Not Available	Indonesia	Strong evidence of January effect found in the Indonesian stock market.
Truong & Friday (2021)	OLS and GARCH model	2009-2018	Vietnam	The January effect is congruent with the Lunar New year.
Nisar, Asif & Ali (2021)	Regression analysis	2009-2020	United Kingdom	Strong statistical evidence of the January market anomaly in the United Kingdom stock market.
Enescu (2022)	Ordinary Least square (OLS)	2002-2022	Romania	The findings indicated mixed results where the January effect was only evident from 2003 to 2007.
Sahoo (2021)	GARCH model	1 April 2005 - 14 May 2020	India	No statistical evidence of the January effect in the Indian stock market.

Source: Author

Methodology

In exploring the January effect, five stock markets were used as samples which were the Nikkei 225 (Tokyo Stock exchange), the JSE (Johannesburg stock exchange), the CAC 40 (French index), the DAX (the Frankfurt index) and the NASDAQ Index. The selected indexes represent the main financial markets are around the globe. The daily adjusted share prices were retrieved from yahoo finance from February 2019 to February 2024. Before conducting a F-statistics test, the daily returns were first computed using the formula below.

$$\text{Daily return} = \frac{P_t}{P_{t-1}}$$

Where P_t is the current price and P_{t-1} is the previous day's closing price. A descriptive statistic and a variance test (F- stats Test) was applied to explore the distribution of the daily returns in the sampled financial markets. The F- test statistics was used to investigate the differences in variance for January and the other months (February to December) as well as their p-values (Kao & Green, 2008). Prior studies highlighted in table 1 mainly used OLS analysis and did not include F-stats analysis hence a significant leap from prior literature. The mathematical presentation of the F- stats test is given below (Kao & Green, 2008):

$$\text{F-stats test} = \frac{\text{Max}(S_1^2, S_2^2)}{\text{Min}(S_1^2, S_2^2)} \sim S^2 = \text{variance}$$

$$\text{Standard deviation} = \sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}$$

$$\text{Degrees of freedom (df)} = \frac{\left(\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}\right)^2}{\frac{S_1^4}{N_1^2 (N_1 - 1)} + \frac{S_2^4}{N_2^2 (N_2 - 1)}}$$

In analysing the research question highlighted in the introduction section, the hypothesis below were explored.

H_0 : There is no significant difference in the returns between January and the other months of the year for the most recent 5 years, hence the absence of the January effect.

H_1 : There is a significant difference in the returns between January and the other months of the year for the most recent 5 years, hence evidence of the January effect.

From the research blueprint highlighted above, the next section presents the findings of the daily return data analysed.

Analysis and Findings

Table 2 presents the descriptive statistics for five selected stock markets (Nikkei 225, JSE, CAC 40, DAX, and Nasdaq) over a period of 12 months. Each market's statistics include the number of observations (obs) and the average returns (AR) for each month.

For Nikkei 225, the average returns (AR) fluctuate each month, with notable positive returns in months 4 (0.11%), 5 (0.13%), and 10 (0.14%), and negative returns in months 3 (-0.10%) and 12 (-0.04%). The JSE shows a mix of positive and negative average returns, with the highest positive return in month 5 (0.147%) and the lowest negative return in month 3 (-0.231%). The CAC 40 generally exhibits moderate returns, with positive returns in months 4 (0.07%) and 12 (0.08%), and negative returns in months 2 (-0.13%) and 9 (-0.10%). The DAX shows consistently higher positive returns, with the highest in months 11 (0.27%) and 12 (0.10%), and the lowest in month 2 (-0.21%). Nasdaq has the highest average return in month 7 (0.22%) and shows negative returns in months 9 (-0.22%) and 2 (-0.14%).

Table 2: Descriptive statistics for the selected markets

<i>Month</i>	<i>Nikkei 225</i>		<i>JSE</i>		<i>CAC 40</i>		<i>DAX</i>		<i>Nasdaq</i>	
	<i>obs</i>	<i>A R</i>	<i>obs</i>	<i>AR</i>	<i>obs</i>	<i>A R</i>	<i>obs</i>	<i>AR</i>	<i>obs</i>	<i>A R</i>
1	95	0,09%	96	0,093%	85	0,00%	85	0,03%	81	0,14%
2	92	0,10%	80	-0,031%	80	-0,13%	80	-0,21%	76	-0,14%
3	109	-0,10%	108	-0,231%	112	-0,06%	112	-0,04%	112	-0,01%
4	102	0,11%	93	0,053%	97	0,07%	97	0,14%	102	0,10%
5	94	0,13%	105	0,147%	107	0,03%	106	0,15%	105	0,04%
6	108	0,09%	103	-0,176%	108	0,06%	106	-0,01%	106	0,19%
7	103	0,03%	110	-0,098%	110	0,09%	110	0,07%	105	0,22%
8	106	-0,01%	106	0,100%	111	-0,05%	111	-0,06%	111	0,04%
9	99	-0,01%	104	-0,050%	108	-0,10%	108	-0,09%	103	-0,22%
10	104	0,14%	109	-0,041%	109	0,12%	108	0,09%	109	0,08%
11	99	0,19%	107	-0,035%	106	0,28%	108	0,27%	103	0,27%
12	108	-0,04%	98	0,033%	86	0,08%	88	0,10%	106	0,06%

*obs connotes observations

* AR connotes Average returns

Positive and negative returns are distributed across different months, indicating variability in market performance over the year. The DAX and Nasdaq show relatively higher positive returns in several months compared to other markets. The JSE has the most significant negative return in month 3, highlighting a period of poor performance for that market. This table highlights the monthly variability in average returns for different stock markets, with some markets showing higher volatility than others. The DAX and Nasdaq appear to have higher peaks in positive returns, while the JSE shows a significant dip in month 3. Such descriptive statistics are crucial for investors looking to understand market behavior and make informed investment decisions.

Table 3: OLS results for the selected markets

	<i>Nikkei 225</i>		<i>JSE</i>		<i>CAC 40</i>		<i>DAX</i>		<i>Nasdaq</i>	
	<i>other months</i>	<i>January</i>	<i>other months</i>	<i>January</i>	<i>other months</i>	<i>January</i>	<i>other months</i>	<i>January</i>	<i>other months</i>	<i>January</i>
Coefficient	0,00	0,00	0,02%	0,00	-0,02%	0,00	-0,02%	0,00	-0,03%	0,00
S. E	0,13%	0,00%	0,17%	0,00%	0,15%	0,00%	0,15%	0,00%	0,18%	0,00%
t-stats	3,11%	0,00%	12,89%	0,00%	-12,03%	0,00%	-11,43%	0,00%	-15,82%	0,00%
P-value	97,52%	0,00%	89,74%	0,00%	90,42%	0,00%	90,90%	0,00%	87,43%	0,00%

*S.E connotes Standard Error

Table 3 presents the results of Ordinary Least Squares (OLS) regression analysis for five selected stock markets (Nikkei 225, JSE, CAC 40, DAX, and Nasdaq) comparing the coefficient, standard error (S.E.), t-statistics, and p-values for the month of January versus other months. All selected markets (Nikkei 225, JSE, CAC 40, DAX, and Nasdaq) show no significant difference in returns between January and other months, as indicated by the coefficients near zero and high p-values (all above 87%). The t-statistics for January are zero, indicating no change, and the high p-values across all markets confirm the lack of statistical significance in the difference of returns for January.

The OLS regression analysis indicates that there is no significant difference in the returns for January compared to other months across the selected markets (Nikkei 225, JSE, CAC 40, DAX, and Nasdaq). This suggests that the January effect, if present, is not statistically significant in these markets during the period analyzed. Investors might not expect significantly different performance in January compared to other months based on this data.

To conclude the interpretation of the findings in tables 2 and 3 highlights the results of the daily returns for January and the other months. From table 2, the returns in January falls within the same range as that of the other months. Hence, the perception that January experiences significant bull episodes and higher returns than the other months may not be the case. Further evidence can be seen in the F-statistics results in the Nikkei 225, JSE, CAC 40, DAX, and Nasdaq where there is no statistical significance between the returns observed in January and that of the other months for the most recent 5 years. In other words, the variance of January returns does not differ from that of the other months which is also evident from their p-values. This finding concurs with the findings of Patel (2016); Perez (2018); Sahoo (2021) who also contends that there is no evidence of the January effect anomaly in financial markets. Despite the presence of the January effect in the early 19th century, there is no strong evidence to supporting its existence. It is possible that the proliferation of multiple investment strategies such as smart beta, socially responsible investing, dollar cost investing has caused the anomaly to progressively fade off from financial markets. From the above analysis, the null hypothesis which states "there is no significant difference in the returns between January and the other months of the year for the most recent 5 years", is accepted.

Discussion

The average returns (AR) for each market exhibit variability across months, indicating fluctuations in market performance. This suggests that investors should be aware of monthly trends and consider seasonal patterns when making investment decisions. Different markets show distinct performance patterns. For instance, the DAX and Nasdaq have higher positive returns in several months compared to other markets, which may indicate stronger market conditions or better performance in specific sectors. Investors might focus on these markets during months with historically higher returns. The variability in average returns also highlights the risk associated with each market. Investors should consider the risk-return profile of each market, especially in months where significant positive or negative returns are observed. Investors can use this information to develop strategies that capitalize on historical trends. For example, they might choose to increase their investments in markets with higher expected returns during specific months or diversify to mitigate risks during months with negative returns. The analysis shows no significant difference in returns between January and other months across the selected markets, as indicated by the coefficients near zero and high p-values. This implies that the "January effect" (a perceived seasonal anomaly where stocks typically perform better in January) is not evident in these markets during the period analyzed. The lack of significant differences in returns suggests that these markets are relatively efficient, with no apparent seasonal biases that investors can exploit. This aligns with the Efficient Market Hypothesis (EMH), which posits that stock prices fully reflect all available information and that it is difficult to consistently achieve higher returns without taking on additional risk.

For portfolio managers, these results imply that adjusting portfolios specifically for January may not yield additional benefits. Instead, they should focus on broader market trends and fundamentals rather than relying on seasonal anomalies. Given the absence of significant seasonal effects, investors should prioritize diversification and risk management strategies based on long-term market trends and individual market characteristics rather than attempting to time the market based on the month. Although the January effect is not evident in this analysis, it may still be worthwhile to examine other potential seasonal effects or conduct similar studies in different time periods or other markets. Further research could provide additional insights into market behavior and potential anomalies.

Conclusions

The objective of this study was to explore the January effect where stock markets are perceived to experience higher returns due to increasing trading activities. From the outputs of the F-test statistics, the findings revealed that there is no evidence of January effect, at least for the most recent five years under consideration. The results presented in the data analysis section echoes the sentiment of Chen (2024) who argues that the supposedly January effect should have been attributed solely to human psychology rather than window dressing or tax losses. Also, it may well be possible that the EMH may prove to be at work as financial markets may be correctly pricing securities. Hence, market correction in the long run have shrug off the January effect. From the findings of this study, selling poor performing stocks in December and later repurchasing the same in January for window dressing or any other purpose is inconsistent with the framework of portfolio construction. The findings of this study also concur with the irrelevance of market timing as there are no records of anyone who has consistently time the market to identify peaks and troughs and act

accordingly. It is also important to note that the cost of trading securities within a short period in time may outweigh the benefits like selling in December and buying in January.

Investors should be cautious about relying on seasonal patterns such as the January effect when making investment decisions. Instead, they should focus on understanding broader market trends and fundamental analysis. The insights from Table 2 can help investors identify market-specific trends and tailor their strategies accordingly, while the findings from Table 3 reinforce the importance of maintaining a diversified and well-balanced portfolio.

Financial analysts and portfolio managers can use these findings to refine their investment strategies, ensuring they are based on robust market analysis rather than seasonal anomalies that may not consistently hold true.

Future research should consider extending the analysis to different time periods and additional markets to determine if the findings regarding the January effect and monthly returns hold across various economic cycles and geographic regions. Researchers could also explore the impact of macroeconomic factors, such as interest rates, inflation, and geopolitical events, on monthly market returns to provide a more comprehensive understanding of the forces driving market performance. Additionally, investigating other seasonal effects, such as the Halloween effect or the "sell in May and go away" strategy, could offer further insights into potential anomalies in market behavior.

This study has several limitations. The analysis is restricted to a specific set of markets and a limited time frame, which may not capture broader market trends or the influence of extraordinary events. The use of descriptive statistics and OLS regression provides an overview but lacks the depth of more sophisticated econometric models that could account for potential autocorrelation or heteroscedasticity in the data. Furthermore, the study does not consider the impact of market microstructure, such as trading volumes and liquidity, which could influence return patterns. These limitations suggest the need for more extensive and detailed analyses to validate and expand upon the findings presented.

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