

Drifting away from market efficiency: the presence of the January effect in the U.S. stock market

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Abstract. *The aim of this paper is to examine the existence and persistence across various portfolios of stocks of the January effect, a market anomaly suggesting that security prices exhibit distortions in the first month of every year compared to the rest of the year. The existing empirical studies on the January effect in contemporary financial markets, particularly in recent years, are somewhat limited. To provide a comprehensive overview, this paper utilizes data encompassing all American stocks listed on NASDAQ, AMEX, and NYSE from 1980s to 2023. The selection of the American stock market as the sample is based on its complexity and substantial trading activity. This investigation delves into the anomaly by assessing its impact on stock portfolios categorized by size, book-to-market ratio, and dividend yield. Additionally, the paper scrutinizes cross-sectional variations within the portfolios to uncover potential patterns explaining this anomaly, by looking at the corresponding quintile distribution. The data undergoes regression analysis using dummy Ordinary Least Squares. The results of the analysis reveal that the anomaly affects only a subset of stocks that share common characteristics: small capitalization, high book-to-market value and the ones that did not yield investors any dividends. The results are in line with previous findings in literature, particularly those of Ross (1983) and Reinganum (1983), suggesting evidence in favour of the window dressing hypothesis and the tax-loss selling hypothesis.*

Keywords: efficiency, stock market, yield, econometric testing.

JEL Classification: G14.

1. Introduction

Financial markets represent the foundation of capitalist economies, creating liquidity for investors through the trading of financial instruments. They are dynamic, uncertain and carry significant risk due to their sensitivity to market shocks. The Great Financial Crisis and the outbreak of the COVID-19 pandemic served as an example of how trillions of dollars in value can vanish overnight. Throughout decades, investors and academia trusted various forms of efficiencies in these markets, documented by the Efficient Markets Hypothesis (EMH), which can be regarded as an analogous to Smith's Invisible Hand. The EMH builds on the Random Walk Theory, stating that changes in securities' prices are unpredictable and independent of each other, therefore, it would be futile to try to predict them by looking at trends or employing means such as technical analysis. One point of the theorem states that risk-adjusted excess returns are entirely coincidental, but the fact that many investors succeeded in beating the market (e.g. Warren Buffet), shows the flaws of this approach. In practice, the claims of the EMH are not holding in financial markets. The presence of seasonality causes stock prices to no longer follow a random walk and they can be estimated based on past patterns.

Throughout the 20th century, financial markets were regarded as being strong form efficient, while numerous investment decision models were created by building on Markowitz's Modern Portfolio Theory, like the Nobel prize winning Capital Asset Pricing Model (CAPM 1961-1966). Fama and French created the multifactorial models, and Ross developed the Arbitrage Pricing Theory in 1976 in order to improve on the accuracy of the CAPM. However, these models came to be less universal towards the 2000s and the academia started to question the viability of their assumptions. The later wave of economists studied numerous deviations from market efficiencies and detected the presence of anomalies. A study done by Lo and Mackinlay (1999) rejected the hypothesis that stock prices behave like a random walk after spotting some short-run correlations in securities' prices that weren't close to zero. They found that pattern identification, such as Head and Shoulders and Double Bottoms have little power in anticipating stock prices. Other deviations from the EMH include Friday Earnings Announcements and Calendar Effects, or Momentum Trading and the Dogs of the Dow, showing that markets could be 'beaten by using trading strategies.

2. Literature Review

Fama introduced the Efficient Markets Hypothesis (EMH) in 1965, representing a significant contribution to Finance and a cornerstone in modern portfolio theory. EMH asserts that neither private nor public information can be used to predict future security prices or price fluctuations. In a market adhering to EMH, security prices instantaneously reflect all available information, preventing investors from consistently profiting by buying undervalued and selling overvalued stocks. This scenario aligns with the Capital Asset Pricing Model (CAPM), where securities are priced based on their inherent risk level. Fama's EMH categorizes the informational efficiency of stock markets into three forms: strong-form, semi-strong form, and weak-form efficiency. In a strong-form efficient

market, exploiting any information, whether related to past prices or public/private data, for forecasting stock prices is considered impossible. Semi-strong form efficiency posits that attempts to predict stock prices using past prices and publicly available information are destined to fail. Weak-form efficiency suggests that investors cannot create a trading rule based on past price patterns that consistently generates profits in the long run.

The core concept of the Efficient Markets Hypothesis (EMH) is that in a scenario where investors share uniform rational expectations, and markets are competitive, security prices are determined by supply and demand dynamics. Consequently, stock prices are believed to exhibit a random walk, freely fluctuating in any direction. This implies that stock prices are assumed to be drawn from the same distribution, and each shift in a security's price is considered independent. Thus, the attainment of Risk-Adjusted Returns (RARs) is viewed as purely coincidental. Technical or fundamental analyses are deemed unpredictable tools, and any trading strategy based on such methods is not expected to yield consistent returns in the long run. An illustrative example challenging the validity of the Random Walk Theory occurred in 1988, orchestrated by the Wall Street Journal. They created two types of stock portfolios: one meticulously curated by experts and another formed by randomly selecting stocks by throwing darts at stock tables. After 100 contests, the expert-formed portfolios outperformed in 61 instances, yet surpassed the Dow Jones Industrial Average (DJIA) only 51 times. However, Malkiel (2003) argues that the contest's validity concerning the EMH is restricted due to the *publicity effect* and the limited number of stocks involved in the test.

Since the inception of this model, researchers have conducted numerous tests, revealing substantial empirical evidence that real-world financial markets are far from being fully efficient. When seasonality is evident in financial markets, stock prices deviate from a random walk pattern and become predictable based on historical patterns. This study specifically delves into the seasonality of financial markets, with a focus on the January effect. If securities are inaccurately valued in January, it implies a violation of Fama's weak form of efficiency, as investors could devise a trading strategy providing them with risk-adjusted returns (RARs) over an extended period. The findings confirm that, for certain subsets of stocks examined, the January effect persists in contemporary financial markets. Notably, the regression results indicate that small-cap stocks are particularly influenced by the January effect. However, scholars like Ho (1990) or Gu and Simon (2003) argue that this anomaly may have vanished or is gradually diminishing in its impact on financial markets. This paper contributes to the empirical evidence on this subject by challenging these perspectives with recent evidence, while also raising doubts about the assumption of market efficiency.

Before the first quarter of the 20th century, minimal research was conducted on the seasonality of equity markets. The prevailing belief among academics was a firm conviction that such effects were entirely non-existent. In 1943, Wachtel initiated his paper by referencing a prior study. Following an analysis of stock prices spanning from January 1897 to January 1914, the Harvard Committee on Economic Research found no definitive evidence of seasonal tendencies. Owens and Hardy also rejected the presence of seasonal anomalies in stock exchanges. After an exhaustive analysis of all available stock data up to

1925, they emphatically concluded, "Seasonal variations of security prices are impossible." Their argument posited that if such a phenomenon existed, one could make a living without ever working, simply by buying securities in September and selling them in January. Moreover, investors would have no difficulty determining when to buy or sell securities, using the call loan rate to identify the optimal time for transactions. Their ultimate assertion was that "No seasonal variations should be expected", and if a seasonal variation in stock prices did exist, widespread knowledge of its existence would promptly eliminate it. However, in the subsequent decades, the general perception of seasonality in financial markets underwent a profound transformation.

Wachtel (1943) was the first to identify the distortion of security prices in January. Examining the Dow-Jones Industrial Average index from 1927 to 1942, he concluded that stock prices consistently exhibited a strong bullish behaviour in January. This trend was noticeable in eleven out of fifteen years, with the movements being relatively small in magnitude during the four years of bearish behaviour. Subsequently, Rozeff and Kinney (1976) conducted an analysis of stock prices on the NYSE from 1904 to 1974, confirming the existence of seasonality in the monthly rates of return. They determined that stock prices showed a significant increase in the first month of the year, identifying this phenomenon as the January effect. Since then, numerous studies have affirmed the presence of this effect in financial markets worldwide. Gultekin and Gultekin (1983) examined seasonality in the most industrialised countries and found similar patterns in their capital markets as observed by Rozeff and Kinney (1976) in the United States. Except for Australia, all abnormal returns related to seasonality coincided with the end of the tax year. Roll (1983) and Reinganum (1983) assert that the January effect stems from companies' efforts to sell shares whose value has fallen below their book value, aiming to report realized financial losses and thereby reduce their tax burden. Their research reveals that small firms' stocks are more significantly impacted by the January effect. This study aligns with the findings of Roll and Reinganum, supported by statistical results indicating that smaller firms' stocks exhibit higher values in January. The underlying explanation for this trend is that smaller firms' value is perceived to be more susceptible to negative influences throughout the year. Consequently, investors seize the opportunity to sell these stocks and realize losses, supporting the tax-loss selling hypothesis. This hypothesis involves selling stocks that have depreciated in value to offset capital gains earned on other investments, leading to an artificial reduction in capital gains tax (CGT) liability. According to Branch (1977), stocks sold for tax purposes experience a recovery in January, exerting pressure on prices and resulting in abnormal returns during that period.

One of the most well-known studies addressing the January effect is conducted by Roll (1983). He distinguishes between small and large firms using AMEX as an equally-weighted index and NYSE as a value-weighted index. Roll examined the returns of stocks included in these indices from 1962 to 1980. His findings confirm that small firms exhibited higher abnormal returns in the initial four trading days of January. Additionally, he analysed cross-sectional returns for the entire year, excluding the final trading days in December and the initial trading days in January. The majority of the outcomes were statistically significant, with all coefficients showing negativity for both NYSE and AMEX stocks. Furthermore, Roll demonstrated that stocks experiencing losses in the preceding

year had notably positive abnormal returns on the first trading day of the subsequent financial year. These outcomes align with the tax loss selling hypothesis. Subsequent studies, including those by Jones, Lee, and Apenbrink (1981) and Poterba and Weisbenner (2001), support the tax-loss selling hypothesis by investigating how investors respond to changes in taxation rules. Draper and Paudyal (1997) endorse the hypothesis as a potential explanation for heightened returns in April but dismiss it for January returns. They argue that in the final month of the tax year, stocks tend to yield poor returns with increased turnover. The results presented in this paper support the tax-loss selling hypothesis as a plausible explanation for January returns.

Given that the January effect is a broader seasonal anomaly, various alternative explanations exist, including window dressing, bid-ask bounce, and risk-based theories (winner's curse, momentum). The window dressing hypothesis posits that as the fiscal year-end nears, portfolio managers and mutual funds will divest stocks with substantial losses to present a more attractive portfolio to their clients. Additionally, they will liquidate small and high-risk stocks to boost portfolio performance. They retain the cash until the new fiscal year begins, and in January, reinvest the proceeds in small and high-risk securities, thereby reversing their portfolios. This phenomenon exerts significant pressure on smaller stock prices, leading to abnormal returns in January. The window dressing hypothesis was initially proposed by Haugen and Lakonishok (1987) and later supported by Lakonishok, Shleifer, Thaler, and Vishny (1991). It is considered the second most acknowledged explanation for the January effect. Athanassakos (2002) examined seasonality in Canadian markets and rejected the tax-loss selling hypothesis in favor of the window dressing hypothesis. However, some scholars, such as Chen and Singal (2004), dismiss the window-dressing hypothesis as a plausible explanation for the January effect.

While numerous papers have documented the January effect and acknowledged its existence in financial markets, several studies have contested its presence in various markets. Raj and Thurston (1994) examined seasonality in New Zealand's capital markets but found limited evidence supporting the January effect. Another study conducted by Ho (1990) discovered no significant January effect in most Asian capital markets. Gu and Simon (2003) focused on the United Kingdom market, analyzing two stock indices, FT30 and FT700, from 1976 to 2000. Their conclusion suggested that, although still observable, the January effect was diminishing in this market. Gu (2003) conducted a similar study for the U.S. market, yielding comparable results, indicating a trend toward a stronger form of efficiency. However, as long as the January effect persists in financial markets, Fama's weak form of efficiency is theoretically violated. This study provides compelling evidence of such violation, as investors can theoretically use past trends to anticipate changes in security prices.

3. Data and methodology

In order to capture the existence of the January effect, this study analyses data from 1980 up until 2023 from the US stock market (NASDAQ, AMEX and NYSE). The sample of monthly stock returns is collected from the Kenneth R. French data library, and then sorted

by stock portfolios based on book-to-market, size and dividend yield. The study will examine both equally-weighted and value-weighted portfolios. The focus is on quintile portfolios, due to their improved coverage of the types of stocks that might be affected by the January effect and in order to examine cross-sectional variation within the portfolios. By doing this, any trend which might have been neglected is uncovered as compared to a study solely focused on a particular portfolio or stock index. There are 528 observations in each quintile portfolio. Ultimately, the data is regressed through a dummy OLS estimation. A regression is computed for each of the quintile portfolio for the 1980-2023 period. The regression is expressed as follows:

$$y_{it} = b_{0i} + b_{1i} \text{Jan}_t + e_{it}$$

$i = 0, 1, 2, 3, 4, 5$ for non-dividend and dividend yield quintile portfolios or $i = 1, 2, 3, 4, 5$ for size or book-to-market quintile portfolios;

y_{it} represents the dependent variable which is the monthly return on quintile portfolio i in month t ;

b_{0i} is the average return on the quintile portfolio i in the February-December months;

b_{1i} is the difference between the average return in January and the one for the remaining months;

Jan_t represents a dummy variable which takes the value 1 if the month is January and 0 if the month is different from January;

e_{it} is the error term which is the difference between the actual value of the dependent variable and the value predicted by the model.

4. Hypotheses Development

The null hypothesis (H_0) states that the average monthly returns in January do not surpass those in the remaining 11 months in any of the sorted portfolios. Existing literature suggests that the January effect may not be universally observed in all stocks, with some stocks displaying greater susceptibility. For example, Reinganum (1983) demonstrated through CRSP data from 1962 to 1980 that small stocks were notably affected by the January effect, supporting the tax-loss selling hypothesis. Rozeff and Kinney (1976) also suggested that smaller firms' stocks are more influenced by this anomaly due to the increased difficulty and cost of obtaining information on smaller stocks. To test these findings, an alternative hypothesis, H_1 , is computed, which asserts that small-cap stocks exhibit higher average monthly returns in January compared to the other 11 months. A failure to reject H_1 might be attributed to the tax-loss selling hypothesis and the window dressing hypothesis, as these theories suggest that small stocks are more likely to depreciate or underperform. While the January effect has been extensively studied, most research has focused on the size effect, neglecting other stock characteristics or potential explanations like a value effect. Chan, Hamao, and Lakonishok (1991) found in a study of Japanese stocks that value stocks outperformed growth stocks, and Basu (1977) observed a similar pattern in a sample of common stocks. This paper aims to contribute to the existing literature by examining if the value effect could explain the January effect. Another alternative hypothesis, H_2 , suggests that the January effect is more pronounced in high book-to-market stocks. An additional hypothesis, H_3 , is formulated to explore whether zero-dividend stocks have monthly returns

in January which are higher than in the other 11 months. Many U.S. investors prefer portfolios of zero-dividend stocks, believing these companies will yield superior performance due to reinvestment strategies and avoiding taxation on dividends.

5. Results

The regression results are displayed in a series of six tables, alongside the corresponding p-values.

5.1. The January effect in Size sorted portfolios

For the portfolios sorted on size, the coefficients for the January dummy are all positive for both the value-weighted and the equally-weighted portfolios throughout the period 1980-2023, but they are only statistically significant at the 5 percent level for the *Low20* portfolio. As the firm size increases, the slope coefficient diminishes for equally-weighted portfolios. The coefficients are much smaller for every quintile for the value-weighted portfolios compared to the equally-weighted ones. Given that value-weighted portfolios take into account the market capitalization component, more weight is given to bigger firms. Therefore, as the size of the firms in the portfolios increases, the January effect is less and less significant. In the case of equal weights, we can draw the conclusion that the returns of the firms pertaining to the lower 20 bucket were higher, on average, in January, and the returns were 5.7 percent higher than in the remaining months. These findings are in line with other empirical evidence on this topic and validate H1.

Table 1

	Size (value-weighted)					p-value				
	<i>Low20</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>High20</i>	<i>Low20</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>High20</i>
b_{0i} (non-Jan)	0.836364	1.064504	1.097562	1.116550	1.019483	0.0029	0.0001	0.0000	0.0000	0.0000
b_{1i} (Jan)	2.219545	0.373223	0.100847	0.121405	0.114835	0.0221	0.6871	0.9064	0.8802	0.8682

Table 2

	Size (equally-weighted)					p-value				
	<i>Low20</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>High20</i>	<i>Low20</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>High20</i>
b_{0i} (non-Jan)	0.620810	0.997603	1.067025	1.076777	1.031963	0.0275	0.0004	0.0001	0.0000	0.0000
b_{1i} (Jan)	5.678017	0.968306	0.542521	0.451860	0.352810	0.0000	0.3220	0.5540	0.5947	0.6394

5.2. The January Effect in Book-to-Market Sorted Portfolios

Regarding portfolios sorted on book-to-market, the January dummy is again positive for both the equally-weighted and value-weighted cases (in the latter one the exception is the second quintile), however, the relationship with the returns is rather weak, and it is statistically significant at the 5 percent level only for the equally-weighted portfolio, regardless of the quintile distribution. The highest coefficient was recorded in the case of the highest quintile, January returns being, on average, 4.6 percent higher than in the remaining months of the year. The effect seems to be present also in the case of the stocks

in the lowest quintiles, with returns being 3.8 percent higher in January, on average. For the remaining quintiles, the returns in January were, on average, between 2.3 and 2.7 percent higher.

Table 3

Book-to-Market (Value-Weighted)						p-value				
	Low20	Q2	Q3	Q4	High20	Low20	Q2	Q3	Q4	High20
b _{0t} (non-Jan)	1.068843	1.072087	1.044835	0.984504	1.164256	0.0000	0.0000	0.0000	0.0000	0.0000
b _{1t} (Jan)	0.102521	-0.107314	0.052438	0.101860	0.945062	0.8940	0.8813	0.9407	0.8916	0.2728

Table 4

Book-to-Market (Equally weighted)						p-value				
	Low-20	Q2	Q3	Q4	High20	Low-20	Q2	Q3	Q4	High20
b _{0t} (non-Jan)	0.418244	0.879917	0.993864	1.079360	1.140537	0.1774	0.0009	0.0001	0.0000	0.0000
b _{1t} (Jan)	3.772438	2.699855	2.347273	2.362913	4.624690	0.0005	0.0031	0.0059	0.0039	0.0000

5.3. The January Effect in Dividend Yield Sorted Portfolios

In the case of value-weighted portfolios, the results for the dividend yield sorted portfolios show that the returns are not higher, on average, for the January month, due to a statistically insignificant p-value at the 5 percent level, regardless of the quintile distribution. Therefore, there is no evidence of a January effect in the value-weighted portfolios sorted on dividend yield. For these portfolios, H3 hypothesis can be rejected. Concerning the equally weighted portfolios, there is evidence in favour of the January effect only in the case of the zero-dividend portfolio. On average, stocks in this portfolio witnessed 5.64 percent higher returns in January as compared to the rest of the 11 months.

Table 5

Table 3

	Dividend Yield (Value Weighted)						p-value					
	=0	Low-20	Q2	Q3	Q4	High20	=0	Low-20	Q2	Q3	Q4	High20
b _{0t} (non-Jan)	0.905041	1.007190	1.146054	1.040124	1.124607	1.073037	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000
b _{1t} (Jan)	1.796552	0.323492	-0.447417	-0.041033	-0.519153	-0.086219	0.0746	0.7019	0.5490	0.9531	0.4312	0.8982

Table 6

Dividend Yield (Equally Weighted)							p-value					
	=0	Low-20	Q2	Q3	Q4	High20	=0	Low-20	Q2	Q3	Q4	High20
b _{0t} (non-Jan)	0.578306	1.134050	1.201322	1.1910165	1.228140	1.108740	0.0620	0.0000	0.0000	0.0000	0.0000	0.0000
b _{1t} (Jan)	5.643512	0.587541	0.406860	0.441426	0.398223	1.134215	0.0000	0.4758	0.5891	0.5417	0.5569	0.1078

6. Conclusions

This study concludes that the January effect is fading in more modern financial markets. What used to be once one of the most well-known anomalies in finance, the signals of its existence are rather weak, only present in certain type of portfolios. The most likely reason for this is economic reasoning, as markets tend to automatically correct such anomalies as

soon as their existence becomes known. The results of this research also challenge the weak-form Efficient Market Hypothesis as outlined by Fama. Given the existing evidence in favour of the January effect, investors theoretically have the opportunity to create portfolios capable of yielding actual trading gains. This can be achieved by leveraging historical patterns to anticipate the future movements of stock prices. This paper confirms the existence of the January effect only for a small subset of stocks that share some common characteristics, leading to the rejection of H_0 . In particular, the strongest evidence is in favour of small capitalisation stocks. In the case of the lowest quintiles of size sorted portfolios (both equally-weighted and value-weighted), there is clear evidence in favour of the January effect. The conclusion is in line with Roll's findings and indicates that small firms are more affected by the January effect.

In the case of book-to-market sorted portfolios, there is strong evidence that supports the existence of the January effect in the case of all equally-weighted portfolios. Regarding the stocks in the highest quintile, the January effects tends to be most persistent. These stocks have the highest book-to-market ratio, and are known in the literature as value stocks, which tend to be smaller companies, with a high growth potential. This finding provides evidence in favour of the window dressing and the tax-loss selling hypotheses as possible explanations for the January effect, as value stocks are more prone to underperforming than growth stocks. The evidence in the case of the zero-dividend stocks (on the equally weighted portfolio) is in favour of the tax-loss selling hypothesis and the window dressing hypothesis, as companies that did not pay dividends tend to underperform in financial year. This paper opens the opportunity to further build on its findings by analysing the data from a different perspective, at granular level, by taking into consideration a month-to-month dependency of the returns, which may uncover some valuable results.

References

- Athanassakos, G., 2002. The Scrutinized-Firm Effect, Portfolio Rebalancing, Stock return Seasonality, and the Pervasiveness of the January effect in Canada, *Multinational Finance Journal*, 6, pp. 1-27.
- Basu, S., 1977. Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of The Efficient Market Hypothesis, *The Journal of Finance*, 32(3), pp. 663-682.
- Branch, B., 1977. A tax loss trading rule, *Journal of Business*, 50, pp. 198-207.
- Chan, L.K.C., Hamao Y. and Lakonishok J., 1991. Fundamentals of Stock Return in Japan, *The Journal of Finance*, 46(5), pp. 1739-1764.
- Chen-few L., Porter D.C. and Weaver D.G., 1998. Indirect Tests of the Haugen-Lakonishok Small Firm/January Effect Hypotheses: Window Dressing versus Performance Hedging, *The Financial Review*, 33, pp. 177-194.
- Chen, H. and Signal, V., 2004. All Things Considered, Taxes Drive the January Effect, *Journal of Financial Research*, 27(3), pp. 351-372.

- Draper, P. and Paudyal K., 1997. Microstructure and Seasonality in the UK Equity Market, *Journal of Business Finance and Accounting*, 24(7), pp. 1177-1204.
- Fama, E., 1965. The Behaviour of Stock Market Prices, *Journal of Business*, 64, pp. 34-105.
- Gu, A.Y. and Simon, J.T., 2003. Declining January Effect- Experience in the United Kingdom, *American Business Review*, 21, pp. 117-121.
- Gu, A.Y., 2003. The Declining January Effect: Evidences from the U.S. Equity Markets, *The Quarterly Review of Economics and Finance*, 43, pp. 395-404.
- Gultekin, M.N. and Gultekin, N.B., 1983. Stock Market Seasonality: International Evidence, *Journal of Financial Economics*, 12, pp. 469-481.
- Haugen, R.A. and Lakonishok, J., 1987. The incredible January effect: the stock market's unsolved mystery, *Dow-Jones-Irwin*.
- Ho, Y., 1990. Stock Return Seasonalities in Asia Pacific Markets, *Journal of International Financial Management and Accounting*, 2, pp. 47-77.
- Jones, S.L., Lee, W. and Apenbrink, R., 1991. New evidence on the January effect before personal income taxes, *Journal of Finance*, 46, pp. 1909-1923.
- Lakonishok, J., Shleifer, A., Thaler, R. and Vishny, R.W., 1991. Window dressing by pension fund managers. *American Economic Review*, 81, pp. 227-231.
- Lo, A.W. and MacKinlay, A.C., 1999. A Non-Random Walk Down Wall Street, *Princeton University Press*.
- Lo, A.W., Mamaysky, H. and Wang, J., 2000. Foundations of Technical Analysis: Computational Algorithms, Statistical Inference, and Empirical Implementation, *Journal of Finance*, 55, pp. 1705-1765.
- Malkiel, B.G., 2003. A random walk down Wall Street: the time-tested strategy for successful investing, *New York: W.W. Norton*.
- Owens, C.O. and Hardy, R.N., 1926. Interest Rates and Stock Speculation, *The journal of political economy*, 34(2), p. 124, pp. 263-264.
- Poterba, J.M. and Weisbenner, S.J., 2001. Capital gains tax rules, tax-loss trading, and the turn-of-the-year returns, *Journal of Finance*, 56, pp. 353-368.
- Raj, M. and Thurston, D., 1994. January or April? Tests of the turn-of-the-year effect in the New Zealand stock market, *Applied Economics Letters*, 1(5), pp. 81-83.
- Reinganum, M.R., 1983. The anomalous stock market behaviour of small firms in January: Empirical test for year-end tax effect, *Journal of Financial Economics*, p. 12, pp. 89-104.
- Roll, R., 1983. Was ist das? The turn-of-the-Year Effect and the Return Premia of Small Firms, *The Journal of Portfolio Management*, 10, pp. 18-28.
- Rozeff, M.S. and Kinney, W., 1976. Capital Market Seasonality: The case of stock returns, *Journal of Financial Economics*, 3(4), pp. 379-402.
- Wachtel, S.B., 1943. Certain Observation on Seasonal Movements in Stock Prices, *The Journal of Business of the University of Chicago*, p. 184.