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## BEHAVIOURAL SEASONAL ANOMALIES ON THE STOCK EXCHANGE – VERIFICATION OF THE JANUARY EFFECT ON THE WSE IN WARSAW

### ABSTRACT

Practice and empirical observations prove that achieving above-average returns on the stock market is possible. It is possible to achieve both higher and lower returns than those resulting from the fundamental value of the companies being valued. This condition is affected by anomalies that make the market ineffective. Numerous studies in behavioural finance show that the causes of market inefficiency are to be found in the incomplete rationality of investors. Numerous deviations of investor behaviour from the *homo economicus* model result from their cognitive and motivational limitations. Sometimes the mistakes of an individual investor are systematic – such systematic and massive errors take the form of heuristics that can influence the magnitude of market anomalies, including the occurrence of calendar effects. One of the best-known calendar anomalies is the January Effect. The January Effect is characterised by an increase in stock prices in January, and the occurrence of the January Effect is expressed by the fact that the returns in January are the highest of the entire year. The research conducted on the Warsaw Stock Exchange confirmed the presence of the January Effect in small- and medium-sized companies. During the research, the presence of other calendar effects (related to the months of June and October) was also diagnosed.

**Key words:** behavioural finance, seasonal anomalies, calendar anomalies, January Effect

**JEL codes:** E7, G14, G41

### Introduction

A rational, thinking and independent being makes many choices and decisions in their life. The personal character of humankind's existence most accurately explains this "human fact". Man is not only an independent being in the sense of his existence, but also in terms of the actions he undertakes. This independence leads man to know the reality that surrounds him and make free decisions that result from this knowledge [Andrzejuk 2007, p. 13].

Since the day-to-day functioning of humans at virtually every level of life involves the broad financial sphere, most decisions are financial in nature, resulting – in part – from the process of the financialisation of economies [Franc-Dąbrowska 2018, pp. 701-718, Franc-Dąbrowska 2019, pp. 1-19]. All choices and decisions a person makes should be the best possible, satisfactory and as rational as possible for them [Pawlonka and Pietrzak 2020, pp. 7-9]. However, people cannot always predict the consequences of their decisions wholly and accurately. Financial decisions also involve

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risks that are not always predictable [Sartre 1956, p. 167]. This risk is inextricably linked with financial management and all investment activities [Kuziak 2011, pp. 9-22]. Given this, the question arises: what influences investors' decisions to buy or sell stocks? The simplest way to analyse their actions suggests that their decisions aim to maximise profits and minimise losses and risks. However, their preferences are not necessarily so easy to identify.

Emotions can interfere with a rational approach to investing – for example, different market participants may perceive the same fundamental information differently under the influence of stress, fear or joy. Under the influence of emotions, investors may display an excessive propensity or aversion to risk. Many models developed in the twentieth century wrongly assume that the average market participant acts rationally and has all the information he can fully and unrestrictedly process.

The influence of behavioural factors can have different effects on companies' stock prices – starting from slight changes caused by certain inclinations to enormous rises caused by euphoria or enormous falls caused by fear. A notable example of this is the fear related to the COVID-19 pandemic, which was observed on the global (including Polish) stock market in March 2020.

The market is efficient if its participants behave rationally and prices always fully reflect the available information [Żelazowska 2019, p. 3]. In such a market, it is impossible to achieve above-average returns. However, practice shows that, in reality, it is possible to achieve higher returns than can be deduced from fundamental analysis. The reasons for this include anomalies in the stock markets. Anomalies are relationships between returns that cannot be explained by the CAPM model [Fama, and French 1996, p. 55-84]. They result from certain irrational behaviours of investors who are guided by their emotions when investing and increase objections to the market efficiency hypothesis.

Seasonal anomalies refer to the trend of systematic returns of financial assets at certain times of the day, week, month or even year [Lobão 2019, p. 241-265]. One of the best-known seasonal anomalies is the January Effect, also known as the month-of-the-year effect. The January Effect is characterised by an increase in stock prices in January. The occurrence of the January effect is manifested by the fact that returns in January are the highest recorded in the entire year. The best-known study of the January Effect was conducted by Rozeff and Kinney in 1976. They showed higher returns in January compared to other months on the New York Stock Exchange [1976, p. 379-402]. Thus, they confirmed the theory of S. Wachtel from 1942, which had already pointed out that there are regularly higher returns in certain months [1942, p. 184-193].

As Szyszka notes [2009, p. 166-170], after the publication of the study by Rozeff and Kinney, many other authors began to investigate the January Effect – (including Branch [1977, p. 198-207], Dyl [1977, p. 165-175], Dimson (1988), Lakonishok, Smidt [1988, p. 403-425], Haugen and Lakonishok [1987] – obtaining confirmation of the existence of the January Effect.

The January Effect occurs for a variety of reasons. The most popular theory is that this effect is due to a stock sale at the end of the year for tax reasons. Investors sell shares in companies that have generated a negative return during the year to reduce the tax base. Due to December stock sales, many companies remain undervalued at the beginning of the year, leading investors to buy their stock in early January. The most popular tax theory, which attempts to rationalise the occurrence of the January Effect, does

not quite correspond to reality because in countries such as Australia or England, where the end of the tax year does not coincide with the end of the calendar year, the January Effect can also be observed. In these countries, there are even two months with higher average returns. One is January, and the other is the first month of the tax year – April [Hillier and Marshall 2002, p. 73-84]. For Australia – July [Brown et al. 1983, p. 33-88]. In Japan, there is no capital gains tax but yet January is the month with the highest returns [Kiyoshi 1985, p. 223-245]. The reason for the January Effect in these countries could be the mutual interaction of world markets.

The study by Reinganum [1983, p. 89-104] is important in understanding the above anomaly since he has shown that the January Effect mainly occurs in small- and medium-sized companies. This shows that investors are reluctant to sell large stocks and well-known companies because they believe that well-known companies without important fundamental information are a safe investment. In this case, investors fall into the trap of the accessibility heuristic or, more precisely, are affected by the phenomenon of the pure exposure effect. It manifests itself in the fact that people prefer what they know to what they know less.

The above assumptions, arising from empirical observations, only together account for the January Effect. None of them explains this anomaly one hundred per cent. Since the January Effect is so well-described in academic literature, one might think that investors could easily profit from it. This reasoning led to an anomaly known as the Santa Rally or simply the December Effect. It is based on a rise in stock prices in the last days of December, mainly between Christmas and New Year's Day [Stanek 2020]. Investors anticipating the occurrence of the January Effect want to buy shares of undervalued companies earlier. This is a logical and easy way to achieve above-average returns, but it has two consequences. First, buying stock in December means that the investor increases, not decreases, the tax base, which ultimately contributes to a decline in profits. Secondly, if the investor finds a company that other stockbrokers want to earn from and buys its shares in advance at the end of December, it will turn out that the company is not undervalued at all, meaning that the investor does not earn anything from it at all and only loses by increasing the tax base.

## **Research methodology**

The study's main objective was to verify the presence or absence of the January Effect in the conditions of the Polish stock market for medium-sized companies. As part of the comparison, an analogous study was carried out for large companies, although earlier studies indicated that the January Effect mainly applies to medium and small enterprises [Reinganum 1983, p. 89-104].

To check the presence of the January Effect on the Polish stock market, two stock indices were used, namely WIG20 and mWIG40. The WIG20 index includes the 20 largest companies listed on the Polish capital market. The mWIG40 index includes 40 other companies, so-called "medium-sized" companies, which are not included in the WIG20 index.

The study covers 2000-2019, excluding 2008 and 2009, using stock market index returns in each month over 18 years. Then, the cumulative returns for each month and the

average annual returns for a given month during the study period were calculated. To achieve the main objective, two research hypotheses were formulated:

- $H_1$  – The January Effect occurs within the WIG 20 index.
- $H_2$  – The January Effect occurs within the mWIG40 index.

To confirm the presence of the January Effect in each of the two stock indices analysed, the first month of each year had to meet all of the following conditions:

- $W_1$  – January must have the highest cumulative return and the highest average return in each of the years studied;
- $W_2$  – January must have the highest number of highest returns among the months studied in all the years studied;
- $W_3$  – January must have the highest number of positive returns among the months studied in all of the years studied.

The study presents the results from 2008-2009, although they were not taken into account at the stage of testing the research hypotheses and formulating the final conclusions. The fact that the years 2008-2009 were excluded from the study period is due to the financial crisis and the crash on the American stock market in 2007-2009. On the Polish capital market, this crash left its mark one year after its beginning (i.e., in 2008). For similar reasons, 2020 and 2021 were also excluded from the study. During this period, an increase in the importance of the fear factor and the impact of dynamically changing macro-environmental conditions on the valuations of listed companies was observed.

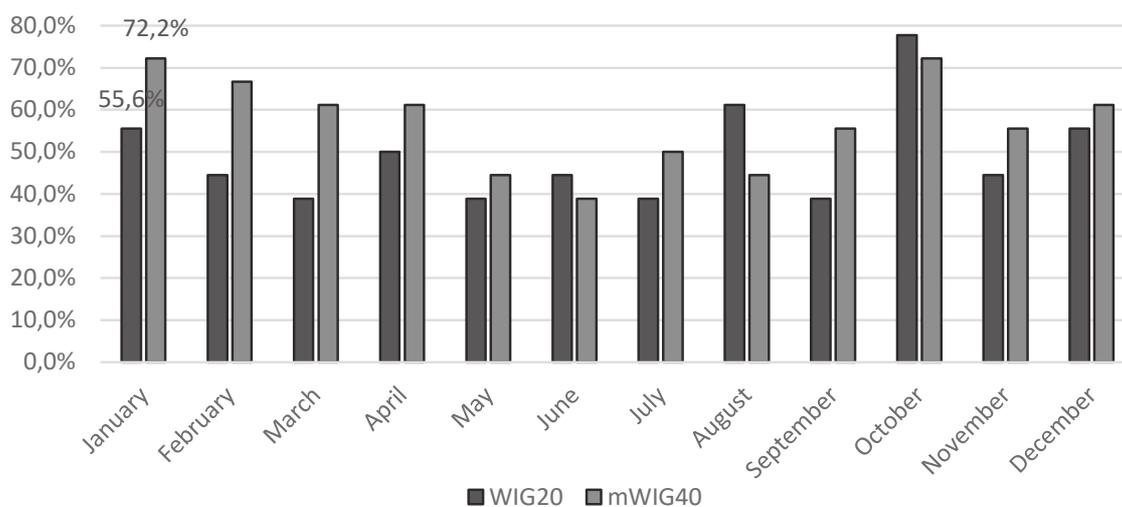
Inside the tables, the designation was consistently used:

- the tables in grey cells show the months in which positive rates of return were recorded;
- white cells show negative rates of return;
- amounts of negative rates of return in italics;
- in each of the periods, the highest return in a given year is shown in bold and underlined;
- the dashed line marks the years 2008 and 2009, which were excluded from the study sample.

The designation used applies to Tables 1-4.

## Results and discussion

The conducted study showed that the probability of reaching the positive side of the return in January 2000-2007 and 2010-2019 was above 50% for all analysed indices. In the case of the WIG20 index, the probability of achieving a positive return was the lowest (55.6%), and in the case of the mWIG40 index, the probability was the highest (72.2%). However, the result of the research does not allow us to conclude that regardless of the stock market index, the probability of achieving a positive return is highest in January because, in the case of the WIG20 and mWIG40 indices, the probability of achieving a positive return is the same or higher in October, as shown in Figure 1.



**Figure 1.** The probability of achieving a positive return in each month in 2000-2007 and 2010-2019 (%)

Source: own study.

### Verification of the January Effect within the WIG20 index

The monthly rates of return amounts in the years 2000-2009 and 2010-2019 as part of the WIG20 index are presented in Table 1 and Table 2.

**Table 1.** Monthly rates of return on the WIG20 index in 2000-2009 [%]

Month	Years									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
January	3.09	-1.26	<b>18.72</b>	-5.15	0.94	-4.03	4.08	4.04	-13.71	-15.05
February	<b>20.33</b>	-15.90	-4.19	-3.41	4.62	<b>9.20</b>	0.48	-8.66	-3.85	-10.45
March	-4.84	-4.26	-3.67	0.26	-1.16	-4.33	-0.39	<b>9.54</b>	3.25	9.54
April	-7.56	6.00	0.13	1.76	-0.25	-6.52	9.66	3.59	-3.51	<b>18.03</b>
May	0.33	2.07	4.89	5.99	-4.35	2.99	-11.74	1.04	-2.48	-3.85
June	-4.54	-13.04	-12.69	5.34	2.64	8.05	1.82	0.57	-10.41	-2.84
July	-4.05	-6.44	-12.23	12.97	-2.45	-2.45	<b>10.21</b>	-0.40	<b>7.58</b>	13.51
August	0.46	-3.45	3.42	<b>18.45</b>	3.07	2.18	-5.28	-1.89	-4.40	2.51
September	-13.50	-10.99	-6.59	-13.72	4.41	8.51	-1.75	0.56	-7.74	-0.33
October	-7.76	<b>21.48</b>	13.49	6.88	0.66	-8.80	5.98	6.04	-24.36	0.84
November	-1.53	2.31	2.41	-8.82	-0.40	4.54	4.04	-7.00	-4.20	3.92
December	11.68	-3.01	-6.40	4.60	<b>5.36</b>	4.53	1.64	-1.71	4.89	0.43

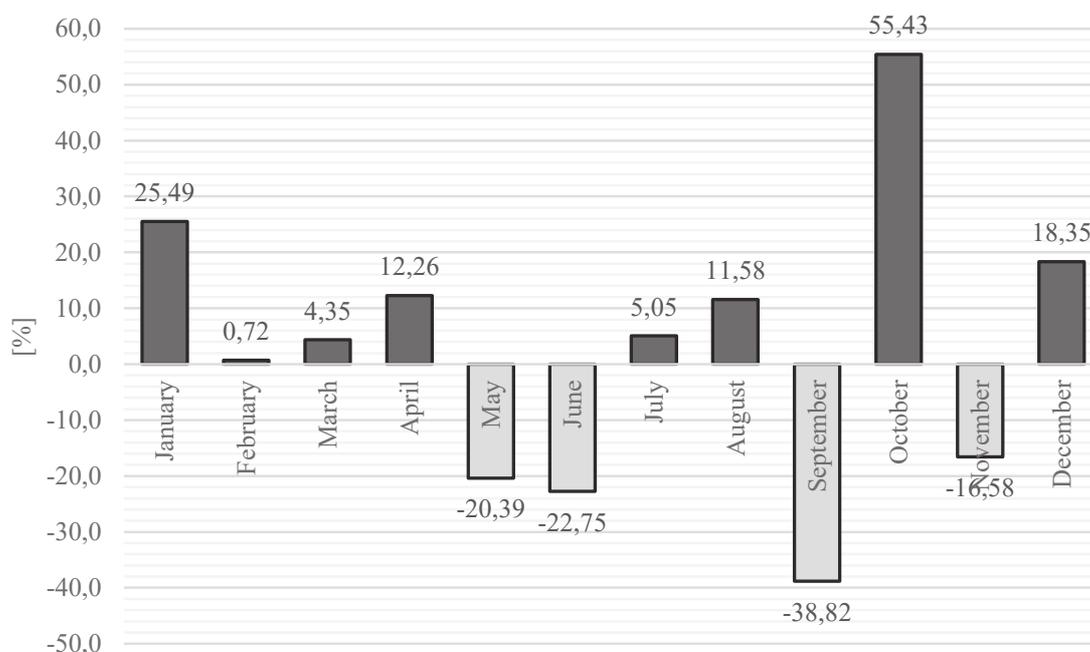
Source: own study based on: [Notowania GPW...].

**Table 2.** Monthly rates of return on the WIG20 index over the period 2010-2019 (%)

Month	Years									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
January	-2.53	-2.78	6.29	-5.08	-3.08	1.37	-1.34	5.12	3.68	3.41
February	-4.15	-0.37	-1.97	-1.89	<b>6.29</b>	1.59	2.62	5.39	-6.70	-2.56
March	<b>9.03</b>	4.63	-1.48	-3.38	3.04	1.60	<b>9.46</b>	-3.46	-5.34	-0.90
April	-0.20	1.25	-2.62	-2.38	-0.96	<b>5.10</b>	-3.88	<b>7.07</b>	2.35	-0.28
May	-0.77	-0.55	-5.82	<b>7.79</b>	-0.10	-3.38	-4.82	-4.64	-5.88	-3.44
June	-5.00	-3.43	<b>9.84</b>	-8.10	-1.29	-4.89	-0.50	0.95	-2.50	<b>4.02</b>
July	8.99	-3.09	-3.07	3.99	-3.49	-2.86	0.87	2.17	<b>8.63</b>	-2.25
August	-4.38	-9.30	3.18	1.41	3.21	-2.98	1.78	5.44	0.97	-4.71
September	6.59	-9.36	4.70	-0.14	2.34	-2.33	-2.96	-2.93	-3.00	1.34
October	1.53	<b>10.48</b>	-3.43	4.80	0.04	0.49	5.17	2.24	-5.79	1.93
November	-2.52	-2.87	3.22	1.43	-1.85	-7.29	1.85	-3.71	4.25	-4.64
December	2.88	-5.32	5.75	-5.31	-4.19	-3.37	9.19	2.98	-2.26	1.31

Source: own study based on: [Notowania GPW...].

A review of the data presented in Tables 1 and 2 shows that of the 18 observations, positive returns occurred ten times in January. Positive returns were recorded much more frequently in October (14 times). Only in four of the 18 years studied were there negative returns for the WIG20 index in October. In more than ten years, August and December were also characterised by positive returns. The remaining months, with the exception of April (nine positive and nine negative years), had more years in which they had a negative return for the index.

**Figure 2.** Cumulative rate of return on the WIG20 index from 2000-2007 and 2010-2019 [%]

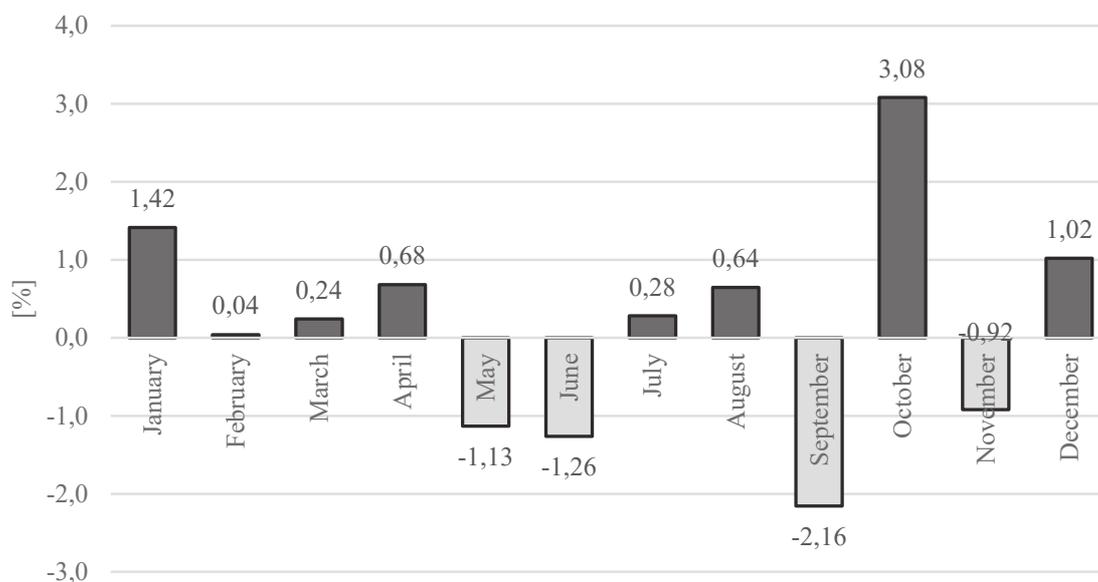
Source: own study.

However, neither January nor October was characterised by the greatest number of highest returns in each year. The highest returns (i.e., three times) were in February (2000, 2005, 2014) and in March (2007, 2010, 2016). On the other hand, months such as September and November never achieved the highest return in the 18 years analysed.

Thus, the month of January did not fulfil the first two conditions already mentioned in connection with the January Effect. It did not stand out for having the highest number of years with positive rates of return, and it achieved the highest return in the WIG20 index only in one year (2002) – which means that it is also not the leading one in this respect either.

Figure 2 shows the cumulative rate of return for individual months in 2000-2007 and 2010-2019, showing what return could have been achieved if contracts for the index had been entered into at the beginning of the month and then sold at the end of the month each year (in the years of the study).

Figure 3 shows the average annual rate of return in each month within the WIG20 index, based on the average for 2000-2007 and 2010-2019.



**Figure 3.** Average rate of return on the WIG20 index in 2000-2007 and 2010-2019 [%]

Source: own study.

Analysis of the data presented in Figures 2 and 3 shows that the highest cumulative returns and average returns on the WIG20 index in 2000-2007 and 2010-2019 could be achieved in October. The cumulative rate of return that could be achieved in October was more than double the January value, which is the second highest. On the other hand, the average return of the WIG20 index during the survey period was more than three per cent in October. The reasons for the dominance of October in terms of return may be that it is the first month of the last quarter and, therefore, it could be a period when investors make the last portfolio changes before the end of the year but then hold the shares until the end. This is because they are hoping for an even higher profit in a situation where the share prices of companies are rising or bet until the last minute on a reversal of the falling price in terms of the sunk cost effect and, therefore, do not change the contents of the portfolio.

In the case of January, despite the observed high cumulative and average returns (the second highest cumulative return, ten years of positive returns on the WIG20 index, average return at the level of 1.42%), the result of the study in the context of the verification of the January Effect does not allow its confirmation.

According to the conditions that enable the verification of the January Effect (and, in particular, the  $W_1$  condition), cumulative and average January returns should be the highest throughout the year. Moreover, during the study period, the highest return in a given year was observed only once in January, which also does not constitute a basis for confirming the January Effect (according to the  $W_2$  condition). The investigation conducted for WIG20 to verify the January Effect showed that this effect did not occur because not all three conditions ( $W_1$ ,  $W_2$ ,  $W_3$ ) were met. Consequently, the  $H_1$  hypothesis that there is a January Effect in the WIG20 index cannot be confirmed. However, in the case of the WIG20 index, the occurrence of the calendar effect can be detected, with the “exceptional” month being October rather than January. In the case of October, all three required conditions would be met. However, analysis of the “October Effect” in the case of the WIG20 index would require an in-depth investigation and extended conclusions on the possible causes of the observed phenomenon.

#### **Verification of the January Effect within the mWIG40 index**

The monthly returns of the mWIG40 index in 2000-2009 and 2010-2019 are shown in Tables 3 and 4. At first glance, the data presented in the tables show significantly more months with positive returns for the mWIG40 index than for the WIG20 index. While positive returns occurred in 106 of 216 possible months (49.07%) for the WIG20 index, there were positive returns in 123 of 216 possible months (56.94%) for the mWIG40 index. A larger number of months with positive returns may mean that investors consider mid-sized companies more profitable than large ones and invest in them more frequently. Medium-sized companies are characterised by slightly higher fluctuations in returns. It should be noted that these are not significant differences as the mWIG40 is the backbone of the WIG20; but they are worth noting.

In the case of the mWIG40 index, there have been as many as nine months of positive returns in ten or more years. The highest number of positive returns was recorded in January and October (13 out of 18). The only months with more negative than positive returns were May, June and July. On the other hand, January proved to be unrivalled when it comes to recording the highest returns for the year among all months in the study period. January recorded the highest returns for the index in five of the 18 years. This means that two of the three criteria have already been met in the case of the January Effect on the mWIG40 index. It is interesting to note the high number of years in which October returned positive returns. In the case of the WIG20, it was 14 years and, in the case of the mWIG40, 13 years. Moreover, the two highest annual returns were achieved in October – in 2001 and 2011.

In Figures 4 and 5, as in the case of the previous index, the cumulative rate of return for individual months was presented, as well as the average rate of return on the mWIG40 index.

**Table 3.** Rates of return on the mWIG40 index in 2000-2009 [%]

Month	Years									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
January	1.46	2.15	<b>7.30</b>	-4.77	<b>10.90</b>	-1.23	<b>20.26</b>	13.13	-17.32	-11.77
February	-8.30	-7.66	-2.46	-1.69	8.46	2.25	1.34	-1.82	-3.75	-7.79
March	<b>8.70</b>	1.34	-3.07	-0.22	7.46	-1.36	4.03	<b>13.78</b>	<b>4.07</b>	10.88
April	-4.65	5.03	-0.05	3.22	6.42	-4.87	3.69	6.59	-4.91	<b>22.40</b>
May	-2.01	0.86	4.68	4.73	-4.35	1.78	-10.38	11.16	-3.72	1.46
June	-0.41	-4.36	-8.08	1.38	-2.33	5.53	0.03	0.42	-14.66	-0.72
July	-0.91	-5.74	-8.43	12.08	-0.05	2.30	11.70	-9.86	-3.23	14.98
August	-2.62	0.40	1.33	<b>17.78</b>	2.72	2.28	-0.62	-3.17	-3.95	12.47
September	-9.09	0.17	-4.32	-9.59	1.97	2.18	9.58	-5.15	-6.77	0.35
October	-2.50	<b>7.97</b>	5.41	6.66	-3.67	3.26	10.30	3.22	-28.78	-0.57
November	1.24	2.49	3.63	-5.15	-1.85	3.32	8.60	-10.95	-4.78	2.49
December	4.61	4.32	0.07	4.08	1.65	<b>7.40</b>	-4.92	-1.84	-1.35	2.17

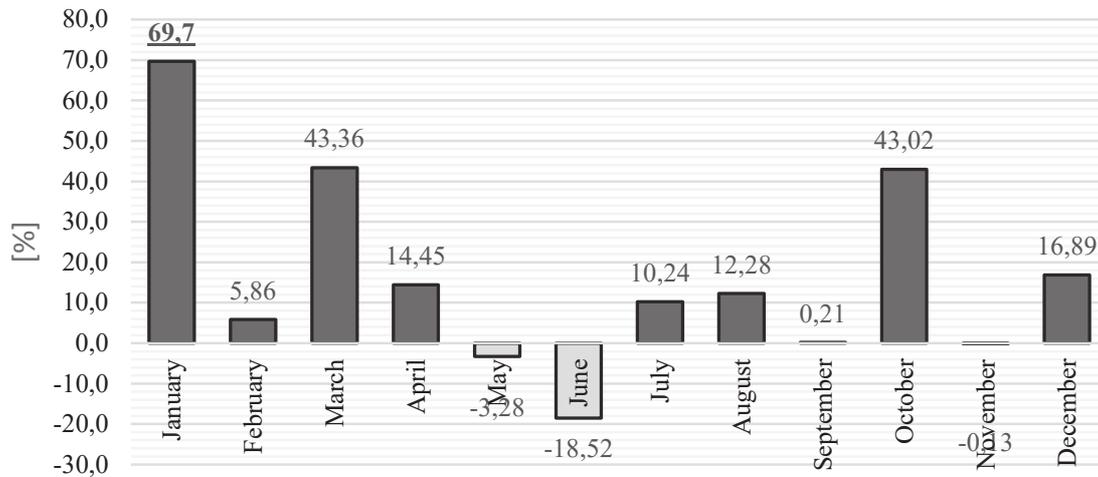
Source: own study based on: [Notowania GPW...].

**Table 4.** Rates of return on the mWIG40 index in 2010-2019 [%]

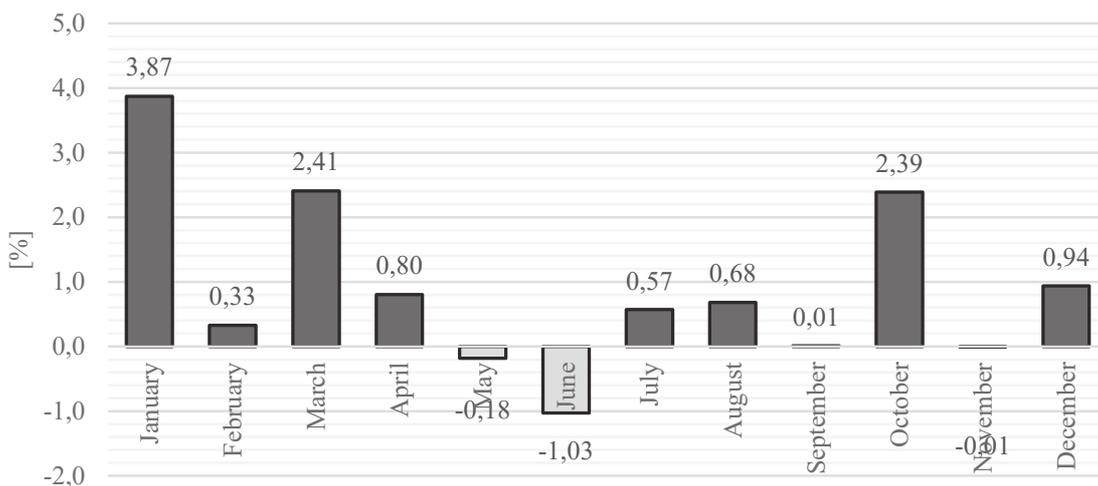
Month	Years									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
January	-2.70	0.18	<b>7.48</b>	1.27	-0.09	1.38	-3.96	<b>10.55</b>	3.11	3.28
February	0.27	0.05	4.09	0.19	5.20	3.56	2.35	4.00	-5.24	1.27
March	<b>7.34</b>	1.74	1.68	-0.06	2.77	1.26	5.13	-3.50	-2.96	-0.70
April	1.65	0.60	-4.15	-3.51	-2.09	<b>3.75</b>	1.00	2.65	0.26	-1.09
May	-1.55	0.13	-7.38	<b>10.58</b>	1.23	-0.90	-3.69	-2.21	-2.41	-3.55
June	-3.15	-3.27	4.36	-0.68	-1.12	-4.93	-0.32	1.29	-6.40	<b>3.52</b>
July	5.70	-4.02	-3.04	4.07	-3.43	3.63	5.78	0.71	<b>3.37</b>	-3.62
August	-0.68	-11.06	-0.16	4.80	2.33	-3.45	<b>9.32</b>	-0.48	-2.79	-3.65
September	5.73	-8.16	5.26	4.69	<b>5.57</b>	-0.98	3.40	1.61	-0.52	-2.14
October	3.86	<b>7.88</b>	1.48	5.21	-1.01	2.54	1.99	-1.99	-8.33	0.74
November	-2.79	-4.58	4.43	-0.15	0.33	-1.49	2.59	-2.27	1.94	0.53
December	2.96	-0.44	2.09	-4.28	-1.86	-1.79	2.38	2.61	-3.02	2.87

Source: own study based on: [Notowania GPW...].

The cumulative return of the mWIG40 index in January was almost 70%. This is almost 30 p.p. higher than the second-largest cumulative return in March and October 3. The average return in January was higher than that of the WIG20 index in October (3.08%).



**Figure 4.** Cumulative rate of return on the mWIG40 index for 2000-2007 and 2010-2019 [%]  
Source: own study.



**Figure 5.** Average rate of return on the mWIG40 index in 2000-2007 and 2010-2019 [%]  
Source: own study.

In accordance with the conditions that allow the verification of the January Effect (Condition  $W_1$ ), the cumulative and average January rates of return in the case of the mWIG40 index were the highest among the other months of the analysed study period. Moreover, in January, the highest return in a given year was observed five times during the study period, which can also confirm the existence of the January Effect (Condition  $W_2$ ). January also recorded the highest number of positive returns among all months of the analysed study period (Condition  $W_3$ ). The study conducted for mWIG40 to verify the January Effect indicates the occurrence of this effect, which results from the fact that all three conditions are met ( $W_1$ ,  $W_2$ ,  $W_3$ ). Consequently, hypothesis  $H_2$ , according to which there is a January Effect in the mWIG40 index, was confirmed.

## Conclusions

The study's main objective was to verify the presence or absence of the January Effect in the conditions of the Polish stock market for medium-sized companies. As part of the comparison, an analogous study was carried out for large companies, although earlier studies indicated that the January Effect mainly applies to medium and small enterprises. The study covers 2000-2019, excluding 2008 and 2009, using stock market index returns in each month over 18 years. Then, the cumulative returns for each month and the average annual returns for a given month during the study period were calculated.

The results of the survey show that the January Effect is observed on the Warsaw Stock Exchange, although it only applies to medium-sized companies. Only they show the highest return in January. This means that the conducted study confirms the correctness of hypothesis  $H_2$ . However, hypothesis  $H_1$  was not confirmed, indicating no argument for a January Effect for large companies (WIG20 index). This result of the study is in line with the observations of Reinganum [1983, p. 89-104], who, in 1983, showed that the January Effect mainly affects smaller companies. The reason for this is the reluctance of investors to divest themselves of the shares of the largest companies at the end of the year as these form the core of the portfolio – even if these companies were loss-making. This is due to the belief that companies listed in the main index are generally not at risk of collapse and, even if they are making losses now, the trend will reverse in the future. On the other hand, if investors have shares of smaller companies in their portfolios and they are loss-making or not as profitable as expected, they will sell their shares at the end of the year. As a result, the stocks of some medium and smaller companies may be undervalued at the beginning of the year, leading investors to add stocks of promising medium and small companies to their investment portfolio at the beginning of the year – resulting in high returns in January in the mWIG40.

The study also showed that there are other calendar effects in the case of the Warsaw Stock Exchange. For all the indices analysed, it was found that May and June are characterised by the lowest returns, negative in each case. From the perspective of the existing research on the so-called “summer rally”, the result on the Warsaw Stock Exchange is surprising. In accordance with the observations on the effects of the summer rally, the market has the highest returns at the beginning of the summer (especially in June). Research conducted on the Warsaw Stock Exchange has shown that negative returns are recorded, on average, in June – regardless of the index. It should also be mentioned that the analysed returns in June were the lowest among all other months (except for September for the WIG20 index, which was even worse).

On the other hand, in addition to January, October is also attractive in terms of investment as it generates an average positive return for all two indexes analysed (the maximum return for the WIG20 index). Interestingly, such a result (of the study) does not coincide with the results of studies on the so-called “Mark Twain effect”. This effect assumes that October is the worst month for stock market traders in terms of achieved returns. It could also be that the consequence of high returns in October is negative returns in November, which also occur regardless of the index.

The application conclusion resulting from the research is that calendar effects, departing from the paradigm of rationality in the sense of the *homo economicus* model, indicate a lack of full rationality among investors during investment decisions. This means

that there are heuristics resulting from cognitive and motivational tendencies, which disturb the rationality of investors and total market efficiency.

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## **Behawioralne anomalie sezonowe na giełdzie – weryfikacja kalendarzowego efektu stycznia na GPW w Warszawie**

### **STRESZCZENIE**

Praktyka i empiryczne obserwacje dowodzą, że na rynku giełdowym istnieje możliwość osiągnięcia ponadprzeciętnych stóp zwrotu. Możliwe jest osiąganie zarówno wyższych, jak i niższych stóp zwrotu niż wynika to z wartości fundamentalnej wycenianych spółek. Wpływ na taki stan rzeczy mają anomalie, które sprawiają, że w rzeczywistości rynek nie jest efektywny. Liczne badania w nurcie finansów behawioralnych dowodzą, że przyczyn nieefektywności rynku doszukiwać się można w niepełnej racjonalności inwestorów. Liczne odstępstwa zachowań inwestorów od modelu homo oeconomicus wynikają z ich ograniczeń o charakterze poznawczym i motywacyjnym. Niekiedy, popełniane przez pojedynczego inwestora błędy mają charakter systematyczny. Takie systemowo i masowo popełniane błędy przyjmują formę heurystyk mogących wpływać na nasilenie anomalii rynkowych, w tym na pojawienie się efektów kalendarzowych. Jedną z najbardziej znanych anomalii kalendarzowych jest efekt stycznia. Efekt stycznia charakteryzuje się wzrostem cen akcji w styczniu. Występowanie efektu stycznia objawia się tym, że styczniowe stopy zwrotu są najwyższymi stopami zwrotu odnotowywanymi w całym roku. Zrealizowane na GPW w Warszawie badanie pozwoliło na potwierdzenie występowania efektu stycznia w przypadku spółek małych i średnich. W trakcie badań zdiagnozowano również występowanie innych efektów kalendarzowych (związanych z miesiącem czerwcem i październikiem).

**Słowa kluczowe:** finanse behawioralne, anomalie sezonowe, anomalie kalendarzowe, efekt stycznia