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SHORT- AND LONG-TERM RETURNS ON INITIAL PUBLIC OFFERINGS (IPOS) IN THE POLISH CAPITAL MARKET

Abstract

The purpose of the article. The purpose of the study was to examine how the returns on shares of companies entering the Warsaw Stock Exchange as part of initial public offerings (IPOs) evolve, both in the short and long term. The study aimed to verify the hypothesis of the existence of anomalies on the main market of the WSE, consisting in the underpricing of shares in the short term and their overpricing in the medium and long term.

Methodology. The basis of the study was the analysis of historical data on returns on shares issued in initial public offerings. The evaluation of the phenomenon of undervaluation of share prices from IPOs was conducted using the immediate return (IR) index and its adjusted version (AIR). In turn, simple rates of return (BHR) and abnormal rates of return (BHAR) were used to assess the overvaluation of share prices over the longer term.

Results of the research. The study confirmed the occurrence of share price undervaluation during IPOs on the Polish capital market in the years 2010–2024, as evidenced by an average immediate return (IR) of 9.73%. The highest average returns in the short term were recorded in 2020, exceeding 40%, mainly due to debuts of companies from the computer games sector. In contrast, in the long term, the weakest performance, characterized by negative average returns (BHARs) in all periods studied, took place between 2019 and 2024, associated with the economic difficulties following the pandemic and the preponderance of companies making losses.

Keywords: undervaluation, overvaluation, IPO, public offering, BHR, BHAR, IR, AIR

JEL Class: G12, G14, G24



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Introduction

The term “initial public offering” is defined quite broadly in the literature and can be interpreted in various ways (Sobotnik, 2009, pp. 268–269). It most often refers to a situation where a company offers its shares to a wide range of investors for the first time, which is tantamount to its IPO (Siwek, 2005, pp. 12–13). An IPO may include both the issue of new shares to be traded on the public market (first subscription) and the sale of existing shares by existing shareholders, offered for the first time on the public market (first sale) (*Act of 29 July 2005...*, Article 4(5); Siwek, 2005, p. 13). Under national and EU law, a public offer of securities means a communication, in whatever form and by whatever means, which contains sufficient information about the terms of the offer and the securities offered to enable an investor to decide to purchase or subscribe to them (*Regulation (EU) 2017/1129...*, Article 2(d)). As of July 21, 2019, communication addressed to at least two persons is considered a public offer, whereas previously the threshold was 150 persons (FSC, 2025).

A stock market debut in the form of an initial public offering (IPO) is often associated with a rapid increase in the value of shares, especially on the first day of trading, which is known in the literature as *underpricing*. In contrast, in the longer term, a decline in the value of the shares can usually be observed, known as *underperformance* (Lizińska, 2014, p. 384). The phenomenon of underpricing of shares in IPOs is commonly present in global capital markets, although its magnitude depends on the specifics of the market in question, the period analyzed or the phase of the economic cycle (Ibbotson & Ritter, 1995, pp. 994–996). *Underperformance*, on the other hand, means that, over the long term, stock returns are lower than those of the broad market as measured, for example, by the WIG index or relative to companies with a similar profile that did not IPO at the same time (Wieczorek, 2020, p. 359).

Taking up the research topic in this study is due to noticeable research gaps in the existing academic literature and the specificity of the Polish capital market. There is still a lack of up-to-date and detailed analyses of undervaluation and overvaluation of shares on the WSE. Studies to date in Poland have been limited to shorter time frames, usually covering two or three years, which is in contrast to multi-year, comprehensive analyses conducted on developed markets, such as J.R. Ritter’s research on the USA. In addition, most of the available studies are based on data prior to 2016, thus failing to take into account current capital market trends and developments.

Although the WSE’s main market plays an important role in raising capital for companies, previous analyses have mainly focused on the long-term effectiveness of IPOs on the world’s largest markets, such as the US, Germany or China. There is a lack of comprehensive research relating to the Polish market. Studies in emerging markets have tended to focus on selected industries, such as the computer games sector, which does not allow general trends to be captured.

Therefore, a thorough analysis of the Polish IPO market is justified and necessary. This market requires systematic observation and research, given its importance in corporate financing. A comprehensive study of the long-term effectiveness of IPOs on the WSE, which overcomes previous methodological and time constraints, can fill gaps in the literature and provide valuable information for capital market participants.

The main objective of this study was to assess changes in short-term and long-term returns on IPOs on the Warsaw Stock Exchange. The research hypothesis was that there are price anomalies on the WSE's main market — in the short term, the shares of new companies are undervalued, while in the medium and long term they are overvalued.

The study formulated two main questions:

1. What were the short-term returns (IR and AIR) for companies debuting on the WSE between 2010 and 2024, particularly on the day of their debut, and was there any undervaluation of share prices at that time?
2. What were the medium- and long-term returns (BHR and BHAR) for companies listing on the WSE during this period, depending on the investment horizon (from 1 to 72 months after listing) and was there *an underperformance* relative to the broad market?

A Review of the Literature on First-Issue Stock Returns

Short-Term Stock Returns – Insights from Foreign and Domestic Studies

In the short term, and especially on the day of the IPO, it is typical for there to be *underpricing* of shares. This means that the closing price of the shares on the day of the debut is usually higher than the issue price (Wieczorek, 2020, p. 359). Miller and Reilly (1987) pointed out that on this day the market valuation of shares is often inadequate. Paleari and Vismara (2007), on the other hand, noted that newly debuting companies are sometimes deliberately priced high by issuers and analysts, which helps build a positive image of the company and increases investor confidence.

The results of empirical studies both on foreign markets and in Poland confirm the existence of *underpricing*. In their 1994 analysis, Ibbotson, Sindelar, and Ritter showed that the average level of underpricing of shares of debuting companies varied across successive periods, reaching 21.3% in the 1960s and 10.9% in the early 1990s. Loughran, Ritter and Rydqvist (2020), analyzing data from 54 countries, found that the average returns on the first day of the debut were usually in the range of a few to several percent. For example, in the US (1960–2019) they were 16.9 per cent, in Germany (1978–2014) they were 23 per cent and in the UK (1959–2016) they were 15.8 per cent. Perz (2025) noted that the magnitude of undervaluation tended to be greater in emerging markets than in mature markets, e.g., in China between 1989 and 1996 it

averaged 388 per cent, compared to 15.8 per cent in the US between 1960 and 1996. The most recent study by Ritter (2025) for the US between 1980 and 2023 showed that the highest average immediate returns occurred between 2019 and 2023 (158%), as well as between 1998 and 2000 (149.4%).

In the Polish and Hungarian markets between 1991 and 1998, according to a study by Lyn and Zychowicz (2003), the average adjusted first-day return in Poland was 15.1%. Czapiewski and co-authors (2014) showed that in Poland the scale of undervaluation decreased with the development of the capital market – in 1991–2000 it was 34.1%, and in 2001–2011 it decreased to 13.6%. Pomykalski and Domagalski (2015) reported an average undervaluation of 11.89% between 2005 and 2013.

Trąpczyński (2017) found that for 200 IPOs between 2007 and 2016, the average *underpricing* was 7.89%, which was a decrease compared to earlier periods, such as 19.8% between 1991 and 1997. Lizińska and Czapiewski (2014) research for 2004–2009 found an average first-day return of 10.98%, and that higher *underpricing* was associated with better pre-issue company financial performance.

Sukacz (2005), analyzing 185 IPOs from 1991 to 2002, showed an average undervaluation of 26%, while pointing to high returns on debut day in sectors such as construction, media, electrical machinery and IT. In contrast, research by Podedworna-Tarnowska and Kiełpsz (2024) found that between 2017 and 2021, the average first-day return was higher for small listings (22.9%) than for large listings (13.68%), with particularly high performance in the gaming industry.

Aziewicz and Dobrowolski (2014) highlighted the high volatility of debut day returns between 2005 and 2013, which made it difficult to develop an effective investment strategy for the long term. Frydrych (2022) noted that between 2007 and 2020, the majority of companies (60.22%) had a higher closing price than the issue price at the end of the first day of their debut, and debuts of so-called ‘penny companies’ (with a price below PLN 1) were significant.

In summary, undervaluation in the short term is a common phenomenon worldwide, and its intensity is greater in emerging markets. Polish research confirms its occurrence and indicates that the scale of this phenomenon has decreased as the domestic capital market has matured.

Long-Term Stock Returns – Results from Domestic and International Studies

Over the long term, the share price of newly listed companies on the main market often shows a downward trend. This phenomenon is called *long-run underperformance* and means that investors typically receive lower returns on such investments compared to the broad market or other listed companies. This problem has been extensively described by, among others, Ritter (2025), who, analyzing data from the US market from 1980 to 2023, found that average adjust-

ed 3-year returns (BHARs) were generally negative over this period – for the entire sample they were around -20.20% , and fell as low as -296.40% from 2019 to 2023. These results show that emerging market equities did not deliver sustainable, above-average returns over the long term. Similar results – negative 3-year returns ranging from -12% to -42% – have been reported in markets such as Spain, Sweden and Switzerland (Schuster, 2003).

The results of international studies confirm that the strategy of buying shares in an IPO and holding them for three years generally did not yield satisfactory results – the prices of these shares often underperformed the benchmark indices. Some exceptions were the markets of Sweden ($+1.20\%$) and Korea ($+2.0\%$), where positive relative returns over the long term were achieved (Sehgal, Singh, 2007). Goergen, Khurshed and Mudambi (2007) pointed out that lower long-term returns were characteristic of companies with higher pre-IPO profitability and with a highly diluted ownership structure after the IPO. In contrast, better results were recorded for larger companies.

In Poland, it has also been shown that returns on investments in IPO shares, in the medium and long term, were clearly lower than the returns obtained on the day of the IPO, and were similar to the performance observed in developed markets. Sieradzki (2013) noted that holding IPO stocks one year yielded an average negative adjusted return of -4.2% relative to the WIG index. Zieliński (2013), analyzing the period 1994–2016, indicated that the 3-year adjusted BHAR ranged from -14% to -28.6% . Rzewuska and Wrzesinski (2016) noted that investments in shares of 2006 IPO companies underperformed the index by 9% after two years and by as much as 26% after three years. Kwit (2006), on the other hand, estimated that holding shares acquired during the IPO for three years resulted in a 17% lower rate of return compared to other companies listed on the WSE market.

Research by Kochalski and Ratajczak (2025) found that the average return on IPOs from 2009 to 2011 showed a downward trend until the 370th day of listing and reached -19.35% . Aziewicz and Dobrowolski (2014) observed that the above-average results obtained 12 months after the IPO were not sustainable, and that declines in returns were particularly pronounced after three years. An interesting conclusion was provided by Wiczorek (2020) study using 29 gaming companies as an example, which pointed to the possibility of achieving positive average BHARs over the long term, which calls into question the universality of the *underperformance* phenomenon.

In summary, most studies – both domestic and foreign – show that investors who kept shares of debut companies in their portfolios for an extended period of time underperformed the market. Although overvaluation over the long term is a common phenomenon, it did not always occur in a systematic way and returns varied depending on the period and market analyzed.

Survey Methodology

The analysis of the occurrence of undervaluation of the share prices of companies entering the stock market was conducted using *the* indicator of the immediate *return* (*IR*) and the adjusted *initial* return (*AIR*). The method of calculating the immediate return is presented in the following formula (cf. Trąpczyński, 2017, p. 150; Wieczorek, 2019, p. 88; Wieczorek, 2020, pp. 367–368):

$$IR = \frac{(P_i - E_i)}{E_i} \times 100\% \quad (1)$$

where:

IR_i – the immediate return on investment in the company's shares *and* offered in the IPO on the first day of trading;

P_i – the closing price of the company's shares (or rights to shares) *and* at the close of trading on the day of the IPO;

E_i – the price of the shares offered by the company *i* (issue price or reference price).

The main advantage of the simple rate of return is that it is the only such a rate whose use in portfolio theory is mathematically justified (Piasecki & Tomasik, 2013, p. 31). Calculating the rate of return on the basis of the presented formula allows us to assess the profitability of investing in the shares of a given company at the time of the IPO.

In order to draw inferences for the groups of companies that debuted on the WSE and were distinguished within the research sample, the rates of return calculated for individual companies on specific trading days can be aggregated and averaged across firms within a given group. This approach enables the estimation of the average adjusted initial return. The formula for the average immediate rate of return on the day of debut is as follows (Siwek, 2005, p. 146):

$$\overline{IR} = \frac{1}{N} \sum_{i=1}^N IR_i \quad (2)$$

where:

$\overline{IR}$ – average immediate rate of return;

N – total number of companies surveyed.

Research papers also use the adjusted immediate rate of return for the relative change in the stock market index (*AIR*). This rate takes into account the change in the broad market, which allows an analysis of the profitability of the investment relative to the overall market. In the empirical part, the WIG index was taken as the benchmark for stock returns reflecting the efficiency of investments in the broad stock market due to the fact that it is considered the primary

barometer of the Polish stock market (Zimny, 2017, p. 114). The formula for the immediate adjusted rate of return was as follows (Podedworna-Tarnowska & Kiełpsz, 2024, p. 56; Wieczorek, 2019, p. 88; Wieczorek 2020, p. 368):

$$AIR_i = \frac{(P_i - E_i)}{E_i} - \frac{(M_i - M_o)}{M_o} \times 100\% \quad (3)$$

where:

AIR_i – the immediate return on investment in the company's shares *and* IPO offerings adjusted for the relative change in the stock market index;

P_i – the closing price of the company's shares *and* on the first day of trading;

E_i – the price of the shares offered by the company (issue price or reference price).

M_i – value of the stock exchange index on the first day of trading of the company I ;

M_o – value of the stock market index on the date of allotment of the company's shares i .

The following formula (Siwek, 2005, p. 155) was used to calculate the average adjusted immediate stock return of all companies for a given time interval:

$$\overline{AIR} = \frac{1}{N} \sum_{i=1}^N AIR_i \quad (4)$$

The average adjusted immediate return indicates what the abnormal return was in each of the consecutive quotations considered.

With regard to the immediate adjusted stock return in the empirical part, a verification of statistical significance was also carried out. Accordingly, two research hypotheses were formulated:

$$\begin{aligned} H_0 &: AIR_i = 0 \\ H_1 &: AIR_i > 0 \end{aligned} \quad (5)$$

A parametric test t_{stat} for the sample mean value with a one-sided rejection area, based on the Student's t-statistic, which is determined according to the following formula, was used to verify the hypotheses:

$$t_{stat} = \frac{AIR_i}{\widehat{S}(\overline{AIR_i})} \sqrt{n} \quad (6)$$

where:

$\widehat{S}(\overline{AIR_i})$ – the standard deviation of the adjusted stock return on the first day of trading.

Under the assumption that the instantaneous rates of return have a normal distribution and the statistical hypothesis H_0 is true, the test statistic t_{stat} has a Student's t-distribution with $n-1$ degrees of freedom. If the decision is made to reject the null hypothesis, the instantaneous rate of return will differ from zero and the result obtained will be statistically significant. For specific rates of return, the value of the test statistic t_{stat} was determined together with the critical probability (Sosnowski, 2014, p. 201).

In order to calculate returns over longer time intervals, the BHR '*buy-and-hold*' (BHR) approach is used in the literature to verify the occurrence of overvaluation of share prices over the longer term. This assumption is based on the fact that the investor will hold the purchased shares in the portfolio at the time of the IPO until the exit (Wieczorek, 2020, p. 368). The timing of the sale in the empirical part was denoted as 1M/3M/6M/12M/24M/48M/60M/72M, respectively, where M refers to the number of months since the IPO for each time interval t . The return on BHR shares was calculated as follows (Podedworna-Tarnowska & Kiełpsz, 2024, p. 56; Wieczorek, 2020, p. 368):

$$BHR_{i,T}^{IPO} = \frac{P_{it} - P_{i1}}{P_{i1}} \times 100\% \quad (7)$$

where:

$BHR_{i,T}^{IPO}$ – simple rate of return on investment in company i shares at date t ;

P_{it} – the closing price of i 's shares on the day of quotation t ;

P_{i1} – the allotment price of the company's i shares on the allotment date $t = 1$.

The following formula was used to calculate the average stock return of all companies (BHR) for a given time interval:

$$\overline{BHR}_{i,T}^{IPO} = \frac{1}{N} \sum_{n=1}^N BHR_{i,T}^{IPO} \quad (8)$$

where:

N – total number of companies surveyed.

On the other hand, if the rate of return on specific financial instruments is compared to the returns on the benchmark portfolio, then the so-called *abnormal* return, BHAR (*buy and hold abnormal return*), is determined. In order to calculate the BHAR, the simple rate of return on the shares of company i for quotation t ($BHR_{i,T}^{IPO}$) should be adjusted by the hypothetical rate of return on the WIG income index, which is calculated according to the following formula (Kochalski, Ratajczak, p. 137):

$$\text{BHR}_{i,T}^{\text{WIG}} = \frac{I_{i,t} - I_{i,1}}{I_{i,1}} \times 100\% \quad (9)$$

where:

$I_{n,T}$ – the closing price of the WIG index corresponding to quotation t for company i ,

$I_{i,1}$ – the closing price of the WIG index on the date of allotment of $t = 1$ share in company i .

The abnormal rate of return for each company on successive trading days was determined according to the following formula (Kochalski & Ratajczak, p. 369):

$$\text{BHAR}_T^i = \text{BHR}_{i,T}^{\text{IPO}} - \text{BHR}_{i,T}^{\text{WIG}} \quad (10)$$

In order to calculate the abnormal return of all companies considered under the time criterion, the equation for the average abnormal return was used (Podedworna-Tarnowska & Kiełpsz, 2024, p. 56):

$$\overline{\text{BHAR}}_T = \frac{1}{N} \sum_{i=1}^N \text{BHAR}_T^i \quad (11)$$

As for instantaneous returns, two statistical hypotheses were also formulated for the returns resulting from the implementation of the buy-and-hold strategy (Sosnowski, 2014, p. 224):

$$H_0 : \text{BHAR}_T = 0 \quad (12)$$

$$H_1 : \text{BHAR}_T < 0$$

A parametric test with a one-sided rejection area was used to verify the hypotheses, whose Student's t-statistic was determined according to the following formula (Sosnowski, 2014, p. 224):

$$t_{\text{stat}} = \frac{\overline{\text{BHAR}}_T}{\widehat{S}(\overline{\text{BHAR}}_T)} \sqrt{n} \quad (13)$$

where:

$\widehat{S}(\overline{\text{BHAR}}_T)$ – standard deviation of the BHAR return.

Assuming a normal distribution for BHAR returns and the truth of the statistical hypothesis H_0 , the test statistic t_{stat} has a Student's t-distribution with $n-1$ degrees of freedom. Rejecting the null hypothesis will mean that the BHAR return rate is significantly different from zero and the result obtained is statistically significant.

Short- and Long-Term Stock Returns in the Light of Own Research

Survey Design and Sampling

Secondary data was used to analyze returns on shares debuted on the main market, which came from the official website of the WSE (issue price data) and the website stooq.pl (closing quotations of shares and the WIG stock market index). The advantage of data from this source is the inclusion of operations such as (Stooq):

- dividends;
- subscription rights;
- acquisition rights;
- rights of coverage;
- share splits;
- denominations of stock market indices.

All the events mentioned have been included in the historical share prices of the companies by converting them with the appropriate divisor value, so that they did not distort the rates of return for the periods in which they occurred.

The research sample was purposively selected based on the following criteria:

1. The analysis includes companies that conducted an initial public offering (IPO) on the Warsaw Stock Exchange between 2010 and 2024 and were listed on 31.12.2024. Entities debuting on the alternative market – NewConnect – were excluded from the research sample.
2. Companies which, although they debuted on the main market, had a transition from the NewConnect market were omitted, as well as those with so-called *cross-listing*, i.e., those which were listed simultaneously on several stock exchange floors.
3. Entities that did not have a classic IPO on the WSE were excluded, such as companies with *dual listings* such as Sopharma AD, Eurohold Bulgaria, Tatry Mountain Resorts, AB Inter Rao, City Service and Marvipol Development.
4. Companies for which the initial price (issue price, offer price) was known at the time of the IPO on the Warsaw Stock Exchange were qualified for the study.
5. Companies for which the closing price of the shares was known on the first day of trading on the Warsaw Stock Exchange were included.

In addition, it should be emphasized that, as in the research of T. Sosnowski (2014, pp. 197–198), in the case of a rights issue (RBO), the RBO price was treated on a par with the share price. On the other hand, if both types of securities were listed on the day of the debut, then the closing price of the shares was taken into account.

In the end, the research sample comprised 90 companies. Stock returns were analyzed depending on the investment horizon adopted from the date of the IPO. It was assumed that investors follow a passive investment strategy of holding the purchased shares for a certain period of time regardless of the economic situation in the country or market developments.

Taking into account the investment horizon, an immediate return (IR) and an adjusted immediate return (AIR) were calculated for each company in the sample, as well as a simple return (BHR) and a rate relative to the WIG (BHAR) over longer periods, assuming the following investment horizons:

- a) 1 month (21 trading sessions);
- b) 3 months (63 trading sessions);
- c) 6 months (126 trading sessions);
- d) 12 months (252 trading sessions);
- e) 24 months (504 trading sessions);
- f) 36 months (756 trading sessions);
- g) 48 months (1008 trading sessions);
- h) 60 months (1260 trading sessions);
- i) 72 months (1512 trading sessions).

Rates of return were determined for each company involved in the IPO, and then mean, median and standard deviation values were calculated for the four periods:

- 2010–2012;
- 2013–2015;
- 2016–2018;
- 2019–2024.

This division made it possible to ensure a comparable number of companies in each time interval, which increases the reliability of statistical analyses. In addition, this solution made it possible to capture the different phases of the business cycle and the specific macroeconomic and market conditions in Poland and Europe at the analyzed time, facilitating comparisons of the rates of return of debuting companies under different market conditions.

Characteristics of the Research Sample

Table 1 presents the number of companies that debuted on the WSE's main market (excluding NewConnect) between 2010 and 2024, the number of entities active on the WSE as at December 31, 2024, included in the research sample, as well as the percentage share of active companies in the total number of debutants in each year.

Table 1.

Data on the number of companies on the WSE included in the sample and the share of the sample companies in the number of IPOs on the WSE between 2010 and 2024

Year of the company's debut	Number of companies newly listed on the WSE (excluding NewConnect)	Number of companies in the research sample (companies active on the WSE as at 31.12.2024)	Share of companies in the sample in the total number of companies newly listed on the WSE
1	2	3	$4 = (\text{col. 3} / \text{col. 2}) \times 100$
2010	27	14	52%
2011	32	13	41%
2012	17	6	35%
2013	16	9	56%
2014	18	7	39%
2015	17	9	53%
2016	12	6	50%
2017	8	3	38%
2018	5	4	80%
2019	1	1	100%
2020	5	5	100%
2021	12	11	92%
2022	0	0	—
2023	1	1	100%
2024	1	1	100%
total	172	90	52%

Source: Own study.

As can be seen from the data presented in Table 1, at the end of 2024, 52% of the companies that debuted between 2010 and 2024 remained listed on the WSE's main market. It is worth noting that of the 172 companies that debuted in the analyzed period, 82 companies were not included in the research sample, which was due to, among other things, merger, acquisition, bankruptcy or delisting processes. Between 2010 and 2016, the percentage of companies included in the survey ranged from 35% to 56%. In contrast, in years when the number of IPOs was very low (2018–2021, 2023–2024), the percentage of companies in the sample was very high, often reaching 100%. The year 2017 stood out with a low number of IPOs (8) and at the same time a relatively low proportion of companies that were in the sample (38%).

In the following part of the analysis, basic descriptive statistics – arithmetic mean, standard deviation and coefficient of variation – were calculated for the IPOs included in the study. Due to the wide scope of the analyzed period, these values referred to aggregate data for the years 2010–2024. The results of these calculations are presented in Table 2.

Table 2.

Selected descriptive statistics on the number of IPOs included in the sample for the period 2010 to 2024

Statistics	Average	Standard deviation	Coefficient of variation
Value	6.00	4.49	74.80%

Source: own study.

The data in Table 2 shows that the average number of IPOs on the WSE during the period under study was six per year. The standard deviation, which illustrates the dispersion of the results around the average, reached a value of 4.49, indicating significant variation in the number of debuts in individual years. This variation may have been the result of macroeconomic, political or other external factors. A coefficient of variation of around 75% indicates a high volatility in the number of IPOs relative to the average. This level of volatility suggests difficulties in predicting the number of IPOs in subsequent years.

Characteristics of the Research Sample

Short-term Stock Returns – Results of the Analysis

Table 3 (p. 42) provides a summary of the companies from each year of the period under review (2010–2024) for which there was an increase in price relative to the issue price, a decrease in price or no change in closing price relative to the IPO issue price on the IPO date.

An analysis of the annual data shows that the majority of companies that proceeded with an IPO recorded an increase in price on their debut day. Particularly noteworthy is 2015, when only 33.33% of companies recorded an increase in share price, indicating a weaker performance compared to the other years. In 2018–2019, all IPO companies ended the first day of trading with a price higher than the issue price. The year 2015 also stood out for having the highest share of companies whose shares lost value at the close of the session on the debut day (55.56%), which may indicate unfavorable market conditions for new issuers. During the period under review, seven years saw IPOs where the issue price was equal to the closing price on

the day of listing. It is also worth noting that there were no IPOs in 2022, which may indicate a decline in interest in IPOs. The last years covered by the analysis (2023–2024) show limited activity in the IPO market.

Table 3.

Number of companies with upside, downside and no volatility in closing price relative to issue price between 2010 and 2024

Year	N	Price increase on debut		Price drop on debut		Issue price = closing price on debut	
		n	%	n	%	n	%
2010	14	11	78.57	3	21.43	0	–
2011	13	8	61.54	4	30.77	1	7.69
2012	6	5	83.33	1	16.67	0	–
2013	9	6	66.67	2	22.22	1	11.11
2014	7	6	85.71	0	0.00	1	14.29
2015	9	3	33.33	5	55.56	1	11.11
2016	6	3	50.00	2	33.33	1	16.67
2017	3	2	66.67	1	33.33	0	–
2018	4	4	100.00	0	0.00	0	–
2019	1	1	100.00	0	0.00	0	–
2020	5	4	80.00	0	0.00	1	20.00
2021	11	5	45.45	6	54.55	0	–
2022	0	0	–	0	–	0	–
2023	1	1	100.00	0	0.00	0	0.00
2024	1	0	0.00	0	0.00	1	100.00
total	90	59	–	24	–	7	–

Source: Own study.

Table 4 presents the results of the analysis with immediate returns (IR) and returns adjusted for the change in the broad market, as expressed by the WIG index (AIR).

The average immediate rate of return (IR) from 2010 to 2024 was 9.73%, with the median value slightly lower at 8.69%. The adjusted immediate rate of return (AIR) reached a similar level of 9.60%, with a median of 8.65%. As in other empirical analyses, the differences between pre- and post-adjusted returns proved to be small. The highest IR and AIR values were achieved by in 2020, at 43.88% and 40.92% respectively, which was largely due to two companies from the gaming sector – GAMES OPERATORS and PCF GROUP, for which IR and AIR were

around 100% (90.80%) and 49.96% (46.95%) respectively. High returns were also achieved by ALLEGRO, where IR reached 62.79% and AIR reached 64.94%. In contrast, the lowest average returns occurred in 2015 and amounted to 0.62% (IR) and 2.90% (AIR), as a result of the negative performance of four companies: ATAL, DEKPOL, KGL CORPORATION, KRYNICA VITAMIN. These results confirm the phenomenon of stock undervaluation during IPOs in the sample.

Table 4.

Immediate unadjusted (IR) and adjusted (AIR) returns from 2010 to 2024

Year	N	Average	Median	Standard deviation	Average	Median	Standard deviation	T-statistics for AIR	The p-value
Immediate rate of return (IR)					Adjusted immediate rate of return (AIR)				
2010	14	8.48%	7.07%	8.81%	7.06%	5.17%	8.33%	3.17	0.36%
2011	13	2.32%	1.52%	11.73%	5.94%	5.00%	12.21%	1.75	9.94%
2012	6	17.42%	7.68%	25.48%	16.89%	6.02%	23.16%	1.79	6.67%
2013	9	10.56%	18.59%	13.20%	9.44%	14.91%	14.91%	1.90	4.70%
2014	7	1.44%	1.72%	0.85%	2.33%	2.09%	1.59%	3.88	0.41%
2015	9	0.62%	-1.29%	4.70%	2.90%	2.90%	5.09%	1.71	6.28%
2016	6	4.32%	2.39%	7.75%	5.03%	2.89%	9.34%	1.32	12.20%
2017	3	2.83%	1.82%	7.06%	2.19%	2.05%	7.35%	0.52	32.74%
2018	4	10.83%	3.53%	13.86%	9.60%	4.61%	15.92%	1.21	15.65%
2019	1	14.74%	14.74%	—	17.57%	17.57%	—	—	—
2020	5	43.88%	49.96%	41.40%	40.92%	46.95%	35.51%	2.58	3.07%
2021	11	4.84%	-0.01%	12.04%	3.98%	0.34%	11.15%	1.19	13.08%
2022	0	—	—	—	—	—	—	n.a.	n.a.
2023	1	13.94%	13.94%	—	8.97%	8.97%	—	—	—
2024	1	0.00%	0.00%	—	1.62%	1.62%	—	—	—
average	90	9.73%	8.69%	13.35%	9.60%	8.65%	13.14%	—	—

Source: Own study.

Due to the fact that the average adjusted rates of return, calculated separately for the individual years covered by the study, turned out to be statistically insignificant in most cases, it was decided to determine their value after the first day of trading in time intervals selected so as to

include a comparable number of companies in each of them. A division into three groups was adopted: companies for which the issue price was lower than the closing price on the debut day, companies for which the issue price exceeded the closing price and companies for which the closing price at the end of the first trading day was equal to the issue price. The results of these calculations are shown in Table 5.

Table 5.

Immediate unadjusted (IR) and adjusted (AIR) return rates over several year intervals from 2010 to 2024

Year	N	Average	Median	Standard deviation	Average	Median	Standard deviation	T-statistics for AIR	The p-value
		IR			AIR				
2010–2012									
total	33	7.68%	3.86%	14.42%	8.41%	5.00%	14.14%	3.42	0.09%
issue price < closing price	24	12.07%	7.14%	13.95%	11.97%	7.10%	13.91%	4.22	0.02%
issue price > closing price	8	−4.52%	−1.49%	7.69%	−1.30%	−0.13%	10.21%	−0.36	63.53%
issue price = closing price	1	0.00%	0.00%	0.00%	0.58%	0.58%	—	—	—
2013–2015									
total	25	4.43%	1.72%	9.42%	5.09%	2.90%	8.97%	2.84	0.45%
issue price < closing price	15	9.46%	6.82%	8.47%	10.00%	8.48%	7.69%	5.03	0.00%
issue price > closing price	7	−4.44%	−4.11%	3.26%	−3.13%	−2.92%	5.07%	−1.64	92.39%
issue price = closing price	3	0.00%	0.00%	0.00%	−0.23%	0.21%	2.75%	−0.14	54.93%

Short- and Long-Term Returns on Initial Public Offerings (IPOs) in the Polish Capital Market

Year	N	Average	Median	Standard deviation	Average	Median	Standard deviation	T-statistics for AIR	The p-value
		IR			AIR				
		2016–2018							
total	13	5.98%	2.94%	10.45%	5.78%	3.79%	10.59%	1.97	3.62%
issue price < closing price	9	9.90%	4.78%	10.30%	9.87%	6.23%	25.78%	1.15	14.17%
issue price > closing price	3	−3.78%	−3.85%	1.24%	−3.65%	−3.74%	2.57%	−2.46	93.35%
issue price = closing price	1	0.00%	0.00%	0.00%	−2.82%	−2.82%	—	—	—
2019–2024									
total	19	15.86%	8.00%	27.11%	14.56%	14.56%	14.56%	4.36	0.02%
issue price < closing price	11	29.69%	14.74%	12.38%	27.78%	27.78%	27.78%	3.32	0.39%
issue price > closing price	6	−4.21%	−1.21%	6.15%	−4.94%	−4.94%	−4.94%	2.45	2.90%
issue price = closing price	2	0.00%	0.00%	0.00%	0.32%	0.32%	1.30%	0.35	39.28%

Source: Own study.

The data presented in Table 5 shows that the highest average IR returns were recorded between 2019 and 2024, reaching 15.86%. The adjusted AIR return over this period was 14.56%. Performance varied by a group of companies (where the issue price was lower, higher or equal to the closing price). For companies where the issue price was lower than the closing price, the average IR between 2019 and 2024 was 29.69%, while AIR was lower at 27.78%. In contrast, for companies where the issue price exceeded the closing price at the end of the first day of trading, both IR and AIR took on negative values, indicating a loss for investors realizing a gain on the day of the debut. The average adjusted returns were statistically significant for companies with an undervalued share price in 2010–2012, 2013–2015, as well as for all companies

debuting in 2019–2024. This period was characterized by strong capital market growth, which supported higher returns. The positive performance was influenced by expansionary monetary policy and the recovery of the economy after the pandemic crisis (in 2019–2021).

Long-term stock returns – results of the analysis

Considering 3-year periods (for the period 2010–2018) and 5-year periods for the period 2019 to 2024, the levels of unadjusted and adjusted stock returns over a longer time horizon than one day from the IPO date are shown in Table 6. The returns at different exit points – after 1, 3, 6, 12, 24, 36, 48, 60 and 72 months from the IPO date – are analyzed.

Table 6.

Unadjusted (BHR) and adjusted returns (BHAR) on first issue shares by investment horizon from the date of listing (in months) over the period 2010–2024

Year	N	Average	Median	Standard deviation	Average	Median	Standard deviation	Statistics <i>t</i> for BHAR	The <i>p</i> -value
		BHR 1M			BHAR 1M				
2010–2012	33	2.78%	0.38%	15.42%	2.03%	1.17%	15.67%	0.74	23.23%
2013–2015	25	2.16%	0.23%	8.12%	2.85%	3.07%	7.17%	1.99	2.90%
2016–2018	13	5.00%	0.00%	11.65%	3.79%	−0.72%	13.42%	1.02	16.39%
2019–2024	19	−1.20%	−3.15%	11.96%	−3.20%	−2.62%	11.65%	−1.20	87.72%
Return on shares		BHR 3M			BHAR 3M				
2010–2012	33	7.75%	0.94%	39.33%	7.46%	3.07%	38.29%	1.12	13.55%
2013–2015	25	5.11%	4.34%	13.78%	4.49%	5.93%	13.43%	1.67	5.40%
2016–2018	13	11.48%	−2.86%	24.91%	8.46%	4.46%	26.48%	1.15	13.63%
2019–2024	19	−1.23%	2.43%	16.85%	−4.79%	−1.74%	15.00%	−1.39	90.93%
Return on shares		BHR 6M			BHAR 6M				
2010–2012	33	1.68%	−5.06%	35.71%	0.97%	−4.30%	34.04%	0.16	43.69%
2013–2015	25	19.64%	13.77%	36.20%	19.17%	17.07%	31.70%	3.02	0.30%
2016–2018	13	13.55%	1.10%	46.33%	7.10%	−2.82%	46.16%	0.55	29.62%
2019–2024	19	−10.52%	−7.70%	24.05%	−18.87%	−15.40%	26.52%	−3.10	99.69%
Return on shares		BHR 12M			BHAR 12M				
2010–2012	33	−3.25%	−10.32%	66.01%	0.01%	−3.71%	63.42%	0.00	50.00%
2013–2015	25	19.33%	14.12%	34.80%	18.71%	11.53%	32.84%	2.85	0.44%

Short- and Long-Term Returns on Initial Public Offerings (IPOs) in the Polish Capital Market

Year	N	Average	Median	Standard deviation	Average	Median	Standard deviation	Statistics <i>t</i> for BHAR	The <i>p</i> -value
2016–2018	13	16.45%	–18.69%	69.04%	2.79%	–17.02%	68.05%	0.15	44.16%
2019–2024	18	–23.98%	–16.47%	23.20%	–25.83%	–20.27%	34.50%	–3.18	99.73%
Return on shares		BHR 24M			BHAR 24M				
2010–2012	33	–2.45%	–27.60%	81.96%	–5.19%	–21.94%	79.09%	–0.38	64.68%
2013–2015	25	30.44%	23.99%	43.90%	23.13%	21.52%	47.72%	2.42	1.17%
2016–2018	13	54.17%	18.98%	149.83%	48.03%	–11.11%	154.14%	1.12	14.23%
2019–2024	17	–29.04%	–26.68%	28.43%	–32.01%	–21.01%	33.61%	–3.93	99.94%
Return on shares		BHR 36M			BHAR 36M				
2010–2012	33	11.31%	–10.99%	92.32%	–2.17%	–25.47%	91.43%	–0.14	55.52%
2013–2015	25	38.68%	26.98%	62.42%	29.38%	27.54%	60.68%	2.42	1.17%
2016–2018	13	123.86%	61.11%	238.26%	117.18%	71.42%	241.16%	1.75	5.28%
2019–2024	17	–28.56%	–39.18%	42.87%	–53.08%	–66.09%	45.25%	–4.84	99.99%
Return on shares		BHR 48M			BHAR 48M				
2010–2012	33	5.28%	–15.17%	86.15%	–11.40%	–31.72%	85.78%	–0.76	77.36%
2013–2015	25	48.34%	7.10%	91.59%	29.57%	–10.27%	92.04%	1.61	6.02%
2016–2018	13	144.21%	69.65%	287.80%	140.45%	51.98%	287.07%	1.76	5.19%
2019–2024	11	–16.26%	0.00%	46.76%	–43.86%	–27.34%	58.38%	–2.49	98.40%
Return on shares		BHR 60M			BHAR 60M				
2010–2012	33	29.96%	–21.01%	130.38%	13.74%	–28.26%	135.76%	0.58	28.30%
2013–2015	25	40.83%	1.52%	95.10%	30.00%	15.26%	96.45%	1.56	6.59%
2016–2018	13	171.87%	111.05%	300.38%	155.00%	65.46%	292.18%	1.91	4.02%
2019–2024	2	–5.30%	0.00%	15.70%	–13.09%	0.00%	40.02%	–0.46	63.72%
Return on shares		BHR 72M			BHAR 72M				
2010–2012	33	43.74%	–21.61%	176.12%	23.48%	–28.20%	177.39%	0.76	22.64%
2013–2015	25	37.05%	15.40%	84.79%	20.89%	21.93%	79.88%	1.31	10.13%
2016–2018	13	165.58%	50.13%	318.73%	140.47%	–0.63%	321.67%	1.57	7.12%
2019–2024	1	–2.89%	0.00%	12.28%	–6.28%	0.00%	26.65%	–	–

Source: Own study.

The results obtained show the volatility of unadjusted returns, as well as those adjusted for the WIG index, depending on the time horizon adopted, calculated from the date of debut. Between 2010 and 2012, stock returns (BHARs) were generally positive, with the exception

of the 24M, 36M and 48M time intervals. It is worth noting that the overstatement of average returns from the third month to three years after the debut was influenced by the high stock returns (even more than 200% increase relative to the issue price) of PCC EXOL. From one year after the debut to five years, significant returns (100–200%) were also achieved by the company ZAMET INDUSTRY. Good results in this period, especially after two years since the debut, were recorded for the companies: EUROPEAN CENTRUM ODSZKODOWAŃ, BENEFIT SYSTEMS, KRUK and AC.

Over the 2013–2015 period, BHR and BHAR returns were positive and statistically significant for the time intervals: 1M, 6M, 12M, 24M, 36M. Particularly high returns, often exceeding 100% three years after listing, were recorded for companies: MFO, ATAL, ENTER AIR. The years 2016–2018 were characterized by on average higher returns for BHR and BHAR, especially after three years from the debut, thanks to the solid performance of companies such as AUTO PARTNER, DINO POLSKA, TEN SQUARE GAMES, ML SYSTEM. During this period, the BHAR return for the horizon of 60 months after the debut was statistically significant. On the other hand, the lack of statistical significance for longer time intervals was due to the decreasing number of companies in the sample, which affected the calculation of the arithmetic mean.

The worst performance, reflected in the negative returns of the BHR and BHAR in all the time intervals analyzed, was recorded between 2019 and 2024. This situation can be explained by the economic problems after the pandemic, which translated into negative investment performance. The median returns also took negative values during this period.

In order to better illustrate the number of companies with positive and negative adjusted returns over the analyzed period, the results of the analysis are summarized in Table 7.

Table 7.

Number of companies with negative and positive average BHAR returns sampled in time intervals from 1M to 72 M after listing from 2010 to 2024

Period	Description	BHAR 1M	BHAR 3M	BHAR 6M	BHAR 12M	BHAR 24M	BHAR 36M	BHAR 48M	BHAR 60M	BHAR 72M
2010–2012	negative	14	13	19	19	22	21	22	21	23
	positive	19	20	14	14	11	12	11	12	10
2013–2015	negative	8	10	5	6	7	9	14	12	11
	positive	17	15	20	19	18	16	11	13	14
2016–2018	negative	7	5	7	8	7	6	6	5	7
	positive	6	8	6	5	6	7	7	8	6
2019–2024	negative	12	11	16	13	16	16	10	2	1
	positive	7	8	3	5	1	1	1	0	0

Source: Own study.

Analysis of the data presented in Table 7 shows changes in the number of companies generating positive and negative average BHAR returns with different investment horizons between 2010 and 2024. In the period 2010–2012, holding shares of debuting companies for up to 3 months usually yielded positive returns, while as the investment period was extended to at least 6 months, the number of companies generating negative returns clearly increased. In subsequent years, between 2013 and 2015, the situation improved in favor of investors – the number of companies generating positive BHAR returns significantly exceeded the number of those generating losses, indicating favorable market conditions for new issuers. A gradual decline in the number of companies generating positive returns was observed in subsequent time frames (2016–2018 and 2019–2024). In particular, in the years 2019–2024, companies with negative abnormal returns prevailed in all the investment horizons analyzed.

Discussion

The analysis of short-term rates of return in our own research confirmed the existence of the phenomenon of undervaluation of share prices in IPOs on the Polish capital market during the analyzed period. The average immediate rate of return (IR) between 2010 and 2024 was 9.73%, while its adjusted value (AIR) was slightly lower at 9.60%. These results are similar to those obtained in other studies on the Polish market, suggesting a continuing trend of a decrease in the scale of undervaluation compared to the 1990s and early 2000s. For example, Czapiewski et al. (2014) showed an average adjusted IR of 34.1% for 1991–2011 and 13.6% for 2001–2011, while Trąpczyński (2017) recorded a level of 7.89% for 2007–2016, which was lower than 19.8% for 1991–1997. Similar results were obtained by Lizińska and Czapiewski (2014) for 2004–2009 (10.89%) and Pomykalski and Domagalski (2015) for 2005–2013 (11.89%). On the other hand, the study by Podedworna-Tarnowska and Kiełpsz (2024) showed an average IR of 13.68% for the largest bids and 22.90% for the smallest bids between 2017 and 2021, while Sukacz (2005) reported 26% for the period between 1991 and 2002.

Comparing the results of our own research with foreign literature, it can be concluded that undervaluation is a common phenomenon, although its intensity depends on the market, the period and the phase of the business cycle. As Perz (2025) points out, this phenomenon was stronger in emerging markets than in developed markets. In China, for example, the average IR between 1989 and 1996 was 388.0%, while in mature markets, such as the US, it was 15.8% between 1960 and 1996. The most recent survey results for the US market (Ritter, 2025) for the period 1980–2023 show a record average IR of 158.0% for the period 2019–2023. The results for Poland (average IR of 9.73% in the own surveyed) rank much lower than in emerging markets or in selected periods in the US, but are in line with levels characteristic of mature markets or more developed emerging markets.

Analysis of the annual data in the self-study showed that a greater proportion of companies experienced an increase in their IPO price, although there was variation from year to year. The highest average returns (IR and AIR) were achieved in 2020. (43.88% and 40.92%), mainly driven by gaming companies and ALLEGRO. Aziewicz and Dobrowolski (2014) also highlighted the high volatility of IPO performance between 2005 and 2013. Their own study showed that average adjusted returns (AIR) were statistically significant for undervalued companies in 2010–2012, 2013–2015 and for all companies in the sample in 2019–2024. These results support the first part of the hypothesis of undervaluation in the short term.

With regard to long-term returns, our own research only partially confirmed the *underperformance* phenomenon observed in the literature (decline in the value of shares over a longer horizon). This phenomenon means that investors tend to lose out on investing in shares of debut companies compared to the market index or other companies. Ritter (2025) in his study for the US market (1980–2023) showed that the average 3-year adjusted returns (BHAR) were typically negative, e.g. –20.20% for the whole period and –296.40% for the years 2019–2023. Polish empirical studies also indicated lower returns on IPOs in the medium and longer term compared to the IPO date or market index. Sieradzki (2013) indicated an average negative abnormal return of –4.2% one year after the IPO. Zielinski (2013) found that the adjusted return of BHAR 36M on the WSE between 1994 and 2016 ranged from –14% to –28.6%. Rzewuska and Wrzesinski (2016) demonstrated that investments in companies with IPOs in 2006 yielded an average return 9% less than the index over a two-year period and 26% over a three-year period. Kwit (2006) estimated that after three years it was possible to gain 17% less compared to the shares of other companies listed on the WSE. Kochalski and Ratajczak (2025) showed a downward trend in the average return (BHR) on shares of companies with IPOs from 2009–2011 until the 370th day of trading, reaching an average of –19.35%. Aziewicz and Dobrowolski (2014) confirmed that the phenomenon of overvaluation after 12 months was not sustainable, with a more pronounced trend of negative returns emerging three years after the IPO.

The results of the own study for the period 2019–2024 are in line with these observations, showing negative average BHR and BHAR returns in all analyzed time intervals. However, the own study also showed periods in which the average returns of BHARs were positive, suggesting that *underperformance* is not a systematic phenomenon across all analyzed time intervals. Between 2010 and 2012, BHAR returns were generally positive, with the exception of the 24M, 36M and 48M intervals. Results from 2013 to 2015 were optimistic, with BHR and BHAR rates positive and statistically significant for intervals 1M, 6M, 12M, 24M, 36M. From 2016 to 2018, average BHR and BHAR returns were higher three years after the debut, and a statistically significant BHAR return was recorded for 60 months after the debut. This variability corresponds

to Aziewicz and Dobrowolski's (2014) observation that the overvaluation phenomenon after 12 months was not sustainable.

An analysis of the number of companies with positive and negative BHAR returns also shows variability over time. While 2010–2012 and 2013–2015 were dominated by companies with positive BHARs in shorter and medium horizons, 2019–2024 was dominated by companies generating negative abnormal returns in all time intervals.

In summary, the results of our own research confirm the existence of the phenomenon of underperformance of share prices in the short term on the WSE main market. On the other hand, with regard to the medium and long term, the results are variable and do not indicate systematic overvaluation (negative returns) in all analyzed time frames, although the underperformance phenomenon was evident in some period, especially in the years 2019–2024. This is consistent with the second part of the research hypothesis for the years 2019–2024, but not for the entire medium- and long-term period studied.

Conclusions

The aim of this study was to assess the development of short- and long-term returns on initial public offerings (IPOs) on the Warsaw Stock Exchange. The in-house study was aimed at verifying the hypothesis assuming the existence of anomalies on the WSE main market, consisting in the undervaluation of share prices in the short term and their overvaluation in the medium and long term. The main research method was the analysis of historical stock returns from IPOs between 2010 and 2024.

The study confirmed the phenomenon of undervaluation of share prices in IPOs on the Polish capital market during the analyzed period. The average immediate return (IR) for the period 2010–2024 was 9.73% and the adjusted immediate return (AIR) reached 9.60%. These results confirmed the first part of the research hypothesis of undervaluation in the short term.

With regard to medium- and long-term returns, our own research only partially confirmed the *underperformance* phenomenon observed in the literature, which means that investors tend to lose out on investing in shares of debut companies compared to the market index or other companies. Although negative average abnormal returns (BHARs) occurred for some periods and the *underperformance* phenomenon was particularly pronounced in the period 2019–2024, where negative average BHARs were recorded in all analyzed intervals, results in other periods (e.g. 2013–2015, 2016–2018 in some intervals) showed positive average BHARs. This means that the own study does not indicate systematic overvaluation (negative returns) in all analyzed time intervals. This is consistent with the second part of the research hypothesis for the years 2019–2024, but not for the entire medium- and long-term period studied.

This study is original due to its analysis of current data for the Polish main market of the WSE from 2010–2024, which fills the information gap after 2016. The study is comprehensive, covering both short and long periods, considering different investment horizons, which is rare in previous Polish studies. In addition, the analysis takes into account different time frames reflecting business cycles.

One of the noted limitations of the study's results is the lack of statistical significance for returns with longer intervals, due to a decrease in the number of companies included in the analysis. Of the 172 companies that debuted during the period, 82 were not included in the research sample for various reasons, such as mergers, acquisitions, bankruptcies or delisting. This means that the long-term analysis only looks at companies that have survived on the market until the end of 2024, which may affect the picture of long-term returns (potential burden of the survival effect).

The research sample was purposively selected based on specific criteria. Companies debuting on the alternative market NewConnect, those which transferred from NewConnect to the main market, as well as those with cross-listing (listed simultaneously on several trading floors) or dual listing were excluded from the analysis. Companies for which there was no data on the issue price or closing price on the day of listing were also excluded. These criteria limit the scope of the study to only classic IPOs on the WSE's main market carried out by companies meeting certain conditions of data availability and market presence, which may affect the possibility of generalizing the results to all types of IPOs or all companies that have ever debuted.

The information obtained in the study can be further used as a database and reference point for future analyses, for example comparing the effectiveness of IPOs on the WSE with other markets (especially emerging markets), examining the determinants of short- and long-term returns for the Polish market, or analyzing the impact of specific market and macroeconomic factors on the performance of IPOs in particular periods.

The results provide valuable insights for market participants. Information on undervaluation in the short term and volatility of returns in the long term is of direct relevance to investors (e.g., in the context of investment strategies), issuers (e.g., in the context of pricing policies in IPOs) and financial intermediaries.

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