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Trends in Underpricing of Private Equity Backed IPO at the Capital Market in Poland in the Years 2000–2018

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Abstract

The global economy is distinguished by the dynamic development of financial markets and with it creating a new specific segments of the market. One of them is the market for venture capital and private equity funds, which is developing very dynamically for more than 50 years. This article aims to analyze the level of underestimation of the IPO on the Warsaw Stock Exchange companies supplied by venture capital and private equity funds. Analyzing the rates of return of 54 companies supplied with VC funds and 453 companies which do not have the support of venture capital funds in the 2000–1018 period, it should be stated that traditional companies reached the lower level of underestimation. For companies a broad market level underestimation of the IPO was 9.99% and for companies with VC/PE support – 9.12%.

Introduction

The joint-stock company's decision to conduct the initial public offering is conditioned by many factors, but the most obvious premise for making the company public is the desire to raise capital for development as a result of a new issue of shares. This, however, involves the need to incur the costs of issue and the costs of introducing shares to regulated secondary trading when the strategic choice of the issuer is to ensure the listing of shares on the secondary market, in particular on the stock exchange. In the case of companies powered by private equity funds, one of the reasons may be the desire to divest their portfolio shares. Funds often introduce a company to the stock exchange for the purpose of subsequent sale of their shares, as they may constitute the provisions of the investment agreement. According to statistical data, in the years 2000–2018, 453 companies debuted on the Warsaw Stock Exchange, including 54 funded companies (data of the Warsaw Stock Exchange and the Association of Capital Investors in Poland [PSIK]). This represents over 12% of all debuts (in quantitative terms), which deserves a closer look at the behavior of these entities after the initial public offering. The empirical research to date also in this case indicates the occurrence of certain patterns that characterize share prices and their rates of return. The aim of the article is to analyze the behavior of share prices and rates of return of companies supplied with private equity funds against the background of other entities conducting the initial public offering (IPO) transaction on the Warsaw Stock Exchange in 2000–2018. The time range selected for analysis is quite wide and sufficient to examine changes in the behavior of share prices and their rates of return over the past eighteen years. Such a wide study period is also very interesting because the studies carried out so far regarding shorter sub-periods indicate different results compared to those observed during the analysis of data for the period indicated in the title of the article.

The capital market is a place of both raising and investing capital, and its two main segments are the primary and secondary market. On the primary market, issuers offer investors shares at the issue price. If this is the first offer addressed to an unlimited number of investors (in Poland at least 100), it is the so-called initial public offering. The company offers its shares to the public for the first time and will be listed on the stock exchange only after the issue. From the issuer's point of view, the optimal mechanism of this offer is one that allows you to maximize income from the issue of shares.

Attempts to explain the phenomenon of increase in share prices in the short term (underpricing) and long-term decline in the long term after the company goes public (underperformance) constitute a wide research trend. Theories describing the phenomenon of underestimation can be divided into 4 main groups:

- asymmetric information theories,
- institutional explanation theories,
- ownership and control theories,
- behavioral theories (behavioral explanations theories).

A significant role was also played by the hypothesis of divergence of opinions, described by Miller, according to which investors assess the value of the company in a subjective way. A large divergence of opinion regarding the expected rates of return usually occurs at the time of issue. Then, it is difficult for new investors to obtain information about the company's condition. The consequence of adopting Miller's theory is the expectation of a higher level of short-term underpricing and a stronger, unfavorable, long-term price response in relation to shares of those companies, which at the time of issue were characterized by a higher degree of uncertainty (Miller, 1977, p. 1151). The level of uncertainty at the time of emission cannot be estimated directly. Hence, Miller refers to their substitutes for some indirect measures, the use of which will allow to approximate the scale of the phenomenon. A company's stability can be expressed by its size. The company's age also allows indirect measurement of the company's quality. Miller also indicates that the volatility of rates of return on company shares just after the issue may be an indirect measure of uncertainty (early aftermarket volatility). The condition of debuting companies can be assessed by potential investors on the basis of information from financial statements. Then, the company's profitability may also be the basis for estimating the level of uncertainty in relation to the company. Theories based on information asymmetry indicate that investors should be rewarded more for investments in shares of those companies that have a higher level of uncertainty. In this context, underpricing can be seen as a kind of "payment" for the risk incurred. A specific feature of the public securities market is the need to make investment decisions in the conditions of limited access to information and the inability to fully assess its reliability. Asymmetry of information occurring between different market participants and resulting from their diverse ability to obtain, process and use information about the subject of a transaction is a common phenomenon, which has the negative effect of increasing investment risk (Leland & Pyle, 1977, pp. 371–387; Yung & Zender, 2010, pp. 320–332). The problem of information asymmetry is increasing and is particularly noticeable in the process of implementing the initial public offering when stock market investors are offered shares in relatively unknown environment to financial markets.

Making the right investment decisions requires obtaining relevant information about the securities sold in the offer. Since access to information about the issuer remains limited before an entity obtains the status of a public company, one of the key sources of knowledge about an enterprise that plans to debut on the stock market is the prospectus (Teoh, Welch, & Wong, 1998). It is the main tool for minimizing the information gap present during the implementation of the initial public offering, and its content is the basis for assessing the adequacy of the determined share sale price. In order to reduce information asymmetry, and thus to obtain a higher valuation of offered securities, some companies voluntarily accept additional obligations in the form of publication of information on financial data. Despite this, there are still some trends on the capital market in the behavior of share prices and rates of return during the first day of listing of shares after the IPO.

Review of literature and research on the underestimation of the initial public offering of companies supplied with private equity funds

Among the studies on the Polish capital market, one can mention numerous studies devoted to the phenomenon of underestimation of initial public offers (see Sieradzki, 2013; Sieradzki & Zasępa, 2016) or even publications on financial forecasts. However, few authors describe the breakdown of underestimation results broken down into companies powered by private equity funds and traditional IPO transactions. Lyn and Zychowicz (2003) analyze the results of 103 IPOs carried out on the Polish and Hungarian market in the years 1991–1998. They believe that the market was adjusted on the first day, average return in Poland was 15.1%, while in Hungary – 54.4%. The authors suggest that one possible explanation for this disproportion is the different structure of investors in both markets. In Hungary, in 1996, foreign investors were inspected about 85% of the free market, while in Poland only 30%. They argue that foreign investors probably have this experience, knowledge and resources can reduce information asymmetries, which should correspond to lower price undercutting. However, this explanation suggests that underselling should be lower in Hungary than in Poland, given almost three times. Sukacz in 2005 examined 185 public offers carried out on the Polish market in the years 1991–2001. He finds that the average price undercutting on the first day of trading was 26%. The low IPO valuation was positively associated with the number of days and the change in the WIG market index width from the last day of the subscription period to the first day of trading, and this was negatively related to the financial ratios P/E and P/BV (Sukacz, 2005). He claims that the average initial return on IPOs of private companies was higher than on IPOs of privatized companies and amounted to 27.4% and 25.5%, respectively. Furthermore, he states that the initial return on IPOs of smaller companies (i.e. listed on the WSE parallel market) were higher than those of larger companies (i.e. listed on the WSE main market). In 2013, Sieradzki conducted an IPO underestimation study in the period 2003–2011, where the average underestimation on the first day of trading was 14.2% (Sieradzki, 2013). In the case of Mamcarz's studies for the period 2006–2010, the average IPO underestimation rate was 19.95% (Mamcarz, 2010, pp. 649–661).

Measures used in assessing the underestimation of share prices

The issue of underestimation can be considered from two points of view, i.e. the issuer or investor, respectively. In the first case, it means that the issuer gives up some of the proceeds from the issue, while in the second, the investor often receives significant subscription profit. Of course, issuers should be interested in generating high revenues and investors in maximum profits. These subscription gains are publicized by the media and broadcasts described as great success. However, the question

arises whether this situation is accidental or repeated in the long run and is in a way intended. In the first case, this can be reduced to low information efficiency of the market, while in the second, long and large subscription profits of the investor mean the permanent resignation of the issuer from a certain part of the proceeds from the issue, as the issue price could be set at a much higher level. Underestimation of the issue price of shares during the initial public offering can be determined in various ways. Most often, the following three concepts are used to indicate the level of IPO underestimation.

The first concept defines it as the absolute difference between the stock exchange rate on the first day of trading and the first issue price according to the following formula:

$$UD_i = P_i - E_i$$

where:
UD_i – underestimation of the price of the i-th share,
P_i – the stock exchange price of the i-th share on the first day of trading,
E_i – issue price of the i-th share.

The second concept is the relative difference between the exchange rate of the i-th share on the first day of trading and the issue price of the share, defined as the initial return according to the following formula:

$$IR = \frac{P_i - E_i}{E_i}$$

where:
IR – the original rate of return,
E_i – the issue price of the i-th share.

The third form is the original rate of return adjusted for the relative change in the stock index in the period between the date of subscription closing and the day of the stock exchange debut (index return rate) calculated according to the formula:

$$AIR = \frac{P_i - E_i}{E_i} - \frac{I_t - I_0}{I_0}$$

where:
AIR – corrected underestimation of the initial public offering,
I_t – value of the market portfolio at the close of the first trading day,
I_0 – value of the market portfolio at the opening of the first trading day (e.g. WIG20).

Such underestimation is to be expressed by the fact that between the end of the subscription of shares and its first listing on the stock exchange a certain period

elapses during which the investor has the opportunity to make an alternative investment. The positive difference alone, regardless of the way it is expressed (absolute, relative), does not allow the thesis that the issue price of shares is underestimated. Only if an alternative investment brings at the same time a lower rate of return than the purchased share, can one talk about underestimation. The original rate of return is therefore adjusted by the realized rate of return on the market portfolio and when it is higher, the investor can achieve an above average (surplus) rate of return (abnormal internal return, AIR).

In this study, a formula was used to determine the average underestimation of the portfolio of shares powered by PE funds in relation to the broad market. This formula takes the following form:

$$\overline{IR} = \frac{1}{N}\sum_{i=1}^{N} IR$$

where:
$\overline{IR}$ – average primary rate of return.

In addition to the arithmetic mean of the equity portfolio, other underestimated measures (median, maximum value, minimum value, standard deviation) and weighted value of the average IPO underestimation rate can also be used to assess underestimation.

Analysis of the level of underestimation of public offers of companies supplied with private equity funds on the WSE in the period 2000–2018

The Warsaw Stock Exchange is the largest national exchange of financial instruments in the region of Central and Eastern Europe in terms of capitalization of listed companies and the value of trading in shares, as well as one of the fastest growing exchanges in Europe. According to the latest IPO Watch Europe report on the number and value of first public offers on European stock exchanges, the Warsaw trading floor is the second market in Europe in terms of the number of debuts and the third in terms of value in 2018. In 2000–2018, the WSE changed into significant way. Trends that changed the size and number of debuts also changed. Figure 1 shows the number of debuts in the years 2000–2018 on the Warsaw Stock Exchange.

Analyzing the data containing the number of IPO transactions on the Warsaw Stock Exchange, it should be noted that since the financial crisis having its peak in 2008, the trend regarding companies' activity in the field of IPOs has been negative. The main reason for stagnation is the poor sentiment of Polish investors, which translates into a decline in prices and valuations, especially of medium and small companies, which is also due to their low liquidity. Large companies, dependent

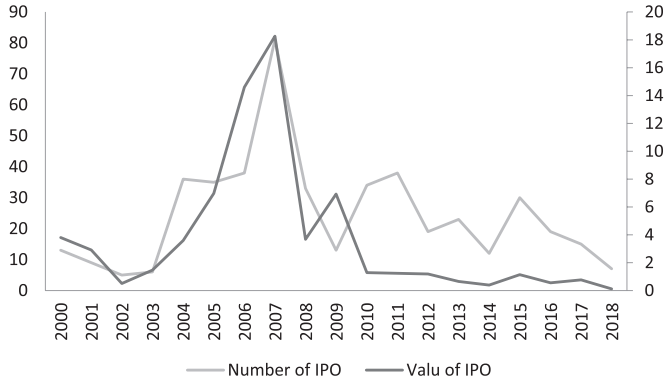

Figure 1. The number and value of IPOs on the Warsaw Stock Exchange in the years 2000–2018 (in PLN billion)

Left scale – IPO number; right scale – IPO value
Source: Author's own study based on data from the Warsaw Stock Exchange.

mainly on foreign investors, are doing better. It is worth pointing out that the number of exclusions of listed companies is also increasing, which resulted in 2017 in the net outflow of the number of companies listed on the Warsaw Stock Exchange for the first time since 2003.

On the major capital markets of the world such as New York or London, the share of companies powered by private equity funds or venture capital represented on average over 50% for the period 2000–2018. It seems that companies supplied with PE funds constitute an important part of entities making IPO transactions also on the Warsaw Stock Exchange. In the examined period, they constituted a share of 12% if we examine the number of transactions carried out. This situation is presented in Table 1.

Table 1. The number of transactions of companies supplied with PE funds against the background of other IPOs on the Warsaw Stock Exchange in 2000–2018

Year	Number of IPOs	Number of PE backed IPOs
2000	13	0
2001	9	2
2002	5	1
2003	6	0
2004	36	5
2005	35	7
2006	38	9
2007	81	6
2008	33	2
2009	13	0
2010	34	2
2011	38	3
2012	19	1
2013	23	2

Year	Number of IPOs	Number of PE backed IPOs
2014	12	6
2015	30	1
2016	19	3
2017	15	3
2018	7	1
Total	466	54

Source: Author's own study based on data from the Warsaw Stock Exchange and PSIK.

Analyzing the number of IPOs of companies powered by PE funds, it should be stated that the number and time of making an IPO depends on the state of the stock market. It can be stated that the highest activity of the funds in the transaction of divestment of shares held by the IPO method falls on periods of prosperity on the stock market. Along with the decrease in the number of debuts, the number of divestments using the first public offering transaction decreases.

In assessing the amount of underestimation of the issue price of shares, the analysis of the original rate of return was used first. Underestimation of the issue price of the portfolio of shares during the initial public offering, measured by the original rate of return for the years 2000–2018, concerned 412 companies not powered by PE funds and 54 powered by PE funds. The average price underestimation in the case of companies not supplied with PE funds was 9.99% and in the case of companies supplied with PE funds it was lower and amounted to 9.11%. One can formulate the hypothesis that in the second case, investors leaving the company put the need for divestment over the sale price and accepted its relatively low level. Investors achieved the highest primary rate of return during the boom on the stock market (2006 and the first half of 2007). The lowest rates of return occurred in 2008, i.e. during the year-round crisis. In 2017, the original rates of return were negative and IPO transactions recorded an average rate of return of -0.05%. It should be noted that companies supplied with PE funds in 2017 had an average of 2.33%. The share of IPOs in high-risk funded companies increased over the period considered compared to previous years, where in the years 2006–2012, their share was no more than 10% and in the period 2015–2018, it was on average 16.6%. Analyzing the rates of return of 54 companies powered by VC funds and 416 companies without high-risk funds support in 2000–2018, it should be stated that traditional companies achieved a slightly higher level of underestimation throughout the entire study period. For companies on the broad market, the level of underestimation of the initial public offering was 9.99% and for companies with PE capital only 9.12%.

Comparing this with the research carried out by Sieradzki and Zasępa for the period 2003–2011, the situation in the analyzed period changed radically (Sieradzki & Zasępa, 2016). The average for companies not supplied with funds for this period was 14.5%, and for companies supplied with VC/PE funds it was 11.5% with a standard deviation of 5%. Basic statistics on the distribution of return rates are presented in Table 2.

Table 2. Statistics of companies making IPOs on the Warsaw Stock Exchange in 2000–2018

Period	2000–2018	2003–2014
Underpricing IPO	9.99%	7.30%
PE backed IPO underpricing	9.12%	8.24%
Skewness IPO	7.95	0.97
Skewness of PE backed IPO	2.54	1.43
Kurtosis IPO	9.5	5.28
Kurtosis of PE backed IPO	8.38	1.44
Median IPO	3.80%	2.87%
Median of PE backed IPO	4.70%	4.76%
Standard deviation of IPO	32.90%	18.51%
Standard deviation of PE backed IPO	16.88%	12.24%

Source: Author's own study.

When analyzing the rate of return on the first day of trading after the IPO, it should be stated that in the period under review the level of underestimation of IPO is relatively high and amounted to 9.99% for the period 2000–2018. In the studies conducted so far to include the Warsaw Stock Exchange, the level of underestimation was much lower (7.3% for all IPOs and 8.24 for IPOs of companies supplied with PE funds). For the period 2003–2011, Sieradzki stated that it was 14.2% (Sieradzki, 2013). For the period 1991–2005, Sukacz confirmed the underestimation at 26% (Sukacz, 2005). It should be emphasized that companies powered by PE funds achieved a lower level of underestimation of IPO for a wide range for 2000–2018, which in the analyzed period amounted to 9.12%. Additionally, it can be stated that at a lower level of underestimation, companies not powered by PE funds have lower kurtosis (8.38 vs. 9.50) and standard deviation compared to companies supported by these funds (16.88 vs. 32.9%). It should also be noted that the skewness of results for companies powered by PE funds is only 2.54 and for the broad market of IPO transactions it is as much as 7.95. The interpretation of this result indicates that the behavior of rates of return on the first day of trading is completely different. The direction for further research should be the analysis of the long-term level of underestimation of IPO in such periods as: 3 months, 6 months, 9 months and 1 year. A possible further direction of research is the analysis of the level of underestimation of IPO transactions in the CEE region and a comparison of trends on this market with those on developed stock markets such as the USA and Great Britain.

Conclusions

The correct execution of an IPO transaction for a company powered by PE funds is a necessary phase in the investment cycle supporting the termination of the fund's involvement in a portfolio company. Research on the level of IPO underestimation of these companies carried out on the Polish market is quite rare. This article fills

this research gap. After analyzing the stock market data on IPOs, it should be stated that in the audited period the underestimation achieved by companies powered by PE funds is higher than that of other companies, which is in line with trends existing on other global capital markets.

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