

Piotr Zasępa\*

## Initial and Long-run IPO Returns in Central and Eastern Europe

### Krótkookresowe oraz długookresowe stopy zwrotu pierwszej oferty publicznej w krajach Europy Centralnej i Wschodniej

**Abstract.** *Initial Public Offerings constitute one of the most important activities in corporate finance, bringing substantial amounts of new capital to the corporate sector. Floating stock is a commonly used method for companies to gain new capital for new investments, to refinance their investments, or to adjust their debt/equity ratio. In this paper we will examine Central and Eastern Europe IPO in terms of initial and long-run returns. Warsaw Stock Exchange (WSE) is currently among the leading European stock markets in terms of initial public offerings. The IPO activity on the Polish capital market contrasts sharply with the number of new listings performed in other Central and Eastern European countries (CEE) however all region is important in terms of capital market. The main goal of the paper is to examine IPOs and its underpricing in the period 2000-2012 on the stock exchanges of Warsaw, Prague, Budapest, Bratislava, Ljubljana and Vienna.*

**Streszczenie.** *Pierwsza oferta publiczna jest jednym z ważniejszych zjawisk w finansach, która zapewnia przedsiębiorstwom kapitał na rozwój. Celem publikacji jest analiza stop zwrotu z przeprowadzonych ofert publicznych zarówno w pierwszym dniu notowań jak i długoterminowych stop zwrotu na rynkach kapitałowych Europy Centralnej i Wschodniej. Głównym celem*

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*jest analiza zjawiska niedoszacowania wartości przedsiębiorstw w latach 2000-2012 na giełdach w Warszawie, Pradze, Budapeszcie, Bratysławie, Lublaniu i Wiedniu.*

## **Introduction**

Initial Public Offerings (IPOs) constitute one of the most important activities in corporate finance, bringing substantial amounts of new capital to the corporate sector. In 2010 alone, when the global IPO activity recovered to pre financial crises levels, investors entrusted \$286 billion on 1,393 new listed firms world-wide. The world witnessed the largest IPO ever, the US\$22.1 billion offering of the state-owned Agricultural Bank of China. Initial public offerings are stocks issued by a formerly privately owned company that is going public, that is selling stock to the public for the first time. Floating stock is a commonly used method for companies to gain new capital for new investments, to refinance their investments, or to adjust their debt/equity ratio. In this paper we will examine Central and Eastern Europe IPO in terms of initial and long-run returns. Warsaw Stock Exchange (WSE) is currently among the leading European stock markets in terms of initial public offerings. The IPO activity on the Polish capital market contrasts sharply with the number of new listings performed in other Central and Eastern European countries (CEE). The main goal of the paper is to examine IPOs in the period 2000-2012 on the stock exchanges of Warsaw, Prague, Budapest, Bratislava, Ljubljana and Vienna.

## **1. Initial public offering and its short term and long term performance**

Over the years there has been abundant literature concerning IPOs and the phenomena surrounding them. One of the best known and documented of these is the initial underpricing phenomenon, where IPOs are found to be underpriced and to have abnormal initial returns. Another part of IPO performance that is well documented is the long-term performance. IPOs tend to underperform the market in the long run, indicating that the abnormal returns they have in the short run are being corrected over time to represent their true value. Concerning initial IPO underpricing, several theories exist. Most IPOs outperform the market during their initial period; Ibbotson performed a study on the initial and aftermarket performance of newly issued common stocks that were offered in the 1960s. His study showed that the average initial performance is positive (11,4 percent)<sup>1</sup>. The results presented a distribution of returns that was peaked and positively skewed with fat tails. Some literature, such as Rock (1986), explain this phenomenon using information asymmetry. Rock<sup>2</sup> assumes that some investors have superior information about the firm, compared to all other investors. If shares at an IPO are priced at their true value, these 'superior' investors will crowd out all other investors. As opposed to bad issues, in which case 'superior' investors will withdraw from the market. Firms will therefore be forced to undervalue their offerings to attract both types of investors.

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<sup>1</sup> Ibbotson, R., *Price performance of common stock new issues*, Journal of Financial Economics, Vol. 2 No.3, p. 235-72, 1975.

<sup>2</sup> Rock, K., *Why new issues are underpriced*, Journal of Financial Economics, 15, p. 187-212, 1986.

Little literature exists in which there is an extensive overview of the long-run performance of IPO stock. Ritter presents in his research evidence that issuing firms underperform the benchmark, measured from the closing price on the first day until the end of a three-year period<sup>3</sup>. As a possible explanation for this underperformance, he looks into the expectations that are formed by investors and he finds that they are overly optimistic. A combination of factors influences the initial performance and the subsequent long-run performance. The bulk of the IPO firms is formed by young growth firms, who come to the market looking for capital to finance their growth. A large survey was performed by Loughran, Ritter & Rydqvist (1994) in which they found more evidence to support the theories of Ritter (1991). Their results show that offerings are timed to high-volume periods, which leads to large long-term underperformance. They also find that riskier firms (which tend to be younger firms) also experience large long-term underperformance, which further supports the theory of over optimism. The extensive literature on initial underpricing has looked at the factors that determine the degree of underpricing. Studies abound for many countries. Examples are: Finn and Higham (1988), Lee *et. al.* (1996) and Ritter (2007) for Australia<sup>4</sup>; Tian and Megginson (2007), for China; Derrien and Womack (2003), Loughran *et al.*, (1995) for France; Ljungqvist (1997) for Germany; Hogholm and

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<sup>3</sup> Ritter, J.R., *The Long-Run performance of Initial Public Offerings*, Journal of Finance, 46 (1), 3-27, 1991.

<sup>4</sup> Lee *et. al.* (1996) and Ritter (2007) provide an analysis on the initial underpricing of 1,103 Australian IPOs listed for a period of 30 years. The findings indicate that for the period 1976-2006 the average initial returns have been 19.8%. The result is consistent with the view that unique institutional characteristics may have overwhelmed previous tests of equilibrium models of IPO underpricing.

Rydqvist (1995), Rydqvist (1997), Ritter (2007) for Sweden<sup>5</sup>; Kiymaz (2000) for Turkey; Kunz and Aggarwal (1994) for Switzerland<sup>6</sup>, Loughran *et al.* (1995), Chompers and Dimson (2009), Levis (2011) for United Kingdom, Gajewski and Gresse (2006) for Europe, Wu *et al.* (2007), Friesen and Swift (2009) and Ritter (2009) for USA, Sieardzki (2013) for Poland.

In the sample of 264 French IPOs, the mean underpricing reached 13.2 percent. Ritter (2007) adds to the previous evidence and shows that in a portfolio of 686 U.S. IPOs during the period from 1983-2006, a total initial return of 10.7 percent. Ljungqvist *et al.* (2006), and Ritter (2009) provide evidence from 652 German IPOs coming to the market from 1978-2006. Underpricing related significantly to stock market conditions, macroeconomic conditions, insider retention rates and the inverse of real gross proceeds. Initial returns for this period of study is 26.9% and is significantly higher from a previous smaller sample of 189 firms from 1970-1993, presented by Ljungqvist with underpricing of 10.5 percent. Chompers and Dimson (2009) examine the performance of 7093 firms listed and traded on the London Stock Exchange during 1917-2007. The overall average first day returns reported is

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<sup>5</sup> Hogholm and Rydqvist (1995), Rydqvist (1997), Ritter (2007) documents IPO underpricing for companies going public on the Stockholm Stock Exchange. The Swedish sample comprises 406 new firms listed during 1980-2006. The average underpricing for the Swedish IPOs is 27.3 percent. Hogholm and Rydqvist (1995) find a positive relationship between the level of underpricing and the level of ex-ante uncertainty.

<sup>6</sup> In Switzerland for a sample of 42 stocks that were issued in the market between 1983 and 1989 Kunz and Aggarwal (1994) report a 35.8 percent. The excess returns from offering price persist for at least three years, however if the purchase is made at the first day's closing price then the three year returns are negative.

13.32%<sup>7</sup>. UK listed IPOs show an increasing underpricing trend over the decades with the most recent 1109 firms listed after 2000 and until 2009 presenting an initial return of 19.86%. Levis (1993), Levis and Thomas (1995) and Loughran *et al* (1995) examine the performance of 3,986 firms listed and traded on the London Stock Exchange during 1959-2006. The overall average first day returns reported is 16.8%. The degree of underpricing related significantly only to the percentage of equity retained in the firm by the original entrepreneurs, the amount of new money raised on flotation and the presence of an earnings forecast. Ritter (2009) in a sample of 15,490 US IPOs, (issued between 1960-2006), reports that initial public offerings are significantly underpriced by 18.0 percent. He shows that the more established an issuer and hence the less investor uncertainty about the firm's real value, the lower the amount of underpricing. An important finding is that hot and cold performances come in waves and cold issue markets have average initial returns that are not necessarily positive.

Jenkinson *et al* (2005) document that for a sample of 918 European and 3480 U.S. IPOs, European underpricing was on average 21.1 percent while the initial underpricing for the U.S. IPOs was 18.3 percent. A possible explanation for this evidence is that initial price ranges are based on less information in Europe than in the U.S. German firms present an unexpectedly high level of underpricing with 48.9 percent. With German firms excluded from the European sample, the average underpricing falls to 13.8 percent, significantly lower than the 18.3 percent observed in the U.S. Jenkinson *et al* present two interesting samples called "rest of

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<sup>7</sup> During the period from 1917 to 1945, public offers were underpriced by an average of only 3.80%, as compared to 9.15% in the period from 1946 to 1986, and even more after the U.K. stock market was deregulated in 1986

West Europe” and “rest of East Europe”, with 75 and 29 IPOs respectively. West Europe IPOs have, on average, low underpricing with 15.1 percent, while East Europe IPOs have marginally higher underpricing of 18.7 percent.

## 2. IPO underpricing

In the existing literature there is no single measure of underpricing. In most of the research underpricing refers to a difference between the closing price of an equity on the first day of trading and the issue price which is named *initial return*. Initial return is calculated as follows:

$$IR_i = \frac{P_{i,t} - P_{i,0}}{P_{i,0}} \quad (1.)$$

where  $IR_i$  is the gross initial return for security  $i$  from the last day of the subscription period to the closing of the first day of trading,  $P_{i,t}$  is the closing price of security  $i$  at the first day of trading,  $P_{i,0}$  is the issue price of security  $i$  at the time of subscription<sup>8</sup>.

Initial return gives us the first glimpse of the profitability of an IPO investment but it is not an accurate measure of investment profitability in real market conditions. The first-day closing price represents what the investors are willing to pay for the firm’s shares. If the offer price is lower than the first-day closing price, the IPO is said to be underpriced and money is left on the table for new investors (Formula 2.). Since existing shareholders settle for a lower offer price/proceeds than what they could have got. Money left on the table represents the wealth transfer from existing shareholders to new shareholders and it is calculated as follows:

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<sup>8</sup> This approach is used (among others) by Al-Hassan et al. (2007).

$$\text{Money left on the table} = (P_{i,t} - P_{i,0}) * Q \quad (2.)$$

where  $Q$  is the number of shares offered and the rest of the symbols are the same as in the formula 1.

Money left on the table is on average about twice the amount of direct cost of carrying out an IPO, and for many firms it can be equal to several years of operating profit. Although most IPOs are underpriced, the level of underpricing varies across IPOs with different issue characteristics, allocation mechanisms, underwriter reputation, and general financial markets conditions. For example, the level of underpricing is generally smaller for larger IPOs, those underwritten by prestigious investment banks, firms with a longer operating history or more experienced insiders on the board, and those companies which intend to use the IPO proceeds to repay debt<sup>9</sup>. On the other hand, technology firms, companies backed by venture capital, firms with negative earnings prior to the IPOs, or entities that went public during a bull market experience greater underpricing<sup>10</sup>.

Bearing in mind that an investor can choose between investment in shares offered in an IPO or choose other equities (alternative investment goals) we have to adjust the Formula 1. We believe that instead of buying IPO shares an investor can buy a market index. We adjust the Formula 1. as follows:

$$AAR_{i,t} = \frac{P_{i,t} - P_{i,1}}{P_{i,1}} - \frac{IND_{i,t} - IND_{i,1}}{IND_{i,1}} \quad (3.)$$

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<sup>9</sup> L. Booth, *The cost of going public, Why IPOs are typically underpriced*, QFinance The Ultimate Financial Resource.

<sup>10</sup> N. Bhattacharaya, E. Demers, P. Joos, *The relevance of accounting information in stock market bubble: evidence in internet IPO*, Journal of Business Finance and Accounting, 37(3) pp. 291-321, April/May 2010.



where the second part of the equation is return on the index in the period  $d$ . The rest of the signs are the same as in the formula 1.

### **3. CEE capital markets overview and IPO underpricing**

The research focuses on capital markets in the Central and Eastern region of Europe (CEE). As most of the capital markets in the CEE region were established in parallel with liberalisation of economic environments of CEE countries approximately two decades ago, they are relatively young. The only exception in CEE region in this respect was Austria, which had by then already had a longer stock market tradition and a liberal economic regime. The comparison of financial and institutional development indicators for this region (World Bank Doing Business publication, 2013) illustrates that in many respects Austrian indicators are more similar to indicators for Euro area than to indicators for CEE region. Yet, this paper analyses CEE region including Austria, since in this way it provides a comprehensive description of IPO performance in geographically area of CEE region. Furthermore, the comparison of CEE capital markets in the 2000s shows that they had many similar characteristics in observed period. One of the factors could be that, due to EU's enlargement after 2004, which included the Czech Republic, Bulgaria, Hungary, Poland, Romania and Slovenia joining, their national regulations and structures quickly became similar to those in Austria and in Western Europe. To sum up the following main common characteristic of capital markets in CEE region in the 2000s. While CEE stock market significance in the national economy measured by market capitalisation-to-GDP ratios remained considerably smaller compared to their developed European counterparts<sup>1</sup> and liquidity measured by turnover velocity remained lower as well, the annual index returns and the annu-

al market capitalisation growth stand out considerably in comparison with developed EU capital markets before 2008,

Table 1. Number of IPOs on the CEE markets in 2000-2012

Exchange	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
WSE	13	9	5	6	36	34	35	68	29	10	26	31	16	318
PRAGUE	0	0	0	0	1	0	2	2	1	0	1	1	0	8
Budapest	0	0	0	0	1	0	3	0	1	2	6	6	0	19
Bratislava	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Liubliana	0	0	0	0	0	0	2	1	1	0	1	2	0	7
Vienna	8	8	2	7	1	6	6	4	1	0	2	2	1	48
Total	21	17	8	13	39	40	48	75	33	12	36	42	17	401

Source: CEE stock exchanges.

Our calculation shows that the majority of IPOs were conducted between 2004 and 2008. A slump in the number new listings is evident in 2009 when the financial and economic crisis culminated. Almost 80 % of IPOs completed in CEE in the period we observe were listings conducted on the Warsaw Stock Exchange, followed by the Vienna Stock Exchange (12 %). Thus, in terms of the number of IPOs, the Polish capital market was dominant in the CEE region. Factors influencing the number of IPOs and their size have been investigated in a relatively limited number of studies where the determinants of going public activities are divided into external such as macroeconomic and capital market factors and internal such as the tendency of a company to reduce leverage or to obtain capital for new projects.

This paper addresses the issue whether local macroeconomic factors have any influence on the number of IPOs and the value of capital raised by IPOs in the emerging market exchanges. The nature of this study is based on the theory and previous empirical research. the decision about going public are dependent on

both macroeconomic and capital market conditions, i.e. that IPOs tend to increase when GDP and stock market index returns are rising. This result implies that the business cycle has a direct impact on the IPO activity in the CEE capital market. The next conclusion is that the attractiveness of a capital market for investors appears to be an important factor for going public activities. The attractiveness of a capital market from the investors' perspective is designed by measures as annual index returns and the annual market and turnover growth.

To provide a relevant description of IPO performance in CEE region, this paper analyse CEE capital markets including the Vienna Stock Exchange. In order to investigate the IPO behaviour on emerging CEE markets, we also provide separate results for emerging capital markets of the Czech Republic, Poland, Hungary, Slovenia and Austria. Our sample covers IPOs in the period 2000–2012 on the stock exchanges of Ljubljana, Prague, Vienna, Bratislava and Warsaw as well as Budapest stock exchange. In order to provide only relevant IPO data, the following additional criteria were applied. To exclude insignificant equity listings (in terms of the size of new capital) we included only companies with at least EUR 10 million of new funds raised (with primary or/and secondary shares), and disregard companies whose primary listing was on another stock exchange as well as companies that are not traded on-exchange any more. In case of double listings we took into account the IPO in the domestic market. We also included privatisations of public companies, but only if they were public offerings (e.g. privatised initial public offering – PIPO). Our calculations show that 33% of IPOs completed in CEE in the observed period were offerings below EUR 10 million. Most (58%) of these small IPOs were executed on the Warsaw SE, on the exchange-regulated mar-

ket (New Connect), where listing rules are less strict compared to EU regulated markets. Our calculation further shows that 24% of companies that executed IPOs had been delisted by the end of 2012. Collected data come from the list of companies that went public from the stock exchanges' internal documentation and from the websites of the stock exchanges, double checking the obtained figures against the detailed case-by-case IPO information on companies' web sites, in IPO prospectuses and companies' annual reports. The industry classification of IPOs was taken from individual stock exchange classification. Datastream provided the market share prices, indices prices and yields to maturity of government bonds for each capital market.

The original sample included 423 IPOs, however by excluding 12 CEE and developed EU IPO outliers identified with scatterplots for initial and 3-years long-run adjusted returns, the final sample was reduced to 401 IPOs in the period 2000–2012. The prevailing capital markets in the CEE IPO sample are the Warsaw SE, which contributed 80% of IPOs market capitalisation in the sample, and the Vienna SE with a 11,9% share. Majority of IPOs in EU sample which we also used to compare its relation to CEE countries are IPOs on the London SE (60% of IPO market capitalisation of the sample) and Deutsche Boerse (36%). Analysis show that average adjusted initial returns for CEE IPO sample are positive for all exchanges included in the sample. A significant first-day underpricing of 11.0% for CEE IPOs is reported and respectively of 12,9 for Warsaw Stock Exchange, 0,6% for Prague Exchange, 22,2% for Budapest exchange, 13,8% for Bratislava exchange, 31,3% for Ljubljana exchange and 1,5% for Vienna. These results reject any hypothesis that initial returns are zero (0) with statistical significance, therefore IPOs on CEE capital markets are underpriced, having

average adjusted positive first day returns, which is confirmed by the data.

Table 2. Average first day initial returns for CEE IPOs in 2000-2012

Exchange	Underpricing level
Warsaw	12,9%
Prague	0,6%
Budapest	22,2%
Bratislava	13,8%
Liubliana	31,3%
Vienna	1,5%
All	11,0%

Data: Own calculation.

Table 2 also summarizes the initial IPO returns for individual CEE capital markets. It shows that average adjusted initial IPO returns are positive for all individual CEE capital markets. Overall, underpricing for CEE region is higher than that for developed EU region. This is again more evident in case of emerging CEE markets. The difference between average adjusted emerging CEE initial returns and developed EU IPO initial returns range from 1.8 to 8.7 percentage points. In addition, volatility of adjusted initial returns for CEE region is significantly higher than that for developed EU region.

## Conclusion

The objective of this paper is to provide a new insight of IPO performance for 6 CEE capital markets in the 2000s. Using a unique database of 401 CEE IPOs we have confirmed initial-day underpricing. We proved significant first-day positive adjusted

returns in the CEE region (ranging from 0,6 to 31,3 percent) and even more positive significant average first-day adjusted IPO returns for emerging CEE region (i.e. CEE markets excl. the Vienna SE; ranging from 8 to 13 percent). Distribution of IPO transaction sizes and their respective performance convince us that outliers drive the differences between unweighted and weighted initial returns. Moreover, we have proven that during the 2000-2012 period average adjusted initial returns on CEE capital markets were statistical significantly higher than on developed EU capital markets. This paper also provides the evidences of the long-run underperformance of CEE IPOs. We have shown that IPOs in CEE capital markets underperform benchmark companies in the long run. We can sum up the analysis on emerging CEE capital markets (excl. the Vienna SE) with the finding that in general IPOs on emerging CEE markets have higher underpricing and lower underperformance, compared to the entire CEE region (i.e. incl. the Vienna SE). This is because the performance of IPOs on the Vienna SE is more similar to those on the developed EU markets, having on average lower underpricing and higher underperformance than that on emerging CEE markets. For investors emerging IPOs are even more attractive than IPOs in the developed markets. This holds for both initial returns as well as for longrun performance.

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