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DETERMINANTS OF THE DIRECT COSTS OF INITIAL PUBLIC OFFERINGS ON THE WARSAW STOCK EXCHANGE

Summary: This study aimed to investigate the relationship between the direct cost of raising equity capital on the Warsaw Stock Exchange (WSE) and some selected variables. The independent variables used in this study are the proxies for: issue size, ownership concentration, a proportion of shares allotted to institutional/large investors, profitability, issuer risk and a stock market situation. The research sample covers 83 companies that conducted IPOs between 2006 and 2015. A multiple regression analysis was used to achieve the adopted objective. The results prove the existence of economies of scale in direct costs of IPOs on the WSE. A negative correlation between ownership concentration and direct costs as a percentage of gross received is also observed. These results are in line with existing literature.

Keywords: direct costs, IPO, Warsaw Stock Exchange.

Introduction

A decision to go public, also known as an Initial Public Offering¹ (IPO), is associated with the costs that have to be incurred. In the literature two components of costs of going public are indicated [Ritter, 1987]: direct costs and underpricing (indirect) costs. According to Ritter, the direct costs, “include the underwriter commission, printing, and auditing expenses; and other out-of-pocket costs” [Ritter, 1987, p. 271]. Polish law requires companies issuing securities to publish a current report after the completion of the public offering process.

¹ While an IPO can be of debt or equity security, this paper focuses on equity issues.

A current report should contain the following components of direct costs: a) costs of preparing and conducting the offer², b) underwriting fees, c) consulting and prospectus preparing costs, d) offer promotion costs [Rozporządzenie Ministra Finansów z dnia 19 lutego 2009, par. 33 ust. 1 pkt 12].

Direct costs can be also classified as obligatory and non-obligatory ones (e.g. promotion costs, underwriters' fees). Some of them can be regarded as fixed costs, while others are variable.

The underpricing cost is the second component of IPO costs. It is measured as the difference between the closing price on the first day of trading and the offer price, divided by the issue price. The more undervalued issued shares are, the higher the cost of underpricing is. The underpricing cost is a gain of new owners who purchase IPO stocks and sell them on the first day of trading, while for the issuing firm it is an opportunity cost. Underpricing influences the amount of 'money left on the table' that is calculated as the difference between the closing price on the first day of trading and the offer price, multiplied by the number of shares sold. The underpricing cost is a phenomenon observed in many financial markets.

Studies on costs of raising equity capital through the IPO have been undertaken by Ritter [1987], Kooli and Suret [2003] and others. Ritter analyzed the direct and indirect costs of raising capital for the best effort offers and best commitment offers IPOs in US from 1977 to 1982. Similar research was conducted by Kooli and Suret for Canadian and US sample of IPOs for the period 1997-1999. Other researchers [Chen and Wu, 2002; Lee et al., 1996] compared costs of IPOs with costs of seasoned equity offers (SEO), both direct and indirect costs.

There are some studies devoted to gross spread (underwriting cost) which is one of the components of direct costs. Existing research reports that the gross spreads charged by underwriters on commitment IPOs in the United States market are higher than in other countries. Chen and Ritter report the clustering of underwriting spreads at seven percent over time while in other countries, e.g. the United Kingdom, Japan, Australia, Taiwan, they are much lower [2000]. This conclusion was confirmed by Torstila [2001], who analyzed gross spreads for IPOs in European countries.

Many researchers investigated factors influencing the costs of going public. A vast number of empirical studies are devoted to factors affecting indirect costs of IPO, while relatively few concern direct costs of IPO. The factors influencing direct costs of IPOs are the subject of several research by Dimovski and the co-

² This includes remuneration for the Brokerage House conducting a book-building process and subscription in the tranche for both individual and institutional investors.

authors. Their research samples include: Australian Real Estate Investment Trusts [Dimovski, 2015], United States Real Estate Investment Trusts (REITs) [Bairagi and Dimovski, 2012] and closed-end funds [Dimovski, Brooks and van Eekelen, 2007].

Kaserer and Kraft [2003] were searching for factors that may influence the average underwriting fees for 117 IPOs on the German capital market for the period 1993-1998. They identified the following determinants: issue size, issuer risk, and offering method complexity [Kaserer and Kraft, 2003, 481].

Existing literature on factors influencing the direct costs of SEOs provides some interesting conclusions that may be used to examine determinants of IPOs. For example, Martín-Ugedo [2003] analyzed factors affecting the cost of raising equity capital for Spanish renounceable equity right issues and similar research was carried out by Warren and Dimovski [2012] for Australian renounceable equity right issues.

As the literature on the factors affecting direct costs of IPO is limited, this paper aims to fulfill this gap. The purpose of this study is to investigate the relationship between the direct costs of raising equity capital through IPO on the main market of the WSE from 2006 to 2015 and some selected variables. The ten-years period covers the significant fluctuations in GDP growth, and in stock market indices pricing. During this period also IPO waves (i.e. fluctuations in the number and volume of IPOs) were observed on the WSE [Wrońska-Bukalska and Golec, 2016]. In the result, issuers had to face different economic and market conditions.

It is widely believed that direct costs depend on issue size, but the question is whether it is possible to indicate other factors affecting direct costs and their components. The multiple regression analysis was employed to achieve the adopted objective³. A range of measures were used to build up regression models, and finally only few were adopted as variables explaining direct costs.

The rest of the paper is organized as follows. After discussing the literature on factors affecting direct costs of raising equity capital, the sample and research method are presented. The next part brings the results of regression models. The conclusions with a direction for future research are included in the last part of the paper.

³ Data was analyzed using IBM SPSS Statistics 22.

1. Literature review on factors influencing direct costs

According to existing literature it is possible to identify a few variables correlated with direct costs of IPO. One of the most important factor seems to be gross proceeds from share issue (issue size). A positive relationship between gross proceeds received and total direct costs is expected. However, direct costs are usually expressed as a percentage of the size of gross proceeds, so the prior studies indicate the existence of economies of scale. It can be caused by two factors: similar fixed costs incurred by issuers and decreasing marginal cost with issue size [Kaserer and Kraft, 2003, p. 485]. This results in a reduction of the average direct cost along with the increase of issuance size. Kooli and Suret by using linear regression came to the conclusion that ‘the total direct cost varies inversely with the size of the offering’ for both Canadian and US IPOs [2003, p. 28]. Economies of scale were also noticed by Dimovski and Brooks [2007] for Australian property trust IPOs from 1994 to 2004 and by Bairagi and Dimovski [2012] for United States REIT IPOs. Although Kaserer and Kraft did not found “clear support for economies of scale in external financing activities” for German IPOs over the period 1993-1998 [2003, p. 481]. Economies of scale are a phenomenon observed also in the case of SEOs [e.g. Warren and Dimovski, 2012].

Another factor that seems to have influence on direct cost of rising equity capital is the ownership concentration. So far, a negative correlation between direct costs and ownership concentration has been observed for SEOs by Martín-Ugedo [2003] and by Warren and Dimovski [2012]. As ownership is more concentrated, it is easier to organize and sell new shares. The question is whether and how this factor is correlated with direct costs of IPOs.

In the literature devoted to going public decision much attention is drawn to the phenomenon called ‘IPO timing’. Researchers observed that the time when the company decides to go public is not a random one. Market conditions play a significant role in taking this decision. Therefore, one can observe fluctuations in the number of IPOs and the total proceeds raised. It is impossible to identify ‘hot’ and ‘cold’ markets as the components of IPO waves [Ibbotson and Jaffe, 1975]. While considering this fact, it is worth examining whether market conditions, especially global financial crises, had an impact on the direct cost of IPOs. This issue has not been extensively examined yet, but existing literature provides mixed results. Dimovski [2015] analyzed the direct cost of Australian REIT IPOs for 1994-2013 period and he did not notice that issues which occurred before the recent global financial crisis had significantly different costs from those in the year 2000 [Dimovski, 2015, p. 204]. The research by Wawryszuk-Misztal [2015]

on the direct costs of Polish IPOs from 2006-2014 provides evidence that after the financial crisis the total direct costs of IPO increased for companies raising less than 50 mn PLN capital, whereas for IPOs above 50 mn PLN this change is not observed. But this conclusion is based on the results of simple statistical tests used to compare the direct costs of IPOs conducted before and after the financial crisis.

Prior research suggest that direct costs of raising equity may be influenced by risk associated with company issuing shares. It can be assumed that the less risky company, the less costly an IPO process is [Dimovski and Brooks, 2007]. As a proxy for company risk the following measures were used: debt to equity ratio, natural logarithm of net asset value, book value per unit, net asset value to issue price and net asset value. Dimovski and Brooks [2007] used natural logarithm of net asset value to explain the direct cost of Australian property trust IPOs. They concluded that IPOs with higher net asset value may be regarded as less risky, so the lower direct costs of rising capital are incurred [Dimovski and Brooks, 2007, p. 10]. Similar results were obtained by Dimovski [2015] for Australian REIT IPOs where net asset value to issue price ratio was applied. The variable 'expected leverage' (Debt to Equity) used by Dimovski was negatively correlated with percentage direct costs but this relationship did not appear to be statistically significant [Dimovski, 2015, p. 198].

Also numerous other factors were employed in existing research on direct costs of IPOs in different countries [i.e. Bairagi and Dimovski, 2012], but these factors cover the specifics of financial markets. For example, underwriting fees are relevant component of direct costs in the United States or Australia, while underwriting agreements were not signed by most companies issuing shares on the WSE.

2. Data collection and sample selection

The research sample consists of 83 Polish non-financial companies that raised equity capital through IPO on the main market WSE. The sample meets the following criteria: (1) observations are for the years 2006-2015, (2) companies that offered only new shares through IPO were included (companies that offered for sales existing shares or existing shares and new shares were excluded), (4) companies that signed an underwriting agreement were excluded, (5) privatized companies were excluded, (6) observations with missing data were excluded.

The data were obtained from different sources. The WSE website provided the information about companies that conducted IPOs on the WSE from 2006 to 2015. Direct costs and gross proceeds data were collected from current reports

published after the completion of the IPO. Prospectuses were the source of information about ownership structure, offer structure (IPO allocation) and financial data that were used to calculate some financial ratios for the year preceding the issuance. The missing variables were gathered from EMIS database and financial portals: money.pl and bankier.pl. Several variables used as a proxy for economic conditions were provided by the WSE website, the Central Statistical Office of Poland and financial portals.

3. Research method

In order to establish determinants of the direct costs, a multiple regression analysis was made. Two groups of models were estimated with the use of different dependent and independent variables. The first group of models adopts the following dependent variables: 1) natural logarithm of total direct costs (LN_COST), 2) natural logarithm of preparing and conducting offer costs (LN_COSTA), 3) natural logarithm of preparing prospectus and advising costs (LN_COSTB), 4) natural logarithm of offer promotion costs (LN_COSTC). The other group of models as dependent variables accepts total direct costs and their components expressed as the gross proceeds of the shares issued: PROC_COST, PROC_COSTA, PROC_COSTB, PROC_COSTC, respectively.

The independent variables used in this study are the proxies for: issue size, ownership concentration, a proportion of shares allotted to institutional/large investors, profitability, issuer risk and a stock market situation. Correlation matrix (the data available at the author's sources) has been used to examine the relationship between variables and to decide which of them to include in the regression analysis. This process enables to choose variables with high explanatory power and remove a multicollinearity problem.

To measure the issue size, the natural logarithm of gross proceeds was used (LN_PROC). Gross proceeds express the amount of capital raised by a company through IPO⁴. It is expected that there will be a positive relationship between gross proceeds and total direct costs, and negative between proceeds and total costs expressed as a percentage of the gross proceeds as a result of economies of scale.

Several variables were used to measure ownership concentration: TOP1, TOP2, TOP3, TOP4, TOP5, HHI (Hirschman–Herfindahl Index), where TOP1

⁴ Sometimes as a proxy for issue size is regarded “the natural logarithm of the maximum amount to be raised from the issue when fully subscribed” [Warren and Dimovski, 2012, p. 16], but in this study this variable was excluded.

expresses the percentage of shares held by the largest shareholder, TOP2 – by two largest shareholders, and so on. The variable HHI was calculated by squaring the percentage of shares of each shareholder⁵, and then summing the resulting numbers. Finally, only the TOP5 variable was found to have relevant impact on dependent variables, so the rest of them was not included in any model. According to prior research a negative correlation between ownership concentration and direct cost of capital is expected.

In the case of Polish IPOs it is worth considering the proportion of shares allotted to institutional/large investors as a variable that may affect direct costs of IPO. New shares were offered for two or three groups of investors: 1) institutional/large investors, 2) small/retail investors and 3) employers/managers or existing shareholders. It is expected that the more shares will be allotted to institutions the lower costs of raising equity will be incurred by issuers. But it should be noted that prior studies have not dealt with this problem, so expectation as for this relationship is based on the author's assumptions. This variable (INST) is calculated using the formula $\ln(1 + \text{percentage of shares offered to institutional/large investors})$ ⁶.

Two financial ratios were applied in the analysis to measure the issuers risk: expected debt to equity ratio (DTEQ) and book value per share (BVperS). DTEQ was computed as the debt for the year preceding the IPO divided by equity capital after the completion of IPO (it is a sum of equity capital for the year preceding the IPO plus gross proceeds received). A positive correlation between DTEQ and direct costs is expected. BVperS was computed for the year preceding the IPO. This variable is expected to be negatively correlated with the direct costs.

As a measure of profitability, operating return on assets (ROA) was employed in regression analysis. It was calculated as net operating profit divided by total assets. A negative correlation between this variable and direct costs of IPO is expected⁷.

Three variables were used as a proxy for stock markets situation (economical condition): annual percentage growth rate of GDP based on constant prices (GDP_t-1), WIG index change in percentage (WIG_t-1), real interest rate

⁵ Only the owners of minimum 5% of shares were taken into account.

⁶ For some offers a zero was assigned as a percentage of shares offered for institutional/large investors as the offer was not divided into tranches.

⁷ Other measures of profitability were applied in this study, e.g. net operating profit divided by sales (ROS) and net operating profit divided by equity (ROE), but they were not included in the models.

(RATE_{t-1})⁸. Only WIG_{t-1} was chosen to build up one of the regression models while other variables seem not to be relevant for explaining the dependent variables. It is difficult to state how WIG_{t-1} may influence the direct costs of IPO.

The summary statistics describing the research sample are reported in Table 1.

Table 1. Descriptive statistics

Variables	N	Minimum	Maksimum	Mean	Standard deviation
Gross Proceeds (thous. PLN)	83	135.2	165000.0	32665.8	30451.0
COST (thous. PLN)	83	241.3	13793.3	1952.0	2010.9
COSTA (thous. PLN)	83	48.0	7546.4	995.9	1218.1
COSTB (thous. PLN)	83	17.9	6027.7	651.5	961.1
COSTC (thous. PLN)	83	4.0	3083.3	304.6	433.7
PROC_COST (%)	83	2.43	328.90	11.96	36.14
PROC_COSTA (%)	83	0.21	102.69	4.53	11.15
PROC_COSTB (%)	83	0.20	207.97	5.54	22.85
PROC_COSTC (%)	83	0.02	30.94	1.88	3.94
PROC_INST (%)	83	0.00	100.00	70.41	21.01
ROA (%)	83	-25.61	57.53	10.45	12.31
DTOEQ	83	0.00	1.92	0.60	0.48
BV (thous. PLN)	83	-0.4	431.0	46.1	72.9
TOP5 (%)	83	43.00	100.00	88.14	13.52

Source: Author's calculations.

The Table 1 reports the average direct costs as a percentage of gross proceeds at the level 11.96%. The largest share of these costs concerns the costs of preparing a prospectus and consulting (5.5% of gross proceeds). Relatively smallest expenditures were incurred on the offer's promotion – only 1.88% of gross proceeds.

4. Results

Table 2 shows the results of the multiple regression analysis for eight models, where total direct costs of IPOs and their components as dependent variables were applied, both expressed in monetary units (Models 1-4) and as a percentage of received gross proceeds (Models 5-8). Standardized coefficients and adjusted R-squared are also reported.

⁸ The daily data for WIBOR 3M were gathered and then the average rate of interest was calculated for every year. Then it was reviewed for the annual inflation rate.

Table 2. Multiple regression analysis results for IPOs on the WSE for 2006-2015

Model	Dependent variable	N	Independent variables							Adj. R2
			LN_PROC	INST	BVperS	ROA	WIG_t-1	TOP5	DTOEQ	
1	LN_COST	83	0.634 (9.262)***	0.171 (2.546)**	0.202 (2.971)***	-0.146 (-2.227)**	—	—	—	0.664
2	LN_COSTA	83	0.539 (6.409)***	0.114 (1.419)	0.123 (1.55)	-0.233 (-2.979)***	0.21 (2.578)**	—	—	0.546
3	LN_COSTB	83	0.266 (3.025)***	0.333 (3.736)***	—	—	—	0.145 (1.674)*	0.339 (3.864)***	0.417
4	LN_COSTC	83	0.372 (3.607)***	—	—	—	—	—	—	0.127
5	PROC_COST	83	-0.574 (-6.48)***	—	—	—	—	-0.167 (-1.888)*	—	0.37
6	PROC_COSTA	83	-0.514 (-5.593)***	—	—	—	—	-0.208 (-2.265)**	—	0.322
7	PROC_COSTB	83	-0.5508 (-6.0974)***	—	—	—	—	-0.173 (-1.911)*	—	0.345
8	PROC_COSTC	83	-0.608 (-6.887)***	—	—	—	—	—	—	0.362

Notes: Values in brackets indicate t-statistics. ***, **, * indicate statistical significance at the 0.01, 0.05 and 0.1 level, respectively

Source: Author's calculations.

As expected, gross proceeds (LN_PROC) seem to be most correlated with the direct cost of IPO and each of their components. Positive and high coefficients in Models 1-4 suggest that an increase in gross proceeds leads to an increase in total direct costs or their components.

For direct costs and its components expressed as a percentage of gross proceeds (Models 5-8), negative and significant correlations between costs and gross proceeds are observed. These results prove the existence of economies of scale in the direct costs of IPOs on the WSE. It is in line with the results arising from prior research for other financial markets reported in this study.

Table 2 indicates that ownership concentration (TOP5) seems to affect the costs of IPOs, but this significant relationship is observed only in Models 3, 5, 6, 7. A negative correlation between ownership concentration for Models 5, 6, 7 allows for the conclusion that the more concentrated ownership, the lower direct costs in percentage. This is consistent with existing literature on direct costs of SEOs.

The proportion of shares allotted to institutional/large investors (INST) is an important factor influencing the total direct costs (Model 1) and costs of preparing prospectus and consulting (Model 3). Surprisingly, the more shares are of-

ferred to large investors, the higher costs are incurred by the issuer. It may result from the issuer's belief that institutional investors reward better prepared IPOs, so the company incurs higher costs to meet the expectations of investors. Retail investors usually are perceived as less interested in analyzing the detailed information on the company's issuing shares. What is more, the results for Models 5-8 (i.e. irrelevance of this factor for costs expressed as a percentage of gross proceeds) suggest that while incurring higher direct costs and costs of preparing a prospectus in particular, it is possible to receive higher proceeds.

Table 2 reports the positive correlation between WIG_{t-1} and the costs of preparing and conducting IPOs (Model 2). This may suggest that brokerage houses require from issuers higher fees when the financial market provides a high rate of return. This variable was not employed in the rest of the models because of its low explanatory power.

The results suggest that a more profitable company (ROA) incurs lower total direct costs (Model 1) and costs of preparing and conducting IPO (Model 2). This conclusion is in line with the expectations.

Other variables reported in Table 2 are a proxy for risk associated with the issuer. The variable book value per share (BVperS) has an important impact on total direct costs and costs of preparing and conducting IPO (Models 1 and 2). The positive correlation received in this study is in contrary to expectations and prior research [Dimovski and Brooks, 2007]. Another variable that reflects the company's risk is debt to equity ratio. But in this case the results are in line with prior studies (Model 3). The higher debt to equity ratio is, the higher costs of preparing a prospectus and consulting are.

While comparing the adjusted R-squared presented in Table 2 it is worth noticing that model 4 has the lowest explanatory power. This is probably due to the fact that the costs of promotion are not obligatory, so they are affected by a different set of predictors. Seeking of them might be the aim of future research.

Conclusions

This study evaluated determinants of the direct costs of IPOs on the WSE in a sample of 83 in the period between 2006-2015. The results highlight the existence of economics of scale. The total direct costs and its components: costs of preparing and conducting IPO, costs of preparing a prospectus and consulting and costs of promotion expressed as a percentage of gross proceeds can be decreased as issue size increases. These types of costs (except promotion costs) are also affected by ownership concentration. As expected, the higher level of ownership concentration, the lower these costs are. These findings confirm the prior investigations.

Other independent variables (e.i. BVperS, ROA, WIG_t-1, DTOEQ) used in regression analysis were relevant only for certain models.

There are arising some interesting issues from the findings of this study. These issues enable to indicate the direction for future research. Firstly, as the previous research on determinants of direct costs is not numerous, it is worth continuing this research including additional variables or apply other research methods (e.g. structural equation modeling – SEM). Secondly, the question is whether it is possible to evaluate determinants of gross proceeds or find a relationship between incurred costs and received capital expressed as a percentage of expected gross proceeds. Thirdly, it is worth conducting similar research for companies placing their shares on NewConnect market – the Polish multilateral trading facilities.

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**DETERMINANTY BEZPOŚREDNICH KOSZTÓW
PIERWSZYCH PUBLICZNYCH EMISJI AKCJI NA GIEŁDZIE
PAPIERÓW WARTOŚCIOWYCH W WARSZAWIE**

Streszczenie: Celem opracowania jest zbadanie zależności między bezpośrednimi kosztami pozyskania kapitału własnego na GPW w Warszawie a wybranymi zmiennymi wyrażającymi wielkość emisji, koncentrację własności, wielkość transzy zaoferowanej inwestorom instytucjonalnym, rentowność, ryzyko emitenta oraz sytuację na rynku finansowym. Próba badawcza obejmuje 83 przedsiębiorstwa, które w okresie 2006-2015 przeprowadziły pierwsze publiczne emisje akcji. Jako metodę badawczą zastosowano analizę regresji wielokrotnej. Otrzymane wyniki wskazują na występowanie zjawiska ekonomii skali w odniesieniu do kosztów emisji akcji. Zauważono także negatywną zależność korelacyjną między koncentracją własności a kosztami bezpośrednimi w ujęciu procentowym. Otrzymane wyniki są zgodne z dotychczasowymi badaniami.

Słowa kluczowe: koszty bezpośrednie, pierwsza oferta publiczna, GPW w Warszawie.