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EARNINGS MANAGEMENT AND UNDERPRICING OF IPOS ON AN EMERGING MARKET

Abstract: The empirical design of this study concentrates on earnings management activities around initial public offerings of equity (IPOs). Previous studies for developed markets mostly concluded that many companies managed earnings around important company events. Such practices were especially aggressive around important corporate events, and the IPO is reputedly one of them.

This study aims at the measurement of the pervasiveness of earnings management and describing its consequences for company short-term market pricing on an emerging market, mainly for Poland. Earning management was measured with discretionary accruals proxied with the application of cross sectional models.

The empirical research provided evidence that earnings management practices were also reported for Polish IPO companies around IPO. However, strong differences in aggressive earnings management among IPO firms were revealed during the subperiods of stable or bull versus bear market. Earnings management approximated by discretionary accruals had informative power in explaining first-day IPO returns.

Keywords: equity issuance, initial public offering, IPO, emerging market, earnings management, underpricing.

JEL classification: G12, G14, G30, G32, G34, M40.

ZARZĄDZANIE ZYSKAMI I UNDERPRICING DLA SPÓŁEK DEBIUTUJĄCYCH NA RYNKU WSCHODZĄCYM

Streszczenie: Wiele z dotychczasowych badań dla rynków wschodzących dowiodło, że praktyki manipulowania zyskami są powszechne wśród przedsiębiorstw, a zjawiska te nasilają się szczególnie w okolicy pewnych zdarzeń. Jednym z nich są pierwotne emisje akcji (IPO).

Badania, których wyniki zawiera opracowanie, koncentrują się na manipulowaniu zyskami w okresie debiutu giełdowego dla Polski należącej – w okresie badania – do grona rynków wschodzących. Rezultaty dotyczą pomiaru skali tego zjawiska oraz jego konsekwencji dla rynkowej wyceny spółki. Pomiar zjawiska manipulowania zyskami następuje poprzez wykorzystanie *proxy* w postaci tzw. *discretionary acruals*, szacowanych z wykorzystaniem przekrojowej wersji modeli opartych na podejściu Jones.

W roku debiutu poziom *discretionary accruals* był dodatni i statystycznie istotny, co pozwala wnioskować o występowaniu zjawiska manipulowania zyskami. Jednak skala agresywnego zarządzania zyskami różniła się w okresach prosperity i dekoniunktury giełdowej. Wykazano, że istnieje związek pomiędzy skalą manipulowania zyskami aproksymowaną poziomem uznaniowych korekt (accruals) i poziomem krótkoterminowego underpricingu.

Słowa kluczowe: emisja akcji, pierwotna emisja akcji, IPO, rynek wschodzący, zarządzanie zyskami, manipulowanie zyskami, underpricing.

Introduction

Many empirical studies have reported strong market interest in earnings announcements (e.g. Hotchkiss & Strickland, 2003; Francis, Schipper, & Vincent, 2002; Bernard & Thomas, 1989). The quality of earnings has been one of the widely discussed issues in contemporary finance. They have demonstrated the importance of corporate income as one of the key financial data for market participants.

Profitability usually attracts more investor attention around important company events. The initial public offering of equity (IPO) seems to be one of those corporate events when firms may be especially motivated to boost their earnings. Firms that go public usually have a much shorter financial history than mature, already listed public companies. It should be assumed then that key accounting numbers such as earnings have a strong impact on IPO pricing, as relatively little is usually known about IPO firms (Nagata, 2013). IPO firms seem to be more inclined to artificially overstate financial performance to opportunistically influence IPO pricing along with the hypothesis

of managerial opportunism (for developed markets see Theo, Welch, & Wong, 1998). On the other hand, reporting standards for public companies should make the monitoring more effective (see the discussion in Ball & Shivakumar, 2005, 2008).

Starting with the early study by Ibbotson (1975), initial IPO returns have been broadly empirically tested all over the world (i.e. Ritter, 2003, among many others). For Poland, underpricing was discussed by Aussenegg (2000), Jelic and Briston (2003), Lyn and Zychowicz (2003), Jewartowski and Lizińska (2012), Cornanic and Novak (2013) and Czapiewski and Lizińska (2014).

Although both the phenomenon of underpricing and earnings management have been extensively explored, the question of whether earnings management influences the underpricing level has not been examined in depth for both developed and emerging markets. A review of the literature allows us to believe that this is the first such study for Poland.

Earnings management practices together with equity price behaviour after going public seem to be to some extent country-specific which makes it interesting to study the pervasiveness and the pricing consequences of earnings management around equity offerings for the Polish capital market which is one of the most important European markets. Additionally, about ninety per cent of IPO firms in Poland in the period 2000–2013 had positive net income in the pre-IPO and IPO years which validates the question about earnings quality and its consequences for equity pricing for Polish firms.

The study was financed by the National Science Centre, Poland as a research project (2015/19/D/HS4/01950). The rest of the paper is structured in the following way. In the next section the research sample is described. Section 2 concentrates on underpricing. In section 3 discretionary accruals are discussed. Section 4 tests the explanatory power of earnings management for underpricing. The last section states the conclusions.

1. Sample characteristics

The research sample includes equity initial public offerings (IPOs) on the Warsaw Stock Exchange in Poland (WSE). The sample covers only such offerings that were connected with a new common stock issuance and that had no prior trading history on alternative markets.

The source of the data was Notoria Serwis, the official site of the WSE (http://www.gpw.pl) and www.gpwinfostrefa.pl. The preliminary tasks encompassed the construction of a comprehensive database covering equity

quotation (including necessary adjustments such as splits, pre-emptive rights and dividends) and financial statements, also for currently delisted companies. Microsoft Excel with Visual Basic for Applications and the R platform were applied to complete the necessary statistical procedures.

The initial sample consists of 255 IPOs completed from 2000 to 2013 on the Warsaw Stock Exchange. The sample period encompasses as well bull as bear markets. As a large body of literature indicates on the IPO-timing problem, the research was done also for subperiods to take the market optimism factors also into account. Figure 1 plots the values of the main Polish WSE index WIG across the selected subperiods: 2000–2005, 2006–2009, and 2010–2013.

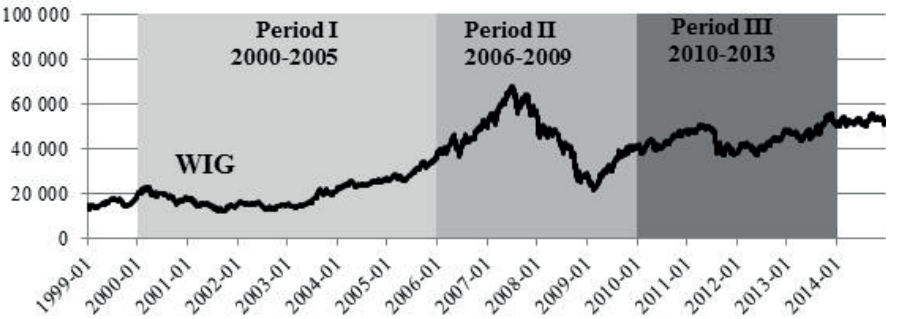

Figure 1. Warsaw Stock Exchange Index changes across research subperiods

The Polish capital market was undergoing a change during the research period. The first six years represented years without particularly extraordinary market down- or upturns. The period from 2006 to 2009 was alternately a strong bull and bear market: equity prices went strongly up to a peak at the end of 2007 and many firms were very active on the IPO market. Then a period of a huge equity price fall was observed and investor sentiment was strongly negative. The financial crisis was accompanied by a considerable drop in IPO activity in 2008 and 2009. After the recession, a positive change in investor sentiment started at the end of 2009 which was reflected in a higher level of equity prices. Starting from 2010, a period of a relatively stable market was observed. However, IPO activity remained weak up to the end of the research period.

The descriptive statistics are given in table 1. IPO firms were characterised by pre-IPO company size (book value of assets, A), operating return on sales (earnings before earnings and tax by sales, ROS), income change (percentage change of the net income, ΔNI), leverage (debt in relation to company assets,

Table 1. Sample characteristic

	A	ROS	ΔNI	LEV	VOL	PR_ UND	PR_IDX	ROA
Panel A: 2000–2013								
Mean	286 mln PLN	11.15%	111.73%	55.13%	2.93%	13.89%	0.07%	6.09%
Median	68 mln PLN	9.56%	83.63%	57.34%	2.34%	10.72%	0.08%	4.61%
N	254	252	252	248	255	253	255	253
Panel B: 2000–2005								
Mean	322 mln PLN	5.95%	87.45%	57.15%	2.88%	9.45%	0.10%	3.58%
Median	85 mln PLN	7.80%	84.31%	58.66%	2.07%	7.88%	0.10%	3.26%
N	83	83	83	82	84	83	84	83
Panel C: 2006–2009								
Mean	141 mln PLN	12.43%	111.28%	56.05%	3.23%	21.58%	0.05%	7.46%
Median	46 mln PLN	9.73%	78.24%	57.38%	2.74%	21.15%	0.10%	5.86%
N	122	121	121	120	122	122	122	121
Panel D: 2010–2013								
Mean	1 439 mln PLN	16.59%	98.80%	49.49%	2.01%	5.44%	0.06%	7.00%
Median	195 mln PLN	14.93%	89.47%	49.92%	1.92%	4.41%	0.06%	3.89%
N	49	48	48	46	49	48	49	49

LEV), early market volatility (standard deviation of closing prices during the first month in the aftermarket, VOL), average previous underpricing (mean of initial returns reported for other companies issuing during half–of--the year, PR_UND), market sentiment before IPO (mean WIG returns during half-of-the year period before the issuance, PR_IDX), net profitability of assets (net income in relation to the book value of assets, ROA).

2. Underpricing level

Short-term IPO performance is usually measured with adjusted abnormal initial returns. For short-term studies, a market index is usually used as a benchmark. Initial price performance was observed on the first day in the aftermarket. The returns were calculated with daily close prices. The raw initial return for security *i* (IR_i) was calculated as:

$$IR_I = \frac{IP_i}{PO_i} - 1, \tag{1}$$

where:

IP_t – the first aftermarket price for IPO *i*,

PO_i – the offer price for IPO *i*.

Then, an initial adjusted return for security *i*(IAR_i) was calculated as:

$$IAR_i = IR_i - IR_i^{WIG}, \tag{2}$$

where IR_i^{WIG} – the return on the Warsaw Stock Exchange Index (WIG) in the IPO day.

The necessary procedures were applied to minimise the potentially detrimental effect of extreme observations. The Cramer von Mises test was used to test the distribution normality (CvM). Both conventional parametric and non-parametric tests were employed, namely the Student t-test (t-Stud) and the Wilcoxon test (W). A summary representation of the WIG-adjusted initial returns for the whole sample is given in Table 2.

Table 2. Initial adjusted IPO returns

IR	2000–2013		2000–2005		2006–2009		2010–2013	
Mean	11.03%		8.87%		14.77%		4.31%	
Median	5.39%		5.15%		8.11%		3.61%	
p-value (t-stud)	0.0000	***	0.0000	***	0.0000	***	0.0204	**
p-value (W)	0.0000	***	0.0000	***	0.0000	***	0.0072	***
Stand. dev.	0.205		0.128		0.265		0.116	
Skewnesss	1.280		0.595		1.365		0.006	
Kurtosis	2.522		–0.296		2.619		0.832	
p-value (CvM)	0.0000	***	0.0137	**	0.0000	***	0.0113	**
N	217		64		111		42	

Notes: Significance at the 1% (***), 5% (**) and 10% (*) level.

The short-term WIG-adjusted returns for IPOs were positive and significant as well for the whole sample period as for the subperiods. However, the level of underpricing was not constant during the analysed period. Before the crisis years and the years of the most galloping equity prices, underpricing averaged at 8.87% (with a median equal to 5.15%). The corresponding values were nearly two times smaller during the post-crisis years with a mean of 4.31% (3.61% median). The average initial adjusted returns were highest in the turbulence years.

3. Earnings management around IPO

Firms obviously do not inform about artificially inflated earnings, so it is impossible to measure earnings management directly. Instead, proxies such as accruals, smoothness, timeliness, or loss avoidance were used (e.g. Tucker & Zarowin, 2006; Basu, 1997; Burgstahler & Dichev, 1997; Sloan, 1996; Jones, 1991). Here, the first of these was applied.

Total real accruals were defined as the change in non-cash net working capital less the depreciation (Jones, 1991):

$$TACC_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - \Delta CL_{it} - Depr_{it}, \tag{3}$$

where:

$TACC_{it}$ – total accruals for company i in year t,
ΔCA_{it} – change in current assets for i company in year t, where the change (Δ) is computed between time t and $t - 1$,
$\Delta Cash_{it}$ – change in cash for i company in year t,
ΔCL_{it} – change in current liabilities for i company in year t,
$Depr_{it}$ – depreciation expense for i company in year t.

Accruals and their components were scaled by lagged assets to reduce heteroscedasticity (Ronen & Yaari, 2008).

Total accruals were decomposed (as in Jones, 1991) into:

$$TACC_{it} = NDACC_{it} + DACC_{it}, \tag{4}$$

where:

$NDACC_{it}$ – non-discretionary accruals for i company in year t,
$DACC_{it}$ – discretionary accruals for i company in year t.

Non-discretionary (normal) accruals are the adjustments that are mandated by legislative bodies. Discretionary (abnormal) accruals are not obligatory, but are allowed to be used by managers. As discretionary accruals can be a mean of transferring earnings between reporting periods, they are commonly used as a proxy for earnings manipulation (e.g. Dechow & Schrand, 2004; Ball & Shivakumar, 2008).

DeAngelo (1986) proposed a model for abnormal accruals calculation assuming that non-discretionary accruals are typical for a company and that the fluctuating level of total accruals is because of the changing level of discretionary accruals. As the level of non-discretionary accruals can also vary

over time, Jones (1991) proposed a model that allowed controlling for the changes in economic circumstances. However, the traditional Jones model may underestimate discretionary accruals if firms manage earnings by the time of the location of sales.

In the present study, the modified Jones model is applied, as proposed by Dechow, Sloan, Sweeney (1995). For IPO firms, the data for a longer time series before going public is often missing, so the cross-sectional version of the model was applied (DeFond & Jiambalvo, 1994; Subramanyam, 1996; DuCharme, Malatesta, & Sefcik, 2001). The initial sample was reduced to IPO firms with the complete data for accruals. The non-discretionary accruals' estimation procedures ensured that the benchmark industry sector consists of at least five companies and IPO firms were restricted up to the second year after going public to be included in the benchmark sector for another IPO. The normal accruals were estimated as:

$$NDACC_{it}^{MJ} = \alpha_{i1}\left(\frac{1}{A_{it-1}}\right) + \alpha_{i2}\left(\Delta REV_{it} - \Delta REC_{it}\right) + \alpha_{i3}\left(PPE_{it}\right), \qquad (5)$$

where:

A_{it-1} – total assets for company i in at time $t - 1$,
ΔREV_{it} – revenues for company i in year t less revenues in year $t - 1$,
ΔREC_{it} – receivables for company i in year t less receivables in year $t - 1$,
PPE_{it} – gross property, plant and equipment in year t for company i,
α_{i1}, α_{i2}, α_{i3} – firm-specific parameters estimated according to the ordinary least square regression.

Earnings management was approximated around the issue time, mainly for the year of going public (Y), for the two preceding years (Y – 1 and Y – 2) and for the consecutive years (Y – 1, Y + 2, Y + 3, and Y + 4).

Accruals modify the timing of earnings and if managers want to influence company pricing, window-dressing techniques are very probable for the IPO period. Hence, it was expected that discretionary accruals would be positive or at least higher for the period around going public. The results for discretionary accruals are detailed in table 3 above and illustrated below in Figure 2.

The level of discretionary accruals in the issuance year seems to support the hypothesis of IPO firms engaging in aggressive income-increasing earnings management. The levels of average discretionary accruals were positive and much higher in the IPO year in comparison to the surrounding years. Abnormal accruals in the IPO year were relatively higher for the pre-crisis years 2000–2005, which probably resulted in strongly negative values for the

Table 3. Discretionary accruals around the IPO time

	Y–2	Y–1	Y0	Y+1	Y+2	Y+3	Y+4
Panel A: 2000–2013							
Mean	–0.101	–0.027	0.089	–0.050	–0.027	–0.025	0.021
Median	–0.035	–0.018	0.058	–0.020	–0.031	–0.020	–0.005
p-value (t-stud)	0.0037	0.2982	0.0016	0.0012	0.0075	0.0155	0.1163
	***		***	***	***	**	
p-value (W)	0.0007	0.0566	0.0001	0.0058	0.0027	0.0206	0.8121
	***	*	***	***	***	**	
Stand. dev.	0.48	0.38	0.41	0.23	0.15	0.15	0.19
Skewnesss	–0.31	0.34	0.55	–1.30	0.03	–0.24	1.14
Kurtosis	3.76	4.47	3.00	4.08	0.03	0.96	2.69
p-value (CvM)	0.0000	0.0000	0.0000	0.0000	0.0056	0.0000	0.0000
	***	***	***	***	***	***	***
N	190	210	217	224	219	202	189
Panel B: Subperiod 2000–2005							
Mean	–0.021	–0.004	0.183	–0.114	–0.019	–0.011	–0.007
Median	–0.005	0.006	0.096	–0.057	–0.031	–0.020	–0.022
p-value (t-stud)	0.6818	0.8657	0.0084	0.0116	0.3016	0.6353	0.7441
			***	**			
p-value (W)	0.9177	0.9729	0.0047	0.0170	0.1392	0.4690	0.1119
			***	**			
N	54	59	64	71	73	68	67
Panel C: Subperiod 2006–2009							
Mean	–0.187	–0.046	0.060	–0.047	–0.028	–0.028	0.043
Median	–0.077	–0.049	0.061	–0.033	–0.040	–0.022	0.006
p-value (t-stud)	0.0021	0.4075	0.1447	0.0041	0.0430	0.0264	0.0368
	***			***	**	**	**
p-value (W)	0.0003	0.0396	0.0422	0.0061	0.0318	0.0383	0.3766
	***	**	**	***	**	**	
N	99	108	111	111	110	107	107
Panel D: Subperiod 2010–2013							
Mean	–0.040	–0.012	0.059	0.026	–0.046	–0.034	0.009
Median	–0.027	–0.000	0.031	0.021	–0.014	–0.017	0.000
p-value (t-stud)	0.2658	0.5914	0.0193	0.1077	0.0853	0.1079	0.7924
			**		*		
p-value (W)	0.2189	0.5662	0.0403	0.0800	0.1792	0.2343	0.8904
			**	*			
N	37	43	42	42	36	27	15

Notes: Significance at the 1% (***), 5% (**) and 10% (*) level.

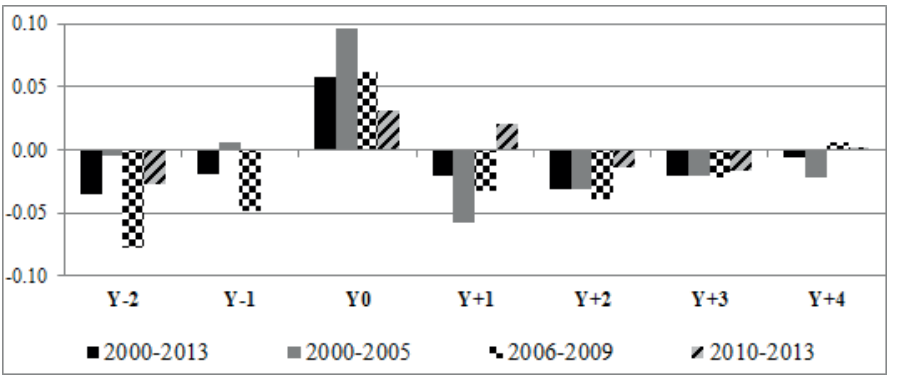

Figure 2. Median discretionary accruals for subperiods

following year. The lowest (but still positive) abnormal accruals were reported for the post-crisis years, when the averages for the next year were not negative. It is also worth pointing out that they were also much higher in the year before IPO as the averages for subperiods were mostly very close to zero (or, at least, much less negative, or even positive). However, it seemed that firms used relatively conservative accounting in the prospectuses of financial statements in comparison to the numbers reported in the IPO year.

4. Relation between earnings management and underpricing

The importance of earnings management for short-term IPO price behaviour was checked with the use of a regression analysis. Initial WIG-adjusted returns were the dependent variables.

Earnings manipulation around IPO was approximated by discretionary accruals in the IPO year (DACC_Y0). However, as the level of discretionary accruals seemed to be also higher for the year before IPO, the proxy for earnings management in the pre-IPO year was also included in the explaining variables (DACC_Y-1).

Control variables were also introduced. They refer to the ex-ante uncertainty hypothesis: natural logarithm of the company size (LNA), net profitability of assets (ROA), operating return on sales (ROS), income change (ΔNI) and early market volatility (VOL). The next variable, namely leverage (LEV), was connected with the signalling theory. Finally, two variables were connected with windows of opportunity: average previous underpricing (PR_UND) and market conditions before issuing (PR_IDX).

Two regressions parameters were reported in table 5. The first model involves all of the variables (Model 1) and the second incorporates only statistically significant explanatory variables and those with p-values just near the cut-off point of significance.

Table 4. Regression results

	Model 1			Model 2		
	coefficient	p-value		coefficient	p-value	
DACC_Y-1	0.062	0.0023	***	0.062	0.0021	***
DACC_Y0	–0.054	0.0532	*	–0.051	0.0645	*
LNA	–0.002	0.8081				
ROA	0.271	0.1430		0.388	0.0106	**
ROS	0.076	0.2100				
ΔNI	–0.015	0.0000	***	–0.015	0.0000	***
VOL	0.566	0.0013	***	0.545	0.0015	***
LEV	0.021	0.7818				
PR_UND	0.163	0.1467		0.161	0.1414	
PR_IDX	33.656	0.0047	***	35.424	0.0025	***
Intercept	0.053	0.6573		0.039	0.1062	
Adj. R^2	0.757			0.758		
N	199			199		

Notes: Significance at the 1% (***), 5% (**) and 10% (*) level.

The results of the regression analysis proved the importance of earnings management in explaining the underpricing level. The relation between underpricing and earnings management proxies was positive for discretionary accruals in the pre-IPO year and negative for accruals in the IPO year. As mentioned in the second section, the level of underpricing is influenced by the offer price and the first-day market price. We hypothesise that boosting profits in the pre-IPO year and in the IPO year may be motivated differently, resulting in the relation between earnings manipulation proxy and underpricing. Some companies may be interested in increasing the offer price by pre-IPO window-dressing, while others seem to boost earnings later, in the IPO year, when the company attracts a lot of market attention and tries to increase the market price. Besides, if there is a suspicion that the earnings are being managed, valuation uncertainty is assumed to increase, leading to a discounted offer price. Such results encourage developing the issue in further follow-up studies.

Conclusions

IPO firms have a strong motivation to manage earnings when they go public. Most of investors' attention is attracted by newly listed firms not only in the year of going public but also in the surrounding periods. Usually, the market reacts positively to high earnings but IPO firms sometimes do not achieve such high income as would be expected. Then, they try to boost their earnings to be more attractive to investors.

IPOs were divided according to the offer time and in relation to the market situation. The importance of market sentiment for IPO pricing was proved by Agathee, Brooks, and Sannassee (2012) among others. The research also provided evidence that there were strong differences in earnings management among IPO firms during the subperiods of stable, or bull and bear markets. However, the IPO-year discretionary accruals were positive and statistically significant.

The study proved that earnings management approximated by discretionary accruals had an informative value in explaining first-day IPO returns in Poland. More aggressive earnings management in the pre-IPO period was associated with higher underpricing. It seemed that lower offer prices were given to firms with more boosted earnings by using discretionary accruals. Upward IPO manipulations were associated with greater ex-ante uncertainty, and investors might have been inclined to demand more discounts at the time of the offer. The market might have reacted more optimistically to firms with higher earnings which also leads to higher underpricing. The results are to some extent in line with Nagata and Hachyia (2007) who found evidence that firms with conservative earnings management had higher offer prices. The results are also in line with Nagata (2013) who showed that boosting earnings by discretionary accruals by IPO firms in the pre-IPO period was associated with higher underpricing.

Aggressive earnings management in the IPO year was connected with lower underpricing. Ball and Shivakumar (2008) reported that it is unlikely that investors are systematically deceived when earnings are artificially inflated, as public firms experience greater monitoring and scrutiny in financial reporting. However, our results are similar to e.g., Aharony et al. (1993), Friedlan (1994), or Chaney and Lewis (1995).

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