

**Issuing bonds, shares or staying private?**  
**Determinants of going public in an emerging economy**

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**ABSTRACT**

The Warsaw Stock Exchange is one of Europe's largest exchanges by the number of IPOs, although it retains features of a market in post-transition countries, including a relatively small size, shallowness and a weak institutional framework. In this study, we use a large dataset to explore firms' decisions to issue equity on the main or alternative market and debt on the bond market. We observe that in general, larger, more profitable firms are more likely to go public, although in contrast to developed economies, these firms tend to be younger. Moreover, we find that current market valuation positively affects the decision to go public on the main market, and we establish that highly leveraged companies are more likely to issue either shares on the alternative market or bonds. At the same time, however, we observe that firms issuing shares on the alternative market are most likely to manipulate their profitability prior to going public.

**Keywords:** going public, capital markets, equity, corporate bonds, emerging markets

**JEL Classification Codes:** G10, G15, G32

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## 1. Introduction

Over the past two decades, unprecedented changes have occurred in the economies and financial systems of Europe's post-transition countries. An important aspect of these changes is the increasing role of capital markets relative to their size in the economy. On the one hand, despite their rapid development, capital markets remain relatively underdeveloped in post-transition countries compared to developed countries; they also demonstrate significantly lower efficiency and governance standards (Prorokowski and Roszkowska, 2014). On the other hand, in some of these countries the market values of initial public offerings (IPOs) have surpassed the levels observed in many developed countries. For example, in 2013, the Warsaw Stock Exchange (WSE) witnessed 54 IPOs worth EUR 1.1 billion (USD 1.5 billion), which caused it to rank second in Europe behind the London Stock Exchange by number of offerings and fifth by value (PwC, 2014). It is surprising, however, that little is known about the decision to go public in post-transition countries, which differs from decisions in developed countries and may therefore attract different companies.

In our study, we use a dataset of 3,570 non-financial firms to analyze the determinants of issuing equity on the main market (WSE) and the alternative market NewConnect (NC) in the years 2000-2012. Additionally, we investigate the determinants of issuing corporate bonds on the debt market (Catalyst), as many obligations linked to becoming a public firm, such as reporting and auditing requirements, are similar to issuing equity on the capital market. On the other hand, we determine that the characteristics and *ex-post* performance differ significantly between firms going public using equity and debt instruments.

We find that larger and more profitable firms are more likely go public on the main market in Poland. Additionally, we document that prior to the financial crisis of 2008 firms' high leverage was positively related to the likelihood of issuing shares. The situation changed, however, after the crisis, which we attribute to increased risk aversion in the financial system and credit constraints in post-transition countries. In contrast to the literature, we find that the age of companies is negatively related to the likelihood of issuing equity. We explain this result by the heritage of the economy;

older companies are often former state-owned companies with strong ties to the government. Such companies are generally not interested in going public, as they would be forced to disclose more information.

In line with our expectations, the empirical results show that smaller, younger and less profitable firms, as well as companies with fewer tangible assets are more likely to go public on the alternative market instead of the main market. Moreover, we find that current market valuation and profitability are among primary drivers behind the decision to go public on the main market, while they do not increase the likelihood of issuing shares on the alternative market. In our opinion, the results suggest that companies use windows of opportunity to issue shares only in the case of the main market. One explanation for this outcome is generally low interest among analysts with regard to small, high-risk companies traded on the alternative market.

Lastly, we find that companies that issue debt instruments are large, yet still young. Interestingly, they report already high levels of leverage and low levels of cash, which is in contrast with our expectations. Additionally, we document that public companies are more likely to issue debt later on. In contrast with the results concerning equity markets, we do not find that profitability or growth increase the likelihood of issuing debt. Moreover, the *ex post* analysis reveals that companies that issue shares manipulate their profitability and growth rates prior to going public. We show that firms' profitability and growth drops significantly in the year following the IPO on the main and alternative market. In contrast, we do not find any evidence that companies that issue debt manipulate their earnings or other ratios prior to going public.

Our study contributes to the existing literature in three ways. First, this study fills in an important gap in the literature identifying the firm-level determinants of going public decisions in a post-transition country. The results show that some firm-specific determinants are different in comparison to developed countries, which in our opinion is partially due to the economic heritage of the former political system. Second, the study verifies the determinants of issuing equity and debt, while also taking into consideration two different equity markets. We document that both *ex-*

*ante* and *ex-post* firm-level determinants differ across the equity and debt markets. Third, we conduct an empirical analysis to investigate the determinants of decisions to go public during the recent financial crisis of 2008. Our results indicate that some determinants changed their significance during the period, which we attribute to changes in the financial system induced by the crisis.

The remainder of the paper is organized as follows. In Section 2, we provide background information on the development of the capital market in Poland. Section 3 reviews the relevant literature on decisions to go public and outlines our predictions. Section 4 presents the data, methodology and descriptive statistics, and in Section 5, we discuss our results. Section 6 presents our conclusions.

## **2. Institutional Framework**

The WSE reopened in 1991 after fifty years of communism, with the first listed companies being four former state-owned firms. Since that time, the market developed gradually through privatization and IPOs of former state-owned companies (Jelic and Briston, 2003). At the end of the last century the privatization was almost completed and, henceforth, IPOs have been made by small and medium-sized companies of private origin, which were typically founded in the last two decades.

In 2013, the WSE reported one of the highest numbers of IPOs in Europe for a consecutive year. According to an annual survey (PwC, 2014), the WSE ranked second among all European exchanges by the number of IPOs in 2013, while the year before it was number one. Although, the number of IPOs decreased from 105 to 54, the market experienced an increase in the offered value of IPOs from EUR 806 million to EUR 1,134 million. As a result, in terms of the value of IPOs, the WSE ranked fifth among all European exchanges in 2013.

On the other hand, the WSE remains relatively small when we consider stock market capitalization and trading volume relative to the size of the economy. Moreover, the fact that the

WSE has not yet joined the stock market consolidation process in Europe is a sign of its weakness. The WSE attempted to take over some exchanges in the region, yet so far unsuccessfully. To remain independent and compete with other stock exchanges in central and eastern Europe (CEE), especially Austria's Wiener Stock Exchange, the WSE needs to acquire a stock exchange in the region or enter into a strategic alliance (Kowalewski, 2014). Meanwhile, however, its management has decided to develop further the capital market in Poland. As a consequence, the WSE opened the NC market in 2007, offering an alternative trading system. The NC market allows early-stage, growing companies, especially those in the high-tech sector, to tap the capital markets. Additionally, in 2009, the Catalyst bond market was launched by the WSE, which led to significant growth in the debt securities market. The debt securities market amounted to 41% of GDP in 2013 and was the largest and most liquid in the CEE region. The bond market, however, is made up of 90% government bonds, with corporate bonds accounting for only approximately 4%. Nevertheless, the Catalyst debt instruments trading system is an important driver of the recovery for the market of non-Treasury bonds in Poland. The nominal value of non-Treasury debt instruments listed on Catalyst has increased more than 25% since 2012 (Kowalewski, 2014).

In sum, three different capital market segments have been created in Poland for companies wanting to go public in the last two decades. These markets are developing rapidly despite the global financial crisis of 2008. At the end of 2013, a total of 450 companies, including 47 foreign-owned, were listed on the main WSE market. The main market listed the largest number of companies among all exchanges in the CEE region and witnessed 13 IPOs with a value greater than EUR 1,123 million in 2013. As a result, it was the largest market based on the capitalization, turnover and number of IPOs in the region. The alternative equity market NC and the corporate bond market Catalyst are also developing quite rapidly. As of December 2013, 450 and 113 companies were publicly listed on the NC and Catalyst markets, respectively. One of the problems of these markets, however, is the small size of the companies going public, especially on the NC market; their riskiness is another. Indeed, a large number of companies either went bankrupt on the

NC market or have defaulted on their bonds on the Catalyst market in recent years. Therefore, to make the markets attractive for individual and institutional investors, the WSE decided to establish the Institute for Analysis and Rating in 2014. This new institution will offer a broad range of rating products aimed at different market segments, in particular the corporate bond market for non-financial small and medium-sized enterprises.

In conclusion, the WSE is, on the one hand, one of the biggest markets in Europe based on the number of IPOs and their value. On the other hand, the market still shows characteristics of an emerging market, such as shallowness, weak institutional structure and low governance standards. For the above reasons, a study on the determinants of going public in a post-transition transition economy offers an interesting subject while complementing existing research. Moreover, differences between the segments of the WSE offer also fertile ground for in-depth research.

### **3. Literature Review and Hypotheses**

Most existing studies present some common determinants of companies' decisions to go public, yet there are still some contradictory findings. Additionally, a small number of studies investigate the decision to go public using equity and debt at the same time, while there are none in the context of an emerging market. Consequently, our knowledge on issuing equity and debt in a post-transition country is scarce. In this section, we briefly review the literature and build our hypotheses. The relevant studies can be divided into two strands.

The first strand of the literature analyzes the determinants of decisions to go public. Ritter (1991) suggested that firms may time their IPOs to exploit the fact that other firms in the same industry are overvalued. Rajan and Servaes (1997) confirmed the existence of windows of opportunity using analyst data following IPOs. Their results suggested that the 'hot issue' periods are mainly driven by inflated expectations, which eventually lead to poor long-term returns. Pagano et al. (1998), who investigated the determinants of Italian companies' decisions to go public, reported that foremost the increase in stock market valuation of other firms within the same industry

increased the likelihood of a company going public. Albornoz and Pope (2004) confirmed their results and showed that the probability of an IPO is positively affected by the stock market valuation of firms in the same industry in the UK. Moreover, they reported that the industry market to book ratios diminish after the IPO, which in their opinion speaks in favor of the hypothesis related to the windows of opportunity. In line with the previous results, Ljungqvist and Boehmer (2004), using hazard models, documented that stock market returns of firms in the same industry positively affected the likelihood of an IPO in Germany. However, they also showed that firms were less likely to go public when IPO activity increased by one standard deviation, suggesting the presence of bottlenecks or capital constraints in Germany. Based on the existing findings we formulate our first hypothesis.

**H 1: *The high market-to-book ratio of companies in the same industry increases a company's propensity to issue shares.***

Pagano, Panetta, and Zingales (1998) claimed that the size of a company is a good proxy for information asymmetry. Additionally, they argued that on top of the initial expenses (e.g., legal and underwriting fees) going public implies considerable direct costs, such as audit costs and stock exchange fees. Because many of these expenses do not increase proportionally with the size of the company, they weigh more heavily on small firms. As a result, a company's size should be positively related to the likelihood of going public, which indeed they documented. Albornoz and Pope (2004) also found that the probability of going public increased with the size of the companies in the UK. The initial costs and fixed costs related to being a public company affect companies regardless of whether they issue shares or bonds. Henceforth, we state the following hypothesis.

**H 2A: *Company size and maturity are positively correlated with the decision to go public.***

Rydqvist and Högholm (1995) investigated the decision to go public in a sample of family-owned corporations in Sweden. They found that the likelihood of going public is positively related to firms' age and that a significant portion of the firms' shares are sold by existing shareholders. Pagano, Panetta, and Zingales (1998) argued that because information asymmetry affects equity

more than debt, information costs are greater for equity than for debt. On the one hand, Helwege and Packer (2003) show that firms that issued private bonds had higher median sales and assets. On the other hand, they also document that younger firms are more likely to go public on the debt market. This line of reasoning leads us the next hypothesis.

**H2B: *The relation between company size and maturity is weaker in the case of the decision to issue bonds than it is for equity.***

The shareholders of privately held companies tend to be overexposed to equity and firm-specific risks. The negative relationship is related to the size of the share of the owners in the company, firm profitability and its specific risk. Pastor et al. (2008) argued that the diversification benefit of going public is risk reduction because a portfolio of stocks and bonds is less risky than concentrated private firm holdings. Moreover, the bigger the firm, the larger the stock owned by the initial shareholders and their incentive to diversify by going public (Albornoz and Pope, 2004). According to Fischer (2000), the diversification incentive to go public is higher for firms that belong to riskier industries, whereas he considers that the level of intangible assets is a good proxy for risk. Using a large sample of German firms, he documented a positive and very strong relationship between the level of intangible assets and the probability of going public on an alternative market. As going public using shares or bonds allows better risk diversification and therefore riskier firms are more likely to go public, we formulate H3 in the following form.

**H 3: *The riskier companies are more likely to go public.***

Bodnaruk et al. (2006) documented that firms owned by less diversified shareholders are also more likely to go public when the companies' profits are high, as both the risk and high profitability levels tend to revert. Moreover, according to Ritter's (1991) market-timing hypothesis, owners might take advantage of the profitability and go public, hoping that investors will assume that high profitability is persistent and therefore overvalue their shares. Consequently, the probability of going public should be positively related to both stock prices of similar companies as well as to firms' profitability (Albornoz and Pope, 2004). Indeed, Pagano et al. (1998) confirmed a positive and significant relationship between profitability and the likelihood of an IPO. Similarly,



Fischer (2000) documented a significant positive relationship between a return on assets ratios and the probability of going public on the alternative stock market in Germany. Additionally, Shirasu and Xu (2007) find that high quality or high growth Japanese firms tend to access the public bond market, while low quality or low-growth firms use more bank debt. In contrast, Albornoz and Pope (2004) show that profitability is negatively related to the decision to go public in the UK. They argue that low profitability of firms may reflect the fact that they cannot generate sufficient internal funds to finance large investments and henceforth need to go public. Nevertheless, we still assume that profitability should positively affect the decision to issue shares as well as bonds and, therefore, we have formulated the following hypothesis.

**H 4: *Profitability positively influences the decision to go public.***

Pagano and Röell (1998) use a theoretical model to demonstrate that companies are more likely to go public if they need a large amount of new funding relative to their value. Similarly, Ritter and Welch (2002) argue that most firms go public primarily to raise new capital for growth. Research by Pagano et al. (1998), however, does not support this prediction in the case of Italian companies. The coefficient for investment is not statistically significant, and the coefficient for growth is significant only at the 10% level. Nevertheless, Fischer (2000) establish that growth opportunities are important determinants of the likelihood of going public among small firms in Germany. Additionally, Kim and Weisbach (2008) use a large cross country sample to show that most companies use the new funds raised during the IPO for several purposes, including financing growth. Based on these findings, we formulate the following hypothesis.

**H 5: *Financing needs positively influence the likelihood of going public.***

According to the pecking order theory by Myers and Majluf (1984), firms initially deploy internal equity to meet their financing needs. They then use external debt, and lastly, external equity. In line with this theory, highly leveraged firms with investment opportunities should be more likely to issue equity. In contrast, firms with low leverage should prefer debt over equity. Pagano et al. (1998) reported that companies do not go public to finance subsequent investment, but rather to rebalance their accounts after a period of high investment and growth. They find that

leverage has a negative impact on the likelihood of an IPO, yet this effect is not significant at conventional levels. Similarly, Albornoz and Pope (2004) showed that companies' decision to go public was related negatively to their leverage levels in the UK. Kim and Weisbach (2008) suggested that firms use the new funds to reduce debt, among other purposes. Based on the existing theoretical and empirical results, we formulate the following hypotheses.

**H 6A: *High leverage positively influences the decision to issue shares.***

**H 6B: *Low leverage positively influences the decision to issue bonds.***

The second strand of the literature investigates the changes in firms' main motives and traits after they went public. Pagano et al. (1998) conducted an *ex post* analysis, comparing the IPO firms' post listing performance with the performance of private companies. They found evidence that profitability declines after the IPO, and the deterioration increases from the first year after the IPO to the third year after listing. Pastor et al. (2008) supported these findings by presenting a theoretical model, which predicts that a firm's profitability should drop after it goes public and that on average this drop should be larger for firms with more volatile profitability and firms with less uncertain average profitability. Moreover, using data for the US, they confirm that firm profitability, measured by return on equity ratios, declines significantly after the process of going public is completed. This allows us to formulate our last hypothesis.

**H 7: *Companies report lower profitability in the year after they go public.***

## **4. Empirical Modeling**

### *4.1. Data*

The financial data on private and public companies we use comes from the Amadeus databases. Because our goal is to study the determinants of the decision to go public, we restrict our attention to quoted and unquoted firms that are limited companies and therefore satisfy the listing requirements. Consequently, most of the firms in our sample are either large or medium in size.

Additionally, we exclude firms from the financial sector, as they differ intrinsically in the nature of their operations and reporting from the industrial and services firms constituting our sample.

In total, we have 20,934 firm-year observations, including 3,296 observations for public companies covering the 2000-2013 period. The sample includes firms going public by issuing equity on the main market (WSE), alternative market (NC), and bonds on the debt market (Catalyst). The information on the equity and debt issues was hand-collected from the annual statements of the stock exchange. Our sample contains a total of 554 security issues, of which 191 took place on the main market, 302 on the alternative market, and 61 on the bond market.

Panel A in Table 1 presents the distribution of observations in our sample by the form of going public and by year. The results reveal some volatility in the number of initial public offerings of shares and bonds over time. As the alternative market was founded in 2007 and the bond market in 2009, there are no observations on public offerings prior to these dates for those segments. In Panel B, we show the distribution of observations in the sample by industry. It is noteworthy that the majority of the share and bond issues are initiated by service companies. One explanation for the results is that these companies have a higher propensity to go public as they gain from additional publicity (Albornoz and Pope, 2004). Another explanation is that those companies do not have abundant collateral and therefore find it easier to raise funds on the capital market than from banks (Allen, Bartiloro, and Kowalewski, 2006).

[Table 1]

#### *4.1.Method*

We divide our investigation into three stages. First, following Pagano et al. (1998), we employ a logit model to investigate the firm-related determinants of the decision to issue shares or bonds. The dependent variable is a qualitative attribute and its equals 1 when a company goes public during the analyzed period, and 0 if the company remains private. As we distinguish between different segments of the capital markets, we apply three types of dependent variables that take the value of 1 when a company goes public on the main market (WIPO), alternative market (NIPO) and bond

market (BIPO), respectively. We use as independent variables one period lagged accounting data to avoid the timing problem, as the year-end financial statements are presented in the following years.

Second, we employ multinomial logit models in which the probabilities of an IPO on the main and alternative markets were analyzed against the probabilities of staying private. Next, we expand the model and analyze additionally the probability of issuing debt against the probability of issuing shares or staying private, whereas we also later use logit models. As previously, the independent variables are one period lagged in all the specifications.

Third, we use logit and multinomial logit panel models to establish whether companies artificially manage their financial ratios before their public offering of shares or bonds. In contrast to the previous regression we employ contemporary accounting data in the regressions. Moreover, as a robustness check we employ a random effects panel model.

Following the literature, we employ a number of independent variables that proxy for different drivers of the decisions to go public. Pagano, Panetta, and Zingales (1998) argued that the probability of going public should be positively correlated with the age and size of a company as adverse selection cost is a bigger problem for young and small companies that have little track record and low visibility. We use two alternative variables to proxy for a firm's size: logarithm of total assets (ASSETS) and logarithm of sales (SALES). Additionally, we employ firms' age (AGE), which also illustrates the uncertainty concerning their future profitability, whereas firms prefer to go public when uncertainty about their future profitability is high (Ljungqvist and Boehmer 2004).

The literature review indicates that firms that go public rebalance their capital structure. We measure leverage as total debt over total assets (LEVERAGE). Following Fischer (2000), we employ a proxy for risk and assume a positive correlation between this variable and the likelihood of an IPO. As a measure of risk we use two variables: tangible assets over total assets (TANGIBLE) and fixed assets over total assets (FIXED). Pagano and Röell (1998) argued that most firms go public and raise new funds for several purposes, including financing growth. We proxy for investment opportunities by using capital expenditures over total fixed assets (CAPEX).

Additionally, we measure a firm's growth as the annual rate of growth in sales, computed as sales in year  $t$  minus sales in year  $t-1$  divided by sales in year  $t-1$  (GROWTH).

A firm that exhibits temporary high performance can initiate a public offering in the hope that investors would interpret its high profitability as permanent (Albornoz and Pope, 2004). In our study, profitability is computed in three alternative ways: as a return on assets (ROA), earnings before interest and taxes (EBIT) over total assets (EBIT\_A), and EBIT over sales (EBIT\_S). Further, we use the profitability measure in the *ex post* analysis when we compare the *ex post* performance of the companies that went public. We also control for the cash holding of the company (CASH), which we compute as cash over total assets.

Furthermore, we employ macroeconomic control variables in the regressions. We proxy for the existence of overvaluation of other industry firms in specific periods using the market to book ratio for the industry from which the firms that go public (MVBV) originate. In the regressions the industry market-to-book value is the median market-to-book value of equity for publicly traded companies in the same industry in each year.

A decrease in the cost of debt makes raising equity relatively less attractive. We approximate conditions in the debt market employing the three-month Warsaw Inter-Bank Offered Rate (WIBOR). Lastly, current macroeconomic conditions may determine a company's future profitability and thus its valuation (Ljungqvist and Boehmer, 2004). We proxy for the overall economic situations employing the yearly GDP growth rate (GDP). We present the description of all the variables in the Appendix.

In Table 2, we provide the descriptive statistics for the variables used in our analysis as well as the correlation coefficients among them. The median firm in the sample has PLN 50.4 billion (USD \$16.8 billion) in assets, sales growth of 4.4%, return on assets of 4.3%, a debt to capital ratio of 50.2%, capital expenditures of 16.1% of net property plant and equipment and is 16 years old. In Poland, however, a company's age is not easily measurable for firms that were created before the transition to the market economy. Although some companies started their operations before 1989, it can be argued that the transition meant a new beginning as they underwent a privatization process.

Therefore, we measure the age for companies that were operating before 1989, as starting their operation in this year.

[Table 2]

#### 4.2. *Univariate analysis*

We address the issue of potential differences in medians between companies that went public and firms from our control samples in Table 3. In the first three columns, the control group is constituted by companies that were never present on the public market, but belonged to industries which were represented on the WSE, NC or any other public market, respectively<sup>2</sup>. In the last column of Table 3, we compare BPO-firms with companies that never issued debt on the public market, but belonged to industries present on any of the three public markets.

Several differences in medians are statistically significant according to the Mann-Whitney test. Overall, we conclude that in a year directly preceding public offerings WIPO-, NIPO- and BPO-firms had a lower ratio of tangible fixed assets to total assets (TANGIBLE), invested more in fixed assets (CAPEX), and grew faster in terms of sales (GROWTH). Apart from that, WIPO- and BPO-firms were generally more profitable than their peers. In case of the NC market the positive differences in medians for both ROA and EBIT\_A were not statistically significant. Finally, differences in medians for LEVERAGE and three out of four differences in medians for CASH were not statistically significant. All signs of the above mentioned statistically significant differences in medians are in line with our expectations.

Special comments should be added to the results for the variables AGE and SIZE, for which statistically significant negative differences in medians were observed. We may assume that older companies are often former state-owned enterprises and, henceforth, have heritage from the previous system such as stronger political ties, which may result in higher information asymmetry, and reduce the probability of public offering. The same refers to the coefficients for SIZE, as the largest companies are generally former state-owned companies, which were often founded before 1989. The heritage of the post-transition countries may explain the significant differences between

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<sup>2</sup> Industries are defined here by the first two digits of the NACE Rev. 2 classification.

our results and that for western European countries or the US. Additionally, it should be noted that the results in Table 3 do not take into account the industry characteristics of companies that went public, which can distort the simple differences in medians. Therefore, in the following section we will perform a multivariate analysis that will enable us to control for the industry characteristics.

[Table 3]

## **5. Empirical Results**

### *5.1. Determinants of the decision to go public*

In this section we estimate logistic models of the probability of going public. First, we study the determinants of going public on the main market, then on the alternative market and finally on the debt market. In the following section, we investigate earnings management prior to going public.

#### *5.1.1. WSE-firms vs. private companies*

In Table 4, we present the results of logit model estimations, with which we investigate the determinants of going public on the main market. In all specifications, the control sample was constituted by companies that never went public, yet operated in industries present on the main market. In all the regressions we include industry group dummies. Specifications (1) and (2) cover the period of 2000-2012, while models (3)-(4) and (5)-(6) explain WIPO determinants in pre-crisis and crisis subperiods, i.e., years 2000-2006 and 2007-2012, respectively. The econometric properties of the models are satisfactory, allowing for statistical inference. Each time the set of independent variables jointly explains the dependent variable in a statistically significant way at levels below 1%. Furthermore, in all specifications 6 to 8 out of 9 estimated coefficients for the explanatory variables are individually statistically significant and at levels mostly below 1%.

The independent variables generally affect the WIPO probabilities in the expected directions. WIPO-firms were on average more profitable (ROA and EBIT\_A), had lower cash holdings (CASH), and needed more investments in fixed assets (CAPEX). Their level of tangible fixed assets to total assets in the period directly preceding IPO was also quite low (TANGIBLE).

Furthermore, the results suggest that faster sales growth (GROWTH) increased the probability of going public; however, only the coefficients for the whole sample period and the coefficient in one out of two specifications for the crisis period were statistically significant. According to Subrahmanyam and Titman (1999), as the market for firms' products expands and future demand uncertainty increases, public financing becomes more attractive. Henceforth, the results indicate that more risky (H3) and profitable (H4) companies are more likely to go public.

The coefficient for the variable MVBV is positive in all specifications, yet statistically significant at the 5% level only in the whole period, and in the pre-crisis subperiod. Consequently, we find only partial evidence for H1, which states that firms go public to use favorable pricing of an industry to which a given company belongs in a given moment.

In contrast to Pagano, Panetta, and Zingales (1998), our results suggest that firms go public on the main market to finance subsequent investment and growth. Moreover, it should be noted that in the case of LEVERAGE, the estimated coefficient changes its sign. Statistically significantly positive coefficients for the pre-crisis period contrast with statistically significantly negative ones for the crisis period. The inversion of the relationship between LEVERAGE and WIPO probability supposedly led to a statistically insignificant coefficient observed in the whole sample period. Yet, the change in the coefficients' signs is not surprising. In the pre-crisis period, a high leverage was characteristic for companies that exhausted their chances of acquiring funds on the debt market. Thus, in line with the pecking order theory by Myers and Majluf (1984), they were more eager to increase equity. Conversely, high leverage companies were less likely to go public on the main market during the financial crisis of 2008. On the one hand, the results may indicate that high leverage was perceived by potential investors as an indication of high default risk, which reduced the likelihood of IPO during the crisis. On the other hand, the low leverage may be the results of the financial crisis and reduced access to bank credit during the crisis, which forced the companies to go public (Allen, Jackowicz, and Kowalewski, 2013).

Moreover, in specifications (3) and (4) the coefficients for AGE are negative and statistically significant at the 5% level, while they are significant at levels below 1% in all the other



specifications. Hence, the results indicated that IPOs on WSE are more likely for younger companies. On the one hand, the results are in contrast to our expectations (H2), which is not surprising considering the specificity of the older companies in post-transition countries. On the other hand, however, we observe a positive relation between a firm's size and WIPO probability. The coefficient for SIZE is statistically significant at the 10% level for the whole period and the pre-crisis subperiod. These relations could not be easily reflected in a univariate analysis. While, our results are contradictory (H2), they indicate that former state-owned companies are less likely to go public. An explanation for the results could be the political patronage of the former state-owned companies that discourages them from disclosing information.

[Table 4]

### 5.3. *WSE- and NC-firms vs. private companies*

In Table 5, we present the results for multinomial logit models, in which probabilities of IPO on the main market (WIPO) and the alternative market (NIPO) were analyzed against probabilities of staying private. Thus, in this part each multinomial logit model consists of two equations. The control sample was constituted by companies that never went public but operated in industries that were represented on any of the two equity markets. As the NC market opened in 2007, we restricted our estimations to the crisis period only, i.e., 2007-2012. The econometric properties of the models are again satisfactory. The set of explanatory variables is jointly statistically significant at levels below 1%, and most of the estimated coefficients are also individually statistically significant.

We observe several similarities between WIPO- and NIPO-firms. Compared to their private competitors, both of these groups grew faster, as the coefficient for the GROWTH variable is positive and statistically significant in three out four regressions, invested more in fixed assets (CAPEX), had higher leverage (LEVERAGE) and were younger (AGE). Furthermore, in multinomial logit models all coefficients estimated for TANGIBLE and CASH are negative, but they are statistically significant only in the case of WIPO-companies.

With regard to the differences in estimates for WIPO and NIPO, WIPO-firms were more profitable than their private peers, while in the case of NIPO-firms the situation was different. The

coefficients for ROA and EBIT\_A in specifications (2) and (4) were negative, although insignificant. The results are not surprising when we take into account the fact that the alternative market was created for young companies. We may, henceforth, assume that young companies, which are able to break even, may try to go public on the NC market. Indeed, we find that growth in a company's size decreased the probability of NIPO, but increased the probability of WIPO, although the latter relationship was statistically insignificant. Overall, it means that WIPO-firms were bigger than their NIPO-counterparties, which was expected considering the differences between these two markets.

In line with our previous results in Table 4, we find that better pricing of industries on the main market stimulated chances of WIPO. In contrast, we establish that the favorable pricing reduced the chances of IPO on the alternative market. Consequently, the results show that companies going public on the NC are using windows of opportunities to a lesser degree than WSE firms. Rajan and Servaes (1997) showed that more firms complete IPOs when analysts are particularly optimistic about the growth prospects of recent IPOs. Henceforth, one explanation for our results may be the low interest in this market by institutional investors and analysts, as the NC market is perceived to be risky, and the listed companies are small.

[Table 5]

#### *5.4. WSE-, NC- and Catalyst-firms vs. private companies*

In Table 6 in specification (1) through (6) we present the results when we simultaneously analyze potential determinants of an IPO on the WSE and NC, as well as a public offering of bonds on the Catalyst market. Every multinomial logit model includes three equations, each of which concerns the probability of an IPO on the WSE, NC and a bond offering on Catalyst, respectively, in relation to the probability of staying private. The control group is constituted by companies that never went public but belonged to industries that were present on any of the three segments of the Polish capital market. As the Catalyst market inaugurated in 2009, our sample was restricted to the period of 2009-2012. The set of independent variables in all models explains the probability of a public offering in a statistically significant way at levels below 1%, which allows for statistical

inference. Due to the limited sample size and short period of analysis, the standard errors for estimated coefficients are higher than in the previous specifications, which results in fewer coefficients being individually statistically significant. In comparison with previous specifications, a new variable, WIBOR, was added to the set of explanatory variables. We add this variable to reflect the alternative cost of borrowing, which may co-determine the probability of going public on the bond market.

With regard to the probabilities of an IPO on the WSE and NC, the estimation results are almost the same as in the multinomial model for WIPO and NIPO, presented individually in Table 5. Therefore, we restrict our inference to the BPO equations presented in specifications (5) and (8) in Table 6. In line with our expectations (H2B), we find that BPO-firms were larger (SIZE), yet again younger (AGE) than their private counterparts. The BPO-firms had fewer cash holdings (CASH) and surprisingly worse profitability as measured by EBIT to total assets. Our results partially contradict the existing findings, as Helwege and Liang (1996) and Denis and Mihov (2003) documented that public bonds are issued by large, yet profitable firms. On the one hand, the lower profitability of the companies that go public with debt contradicts our expectation (H5) and the prior results for the equity market. On the other hand, the results confirm that companies that issue equity are taking advantage of temporary increases in profitability in the hope that investors will perceive high profitability as persistent and overvalue their shares. Indeed, the coefficient for MVBV is insignificant in all the specifications for BPO-firms, which confirms the market-timing hypothesis only for the equity market (Ritter, 1991).

Moreover, we find a negative coefficient for the tangible assets to total assets ratio but this coefficient was statistically significant only at the 10% level in specification (6). Consequently, the results weakly suggest that riskier companies go public with debt (H3), especially if we also take into account their low profitability. All the coefficients for the other firm-specific variables are insignificant. Therefore, in contrast to the results for the equity market, we do not find evidence that companies are issuing debt to finance subsequent investment or growth (H5).

Lastly, we find that the coefficient for WIBOR is insignificantly related to the likelihood of going public on the equity market. The results are in line with Rees (1997), who also did not find any significant link between the number of IPOs and UK interest rates. In contrast, we document a positive relation between the issuance of bonds and market rates. The coefficient for WIBOR is positive and statistically significant at least at 5% in all the specifications for BPO-firms. One explanation for the results is that on average the interest rate costs on the money market increased during the period of investigation, as the Polish economy was not strongly affected by the financial crisis of 2008. At the same time, companies faced credit constraints mainly related to financial problems of the foreign banks' subsidiaries in the home market. Henceforth, companies increasingly borrowed on the bond market despite the increasing interest costs.

[Table 6]

In specifications (1) to (6) in Table 6 we aimed to compare companies that went public in with companies that never followed such strategy. In specifications (7) and (8) the logit models explain the probability of a public offering on the bond market in relation to the probability of avoiding bond issuance. In this case we do not exclude firms listed on the equity market from the control sample. Additionally, we use an additional binary variable LISTED, which takes the value 1 if the company was present on the equity market, and 0 otherwise. As previously, we observe that public bond offerings were more probable for larger (SIZE) and younger (AGE) companies with fewer cash holdings (CASH). The positive coefficient for the variable LEVERAGE suggests that the bond market was targeted mostly by companies that generally preferred debt over equity financing, although theoretically high leverage should encourage firms to issue shares instead of bonds (H6B). All the coefficients for the other firm-specific variables are again insignificant.

Lastly, we see that the fact of being listed on WSE or NC was a significant determinant of bond offering, as the coefficients for the variable LISTED were positive and statistically significant at levels below 1%. Therefore, experience gained in entering the equity market seems to facilitate going public process on debt market. In line with the previous results, we find that companies are more likely to issue debt in in periods of high WIBOR rates.

[Table 6]

### 5.5. *WSE vs. NC vs. Catalyst-firms*

In all previous specifications, with the notable exceptions of specifications (7) and (8) in Table 6, the probability of a public offering was analyzed against the probability of staying private. In Table 7, we show the results of the logit regression where we use only the data on companies that went public on any of the three markets, where we estimate the probability of WIPO vs. NIPO, WIPO vs. BPO, and lastly NIPO vs. BPO.

In specifications (3) and (4) we removed industry dummies due to the limited number of observations. The results in Table 7 are in line with those presented in Table 5 and 6, where WIPO-, NIPO- and BPO-firms were compared to private ones. The estimates of the type ‘WIPO vs. private firms’ and ‘NIPO vs. private firms’, however, do not allow for a direct statistical inference about differences between WIPO- and NIPO-companies. Using the proposed approach we are able to address these problems and investigate more closely the firm-specific determinants of decisions to go public on one of the three markets.

The largest sub-sample is constituted by WIPO- vs. NIPO-firms. Specifications (1) and (2) reveal that WIPO-companies are bigger (SIZE) and older (AGE) than their NIPO-counterparts. Moreover, the companies on the main market are more profitable (ROA and EBIT\_A) and have more tangible fixed assets in their balance sheets (TANGIBLE). The results are not surprising considering that the NC market is designed for younger and riskier companies, which may also explain why the NIPO firms are more leveraged (LEVERAGE). Moreover, in line with findings in Table 6, we infer that better pricing of a firm’s industry on the main market increases the probability of an IPO on the WSE instead of on the NC. With regard to WIPO vs. BPO and NIPO vs. BPO models, conclusions should be drawn cautiously as the relevant sub-samples are limited.

Specifications (3) and (4) show that an IPO on the main market is more likely than a public offering of bonds for more profitable companies (ROA and EBIT\_A) and those investing more in fixed assets (CAPEX), while all other firm-specific and macro control variables are not significant.

Lastly, specifications (5) and (6) analyze IPOs on the alternative market compared to public offerings of bonds. We find that going public on the alternative market is more likely for smaller companies (SIZE) and interestingly in periods of lower WIBOR rates. As the coefficient for the WIBOR rate was not significant in the specifications for the WIPO-firms the results may suggest that larger companies may prefer to issue debt instead of going public on the alternative market.

[Table 7]

### *5.2. Analysis of the earnings management prior to going public*

Having analyzed the determinants of going public, we verify whether companies artificially manage their financial ratios in a year directly preceding their decisions to go public. For this purpose, we analyze yearly changes in basic financial ratios in the period around public offerings. In particular, we build logit models explaining *ex-post* probability of being a WIPO-, NIPO- or BPO-firm with firms' specific characteristics and current yearly changes in financial ratios. Our dependent variables are the same as before WIPO, NIPO and BPO, yet we do not use lagged firms' financial ratios as independent variables. In the specifications for WIPO and NIPO we include industry group dummies, which are removed from models for BPO due to the limited number of observed public bond offerings which can be analyzed in a post-offering setting. Each model includes SIZE, AGE and GDP to control for a company's size, age and stage of the economic cycle, respectively. It should be noted that in all specifications the sets of explanatory variables are jointly statistically significant, which allows for statistical inference.

#### *5.2.1. Analysis of the ex-post consequences on the WSE*

In Table 8, we find that an IPO on the main market results, as expected, in a decrease in leverage and simultaneously an increase in the ratio of cash to total assets. The coefficients for the variables  $\Delta$ LEVERAGE and  $\Delta$ CASH are significant in all the specifications at the 1% level. In two out of three specifications the coefficient for  $\Delta$ TANGIBLE is positive and statistically significant, although only at the 10% level. Consequently, we find weak evidence that the new financial resources are invested in a short run in tangible fixed assets.

Nevertheless, from the perspective of our hypotheses concerning earnings management, the most important are statistically significant coefficients mostly at levels below 1% for the variables  $\Delta ROA$ ,  $\Delta EBIT\_A$  and  $\Delta EBIT\_S$ . Their negative signs mean that the profitability of a company drops significantly after the IPO on the main market. Although the decreases in ROA and EBIT can be partially related to a sudden increase in the denominator due to the IPO, the EBIT to sales ratio should not be affected in such a way. However, we find also that the coefficient for the variable  $\Delta SALES$  is negative and statistically significant at levels below 1% in most of the specifications. Thus, the results also indicate that sales diminish after the IPO, whereas the coefficient for  $\Delta GROWTH$  is insignificant. Consequently, our results indicate that companies manage profitability ratios before an IPO to influence investors' decisions (H8).

[Table 8]

### 5.2.2. Analysis of the ex-post consequences on the WSE and NC

Table 9 presents the results of the multinomial logit regressions of the *ex post* analysis of the likelihood to issue equity on the WSE or NC market. In the case of shares issued on the alternative market the results are generally comparable to those discussed above, although fewer coefficients are statistically significant due to a much shorter observation period. As previously, in specifications (4)-(6), we find that the leverage of companies that went public on the alternative market NC decreases. Separately, for NIPO-firms we document a statistically significant increase in capital expenditures. The coefficient for  $\Delta CAPEX$  is significant at the 5% level in two specifications and at the 10% level in one specification.

It is worth noting that all profitability ratios tend to drop after an IPO on the NC, and the obtained coefficients for the variables  $\Delta ROA$ ,  $\Delta EBIT\_A$  and  $\Delta EBIT\_S$  are statistically significant at levels below 1% in all the specifications. Hence, the drop in profitability seems to be bigger for companies that go public on the alternative market than on the main market. As companies from the alternative market are on average riskier, our results support the model of Pastor et al. (2008) who predict that firm profitability declines more after the IPO, on average, for firms with more volatile

and less uncertain profitability. Overall, the results confirm that profitability ratios are managed before going public on the equity market (H8).

[Table 9]

### 5.2.3. Analysis of the ex-post consequences on the WSE, NC and Catalyst

In specifications (1) - (9) in Table 10 we show the results of the multinomial logit regression of the *ex post* analysis of the likelihood to go public on the WSE, NC, and Catalyst. We find that the determinants for going public on the equity market are in line with the previous results in Table 9, although the analysis covers only the years 2009-2012. Consequently, we demonstrate again that the profitability ratios drop significantly after going public on the equity market (H9).

As we mentioned, the specifications (1) – (9) show the results of the multinomial logistic regression, while the specification (10) – (12) presents the results of the logistic regression for the *ex post* analysis on the likelihood to go public on the debt market. In all the specifications the coefficients hardly change, which confirm the robustness of our results. However, the results for BPO-companies are more ambiguous, which can be the results of much fewer public-offerings of bonds that can be analyzed *ex post*. Moreover, we assume that bond investors are more interested in collateral and stable cash-flows than an above-average profitability. Consequently, we are not surprised to find that we do not observe a statistically significant drop in profitability ratios after issuing bonds. The coefficients for our profitability variables are insignificant in all the specifications. We establish only, as anticipated, a statistically significant increase in LEVERAGE. The positive coefficient for this variable is obvious and directly related to the debt issuance.

[Table 10]

We conducted a robustness check and estimated random-effects panel models, whereas we use as dependent variables the two profitability measures ROA and EBIT\_S. The sample includes all the firms that we used in the previous regressions. We also applied the same control variables. However, we now employ a dummy variable WIPO, which takes the value 1 in the year directly preceding an IPO on the WSE, and 0 otherwise. Similarly, we use the dummy variables NIPO and BPO, which takes the value 1 in the year preceding going public either on the NC or Catalyst, and 0



otherwise. The results of the estimations are presented in Table 11. It should be noted that in all specifications the explanatory variables are again jointly statistically significant.

The results of the robustness check confirm our previous findings presented in Table 10. We find that the coefficients for the dummy variables WIPO and NIPO are positive and statistically significant mostly at levels below 1% in all the specifications. Therefore, the results strongly support the hypothesis that firms manipulate their profitability ratios in the year directly preceding the IPO (H8). We assume that companies try to manipulate the ratio to successfully go public and to achieve better valuation. In contrast, we do not find any evidence that companies influence their profitability ratios prior to issuing bonds. In all the specifications the coefficient for the dummy variable BPO is insignificant.

The control variables generally influence both profitability ratios in the expected directions. On the one hand, higher profitability is on average reported in periods of high economic growth (GDP) for larger (SIZE) and more mature (AGE) companies with higher cash holdings (CASH). Moreover, profitability is significantly and positively related to sales growth (GROWH) and quicker asset turnover ratios (SALES). On the other hand, higher debt (LEVERAGE) and share of fixed assets (FIXED) in total assets reduce firms' profitability, yet the coefficients are only statistically significant for the variable ROA. Lastly, we find that the coefficients for capital expenditures (CAPEX) are statistically insignificant in all specifications. Consequently, we do not find any relationship between investment and a firm's profitability in the short-term.

[Table 11]

## **5. Conclusions**

The study provides an analysis of the factors determining decisions to go public on the WSE, which is one of the largest stock exchanges in Europe based on the number of IPOs. Currently, the WSE consists of three different segments, namely, the main market, the alternative market for shares and the bond market, which makes the WSE fertile ground to study decisions to go public in a post-transition economy.

Our results show that firms that go public on the main market tend to be larger, more profitable, and experience higher investment and sales growth than companies that decide to remain private. Thus, the results suggest that obtaining external funds to finance investments and growth is an underlying reason for IPOs on the main market in a post-transition country. In contrast, Rydqvist and Högholm (1995) and Pagano, Panetta, and Zingales (1998) showed that new equity raised is used to reduce leverage rather than to finance growth in Sweden and Italy. Our results therefore differ from those for developed European countries. One explanation for the results is that companies in Poland are still developing, while in western Europe more mature companies decide to go public.

Moreover, we find that current profitability and market valuation increase the likelihood of going public on the main market. As in Pagano, Panetta, and Zingales (1998), we favor the windows of opportunity hypothesis to explain this result for the main market because profitability diminishes after the IPO on the main market. In contrast to the developed countries, however, we document that younger firms are more likely to go public (Rydqvist and Högholm, 1995). In our opinion, the results suggest that former state-owned companies do not want to disclose information, which we attribute partially to their political patronage.

In line with theoretical predictions, we find that firms that are younger and smaller more frequently decide to issue shares on the alternative market. Additionally, we establish that companies with higher leverage decide to issue shares on the alternative market or bonds on the Catalyst. Interestingly, we find that neither stock market valuation nor profitability determine the decision to go public on the alternative market or bond market. In the first case, we assume that the alternative market is followed by analysts to a lesser degree than the main market because firms are smaller and riskier. As a result, the chances to use windows of opportunity are much lower (Rajan and Servaes, 1997), which may explain why current stock valuation does not increase the probability of an IPO on this market. Bond investors, on the other hand, are probably more interested in cash flows and collateral than in firms' current valuation or profitability, which may provide an explanation for our results.

Indeed, we do not find evidence that firms manipulate their performance measures prior to issuing bonds. In contrast, the *ex-post* analysis reveals that firms that issue equity report lower profitability in the year after being listed. Our results suggest that the drop is larger for IPOs on the alternative market than on the main market. As the companies on the alternative market are riskier on average, our results support the theoretical model of Pastor, Taylor, and Veronesi (2008). They show that a firm's profitability declines after the IPO, on average, and that this decline is larger for firms with more volatile profitability and firms with less uncertain average profitability. Henceforth, the results indicate that companies either use the moment of high profitability to go public or try to manipulate their financial statements before being listed.

In conclusion, the results of the study document some of the firm-specific determinants of decisions to go public, which are different in comparison to developed countries. Moreover, we show that determinants also differ across markets, which may explain why some of the previous studies presented contradicting results. Finally, the establishment of a rating agency by the WSE should in the long term improve the institutional infrastructure of the capital market in Poland. It would be interesting to see whether this change will have an impact on *ex-ante* determinants, and especially *ex-post* performance of the companies. We leave this issue, however, for further research on the capital markets in post-transition countries.

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## References

- Albornoz, B. de, and P. Pope. 2004. The Determinants of the Going Public Decision: Evidence from the UK. WP-AD 2004-22.
- Allen, F., L. Bartiloro, and O. Kowalewski. 2006. Does Economic Structure Determine Financial Structure? *AFA 2007 Chicago Meetings ...* . AFA 2007 Chicago Meetings Paper.
- Allen, F., K. Jackowicz, and O. Kowalewski. 2013. The Effects of Foreign and Government Ownership on Bank Lending Behavior During a Crisis in Central and Eastern Europe. *Wharton Financial Institutions Center Working Paper* 13-25.
- Bodnaruk, A., E. Kandel, M. Massa, and A. Simonov. 2006. Shareholder Diversification and the Decision to Go Public. *Review of Financial Studies* 21:2779–2824.
- Denis, D. J., and V. T. Mihov. 2003. The Choice among Bank Debt, Non-Bank Private Debt, and Public Debt: Evidence from New Corporate Borrowings. *Journal of Financial Economics* 70:3–28.
- Fischer, C. 2000. Why Do Companies Go Public? Empirical Evidence from Germany's Neuer Markt. *Empirical Evidence from Germany's Neuer Markt (May ...* .
- Helwege, J., and N. Liang. 1996. Is There a Pecking Order? Evidence from a Panel of IPO Firms. *Journal of Financial Economics* 40:429–58.
- Helwege, J., and F. Packer. 2003. The Decision to Go Public : Evidence from Mandatory SEC Filings of Private Firms The Decision to Go Public : Evidence from Mandatory SEC Filings of Private Firms. Dice Center Working Paper 2001-12.
- Jelic, R., and R. Briston. 2003. Privatisation Initial Public Offerings : The Polish Experience. *European Financial Management* 9:457–84.
- Kim, W., and M. Weisbach. 2008. Motivations for Public Equity Offers: An International Perspective. *Journal of Financial Economics* 87:281–307.
- Kowalewski, O. 2014. Financial System Development. In Weresa, M. A. (ed.), *POLAND Competitiveness Report 2014. A Decade in the European Union*. Warsaw: Warsaw School of Economics Press.
- Ljungqvist, A., and E. Boehmer. 2004. On the Decision to Go Public: Evidence from Privately-Held Firms. Discussion paper Series 1 / Volkswirtschaftliches Forschungszentrum der Deutschen Bundesbank, No. 2004,16.
- Myers, S. C., and N. S. Majluf. 1984. Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Finance and Economics* 13:187–221.
- Pagano, M., F. Panetta, and L. Zingales. 1998. Why Do Companies Go Public? An Empirical Analysis. *Journal of Finance* 53:27–64.
- Pagano, M., and A. Röell. 1998. The Choice of Stock Ownership Structure: Agency Costs, Monitoring, and the Decision to Go Public. *Quarterly Journal of Economics* 113:187–225.

- Pastor, L., L. A. Taylor, and P. Veronesi. 2008. Entrepreneurial Learning, the IPO Decision, and the Post-IPO Drop in Firm Profitability. *Review of Financial Studies* 22:3005–46.
- Prorokowski, L., and P. Roszkowska. 2014. Comparison of Practitioners' Views on Managing Equity Investments: Evidence from Poland. *Baltic Journal of Management* 9:153–67.
- PwC. 2014. IPO Watch Europe 2013.
- Rajan, R., and H. Servaes. 1997. Analyst Following of Initial Public Offerings. *Journal of Finance* 52:507–29.
- Rees, W. P. 1997. The Arrival Rate of Initial Public Offers in the UK. *European Financial Management* 3:45–62.
- Ritter, J. R. 1991. The Long-Run Performance of Initial Public Offerings. *Journal of Finance* 46:3–27.
- Ritter, J. R., and I. Welch. 2002. A Review of IPO Activity, Pricing, and Allocations. *Journal of Finance* 57:1795–1828.
- Rydqvist, K., and K. Högholm. 1995. Going Public in the 1980s: Evidence from Sweden. *European Financial Management* 1:287–315.
- Shirasu, Y., and P. Xu. 2007. The Choice of Financing with Public Debt versus Private Debt: New Evidence from Japan after Critical Binding Regulations Were Removed. *Japan and the World Economy* 19:393–424.
- Subrahmanyam, A., and S. Titman. 1999. The Going-Public Decision and the Development of Financial Markets. *The Journal of Finance* 54:1045–82.

## Appendix

### Variables and their definitions

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Variables identifying public offerings	
WIPO	The variable takes the value of 1 in the case of a company's IPO on the Warsaw Stock Exchange (WSE), and 0 otherwise
NIPO	The variable takes the value of 1 in the case of a company's IPO on NewConnect (NC), and 0 otherwise
BPO	The variable takes the value of 1 in the case of a company's public offering of bonds on the Catalyst market and 0 otherwise

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Market variables	
WIBOR	Warsaw Interbank Offered Rate
GDP	Yearly GDP growth rate
MVBV	Market value to book value on the WSE for an industry in which a company operates

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Characteristics of companies	
LISTED	The variable takes the value of 1 if a company is listed on the equity market in a given year, and 0 otherwise
AGE	Company's age (capped at 50)
SIZE	Natural logarithm of total assets in constant prices
TANGIBLE	Ratio of tangible fixed assets to total assets
FIXED	Ratio of fixed assets to total assets
CASH	Ratio of cash to total assets
LEVERAGE	Ratio of current and non-current liabilities to total assets
ROA	Return on total assets
EBIT_A	Earnings before interests and taxes to total assets
EBIT_S	Earnings before interests and taxes to sales
CAPEX	Growth rate of fixed assets in constant prices
GROWTH	Growth rate of sales in constant prices
SALES	Ratio of sales to total assets

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**Table 1**

## Distribution of the sample including listed companies and securities issues

List shows the number of public companies in the sample. WIPO, NIPO and BPO denotes public offering on the main market WSE, alternative market NC, and debt market Catalyst, respectively.

	Obs.	Listed	WIPO	NIPO	BPO
<i>Panel A: Sample distribution by year</i>					
2000	106	8	0	0	0
2001	306	32	1	0	0
2002	1,395	98	0	0	0
2003	1,442	105	5	0	0
2004	1,475	124	16	0	0
2005	1,517	140	17	0	0
2006	1,680	180	23	0	0
2007	1,813	247	46	10	0
2008	2,033	323	23	35	0
2009	2,108	353	11	14	0
2010	2,099	430	18	50	7
2011	2,065	583	17	111	18
2012	2,895	673	11	57	29
2013			3	25	7
<i>Panel B: Sample distribution by industry</i>					
Chemicals	652	93	5	1	3
Construction	2.253	420	24	25	13
Food, beverages and tobacco	1.383	190	9	5	2
Information and communication	1.524	480	21	60	5
Metals, machinery and vehicles	2.458	296	20	14	1
Other activities	2.690	528	31	82	16
Other manufacturing	2.444	332	19	34	6
Plastic	1.137	150	10	12	0
Primary sector	479	18	2	1	0
Trade	3.635	637	37	56	7
Transporting and storage	996	29	4	4	2
Utilities	1.283	123	9	8	6
Total	20,934	3,296	191	302	61

**Table 2**  
Descriptive statistics

	WIPO	NIPO	BPO	SIZE	GROWTH	LEVERAGE	ROA	EBIT_A	TANGIBLE	CAPEX	CASH	AGE
<i>Panel A: Summary statistics</i>												
Mean	0.009	0.0147	0.003	17.9	0.083	0.499	0.051	0.057	0.335	0.301	0.092	23.3
Median	0.000	0.000	0.000	17.8	0.044	0.502	0.043	0.051	0.303	0.161	0.391	16.0
Std. Dev.	0.096	0.1205	0.054	1.81	0.376	0.235	0.119	0.114	0.249	0.491	0.132	17.8
<i>Panel B: Pairwise correlations</i>												
WIPO	1.000											
NIPO	0.000	1.000										
BPO	0.020	0.020	1.000									
SIZE	0.004	-0.147	0.024	1.000								
GROWTH	0.044	0.040	-0.007	-0.022	1.000							
LEVERAGE	0.018	-0.015	0.009	-0.042	0.149	1.000						
ROA	0.049	0.010	-0.013	0.003	0.193	-0.206	1.000					
EBIT_A	0.052	0.012	-0.017	-0.013	0.224	-0.106	0.924	1.000				
TANGIBLE	-0.032	-0.042	-0.019	0.155	-0.011	-0.123	-0.141	-0.108	1.000			
CAPEX	0.072	0.040	0.002	-0.018	0.211	0.070	0.116	0.113	-0.039	1.000		
CASH	-0.010	0.047	-0.016	-0.114	0.044	-0.213	0.229	0.171	-0.212	-0.002	1.000	
AGE	-0.042	-0.083	-0.030	0.172	-0.094	-0.106	-0.075	-0.082	0.163	-0.126	-0.021	1.000



**Table 3**

Differences in medians for companies that went public vs. control sample

Control sample Period	WIPO-firms	NIPO-firms	BPO-firms	
	private firms 2000-2012	private firms 2007-2012	private firms	no-Catalyst firms 2009-2012
SIZE	-0.531***	-0.617***	-0.768***	-2.047***
GROWTH	0.096***	0.641***	0.379***	0.081***
LEVERAGE	0.021	-0.02	-0.019	-0.012
ROA	0.027***	0.009	0.020	0.027***
EBIT_A	0.030***	0.008	0.018**	0.030***
TANGIBLE	-0.131***	-0.144***	-0.221***	-0.128***
CAPEX	0.153***	0.292***	0.163***	0.113***
CASH	0.001	0.003	-0.009	0.030***
AGE	-8.0***	-10.0***	-11.5***	-10.0***

Note: Differences in medians were tested with Mann-Whitney test. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

**Table 4**

Probability of an IPO on the main market WSE

	(1)	(2)	(3)	(4)	(5)	(6)
	2000-2012		2000-2006		2007-2012	
SIZE	0.116*	0.119*	0.160*	0.164*	0.111	0.115
	(0.063)	(0.063)	(0.086)	(0.086)	(0.093)	(0.093)
GROWTH	0.560***	0.520**	0.500	0.475	0.581*	0.499
	(0.215)	(0.217)	(0.308)	(0.308)	(0.305)	(0.311)
LEVERAGE	0.085	0.061	1.369**	1.191*	-1.365**	-1.252**
	(0.443)	(0.432)	(0.660)	(0.637)	(0.641)	(0.631)
ROA	3.269***		4.067***		2.652**	
	(0.894)		(1.273)		(1.316)	
EBIT_A		3.820***		3.994***		3.964***
		(0.893)		(1.268)		(1.321)
TANGIBLE	-1.505***	-1.524***	-1.530**	-1.653**	-1.337**	-1.277**
	(0.455)	(0.451)	(0.677)	(0.676)	(0.624)	(0.617)
CAPEX	0.738***	0.736***	0.499***	0.516***	1.033***	1.025***
	(0.125)	(0.126)	(0.187)	(0.186)	(0.173)	(0.175)
CASH	-3.037***	-2.918***	-3.383**	-3.325**	-2.865**	-2.788**
	(0.971)	(0.959)	(1.510)	(1.512)	(1.247)	(1.237)
AGE	-0.023***	-0.023***	-0.017**	-0.017**	-0.027***	-0.028***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.010)	(0.010)
MVBV	0.337**	0.333**	1.185**	1.220**	0.204	0.179
	(0.145)	(0.145)	(0.494)	(0.494)	(0.187)	(0.187)
Obs.	10,645	10,658	3,694	3,697	6,678	6,687
Pseudo R <sup>2</sup>	0.107	0.109	0.113	0.112	0.143	0.146
$\chi^2$	156.5***	160.2***	85.10***	84.82***	96.55***	100.2***

Note: The probability of going public is estimated by a logit model. The dependent variable WIPO is 0 if the company is not listed and 1 on the year of listing. WIPO-companies are modelled against always-private firms from industries that were represented on the main market WSE. The independent variables are one period lagged. The constant and industry group dummies were included in all regressions but is not shown. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are given in parentheses.

**Table 5**

Probability of an IPO on the main market WSE and alternative market NC

	(1)	(2)	(3)	(4)
	WIPO		NIPO	
SIZE	0.144 (0.093)	0.148 (0.0938)	-1.749*** (0.124)	-1.753*** (0.124)
GROWTH	0.609** (0.308)	0.520 (0.317)	0.511* (0.261)	0.515** (0.261)
LEVERAGE	-1.359** (0.650)	-1.267** (0.641)	-1.006* (0.543)	-0.961* (0.533)
ROA	3.128** (1.317)		-0.835 (0.934)	
EBIT_A		4.467*** (1.329)		-0.718 (0.935)
TANGIBLE	-1.475** (0.634)	-1.411** (0.627)	-0.0654 (0.566)	-0.0429 (0.561)
CAPEX	1.052*** (0.175)	1.052*** (0.177)	0.716*** (0.207)	0.714*** (0.206)
CASH	-2.868** (1.245)	-2.802** (1.233)	-1.369 (0.927)	-1.382 (0.926)
AGE	-0.030*** (0.010)	-0.031*** (0.010)	-0.077*** (0.013)	-0.077*** (0.013)
MVBV	0.214 (0.187)	0.190 (0.187)	-0.774*** (0.215)	-0.775*** (0.215)
Obs.	6,964	6,972	6,964	6,972
Pseudo R <sup>2</sup>	0.381	0.382	0.381	0.382
$\chi^2$	760.1***	764.3***	760.1***	764.3***

Note: The probability of going public is estimated by a multinomial model. The dependent variable WIPO or NIPO is 0 if the company is not listed and 1 on the year of listing, respectively. WIPO- and NIPO-companies are modelled against always-private firms from industries that were represented on the equity market for the period 2007-2012. The independent variables are one period lagged. The constant and industry group dummies were included in all regressions but is not shown. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are given in parentheses.

**Table 6**

Probability of going public on the equity market WSE and NC, and debt market Catalyst

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	WIPO		NIPO		BPO			
SIZE	0.304** (0.127)	0.320** (0.129)	-1.752*** (0.143)	-1.758*** (0.143)	0.307*** (0.109)	0.278** (0.109)	0.240*** (0.081)	0.223*** (0.081)
GROWH	0.610 (0.408)	0.407 (0.432)	0.541* (0.314)	0.532* (0.316)	-0.0654 (0.425)	-0.150 (0.423)	-0.240 (0.390)	-0.284 (0.387)
LEVERAGE	-1.662** (0.842)	-1.570* (0.838)	-0.781 (0.639)	-0.743 (0.630)	-0.426 (0.708)	-0.435 (0.690)	1.564** (0.755)	1.393* (0.719)
ROA	4.329*** (1.660)		-0.423 (1.079)		-1.701 (1.717)		0.921 (1.561)	
EBIT_A		6.984*** (1.800)		-0.0401 (1.064)		-2.878* (1.696)		0.169 (1.599)
TANGIBLE	-1.566* (0.876)	-1.349 (0.861)	0.312 (0.650)	0.346 (0.643)	-1.046 (0.666)	-1.154* (0.665)	-0.126 (0.653)	-0.290 (0.652)
CAPEX	1.459*** (0.242)	1.473*** (0.246)	0.749*** (0.278)	0.744*** (0.276)	0.400 (0.323)	0.378 (0.319)	-0.004 (0.322)	-0.008 (0.317)
CASH	-3.344* (1.889)	-3.757** (1.883)	-1.644 (1.103)	-1.700 (1.102)	-4.631** (2.112)	-4.731** (2.098)	-4.920** (2.282)	-4.861** (2.258)
AGE	-0.066*** (0.019)	-0.069*** (0.019)	-0.083*** (0.015)	-0.083*** (0.015)	-0.051*** (0.014)	-0.046*** (0.013)	-0.042*** (0.013)	-0.037*** (0.013)
MVBV	3.141 (2.285)	2.883 (2.258)	7.872*** (1.836)	7.847*** (1.839)	1.610 (2.249)	1.635 (2.249)		
WIBOR	-6.972 (59.03)	-14.75 (58.79)	-63.15 (50.20)	-62.12 (50.18)	98.69** (47.80)	107.1** (47.16)	117.6*** (40.62)	124.5*** (40.40)
LISTED							1.683*** (0.336)	1.675*** (0.332)
Obs.	4,751	4,756	4,751	4,756	4,751	4,756	4,670	5,108
Pseudo R <sup>2</sup>	0.391	0.389	0.391	0.389	0.391	0.389	0.155	0.156
$\chi^2$	762.1***	765.0***	762.1***	765.0***	762.1***	765.0***	81.34***	84.64***

Note: The probability of going public is estimated by a multinomial model. The dependent variable WIPO, NIPO or BPO is 0 if the company is not listed and 1 on the year of listing, respectively. WIPO-, NIPO- and BPO- companies are modelled against always-private firms from industries that were represented on WSE, NC or Catalyst for the period 2009-2012. Specifications (1)-(6) are estimated using a multinomial logit model, while specifications (7)-(8) are estimated using a logit model. The independent variables are one period lagged. The constant and industry group dummies were included in all regressions but are not shown. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are given in parentheses.

**Table 7**

Pairwise analysis of a public offering on different markets

Period	(1)	(2)	(3)	(4)	(5)	(6)
	2007-2012		2009-2012			
Dependent=1	WIPO			NIPO		
Dependent=0	NIPO		BPO		BPO	
SIZE	1.964*** (0.342)	1.972*** (0.343)	-0.0473 (0.148)	-0.0239 (0.155)	-1.784*** (0.374)	-1.857*** (0.400)
GROWTH	-0.085 (0.706)	-0.200 (0.708)	0.466 (0.639)	0.451 (0.655)	0.738 (0.716)	0.683 (0.731)
LEVERAGE	-2.928* (1.602)	-2.611* (1.533)	-2.067 (1.529)	-2.538 (1.578)	1.804 (2.117)	2.732 (2.116)
ROA	7.745** (3.050)		7.555** (3.507)		-0.003 (3.132)	
EBIT_A		9.365*** (2.982)		10.15*** (3.669)		3.415 (2.949)
TANGIBLE	2.812* (1.657)	3.093* (1.660)	0.054 (1.081)	-0.043 (1.108)	-2.280 (1.631)	-1.843 (1.609)
CAPEX	0.751 (0.489)	0.625 (0.473)	1.376*** (0.510)	1.423*** (0.533)	0.996 (0.774)	0.874 (0.737)
CASH	-1.363 (2.529)	-0.338 (2.417)	-0.948 (2.973)	-1.252 (3.036)	3.937 (4.502)	3.674 (4.331)
AGE	0.056* (0.029)	0.051* (0.028)	0.013 (0.022)	0.011 (0.022)	0.016 (0.036)	-0.002 (0.032)
MVBV	1.630*** (0.500)	1.565*** (0.487)	0.705 (3.600)	1.217 (3.602)	4.729 (4.130)	3.570 (4.127)
WIBOR			-86.57 (86.35)	-99.54 (88.15)	-233.9** (105.9)	-277.3*** (107.1)
Obs.	190	191	79	81	147	149
Pseudo R <sup>2</sup>	0.585	0.577	0.210	0.253	0.581	0.583
$\chi^2$	135.8***	135.3***	22.64**	27.99***	105.2***	107.4***

Note: The probability of going public is estimated by a logit model. The independent variables are one period lagged. The constant were included in all regressions and industry group dummies in specification (1), (2), (5) and (6) but are not shown. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are given in parentheses.

**Table 8**

Ex post analysis on the probability of IPO on the main market WSE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	2000-2012			2000-2007			2008-2012		
$\Delta$ GROWTH	0.358 (0.240)	0.392 (0.243)	0.372 (0.240)	0.407 (0.346)	0.386 (0.347)	0.393 (0.347)	0.309 (0.334)	0.377 (0.339)	0.322 (0.335)
$\Delta$ LEVERAGE	-7.110*** (0.710)	-6.804*** (0.686)	-6.554*** (0.661)	-10.31*** (1.207)	-9.751*** (1.138)	-10.35*** (1.181)	-4.750*** (1.038)	-4.822*** (1.005)	-4.314*** (0.977)
$\Delta$ ROA	-3.535*** (1.118)			-4.562*** (1.721)			-2.339 (1.627)		
$\Delta$ EBIT_A		-3.069** (1.234)			-3.214* (1.899)			-3.359* (1.771)	
$\Delta$ EBIT_S			-1.860** (0.813)			-3.217*** (1.248)			-1.028 (1.219)
$\Delta$ TANGIBLE	1.469* (0.882)	1.389 (0.889)	1.451* (0.875)	-0.238 (1.354)	-0.330 (1.338)	-0.580 (1.305)	3.217*** (1.226)	3.149** (1.245)	3.130** (1.230)
$\Delta$ CAPEX	-0.129 (0.181)	-0.100 (0.182)	-0.0897 (0.184)	0.0751 (0.246)	0.138 (0.245)	0.233 (0.255)	-0.702*** (0.252)	-0.619** (0.255)	-0.629** (0.254)
$\Delta$ CASH	6.587*** (0.950)	6.598*** (0.937)	6.290*** (0.912)	7.036*** (1.458)	7.053*** (1.439)	6.309*** (1.420)	5.872*** (1.367)	5.895*** (1.386)	5.683*** (1.341)
$\Delta$ SALES	-0.975*** (0.218)	-0.950*** (0.220)	-1.150*** (0.207)	-1.275*** (0.338)	-1.279*** (0.338)	-1.445*** (0.326)	-0.702** (0.326)	-0.619* (0.327)	-0.861*** (0.305)
SIZE	0.345*** (0.070)	0.320*** (0.070)	0.327*** (0.069)	0.376*** (0.109)	0.360*** (0.108)	0.382*** (0.107)	0.265*** (0.099)	0.232** (0.101)	0.242** (0.100)
AGE	-0.019*** (0.007)	-0.021*** (0.007)	-0.023*** (0.007)	-0.006 (0.010)	-0.008 (0.010)	-0.008 (0.010)	-0.027** (0.011)	-0.032*** (0.011)	-0.032*** (0.011)
GDP	23.71*** (6.765)	22.93*** (6.752)	22.52*** (6.741)	8.372 (12.51)	7.153 (12.38)	2.790 (12.62)	30.59** (12.22)	29.92** (12.29)	28.44** (12.20)
Obs.	8,303	8,314	8,300	3,181	3,184	3,187	4,874	4,881	4,864
Pseudo R <sup>2</sup>	0.263	0.261	0.257	0.404	0.396	0.401	0.184	0.187	0.182
$\chi^2$	313.9***	311.7***	307.3***	249.8***	244.9***	248.4***	102.3***	104.5***	101.4***

Note: The probability of going public is estimated by a logit model. The dependent variable WIPO is 0 if the company is not listed and 1 on the year of listing. WIPO-companies are modelled against always-private firms from industries that were represented on WSE.  $\Delta$  in front of a variable' name denotes its yearly increase. The constant and industry group dummies were included in all regressions but are not shown. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are given in parentheses.



**Table 9**

Ex post analysis of the probability of an IPO on the main market WSE and alternative market NC

	(1)	(2)	(3)	(4)	(5)	(6)
	WIPO			NIPO		
$\Delta$ GROWTH	0.314 (0.338)	0.377 (0.341)	0.311 (0.338)	0.0755 (0.282)	0.0909 (0.283)	0.237 (0.298)
$\Delta$ LEVERAGE	-4.959*** (1.045)	-4.975*** (1.010)	-4.436*** (0.985)	-2.184** (1.018)	-1.853* (0.990)	-1.763* (0.945)
$\Delta$ ROA	-2.551 (1.638)			-3.546*** (1.142)		
$\Delta$ EBIT_A		-3.470** (1.761)			-3.691*** (1.162)	
$\Delta$ EBIT_S			-1.015 (1.173)			-3.851*** (1.032)
$\Delta$ TANGIBLE	3.292*** (1.236)	3.230*** (1.251)	3.259*** (1.233)	-1.152 (1.535)	-0.630 (1.525)	-1.238 (1.549)
$\Delta$ CAPEX	-0.709*** (0.253)	-0.624** (0.255)	-0.649** (0.253)	0.439* (0.226)	0.389* (0.221)	0.460** (0.229)
$\Delta$ CASH	6.363*** (1.348)	6.378*** (1.354)	6.335*** (1.291)	-0.460 (1.213)	-0.223 (1.207)	-0.636 (1.168)
$\Delta$ SALES_A	-0.793** (0.338)	-0.705** (0.338)	-0.948*** (0.312)	-0.110 (0.253)	-0.0816 (0.248)	-0.249 (0.249)
SIZE	0.300*** (0.0982)	0.270*** (0.100)	0.278*** (0.0988)	-1.662*** (0.147)	-1.666*** (0.147)	-1.720*** (0.149)
AGE	-0.031*** (0.011)	-0.036*** (0.012)	-0.037*** (0.012)	-0.088*** (0.014)	-0.090*** (0.014)	-0.085*** (0.014)
GDP	31.70** (12.46)	30.79** (12.50)	28.94** (12.36)	23.48** (10.41)	22.25** (10.30)	24.53** (10.42)
Obs.	5,081	5,089	5,073	5,081	5,089	5,073
Pseudo R <sup>2</sup>	0.365	0.364	0.367	0.365	0.364	0.367
$\chi^2$	548.3***	550.6***	550.9***	548.3***	550.6***	550.9***

Note: The probability of going public is estimated by a multinomial model. The dependent variable WIPO or NIPO is 0 if the company is not listed and 1 on the year of listing, respectively. WIPO- and NIPO-companies are modelled against always-private firms from industries that were present on WSE or NC in the period 2008-2012.  $\Delta$  in front of a variable' name denotes its yearly increase. The constant and industry group dummies were included in all regressions but are not shown. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are given in parentheses.

**Table 10**

Ex post analysis of the probability of issuing shares on WSE or NC, and bonds on Catalyst

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	WIPO			NIPO			BPO					
$\Delta$ GROWTH	0.447 (0.450)	0.659 (0.464)	0.508 (0.464)	-0.061 (0.330)	-0.094 (0.330)	0.077 (0.373)	0.861* (0.462)	0.849* (0.468)	0.636 (0.478)	0.573 (0.401)	0.546 (0.400)	0.432 (0.413)
$\Delta$ LEVERAGE	-6.405*** (1.668)	-6.590*** (1.542)	-5.383*** (1.417)	-3.439*** (1.148)	-3.076*** (1.117)	-2.784** (1.092)	6.865*** (2.043)	7.046*** (1.998)	7.385*** (1.940)	5.041*** (1.792)	5.160*** (1.747)	5.154*** (1.727)
$\Delta$ ROA	-3.438 (2.224)			-3.153** (1.270)			-1.335 (2.197)			-0.365 (2.036)		
$\Delta$ EBIT_A		-5.479** (2.543)			-2.581** (1.291)			-1.063 (2.446)			0.287 (2.325)	
$\Delta$ EBIT_S			-2.095 (1.485)			-2.839** (1.280)			0.246 (2.088)			0.557 (1.501)
$\Delta$ TANGIBLE	4.787*** (1.698)	4.025** (1.696)	4.139** (1.693)	-2.241 (1.555)	-1.939 (1.588)	-2.593 (1.778)	-1.329 (1.558)	-1.304 (1.543)	-1.110 (1.610)	-2.047 (1.353)	-2.015 (1.347)	-1.870 (1.435)
$\Delta$ CAPEX	-1.199*** (0.330)	-1.114*** (0.333)	-1.089*** (0.337)	0.489* (0.267)	0.461* (0.260)	0.613** (0.273)	-0.109 (0.425)	-0.123 (0.424)	-0.0725 (0.431)	0.144 (0.358)	0.145 (0.360)	0.183 (0.370)
$\Delta$ CASH	4.429** (2.179)	4.371* (2.293)	4.915** (2.107)	-0.469 (1.494)	-0.261 (1.514)	-0.886 (1.511)	2.904 (2.981)	3.309 (3.208)	3.252 (3.275)	2.576 (2.251)	2.685 (2.314)	2.676 (2.357)
$\Delta$ SALES	-0.482 (0.545)	-0.424 (0.527)	-0.786 (0.504)	-0.558* (0.287)	-0.501* (0.286)	-0.591** (0.293)	-0.500 (0.686)	-0.492 (0.686)	-0.440 (0.682)	-0.363 (0.619)	-0.381 (0.625)	-0.284 (0.613)
SIZE	0.392*** (0.134)	0.392*** (0.133)	0.361*** (0.130)	-1.619*** (0.151)	-1.626*** (0.152)	-1.638*** (0.151)	0.291** (0.121)	0.288** (0.122)	0.234* (0.130)	0.296*** (0.100)	0.297*** (0.0996)	0.249** (0.107)
AGE	-0.070*** (0.022)	-0.074*** (0.023)	-0.074*** (0.023)	-0.089*** (0.016)	-0.089*** (0.016)	-0.085*** (0.016)	-0.066*** (0.021)	-0.066*** (0.021)	-0.059*** (0.020)	-0.0493*** (0.017)	-0.049*** (0.017)	-0.0424*** (0.0164)
GDP	32.05 (24.82)	36.21 (25.44)	31.67 (25.03)	39.11** (16.36)	40.73** (16.50)	44.96*** (16.94)	-71.20*** (19.47)	-72.08*** (19.48)	-64.84*** (20.16)	-7.772*** (1.950)	-7.766*** (1.935)	-7.208*** (2.049)
Obs.	3,085	3,087	3,062	3,085	3,087	3,062	3,085	3,087	3,062	4,034	4,048	4,006
Pseudo R <sup>2</sup>	0.358	0.357	0.353	0.358	0.357	0.353	0.358	0.357	0.353	0.132	0.132	0.107
$\chi^2$	469.0***	470.3***	454.6***	469.0***	470.3***	454.6***	469.0***	470.3***	454.6***	43.99***	43.99***	33.57***

Note: Specifications (1)-(9) are estimated using multinomial logit model, while specifications (10)-(12) are estimated using a logit model. The dependent variable WIPO, NIPO or BPO is 0 if the company is not listed and 1 on the year of listing, respectively. WIPO-, NIPO and BPO-companies are modelled against always-private firms from industries that were represented on

WSE, NC or Catalyst in the years 2009-2012. 'Δ' in front of a variable' name denotes its yearly increase. The constant and industry group dummies were included in all regressions but are not shown.\*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Standard errors are given in parentheses.

**Table 11.**

Profitability in the period directly preceding going public

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROA					EBIT_S				
	2000-2012	2007-2012	2007-2012	2009-2012	2009-2012	2000-2012	2007-2012	2007-2012	2009-2012	2009-2012
SIZE	0.007*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.017*** (0.002)	0.021*** (0.002)	0.021*** (0.002)	0.020*** (0.002)	0.021*** (0.003)
CASH <sub>t-1</sub>	0.071*** (0.014)	0.073*** (0.016)	0.073*** (0.016)	0.089*** (0.019)	0.092*** (0.019)	0.050*** (0.017)	0.068*** (0.020)	0.068*** (0.020)	0.074*** (0.024)	0.080*** (0.024)
FIXED <sub>t-1</sub>	-0.034*** (0.009)	-0.027*** (0.010)	-0.027*** (0.010)	-0.018* (0.011)	-0.019* (0.011)	0.003 (0.013)	0.010 (0.016)	0.010 (0.016)	0.028 (0.018)	0.027 (0.018)
LEVERAGE <sub>t-1</sub>	-0.035*** (0.007)	-0.038*** (0.008)	-0.038*** (0.008)	-0.035*** (0.010)	-0.036*** (0.010)	-0.012 (0.011)	-0.010 (0.012)	-0.011 (0.012)	0.010 (0.015)	0.008 (0.015)
CAPEX <sub>t-1</sub>	0.002 (0.002)	0.002 (0.003)	0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	-0.004 (0.005)	-0.004 (0.005)
GROWTH <sub>t-1</sub>	0.014*** (0.003)	0.013*** (0.004)	0.013*** (0.004)	0.0128*** (0.004)	0.0130*** (0.004)	0.013*** (0.004)	0.013*** (0.005)	0.013*** (0.005)	0.011* (0.006)	0.012* (0.006)
SALES <sub>t-1</sub>	0.022*** (0.002)	0.020*** (0.002)	0.020*** (0.002)	0.020*** (0.003)	0.019*** (0.003)	0.012*** (0.003)	0.009*** (0.003)	0.009*** (0.003)	0.007** (0.003)	0.006* (0.003)
WIPO	0.042*** (0.008)		0.042*** (0.013)		0.052*** (0.019)	0.046*** (0.009)		0.048*** (0.016)		0.064** (0.027)
NIPO		0.034*** (0.012)	0.034*** (0.012)		0.027** (0.011)		0.056*** (0.013)	0.056*** (0.013)		0.056*** (0.015)
BPO				0.006 (0.015)	0.005 (0.016)				0.008 (0.028)	0.006 (0.028)
GDP	0.659*** (0.055)	0.606*** (0.060)	0.600*** (0.060)	0.200** (0.089)	0.182** (0.089)	0.524*** (0.062)	0.569*** (0.066)	0.562*** (0.066)	0.397*** (0.112)	0.361*** (0.111)
Obs.	12,290	8,643	8,643	6,067	6,067	12,231	8,592	8,592	6,007	6,007
Companies	2,028	1,998	1,998	1,964	1,964	2,010	1,982	1,982	1,940	1,940
R <sup>2</sup>	0.103	0.103	0.105	0.0916	0.0947	0.0451	0.0570	0.0582	0.0494	0.0533
Wald (joint)	596.5***	447.3***	458.6***	245.1***	256.9***	287.3***	279.9***	286.9***	169.0***	182.8***

Note:: The firms' profitability is estimated using a random-effects model. The constant and industry group dummies were included in all regressions but are not shown. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are given in parentheses.