

The Ex Post Operating Performance of IPO Firms

- An empirical study of IPOs on the Stockholm Stock Exchange 1997-2008

Henrik Giver*

Bachelor in Finance
Stockholm School of Economics

Gabriel Leifland Berntsson**

Bachelor in Finance
Stockholm School of Economics

ABSTRACT

The initial public offering (IPO) has historically remained a significant method for corporate capital funding and diversification of the equity base. This thesis examines the short to long-term effect on operating performance of companies as they make the transition from private to public ownership. Specifically, we investigate how the performance development varies with the initial equity retention of the owner-managers, as well as the relation between operating performance and the level of underpricing. Finally, we analyze the national economic crisis effect on operating performance of IPO-firms. The empirical sample comprises 111 IPOs of the main lists of the Stockholm Stock Exchange from 1997 to 2008. We find that the post-issue operating performance of IPO-firms decline substantially in all performance measures except sales. Moreover, we observe that managerial ownership retention has a positive effect on sales but a negative relationship with other measures of operating performance and that the initial return of the stock affects short-term performance of the firm positively. Additionally, IPO firms exceed other firms in terms of sales growth during a period of crisis, but fare worse considering remaining measures of operating performance.

*21786@student.hhs.se

**21778@student.hhs.se

Keywords: Initial public offering, post-issue operating performance, managerial ownership retention, underpricing

Bachelor's Thesis in Finance

Tutor: Mariassunta Giannetti, Professor

Dissertation: 24 May 2012, 13.15-17.00

Venue: 348

We would like to thank Professor Mariassunta Giannetti for valuable input and comments in the process of writing this thesis. Furthermore we would like to present our gratitude to Kitty Larsson, The School of Business Economics and Law, Gothenburg University for her help in reviewing the final draft.

Contents

1. Introduction	1
1.1 Purpose	3
1.2 relevance	3
1.3 Outline	4
2. The initial public offering	5
3. Previous literature and hypotheses	6
3.1 IPO effect on operating performance	6
3.2 Explanations for IPO effect on operating performance.....	7
3.3 Crisis effects on operating performance.....	10
3.4 Relevant findings & Hypotheses.....	10
4. Methodology	12
4.1 Event specification.....	12
4.2 Performance measure definition	12
4.3 Analysis outline.....	14
4.4 Econometric models.....	15
5. Data description	17
5.1 Data Collection.....	17
5.2 Data overview	18
5.3 Data evaluation	21
6. Results & Empirical Analysis	22
6.1 Development in operating performance	22
6.2 Managerial ownership retention & performance	27
6.3 Underpricing effects on performance.....	30
6.4 Crisis effects on IPO firm performance.....	33
6.5 Main regression model	36
7. Conclusion.....	37
7.1 Delimitations.....	37
7.2 Further research.....	37
8. References	38
9. Appendix	42

1. INTRODUCTION

A large number of studies have historically been conducted on Initial Public Offerings (IPOs), where a majority, primarily early work, have investigated the post-IPO stock price performance, such as Ritter (1991) and Lang (1991). Degeorge and Zeckhauser (1993) examine the operating performance of reverse leveraged buyout firms, whereas the first paper covering the development in operating performance of pure IPO firms was Jain and Kini (1994). Various ensuing studies have similarly include an element of post-issue operating performance, for instance Pagano, Panetta and Zingales (1998) while investigating reasons for going public. The results of these studies frequently imply the same findings; a decline in operating performance subsequent to the IPO.

1.1 PURPOSE

An IPO is a method of raising external capital for the company or diversifying the equity ownership stake. There are several different reasons for raising capital and many more for making the transition from private to public ownership. In order to make an informed decision company management must know how the IPO will affect various aspects of the firm operations. The primary goal with this study is to investigate how an IPO affects a firm's operating performance.

Most of the earlier studies conducted in relation to IPOs focuses on post-issue stock price performance.¹ There are a few, however, which focus on the operating performance of the firm. To our knowledge no recognized study has been done on this subject on the Swedish market. Furthermore, our study is more recent than other studies that focus on IPOs. We will investigate how the IPO affects firms on an operating performance level, and to some extent why these effects occur. It is our belief that these conclusions can be used as guidelines for Swedish companies considering a public listing. A firm considering the move to go public should always be aware of the potential negative implications in order to make an informed decision.

1.2 RELEVANCE

We describe a set of theories regarding why the operating performance is affected by an IPO and test these theories on our sample data. We examine whether float rate and underpricing (described below) are correlated to the effect in post-issue operating performance. This is relevant since it will give indications about whether certain theories could have any bearing in reality. The float rate can imply how much equity stake the potential owner-managers of the company retain after the IPO and thus describe different managerial incentive situations. Underpricing effects could give further implications, which we also delve into. Moreover, we look at performance of IPO firms during crises. Sweden has suffered two crises during our sample period, the stock market crash of 2000-2002 (the IT crash) and the global financial crisis of 2008-2009.

¹ Jain and Kini (1994)

1.3 OUTLINE

The paper is divided into six main chapters, with this introduction being the first. A review of the IPO process is presented in the second chapter. In the third chapter we cover previous literature and theories in order to set a theoretical framework for the thesis. The fourth chapter covers the econometric and statistical methods used in the empirical analysis. Our data collection and compilation is presented in the fifth chapter. The sixth chapter focuses on the results and findings of this paper and concludes which theories that seem to have bases in the reality of the Swedish market. The seventh chapter includes a summary and an evaluation of the analysis, as well as suggestions for further research in order to assess the presented findings. The chapters are divided into several sections, each section covering relevant sub-topics.

The words performance and operating performance as well as original ownership retention and managerial retention will respectively be used synonymous throughout the paper. To present our findings in a pedagogical and understandable manner we have chosen to replicate, to some extent, one of the tables found in the study by Jain and Kini (1994). These tables present the growth of a measure from the year before the IPO to each of the four subsequent years, including the IPO year (tables henceforth referred to as growth tables). A benchmark-adjusted figure is also displayed in the tables for comparison. Our analysis is divided into four main parts; analysis of the entire sample and three different sub-samples. The sub-samples are created based on float rate, initial return and crisis years². The described growth tables are created using each sub-sample.

² The year of the observation is defined as a crisis year if it was in a period of economic crisis.

2. THE INITIAL PUBLIC OFFERING

In this chapter we start by briefly explaining the initial public offering and related aspects. This is followed by a review of reasons for going public, as well as the costs and benefits associated with the listing.

An IPO is a private company's first effort to sell shares, thus raise capital, in a public equity market. The offer regularly comprises both newly issued as well as existing shares, which in relation to the total amount of shares constitute the float rate. As a result, the corporate action has several effects on ownership structure. The issuing company generally mandates underwriters (also referred to as the syndicates), usually involving commercial and investment banks, managing sale of stock to the public. In addition they frequently aid the company to decide the subscription price, i.e. the price paid per share by the shareholders partaking in the offering. During the first period of trading the subscription price is generally adjusted for by the market, reaching more stabilized levels. The magnitude of this positive or negative change can be described as levels of under-, and overpricing respectively. In an attempt to stabilize share prices during the initial trading, an overallotment arrangement can be put in use. The arrangement enables the underwriters to sell more shares to the public than the actual size offered (Oskarsson and Strömberg 2009).

Various costs and benefits of going public have been the topic of discussion in previous literature. The pecking order theory states that the firm has a preference in terms of capital sources. First, internal equity generated by previous earnings should be put to use, followed by debt financing. The last and final option should be external equity. According to Modigliani and Miller, external equity should only be selected as a source of capital if it incorporates a lower cost of capital, ultimately increasing the firm value.

Pagano, Panetta and Zingales (1998) view the IPO conventionally as an instrument for company growth. However, according to their study, IPO firms' listing motives are primarily to rebalance accounts and reduce leverage after periods of high investment and growth rather than to finance future growth and investment. The authors discuss further benefits of going public, such as equity diversification and increased liquidity of shares facilitating the trading volume, elevated bank bargaining power, i.e. reduced cost of credit³, as well as investor recognition, with the IPO acting as advertisement for the company.

Moreover, they correspondingly introduce several costs associated with the IPO; management of the issuing company often have more information at hand than that of the average investor, implying that the intrinsic value of the company is unknown to the market. The nature of informational asymmetry concerning the IPO can then lead to adverse selection costs in terms of underpricing. Additionally, costs such as larger administrative expenses and fees in terms of registration, auditing and underwriting etc. incur. Finally, stock markets have disclosure rules that force companies to promulgate material, which were previously confidential, for instance records of research & development (R&D) or marketing strategies.⁴ Consequently, the loss of confidentiality might comprise a cost in terms of market share loss.

³ IPO firm loan rate minus loan rate of matching companies is 0.5 pp. lower three years after, compared to three year before the IPO.

⁴ Pagano, Panetta and Zingales (1998).

3. PREVIOUS LITERATURE AND HYPOTHESES

This chapter covers the relevant findings from previous literature and economic theories, serving as an essential framework throughout our thesis. Section one covers the changes in post-issue operating performance observed in a range of studies. This is followed by a presentation of possible explanations in the second section. The third section discusses the relationship between crises and IPOs. In section four we define our hypotheses in alignment with previous findings.

3.1 IPO EFFECT ON OPERATING PERFORMANCE

There are several studies that observe an impact on performance connected to the listing of a firm. We review these results, specifically the effects on profitability as well as sales & financial efficiency.

Profitability

Jain and Kini (1994) measured performance using operating return on assets, operating cash flows divided on total assets, sales, asset turnover and capital expenditure.⁵ They examined the change in performance from the year prior to the IPO to each of the four subsequent years, with the IPO year being the first. Defining operating return on assets as the operating income before depreciation divided by previous year's total assets, they found a substantial decline in all post-IPO years. The decline increases gradually and caps at -10.53 percent in year two after the IPO, with a slight recovery in year three. Additionally, they find evidence of a decrease in operating cash flow over assets. The results are also significant after adjusting the numbers to industry specific effects.⁶

Similarly, Pagano, Panetta and Zingales (1998) defined profitability as EBITDA over total assets at the end of the previous year and detected a decline by -1.5 and -3 pp. (percentage points) for one respectively three years after the IPO.⁷ In an earlier study, they also find that profit over assets for IPO firms is higher than benchmark firms before the IPO but lower at the time of the IPO date and afterwards.⁸ Furthermore, Mikkelsen, Partch and Shah (1997), using an equivalent definition of profitability as Pagano et al (1998), also identify a sharp decrease in post-IPO profitability.⁹ The drop is sharpest between Year -1 and Year 0 as well as between Year 0 and Year 1. Additionally, they find that the performance measures of IPO firms are generally in excess of industry matched firm levels before going public, whereas the measure declines to a threshold below the benchmark similarly to findings of Pagano et al (1996).¹⁰

⁵ Jain and Kini (1994) look at IPOs done in the period 1976-1988. Their sample contains a total of 682 firms.

⁶ Industry adjusted figures are computed by matching each firm to an industry on a three digit SIC code (two digits when three was unavailable) and subtracting the median change in the operating performance measure of all industry firms.

⁷ Pagano, Panetta and Zingales (1998) investigate the reasons why companies choose to go public. The sample consists of IPOs on the Milan Stock Exchange during the years 1982-1992. They examine the post operating performance as an alternative strategy to discover the reason for listing.

⁸ Pagano, Panetta and Zingales (1996), 69 IPOs from 1982-1992. Computing industry matched firms (benchmark) using the industrial sector definitions of the *Centrali dei Bilanci* database.

⁹ The sample used by Mikkelsen et al (1997) contains 283 IPOs reported in the *Investment dealer's digest* in 1980-1983.

¹⁰ Mikkelsen et al (1997) utilized three different matching methods in order to adjust the operating performance measures for industry effects. Their first method match firms only by industry using a four digit SIC code. The second method uses size (book value of assets) as well as the SIC codes for industry to match firms, where assets are required to be within 25 percent. The third method utilizes a matching on performance as well as industry, requiring a match of 10 percent in the performance measure.

Wang (2005) defines return on assets (ROA) as net income divided by total assets and operating income to assets as EBIT divided by total assets and finds a significant decline in these performance measures post-IPO.¹¹ After adjusting for industry trends he finds a decrease in return on assets of close to 4 pp. from three years before to three years after the IPO.¹²

Furthermore, a study by Boubaker and Mezhoud (2011) conducted on the French market in 2000-2006 measures performance using operating return on assets and ROA. Contrary to the other studies, findings indicate a slight increase in the year of the IPO across analyzed measures, followed by a sharp decline in the subsequent years.

Sales & financial efficiency

Jain and Kini (1994) find that the median amount of sales for the sample firms is inferior to the matched industry firms in the year before going public. However, in terms of sales growth the study presents a continuous and steady surge over the post IPO years. Specifically, the median industry-adjusted change in sales is approximately 20 pp. in each consecutive year, resulting in a growth of 80 percent from the pre-IPO year to three years post listing. Consequently, the IPO firms' sales levels increase 20 pp. in excess of matched industry firms per year, resulting in higher absolute sales numbers already during the listing year. Chi and Padgett (2006) also find an increase in sales over the post-IPO years, however, slightly less prominent numbers. The work of Pagano et al (1998), on the other hand, exhibits a practically negligible change in sales, below 4 percent per year.

Although Jain and Kini (1994) observe such a high sales growth, the asset turnover declines, implying an even greater increase in assets. The asset turnover of the IPO firms is initially 25 pp. higher than that of the industry matched firms. The metric decline consists of a one-off drop by 20 pp. in the year of the IPO, which could be expected, since there is a natural boost in assets due to the cash inflow of the new issue. These lower levels of asset turnover remain during subsequent years, although the long-term¹³ values are insignificant. This is further strengthened by the findings of Boubaker and Mezhoud (2011), who observe a decline in asset turnover. However, the decline is taking place in the year after the IPO and forth, deviating from the findings of Jain and Kini (1994) in terms of timing.

3.2 EXPLANATIONS FOR IPO EFFECT ON OPERATING PERFORMANCE

Previous research presents several explanations for the observed changes in post-issue operating performance due to the standalone IPO effect. The following section presents a review of the theories on the impact of managerial ownership retention, window dressing, timing and signalling through underpricing on the post-IPO performance.

¹¹ Studying IPOs made on the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) during 1994-1999.

¹² Industry adjustment is done employing a four digit SIC code industry definition and subtracting the median performance of industry firms.

¹³ We define long-, and medium-term as Year 2 and 3 and short-term as Year 0 and 1.

Ownership and firm performance have been the subject of an important and on-going debate in the corporate finance literature, where Jensen and Meckling (1976) were the first to describe the occurrence of potential agency costs in relation to ownership structure. Numerous academic papers have then investigated further applications of the agency theory and in context of the IPO light is shed primarily on two viewpoints; interest alignment and managerial entrenchment.

Jain and Kini (1994) partly analyse the relationship between changes in managerial ownership and firm operating performance in connection to IPOs. In accordance with theories on interest alignment (Jensen and Meckling 1976), they argue that a decline in managerial ownership increase the risk of conflict of interest between shareholders and original owners. Conversely, given high equity retention in the transition from private to public ownership, interests are supposedly more aligned, implying a lesser risk of investing in unprofitable projects. In line with this theory, the authors observe a higher reduction in operating performance for firms with lower managerial ownership retention.¹⁴ However, they cannot surely conclude whether this effect stems from interest alignment. These findings are supported by the study of Mayur, Kumar and Mahakud (2007) studying Indian IPO firms in 2001-2004. Holthausen and Larcker (1996) similarly find a positive relationship between declining performance and alterations in managerial ownership when studying firms in a reverse leveraged buyout environment.

A theory by Leland and Pyle (1977) implies that managers can signal good quality by keeping a high stake in the company. They argue that since direct information transfer from an agent to a principal is prevented due to moral hazard, willingness to retain a substantial stake after an IPO signals to the market that the firm is of high quality. The managers of these firms know that there is unobserved value in the firm yet to be realized. Consequently, IPOs with higher manager retention should have a superior post-issue performance.

As most of the agency-related theories, management entrenchment has been covered numerous times in studies and implies that managers will act in order to make themselves as valuable as possible to the firm, for instance by investing in manager-specific assets (Shleifer and Vishny 1989). In contrast to interest alignment, it has been argued that managers with high equity stake not necessarily are interested in maximizing profit. Demsetz (1983) disputes that an owner-manager will seek to maximize their utility (as any person would), which can take on several other forms than maximizing firm value. Ignoring all these forms and solely focusing on personal financial gain, managers with a high ownership stake could still be inclined to make non value-maximizing investments, for example if the investment leads to an increase in salaries and bonuses that would compensate for the loss of ownership profits (dividends). Thus, one explanation for high managerial ownership retention correlated with larger decrease in operating performance could be due to the general structure of manager incentive programs. Boubaker and Mezhoud (2011) observe this negative relationship between performance development and managerial ownership retention, meaning that companies in which managers keep a higher equity stake post-listing

¹⁴Managerial retention is calculated through a proxy; pre IPO ownership retention, i.e. one minus the float rate.

experience a greater decline in performance. They argue that such a relationship could be explained by managerial entrenchment, though they choose not to attribute their results to entrenchment theories but rather to timing effects.

Timing & Window dressing

Mikkelsen et al. (1997) find no significant relation between manager retention and post-IPO performance. However, they observe a post-issue decline in operating performance and claim that this can be explained by a timing effect, suggesting the IPO has been timed to coincide with periods of unusually high performance.

This is in line with Degeorge and Zeckhauser (1993) who present a similar theory on why post-issue operating performances of reverse leveraged buyout firms go down. The theory is an extension of the theory of asymmetric information and assumes that managers know the expected value of their firms' performance during a certain period. When managers decide the timing of the IPO, they will choose to time it after a period characterized by performance above normal levels in order to maximize the value of the public offering.

Boubaker and Mezhoud (2011) argue in line with Mikkelsen et al. (1997) that the observed decline in performance could be due to managers timing the IPO during periods of high performance in order to ensure the success of the IPO. Furthermore, they discuss that this timing (of the IPO) could later lead to management entrenchment.

Degeorge and Zeckhauser (1993) further theorize that managers not only time the IPO to periods of unusual performance, but can also create these periods to some extent. The study states that managers can choose to borrow performance from earlier years or defer expenses to later years. Managers would benefit from manipulating even when he or she does not sell own shares. This method of manipulating performance before an IPO is often referred to as window-dressing (Jain and Kini 1994).

Theories of Signalling by underpricing

Many academic papers have documented the underpricing phenomenon in relation to IPOs, first carefully investigated by Ibbotson (1975). In a more recent study, Ibbotson, Sindelar and Ritter (1988) find that the initial return¹⁵ for 8,668 US IPO firms 1960-1987, averaged at 16.4 percent, while Ritter (1991) similarly reports an average initial return of 14.06 percent of 1,526 US IPOs 1975-1984. On the Swedish equity market Loughran, Ritter and Rydqvist (2010) observe a surge of 27.3 percent using an equivalent definition.¹⁶ These studies confirm that the average initial return between the offering and market price exceeds what a "reasonable" risk premium would call for (Carter and Manaster 1990). This implies that IPO firms and underwriters are deliberately engaging in underpricing.

Allen & Faulhaber (1989), Welch (1989) and Grinblatt & Hwang (1989) study the signalling theory of underpricing in the IPO context. They argue that managers, which aim to indicate high company quality to investors, use underpricing as a technique. The explanation is that "good" IPO firms initially

¹⁵ The percentage change from the subscription price to the closing price at the first day of trading.

¹⁶ Sample size of 406 IPO firms 1980-2006.

underprice, as they can be expected to recover the loss going forward. In order to compensate for the loss of capital due the underpricing the firm should conduct a second seasoned offering when the market has understood that the firm is “good”. Since managers of “bad” firms are fully aware that they are unable to recover an underpricing loss they will not partake in the same endeavours as higher quality firms.¹⁷ Using this model, Jain and Kini (1994) predict that IPO firms engaging in underpricing ought to outclass other companies in terms of post-issue operating performance. However, they find no statistical significance of the relationship. More recent studies such as Chi and Padgett (2006) and Wang (2005) confirm the findings of an insignificant relationship along the signalling theory.

3.3 CRISIS EFFECTS ON OPERATING PERFORMANCE

Since our sample stretches over two potential financial crises this gives us an opportunity to investigate the crisis-specific effects on operating performance. There are several definitions of what an economic crisis is. Depending on which definition one employs; Sweden has suffered one to two major crises in the period of our data sample; the IT crash of 2000-2002 and the latest global crisis of 2008-2009. According to the Economic Cycle Research Institute, the period of 2000-2002 was not an economic crisis in Sweden. However, the Stockholm stock exchange index plummeted over 70 percent in the course of 2 years.

Many studies have examined the subject of economic crises, although the majority focus on causes and effects on a national or international level. Nonetheless, a limited amount of work has analysed the relationship between company operations and economic downturns. Using the RVA (real value added)¹⁸ as performance measure Narjoko and Hill (2007) find that performance declines substantially during a crisis, in 1998 the RVA decreased by 10 percent. Similarly Claessens, Djankov and Xu (2000) find that the number of public firms with a negative operating income scaled on sales increased severely. The median operating income over sales decreased by 6.7 pp. during the peak of the crisis. They also show that the variability of the margin increases during these periods.

3.4 RELEVANT FINDINGS & HYPOTHESES

We find no reasons to deviate from the findings of previous literature regarding our hypotheses. When contradicting findings are observed we will evaluate the findings and motivate our choices further. Consequently, Table 2.1 presents our hypotheses based on the relevant findings in previous work.

The first hypothesis is completely in line with the findings of previous literature. To our knowledge no former study has found an increase in operating performance post-IPO. However, we do not hypothesize about the magnitude of this decline due to the inaccuracy of such hypotheses.

¹⁷ The theory is aligned with Ibbotson (1975) stating that IPOs are underpriced to “leave a good taste in investors’ mouths’ so that future underwritings from the same issuer could be sold at attractive prices”.

Welch (1989) furthermore observes that approximately thirty percent of IPO companies 1977-1982 had conducted secondary offering(s) by 1986, averaging minimum three times the IPO size.

A further assumption is that the market knows that only “good” firms can recover the underpricing cost through secondary offerings.

¹⁸ Real value added is the average difference between sale price and production cost of a product.

Table 2.1 Hypotheses

H1	The ex-post profitability margins and return ratios decrease
H2	The ex-post sales growth of IPO firms surges continuously, parallel to a decline in asset turnover
H3	Managerial retention has a positive relationship with post-issue operating performance
H4	Initial return has a positive correlation coefficient with post-issue operating performance

Even though some studies did not find a significant increase in sales, parallel to a decline in asset turnover, a larger number of studies have observed this relationship. We have not found any paper that observes a decrease in sales. Pagano et al. (1998) argue that firms go public in order to deleverage after periods of high investments and growth. This could support the second hypothesis since the growth effect from these investments potentially persists several years following the IPO.

The basis for the third hypothesis is full of contradictory evidence. The studies of Jain & Kini (1994) and Holthausen & Larcker (1996) provide us with material in line with our hypothesis. However, several studies did not find any significance regarding managerial retention (Mikkelsen et al. 1997, Morck and Vishny 1988 and Demsetz & Lehn 1985). Boubaker and Mezhoud (2011) provide basis for an opposite hypothesis. Despite the fact that their study is the most recent, we argue that the underlying theories supporting a positive relationship between managerial retention and performance are stronger than those opposing it. The theory of entrenchment argues that although a manager has a high ownership stake this does not necessarily imply that he or she will be maximizing his or her utility by maximizing ownership profit (i.e. that interests are aligned).¹⁹ Consequently, we regard the theory of interest alignment as more plausible than managerial entrenchment on a market wide level. Furthermore, the theory of signalling through retention supports this hypothesis.

We construct the fourth hypothesis in accordance with the signalling theory of underpricing. Jain & Kini (1994), Chi & Padgett (2006) and Wang (2005) find no significant relationship, but their studies were conducted on other than the Swedish market, observing earlier IPOs, hence the relevance of the issue remains.

¹⁹ Demsetz (1983).

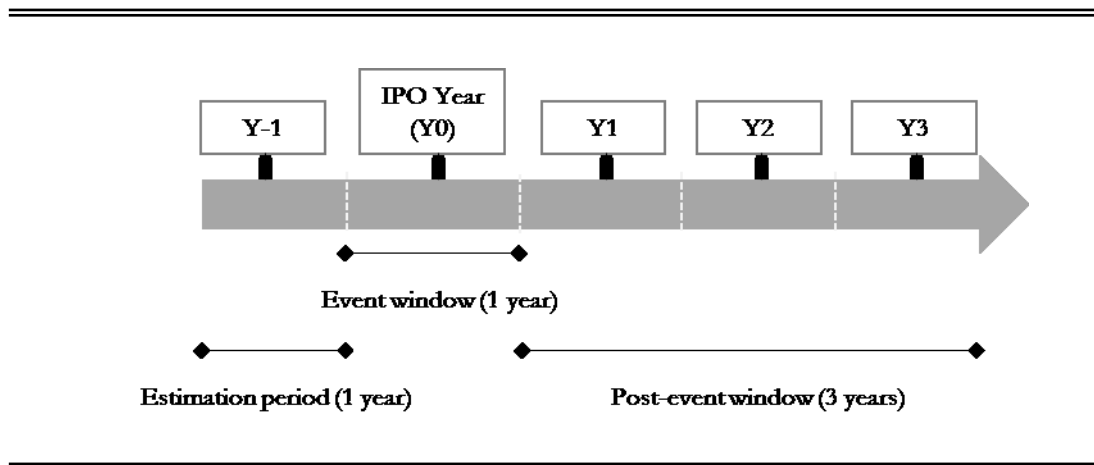
4. METHODOLOGY

This chapter covers the statistical and econometric models applied throughout the paper. We conduct an event study and the first section will outline the event period. In the second section we define and motivate the chosen performance measures. The empirical analysis is outlined in the third section while in the fourth section we describe and evaluate the regressions models used. Our methodology follows previous literature in general with a few exceptions due to data availability.

4.1 EVENT SPECIFICATION

As we measure the post-issue operating performance, the IPO will naturally be the event. Since an IPO is firms specific, i.e. the event occurs at a different time for each firm, the analysis must be conducted on the change in performance over time relative to the IPO. Due to data availability we limit the thesis to observing change in full year accounting data, excluding intra-year variations.²⁰ Therefore, the year of the IPO, hereafter referred to as Year 0, constitutes our event window. Since the aim of this study is to observe changes in operating performance as an effect of the IPO, the estimation period must be the year prior to the event, Year -1. We then compare Year -1 to Year 0 and three consecutive post-IPO years, Year 1-3. The chosen time frame, frequently used in previous literature, is illustrated in Figure 4.1.

Figure 4.1 Event specification



4.2 PERFORMANCE MEASURE DEFINITION

There are several commonly used and clearly defined measures of firm operating performance. Chosen measures are presented in Table 4.1.

In order to enable inter-firm comparison we need to analyze size indifferent measures, such as growth, margins or return ratios.²¹ Sales growth shows the growth in net sales, which is one of the most frequently used accounting items estimating firm size. Asset turnover shows how efficiently a firm uses its assets to generate sales. In terms of profitability, we measure EBITDA margin, which is the earnings before

²⁰ Semiannual and quarterly reports are less available than annual reports.

²¹ The difference between a margin and a return ratio is that sales is always the denominator in a margin and ratios always have a balance sheet item as denominator.

interest, taxes, depreciation and amortization, divided by total sales. This is a measure of a firm's operating performance devoid of any influence of both tax jurisdictions and capital structure, while the numerator simultaneously serve as a proxy for operating cash flow. Operating return on assets is the EBITDA divided by assets. EBIT margin equals operating income deflated by sales. Similarly to the EBITDA margin, EBIT margin is tax neutral and it is not influenced by capital structure. PTP is the pre-tax profit, and when scaled by sales, it expresses how profitable the company is after net financial items, without considering taxation. Profit margin is the bottom-line profitability taking all expenses and income items into account. PTP and profit margins are below the income line, thus heavily influenced by capital structure. Consequently, they are not pure operating performance measures and therefore they are given less attention in the analysis. However, by comparing the two margins we can determine potential IPO effects on company taxation, implied by the transparency theory.²²

ROA implies how effectively the company generates earnings per SEK invested in assets. Similarly, cash flow return shows the firm total cash flow in relation to assets. For the same reasons as PTP and profit margin, ROA and cash flow return are outside our primary scope of analysis.

Table 4.1 Performance measure definitions

Measure	Definition
Sales growth	$(Sales_{t1}/Sales_{t0})-1$
Asset turnover	Sales / Assets
EBITDA margin	EBITDA / Sales
EBIT margin	EBIT / Sales
PTP margin	PTP / Sales
Profit margin	Profit / Sales
Operating return on assets	EBITDA / Assets
ROA	Profit / Assets
Cash flow return	Total cash flow / Assets

Previous literature has frequently used operating return on assets as a main measure of operating performance. Some critique can be directed towards the measure, mainly due to two reasons. First, since total assets include interest bearing items its contribution to the income statement is not only operational but also financial. As a result, one could argue that operating income should be scaled by operating assets rather than total assets. Secondly, an IPO is often combined with a new issue of shares, which, per definition, increases a firm's assets through the cash inflow. This increase will convey a downward bias to asset-deflated measures (Mikkelsen et al. 1997). Despite this, in order to receive results comparable to those of previous literature we have chosen to include measures scaled by assets. In addition, we include measures scaled by sales, thus ending up with operating measures stemming from all financial statements. This gives us a wide range of variables that cover numerous aspects of firm operating performance.

²² It has been argued that the higher transparency of public firms leads to less opportunity for tax evasion. This transparency theory is one of many possible causes of IPO effects on performance (Pagano et al.).

Since company margins frequently change from negative to positive and vice versa, a change in relative percentage is impossible to compute. Consequently we measure the change in absolute percentage points.

4.3 ANALYSIS OUTLINE

In order to observe how the performance changes after an IPO we calculate the growth of the performance measures from Year -1 to each subsequent year. This gives a better overview than calculating the change per year, specifically when examining the long-term impact. We present these findings in the growth tables containing both the measure and the measure deviation from a benchmark. Usage of benchmark deviations is important in order to clarify whether the effect stems from the IPO or other factors, such as national economic trends. These tables compose the main sources of analysis. The significance (p-values) of the table metrics is obtained using a regression model described in the next section. This enables us to conclude whether to reject or accept the two first hypotheses.

To test hypotheses three, four and five we employ different methods, mainly consisting of dividing the full sample into sub-samples. For our third hypothesis the sub-sample is based on above and below median managerial retention. This allows us to perceive potential disparities in operating performance between firms with high and low managerial retention. Similarly, to test the fourth hypothesis we divide our sample into equivalent sub-samples for underpricing. The median, rather than mean, is used in order to split the sample into two equally large clusters.²³ When analyzing the crisis effects we examine four sub-samples; the aggregate crises (i.e. observations stemming from either crisis), one sub-sample per crisis and one sub-sample consisting of non-crisis observations. Comparing these values can give us insights as to whether IPO firms are affected to a higher or lower extent by economic downturns than non-IPO firms. Finally, the results can provide evidence of differing consequences for the two crises. For the analysis of these hypotheses we present equivalent tables to those of the whole sample, with the exception that the performance development are split per sub-sample.

²³ These methods have been used previously by Jain and Kini (1994) as well as Wang (2005).

4.4 ECONOMETRIC MODELS

In order to analyze the IPO effect on performance we are using the following OLS model specifications on all performance measures:

$$(1) \quad y_{it} = \beta_0 + \beta_1 d_float + \beta_2 d_underpr + \beta_3 crisis_d + \sum_{j=0}^3 \beta_j d_year_j + u_{it} + \epsilon_{it}$$

$$(2) \quad z_{it} = \beta_0 + \beta_1 d_float + \beta_2 d_underpr + \beta_3 crisis_d + \sum_{j=0}^3 \beta_j d_year_j + u_{it} + \epsilon_{it},$$

where y_{it} is the performance measure, $float_d$ is a dummy variable taking on the value 1 if the firm has an above median float rate, $underpr_d$ is a dummy taking on the value of 1 if the initial return of the firm is above median, $d_year_0 - d_year_3$ are dummies taking on the value 1 for each respective year. In the second regression z_{it} is the measure deviation from a benchmark, Equation 4.1. Using the deviation captures IPO specific effects to a larger extent since it accounts for other effects such as national economic trends.

$$z_{it} = y_{it} - benchmark\ measure \quad (Equation\ 4.1)$$

To compute the significance (p-value) of the numbers in the growth tables we run the following regression for all the chosen growth variables:

$$(3) \quad \Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_j + e_{it}$$

$$(4) \quad \Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_j + e_{it}$$

Where Δy is the growth of the performance measure from Year -1 to each subsequent year, and consequently Δz is the deviation in measure growth from the benchmark (Equation 4.1). Since growth cannot be calculated for Year -1 we are using a no-constant regression. Contrary to our main model we are only using year dummies as explanatory variables. In order to obtain the p-values for the median based sub-samples we run both regressions on the equivalent groups.

One underlying assumption of the OLS regression model is homoscedasticity; we adjust for potential heteroscedasticity by using robust standard errors in our regressions. When running a regression there is a risk that the regression suffers from endogeneity. There are several causes of endogeneity, the most common being an omitted variable bias. For an omitted variable, x_j , there are two conditions that have to be met in order for bias to occur. These are:

(1) The omitted variable's true beta must be: $\beta_j \neq 0$

(2) The omitted variable has to be correlated with at least one explanatory variable:

$$Corr(x_i; x_j) \neq 0$$

It is possible that there are some omitted variables that satisfy these conditions. One is that there are overlooked national economic forces that are more prevalent in one of the relative IPO years. Since we, for instance, have a large number of IPOs in the early part of our sample the IT crash is potentially more

predominant in the Year 3 data. By using both the normal and the abnormal margins, i.e. the deviation of the firm's margin from the benchmark margin, we account for some of these potential omitted variables such as national economic forces. Other causes of omitted variable bias would require a variable that correlates to the time that passed since an IPO, for example regulation imposing a certain event at a certain time after the IPO. As far as we know there are no such variables.

R^2 indicates the proportion of variability in the dependent variable that the model explains. Our model merely attempts to capture the effect of an IPO over the course of four years as well as the effect of some other factors, not to explain the total variability in performance. Naturally there are a plethora of other variables explaining the variation in chosen performance measures than those in our model. Due to this reason we hypothesize that the explanatory power of our model in terms of proportions of the variability (R^2) will be low. What we want to investigate is the effect of an IPO on the operating performance, not determine every variable explaining operating performance.

5. DATA DESCRIPTION

This chapter covers the data used for analysis throughout the study. Initially we present a description of the data collection. In the second section we display an overview of IPOs on the Stockholm Stock Exchange (SSE) in 1997-2008, as well as observed sample data. The third section serves as an evaluation of our dataset, identifying potential problems.

5.1 DATA COLLECTION

We have found no evidence that a database with the inclusion of operating performance measures of Swedish IPOs already exists. Consequently the majority of the collected data is not openly available, and has as a result been manually retrieved from various sources. Sourcing from the *Nasdaq OMX Trader: Changes to the list – New entries*, we selected our working sample of IPO firms through a set of criteria summarized in table 5.1. The study comprises IPOs 1997-2008 in order to capture the IPO boom of the late 90s, while obtaining a reasonably high sample set. As we are analyzing the three subsequent years of the IPO year, the most recent IPOs included would be those of 2008. This is because 2011 is the last full year with available accounting data (income statement, balance sheet and cash flow items). The lower limit, i.e. 1997 has been chosen purely due to accounting data availability. With the purpose of achieving comparability among firm characteristics, we have selected IPOs solely on the *SSE* main lists, excluding auxiliary lists and market platforms such as SBI-list, First North, Aktietorget, Nya Marknaden etc. To capture the initial effect which the IPO might have on firm operating performance we naturally exclude any secondary listings, list changes, spin-offs and carve-outs from previously listed groups. Moreover, the listing period of the particular firm has to be minimum three years succeeding the IPO year in order to make up an eligible set of observations according to the parameters of the event study. There are essential differences in the nature of operations and accounting information of financial and industrial companies, which leads to incomparability between the two on operating performance. Due to this we have chosen to exclude financial companies from our sample (Pagano et al. 1998). Finally, firms with a majority of unavailable accounting data for each listing year have been excluded.

Table 5.1 Sample selection process²⁴

Criteria	Firms	Excluded
1 New entries on OMX main lists 1997-2008	353	
2 Pure IPOs: No secondary listings, list changes or spin-offs and carve-outs	178	175
3 Listing period of minimum three years subsequent to and excluding the IPO year	133	45
4 Excluding Financial institutions	120	13
5 Accounting data for each listing year available	111	9
Final sample	111	242

²⁴ These figures can be compared to those of the Pagano et al study; which initially consisted of a total of 139 firms but after a total exclusion of 70 firms, among others 63 financial companies, the final sample contained 69 firms.

IPO specific data such as float rates and underpricing have been obtained from IPO prospectuses and occasionally news articles and press releases found through *Factiva*.

Accounting data have primarily been retrieved using *Orbis* (bureau van dijk), *COMPUSTAT Global*, *Affärsdata* (Scandinavian business information) and complementary annual reports.

We are using a national benchmark, much like a control group, to compare the IPO firms' performance with companies unaffected by the specific event (here the IPO). The benchmark measures consist of aggregated items in the financial statements of virtually all non-financial Swedish companies. Consequently these items can be used to calculate various benchmark profitability and return ratios. This data has been drawn from *Statistiska Centralbyrån* (Statistics Sweden).²⁵

5.2 DATA OVERVIEW

Our final sample consists of 111 firms, with each firm's set of performance measures observed per year, over a period of five consecutive years. As shown in Table 5.2, a significant fraction of over 70% of the IPOs in the sample took place in 1997-2000. As the IT bubble burst during the relatively early years in our sample window, a period of a high IPO frequency, the crisis analysis is probably of value to our results. We identify a substantial difference between our sample and that of Jain and Kini (1994), which consists of a majority of listings in the later part of the analyzed period. This is most likely due to IPO clustering in times of high stock market returns (appendix Figure 8.1).

Table 5.2 Initial public offerings (IPOs) per year

Year	Frequency	Percentage
1997	27	24.3%
1998	13	11.7%
1999	25	22.5%
2000	14	12.6%
2001	8	7.2%
2002	4	3.6%
2004	3	2.7%
2005	4	3.6%
2006	7	6.3%
2007	5	4.5%
2008	1	0.9%
Total	111	100%

²⁵ Statistics Sweden is an administrative agency, supplying statistics for decision-making, debate and research.

Table 5.3 Characteristics of Initial public offering (IPO) firms

Summary statistics of 111 IPO firms. The float rate constitutes the percentage of total shares offered to the market through the IPO. Subscription price is the price paid per share by investors partaking in the offering. Closing price is the closing price on the first day of trading. Initial return equals the percentage change from the subscription price to the closing price.

Descriptive measure	Mean	Median	Std. Dev.	Min	Max	Obs.
Float rate (%)	41.18	36.00	21.72	10.11	100.00	102
Subscription price	68.47	62.50	33.24	12.50	190.00	100
Closing price	74.25	66.50	43.16	12.50	213.00	69
Initial return (%)	15.55	3.51	48.62	-22.89	297.50	65

Table 5.3 depicts some IPO-specific characteristics of our sample. The float rate is calculated as total offered shares over total company shares. The offered percentage include the combined sale of both newly issued shares as well as existing shares, and has been collected under the crude assumption that potential overallotment arrangement is exercised. In accordance with Ritter (1991) we describe initial return as the percentage change from the subscription price to the closing price on the first day of trading (Equation 5.2), which is then used as a definition of over- and underpricing. The relatively low number of observations for closing price and initial return is due to unavailable data.

Equal to Jain and Kini (1994), we calculate percentage of shares retained by pre-offering shareholders as a proxy for managerial ownership retention (described in Equation 5.1). There might be potential problems using this estimation; Mikkelson et al. (1997) uses a direct measure of managerial ownership and finds that the proxy used by Jain and Kini (and by us) only has a correlation of 0.17 to their measure. However, we do not know if the critique holds for float rate as a proxy for managerial retention on the Swedish market.

$$\text{Pre-offer shareholder retention} = (1 - \text{float rate}) \quad \text{Equation (5.1)}$$

$$\text{Initial return} = (S1/S^*) - 1 \quad \text{Equation (5.2)}$$

Where, S1 is the closing share price on the first trading day and
S* = IPO subscription price

The mean float rate is 41 percent implying that managers keep some stake in the firms; compared to the manager retention in Jain and Kini (1994) we see that it is more than 10 pp. lower. Mikkelson et al. (1997) report a median retention rate of officers and directors of 43.7 percent, whereas our median managerial ownership retention is 64.0 percent. This could be explained by the previously mentioned potential weakness in our chosen proxy, but could also be the result of differing trends in our sample time periods and markets.

The mean initial return in our sample is 15.55 percent, fairly above the 7.3 percent that Jain and Kini (1994) find. Similarly to their study there is a quite large difference between the median and mean initial return, 12.04 pp. and 6.1 pp. for us and them respectively. These numbers can be further associated to the

results of Ljungqvist and Wilhelm (2003) who find a huge mean initial return of 35.7 percent in the years 1996-2000.²⁶ The phenomenon of underpricing is present in all previous studies we have taken note of.

Table 5.4 displays descriptive statistics of our total sample in Year -1, both pre and post winsorizing (explained in 5.3). As a result of winsorizing the descriptive measure average has approached the median, showcased in the second panel of the table. The relatively considerable differences between the mean and the median pre winsorizing are due to a few observations with an immense negative magnitude in the affected margins.

Comparing our numbers to those of Pagano et al. (1998) we can see that the average Swedish IPO firm during 1997-2008 was over four times smaller, in terms of sales, than the Italian counterpart in the years 1982-1992.²⁷

Table 5.4 Sample descriptive statistics, Year -1

Summary statistics of 111 Initial public offering (IPO) firms, pre and post winsorizing. Y-1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Sales is the absolute sales figure. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income. PTP is the pre-tax profit and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets.

Pre Winsorizing

Descriptive measure	Mean	Median	Std. Dev.	Min	Max	Obs.
Sales (SEK000)	1829869	342440	5501104	8632	52121000	105
Asset turnover	1.72	1.48	1.84	0.06	14.77	105
EBITDA margin (%)	6.47	10.39	30.13	-149.63	78.00	104
EBIT margin (%)	2.62	7.36	31.05	-162.24	74.07	105
PTP margin (%)	0.34	5.89	32.64	-171.12	65.37	104
Profit margin (%)	-1.03	3.95	30.69	-172.02	58.23	100
Operating return on assets (%)	10.76	14.21	24.56	-149.20	49.66	104
ROA (%)	2.85	6.21	23.48	-158.20	35.01	100
Cash flow return (%)	4.46	4.30	23.73	-152.28	61.75	98

Post Winsorizing

Descriptive measure	Mean	Median	Std. Dev.	Min	Max	Obs.
Sales (SEK000)	1829869	342440	5501104	8632	52121000	105
Asset turnover	1.47	1.48	0.76	0.06	2.78	105
EBITDA margin (%)	8.21	10.39	21.56	-66.82	66.82	104
EBIT margin (%)	4.29	7.36	23.69	-83.88	74.07	105
PTP margin (%)	2.40	5.89	23.60	-83.83	65.37	104
Profit margin (%)	1.25	3.95	19.85	-79.57	58.23	100
Operating return on assets (%)	11.64	14.21	19.95	-67.13	49.66	104
ROA (%)	3.52	6.21	18.01	-91.28	35.01	100
Cash flow return (%)	5.29	4.30	17.98	-71.05	61.75	98

²⁶ However, Ljungqvist and Wilhelm (2003) investigate the IPO pricing during the Dot-Com bubble.

²⁷ Pagano et al. (1998).

5.3 DATA EVALUATION

Regarding potential problems with our dataset we can initially say that it is possible that our sample selection period of three years post-IPO data could lead to a survivorship bias, however, we consider that risk low.²⁸ Furthermore, concerning our choice of benchmark one can argue that a benchmark using industry specific measures would have been better. This is because the benchmark we use will only capture the effect of national economic movements, not industry specific trends. However, due to data availability we use the national benchmark. Furthermore, we believe that enough industry effects will be captured by this benchmark.

As our performance measures primarily comprise margins i.e. profitability and return ratios, they can take on a maximum value of 1, but with virtually no minimum limit. As a result of this our sample is skewed due to extreme outliers. In Table 5.4 we saw a substantial difference between the mean and median, which is symptomatic of this issue. In order to adjust for this problem we use the method of winsorizing our sample; which is simply taking all observations that lay two standard deviations from the mean and setting them to two standard deviations from the mean.²⁹ An alternative method to winsorizing is trimming, this is done in the same way but instead of replacing the observations they are removed.

According to Newbold et al. (2007) sample sizes with over 25 observations are well approximated by a normal distribution if the sample follows a symmetric distribution. As each set of measures is winsorized and contains over 450 observations we can assume a normal distribution approximation. Furthermore we have not adjusted for clustering of the standard deviation in each measure since our data is multi-dimensional i.e. panel data. The number of observations presented in the empirical analysis varies due to missing values.

²⁸ Jain and Kini, using a similar time period argues identically.

²⁹ In alignment with statistical methods of Barber and Lyon (1996).

6. RESULTS & EMPIRICAL ANALYSIS

In this chapter we analyze the empirical findings of each performance measure and compare it with our hypotheses. Initially, we present and discuss the development of firm operating performance in comparison to a national benchmark. The second section explains the observed relationship between performance development and managerial ownership retention. An equivalent analysis of underpricing effects is presented in the third section. In section four we are investigating how the post IPO performance is affected by a period of national economic crisis. Finally we assess the results through a comparison with the full regression model.

6.1 DEVELOPMENT IN OPERATING PERFORMANCE

We observe a post-issue mean increase in sales for the entire sample by 41.92 percent, 81.04 percent, 101.04 percent, and 104.95 percent from Year -1 to Year 0, Year 1, Year 2 and Year 3 respectively. The continuous, but gradually declining, annual growth implies a substantial short-term boost in the metric. The benchmark adjusted measure, i.e. the pure IPO effect on average sales growth display a similar trend, culminating in Year 2. Sample measures as well as adjusted values are significant at 1 percent level.

As previously mentioned Pagano et al. (1998) argue that firms invest and grow considerably during pre-IPO years. A potential explanation for our findings could thus be that these prior investments and growth tracks persist in the post-issue period.

Moreover, we find a one-off drop in asset turnover by 18.47 pp. in Year 0, which most likely can be explained by the direct and natural increase in assets related to the potential new issue, thus a cash inflow. As we note that sales grow substantially over the years, while asset turnover experience a slight consecutive decrease, we can conclude that assets grow on average in excess of sales over the entire period Year -1 to Year 3, which can potentially be explained by conductions of secondary seasoned offerings in the post-IPO years (Welch 1989). This implies that companies that go public are increasingly becoming less financially efficient (asset turnover is significant at the 1 percent level for all post-issue years).

The findings of a trend in sales growth and asset turnover are consistent with the results of Jain and Kini (1994) as well as Chi and Padgett (2006), although we observe relatively higher sales growth rates. Development in asset turnover also matches the findings of Boubaker and Mezhoud (2011), hence we can accept the second hypothesis that the sales growth surges continuously parallel to a decline in asset turnover.

Considering the effect on profitability, EBITDA margin decrease on average by -4.75 pp. to Year 2 (significant at 5 percent level), and by -5.24 pp. to Year 3 (significant at 1 percent level) from an average of 8.21 percent in Year -1. Adjusted numbers virtually showcase the same findings with the exception of slight significance contraction. As the benchmark average EBITDA margin is relatively stable over the period, the gap between sample and benchmark firm margin increases subsequent to the offering. The changes during Year 0 and Year -1 are in aligned with a margin decline in the medium to long-term. However these short-term developments are insignificant, which potentially can be attributed to a time lag in the effect of operating performance.

Equal significant and undesirable development is observed in terms of ROA, EBIT, PTP as well as profit margin. In addition, these measures reach negative margin levels, and shockingly, already during Year 1.

In contrast to the EBITDA margin, operating return on assets for IPO firms exceed the benchmark levels by 3.57 pp. in Year -1. On the other hand, the negative post-issue development is recognized (-9.56 pp. from Year -1 to Year 3), and interestingly, both sample and benchmark measures steadily decline, although sample values decrease at a relatively higher magnitude. Consequently, going from pre-issue surpassing levels, the IPO firm return ratio shift below that of the benchmark between Year 1 and Year 2. Also benchmark deviation numbers, in particular Year -1 relative Year 2 and Year 3, decline by 6.07 and 7.63 pp. This implies that the medium to long term decline in operating performance can largely be attributed to pure IPO effects.

Our results in terms of profitability and operating return ratios are similar to those of Mikkelsen et al. (1997), Jain and Kini (1994), Pagano et al. (1998) as well as Wang (2005), with the only exception that we perceive insignificant effects during Year 0. As a result, we accept our first hypothesis that the ex-post profitability margins and return ratios decrease.

Table 6.1 Operating performance of Initial public offering (IPO) firms

The table displays the mean change in performance measures for 111 Initial public offering (IPO) firms on the Stockholm Stock Exchange 1997-2008. Firm accounting data is available through COMPUSTAT, Orbis and annual reports. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Mean BM (benchmark) Dev. is the mean change in the measure for IPO firms adjusted by national business cycles (see chapter 3). Sales is the growth in net sales. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income. PTP equals the pre-tax profit and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets. Significance is obtained from associated OLS regressions (appendix, Regression 3 and 4).

Performance Measure	Years relative pre-IPO year			
	-1 to 0	-1 to 1	-1 to 2	-1 to 3
Panel A: Sales				
Mean. Year -1 (SEK000): IPO Sample = 1829869				
Mean change (%)	41.92***	81.04***	101.04***	104.95***
Mean BM Dev. (pp.)	41.80***	74.88***	79.74***	74.61***
No. of observations	105	105	105	105
Panel B: EBITDA margin				
Mean. Year -1 (%): IPO Sample = 8.21 Benchmark Dev.(pp.) = -2.37				
Mean change (pp.)	-0.51	-1.82	-4.75**	-5.24***
Mean BM Dev. (pp.)	-0.51	-1.72	-4.91*	-5.47**
No. of observations	104	104	104	104

Table 5.1 <i>continued</i>	-1 to 0	-1 to 1	-1 to 2	-1 to 3
Panel C: EBIT margin				
Mean. Year -1 (%):				
IPO Sample = 4.29				
Benchmark Dev.(pp.) = -3.14				
Mean change (pp.)	-1.33	-4.74**	-8.22***	-8.35***
Mean BM Dev. (pp.)	-1.36	-5.14*	-9.24***	-8.39***
No. of observations	105	105	105	105
Panel D: PTP margin				
Mean. Year -1 (%):				
IPO Sample = 2.4				
Benchmark Dev.(pp.) = -6.96				
Mean change (pp.)	-0.50	-2.84	-4.73	-6.21**
Mean BM Dev. (pp.)	-0.72	-3.01	-4.51	-5.60*
No. of observations	104	104	104	104
Panel E: Profit margin				
Mean. Year -1 (%):				
IPO Sample = 1.25				
Benchmark Dev.(pp.) = -7.29				
Mean change (pp.)	-0.92	-3.47	-7.84***	-7.52***
Mean BM Dev. (pp.)	-0.81	-3.79	-8.45**	-6.68**
No. of observations	100	99	98	100
Panel F: Asset turnover				
Mean. Year -1 (%):				
IPO Sample = 146.59				
Benchmark Dev.(pp.) = 66.97				
Mean change (pp.)	-18.47***	-18.27***	-20.95***	-21.42***
Mean BM Dev. (pp.)	-16.11***	-10.95	-6.33	-1.58
No. of observations	105	105	105	105
Panel G: Operating return on assets				
Mean. Year -1 (%):				
IPO Sample = 11.64				
Benchmark Dev.(pp.) = 3.57				
Mean change (pp.)	-0.88	-4.04**	-6.94***	-9.56***
Mean BM Dev. (pp.)	-0.53	-3.22	-6.07**	-7.63***
No. of observations	104	104	104	104
Panel H: ROA				
Mean. Year -1 (%):				
IPO Sample = 3.52				
Benchmark Dev.(pp.) = -2.68				
Mean change (pp.)	-0.21	-4.94**	-8.77***	-9.85***
Mean BM Dev. (pp.)	0.49	-4.66*	-8.71***	-8.55***
No. of observations	100	99	99	100
Panel I: Cash flow return				
Mean. Year -1 (%):				
IPO Sample = 5.29				
Mean change (pp.)	6.30***	-3.98*	-8.35***	-7.02***
No. of observations	98	97	97	98

*** Significant at 1 percent.

** Significant at 5 percent.

* Significant at 10 percent.

Absolute numbers of total cash flow are expected to increase through the cash inflow from financing activities (new issue parallel to listing). Assets should, *ceteris paribus*, by definition increase by the same amount (cash & equivalents). It is then interesting that the cash flow return for the IPO sample in average grows by 6.30 pp. (significant at 1 percent level) during Year 0 from 5.29 in Year -1. As assets grow in excess of sales, the increase in cash flow return must stem from a surge in cash flow separated from the inflow of the new issue. We cannot explain where these additional cash flow streams are generated from.

In order to analyze IPO-related tax implications we compare PTP and profit margin, finding that variations between the measures increase on average, implying that firms which go public appear to pay supplementary taxes in contrast to those who do not, which is in accordance with outcomes of Pagano et al. (1998) and the transparency theory. The development in these two measures is only statistically significant in Year 3 (and Year 2 for profit margin).

To shed further light on the findings for the entire sample, select measures are graphed in Figure 6.1-6.4. In contrast to the metrics presented in Table 6.1, illustrations report absolute annual values rather than growth in the respective measure. However, the implications are virtually the same. Graphs display absolute margins corresponding to values of Table 6.1. Measures in panel: C, D, E, H and can be found in the appendix.

Figure 6.1 Average sales growth, Year -1 to Year 0-Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Growth denotes the change in sales from Year -1 to Year 0-Year 3 respectively. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to reported changes (%) in Table 6.1, panel A.

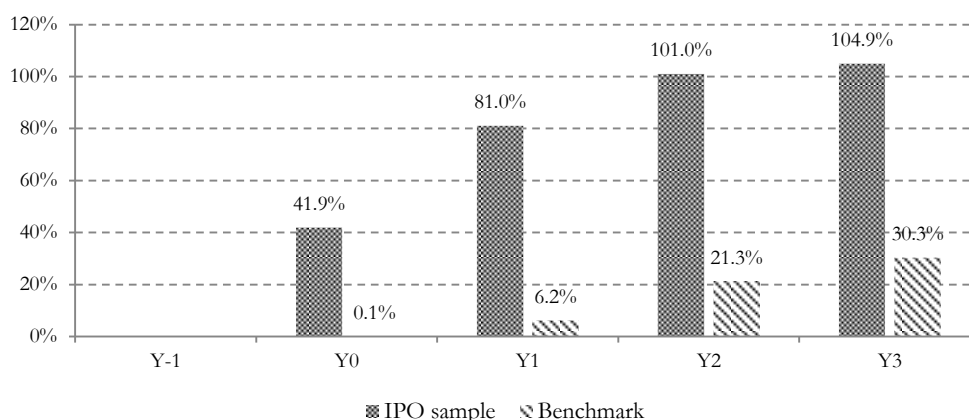


Figure 6.2 Average EBITDA margin, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). EBITDA margin is the earnings before interest, taxes, depreciation and amortization deflated by sales. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to reported changes (pp.) in Table 6.1, panel B.

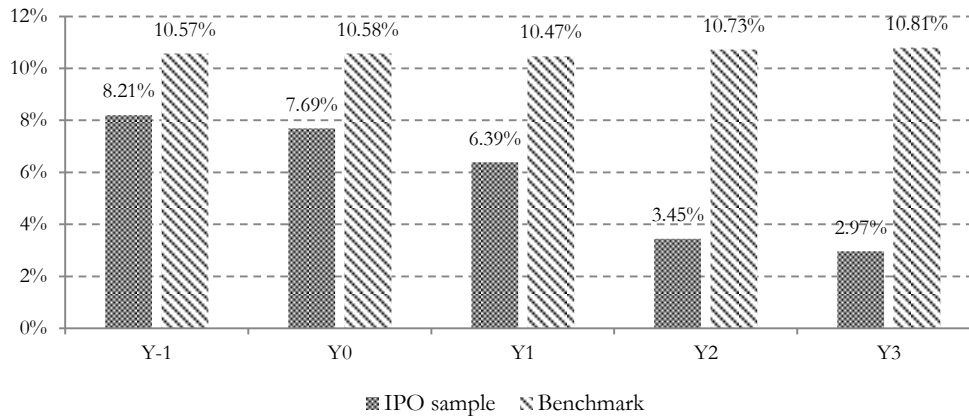


Figure 6.3 Average operating return on assets, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Operating return on assets equals earnings before interest, taxes, depreciation and amortization scaled by total assets. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to reported changes (pp.) in Table 6.1, panel G.

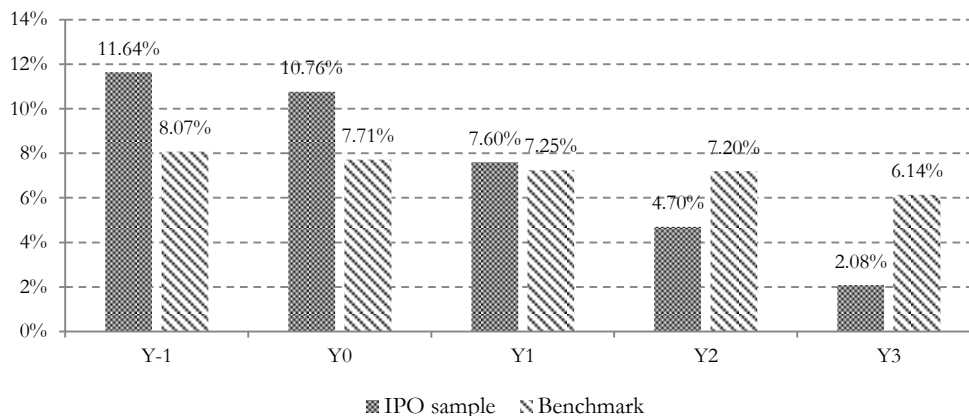
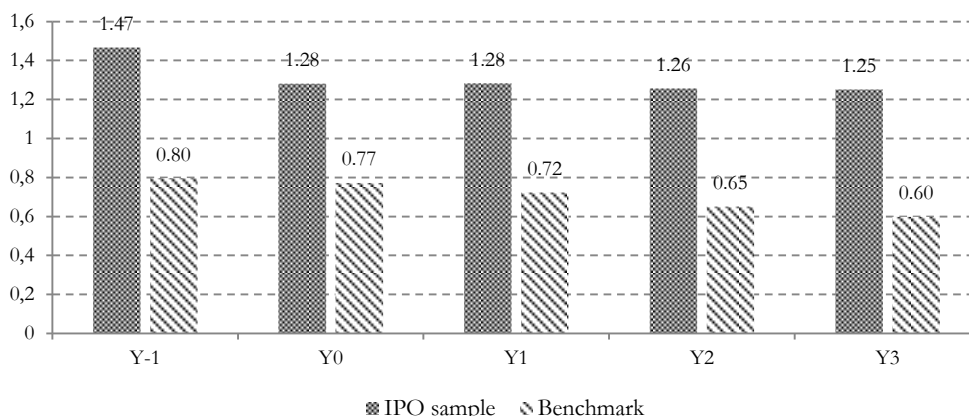


Figure 6.4 Average asset turnover, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Asset turnover is calculated as sales over total assets. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to changes (pp.) in Table 6.1, panel F.



6.2 MANAGERIAL OWNERSHIP RETENTION & PERFORMANCE

Dividing the sample into subgroups by above and below median float rate, several differences in terms of firm characteristics are unveiled. First, companies in which managers retain a relatively minor equity stake (average retention of 0.43 compared to 0.76 percent) appear to be of substantially greater size than high retaining firms in terms of sales (roughly six times) and total assets in the pre-IPO year.

Table 6.2 Descriptive statistics Year -1, firms divided by median float rate

Summary statistics of 111 Initial public offering (IPO) firms. The float rate constitutes the percentage of total shares offered to the market through the IPO. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Subscription price is the price paid per share by investors partaking in the offering. Initial return equals the percentage change from the subscription price to the closing price of the first day of trading. Sales is the absolute sales figure. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets.

Variable (mean)	Float rate ≥ 36.00	Float rate < 36.00
Subscription price	74.37	63.68
Initial return (%)	3.23	31.76
Float rate (%)	57.01	24.06
Sales (000 SEK)	3127279	495513
Asset turnover	1.58	1.37
EBITDA margin (%)	14.07	3.89
EBIT margin (%)	10.71	-0.20
Profit margin (%)	4.78	-0.58
Operating return on assets (%)	17.29	7.83
ROA (%)	6.20	3.02
Cash flow return (%)	3.58	8.83

Secondly, low retaining firms are more profitable than those of the other group before making the transition from private to public ownership. Finally, these companies also seem to price their IPOs in alignment with market anticipations, diverging from possible engagement in signalling by underpricing.

In terms of operating performance, firms with low managerial retention grow on average by 19.61 percent, 48.02 percent, 75.30 percent, and 96.95 percent in sales from Year -1 to Year 0-Year 3. High retaining firms on the other hand experience an even greater increase in the metric of 66.5 percent, 119.4 percent, 128.3 percent and 109.1 percent from Year -1 to Year 0-Year 3 respectively (all values are significant at the 1 percent level). The high retaining sub-groups' sales consequently peak during Year 2, potentially explained by companies reaching maturity. Despite this short-term boost for the group with high managerial retention, the growth subsides slightly in Year 3 and both groups' values converge to some degree in the final year.

As the size of companies characterized by low managerial retention is over six times the size of the other group, a possible scenario is the one described by Pagano et al. (1998). Relating to their arguments, the superior size is a result of high pre-issue investment and growth activities, a potential reason for the relatively lower post-IPO sales growth. It is therefore likely that the intrinsic value of the company has increased in recent times before the IPO. Since low retaining firms in addition are characterized by a substantially minor degree of underpricing, one potential interpretation is that the owner-manager of these firms aspire to make an exit, i.e. sell a majority of his or her equity stake, preferably at such a high price as possible (low underpricing).

Despite the relatively favourable growth rates for high retaining firms, their profitability measures suffer exceptionally in the medium to long-term. For instance, operating return on assets in average falls from Year -1 to Year 2 by 12.01 pp. and to Year 3 by 15.60 pp., with similar adjusted measures. The contrasting subgroups' average development is also negative, yet unquestionably superior in relation (values significant at 1 percent level). As these findings significantly holds for asset turnover as well as EBIT margin we safely reject the third hypothesis, i.e. that theories of interest alignment is applicable.

A potential explanation could as an alternative be the previously discussed theories of managerial entrenchment alongside arguments presented by Demsetz (1983) as well as Boubaker and Mezhoud (2011). This would imply that the owner-manager retaining a high equity stake would engage in non-value maximizing activities, regularly driven by factors of personal gain. For instance a prestige and power-seeking owner-manager could aim to grow the company beyond optimal levels, with suffering profitability as a result. Another example is the existence of incorrectly designed compensation schemes based on growth rather than profitability. Moreover, increased salaries or other personal benefits could facilitate a decline in operating performance. Comparing pre-IPO measures between the two subgroups, we can observe an interesting element; the managerial entrenchment effect for the high retaining firms is not necessarily visible solely post-issue, but possibly also pre-IPO. This could imply that the issue is firm-specific rather than IPO-specific.

Table 6.3 Operating performance of Initial public offering (IPO) firms, divided by median float rate

The table display the mean change in performance measures for 111 Initial public offering (IPO) firms on the Stockholm Stock Exchange 1997-2008. Firm accounting data is available through COMPUSTAT, Orbis and annual reports. The float rate constitutes the percentage of total shares offered to the market through the IPO. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Mean BM (benchmark) Dev. is the mean change in the measure for IPO firms adjusted by national business cycles (see chapter 3). Sales is the growth in net sales. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets. Significance for company values obtained from associated OLS regressions (appendix, Regression 5, 6, 7 and 8).

Performance Measure	Years relative pre-IPO year							
	-1 to 0		-1 to 1		-1 to 2		-1 to 3	
	Float	Float	Float	Float	Float	Float	Float	Float
	≥ 36.00	< 36.00	≥ 36.00	< 36.00	≥ 36.00	< 36.00	≥ 36.00	< 36.00
Panel A: Sales								
Mean change (%)	19.61***	66.50***	48.02***	119.4***	75.30***	128.3***	96.95***	109.1***
Mean BM Dev. (pp.)	17.05***	67.37***	39.22***	113.3***	50.15***	107.5***	59.60***	87.41***
No. of observations	48	48	48	48	48	48	48	48
Panel B: EBITDA margin								
Mean change (pp.)	-2.53	1.64	-0.63	-3.55	-1.70	-9.49**	-1.93	-9.40**
Mean BM Dev. (pp.)	-2.79	1.43	-0.41	-3.53	-1.17	-9.62*	-2.29	-9.10**
No. of observations	48	47	48	47	48	47	48	47
Panel C: EBIT margin								
Mean change (pp.)	-3.29	0.60	-1.47	-8.67*	-4.76*	-13.9***	-3.00*	-13.5***
Mean BM Dev. (pp.)	-3.52	0.42	-1.13	-9.69*	-4.91	-15.2**	-3.58*	-14.1**
No. of observations	48	48	48	48	48	48	48	48
Panel D: Profit margin								
Mean change (pp.)	-1.79	-0.08	0.37	-7.62*	-2.58	-14.3***	-0.86	-13.3***
Mean BM Dev. (pp.)	-1.97	0.18	0.85	-8.46*	-2.42	-14.9**	-0.27	-12.9**
No. of observations	45	47	45	46	44	46	45	47
Panel E: Asset turnover								
Mean change (pp.)	-7.82*	-35.3***	-9.88*	-32.6***	-19.1***	-28.2***	-19.9***	-26.4***
Mean BM Dev. (pp.)	-1.09	-35.6***	1.74	-26.9**	-2.43	-16.6*	-1.90	-7.08
No. of observations	48	48	48	48	48	48	48	48
Panel F: Operating return on assets								
Mean change (pp.)	-1.74	-0.40	-2.19	-7.06**	-4.37***	-12.01***	-6.41***	-15.60***
Mean BM Dev. (pp.)	-0.18	-1.28	-0.49	-6.68*	-1.68	-12.31***	-3.53	-14.23***
No. of observations	48	47	48	47	48	47	48	47
Panel G: ROA								
Mean change (pp.)	-0.07	-0.85	-0.40	-9.99**	-2.76	-16.20***	-2.57	-18.73***
Mean BM Dev. (pp.)	0.60	-0.15	0.66	-10.23**	-1.49	-16.33***	-0.63	-18.22***
No. of observations	45	47	45	46	44	46	45	47
Panel H: Cash flow return								
Mean change (pp.)	2.34	10.46***	-1.53	-6.87	-0.95	-17.31***	-1.14	-14.58***
No. of observations	46	46	46	45	46	45	46	46

*** Significant at 1 percent.

** Significant at 5 percent.

* Significant at 10 percent.

6.3 UNDERPRICING EFFECTS ON PERFORMANCE

In Table 6.4 we show the descriptive statistics for the sub-samples divided on median initial return. The differences in size, measured by sales, are less pronounced for these sub-samples, with the underpriced firms a bit below twice the size of the other group. We can see that the performance measures scaled by sales are slightly superior for the non-underpriced sample; however, the measure scaled on sales on assets is higher. This implies that firms who underprice their IPOs are more efficient in terms of profitability generated per assets.

Table 6.4 Descriptive statistics Year -1, firms divided by median initial return

Summary statistics of 111 Initial public offering (IPO) firms. Initial return equals the percentage change from the subscription price to the closing price of the first day of trading. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Subscription price is the price paid per share by investors partaking in the offering. The float rate constitutes the percentage of total shares offered to the market through the IPO. Sales is the absolute sales figure. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets.

Variable (mean)	Initial return ≥ 3.51	Initial return < 3.51
Subscription price	64.86	71.21
Initial return (%)	32.96	-2.39
Float rate (%)	37.70	41.04
Sales (000 SEK)	2984222	1787998
Asset turnover	1.67	1.24
EBITDA margin (%)	7.00	11.03
EBIT margin (%)	3.00	7.76
Profit margin (%)	1.73	1.74
Operating return on assets (%)	14.65	11.06
ROA (%)	5.53	3.66
Cash flow return (%)	6.24	8.31

The sales growth from Year -1 to Year 0 is twice as high for firms with higher levels of underpricing; 44.64 percent compared to 24.47 percent, as seen in Table 6.5. We observe the same relation on almost all profitability measures for growth Year -1 to Year 0. The mean growth in benchmark adjusted EBITDA margin is over 15 pp. higher for the underpriced group. Profit margin growth for the same period is 2.88 pp. for underpriced firms, whereas the other firms decline by 6.62 pp. This could be explained by the signalling theory; according to which the “good” firms will underprice their stock intending to recover the initial loss by a second offering when the market has understood that the firm is “good”. However, the development of performance over the subsequent years shows that the measures for the two groups converge. The difference in EBITDA margin growth is only 0.02 pp. three years after the IPO, non-adjusted numbers. This contradicts the signalling theory, unless we include the possibility that managers can be wrong or even biased towards the “goodness” of their firms. Including this possibility one could argue that managers in general are incapable of accurately forecasting future firm performance, resulting in

them overestimating the firms' future values. Nevertheless, we do not have enough data to make this conclusion. Since we observe potential evidence of signalling in Year 0, but none in the latter year, an adapted theory could be that managers are good at valuating the future performance in the short-term perspective, but regarding a broader time scope foreseeing performance turn out to be harder. Thus, the signalling theory is potentially valid, however, only if coupled with inaccurate managerial long-term forecasting.

Table 6.5 Operating performance of Initial public offering (IPO) firms divided by median initial return

The table display the mean change in performance measures for 111 Initial public offering (IPO) firms on the Stockholm Stock Exchange 1997-2008. Firm accounting data is available through COMPUSTAT, Orbis and annual reports. IR (initial return) equals the percentage change from the subscription price to the closing price of the first day of trading. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Mean BM (benchmark) Dev. is the mean change in the measure for IPO firms adjusted by national business cycles (see chapter 3). Sales is the growth in net sales. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets. Significance for company values obtained from associated OLS regressions (appendix, Regression 9, 10, 11 and 12).

Performance Measure	Years relative pre-IPO year							
	-1 to 0		-1 to 1		-1 to 2		-1 to 3	
	IR	IR	IR	IR	IR	IR	IR	IR
	≥ 3.51	< 3.51	≥ 3.51	< 3.51	≥ 3.51	< 3.51	≥ 3.51	< 3.51
Panel A: Sales								
Mean change (%)	46.64***	24.47***	81.63***	61.33***	84.59***	74.74***	86.40***	85.04***
Mean BM Dev. (pp.)	44.20***	21.23**	73.57***	49.58***	69.02***	56.44***	64.70***	52.38***
No. of observations	33	32	33	32	33	32	33	32
Panel B: EBITDA margin								
Mean change (pp.)	4.03*	-8.42**	2.23	-6.92**	-4.18	-7.28	-5.99*	-5.97*
Mean BM Dev. (pp.)	4.73**	-9.13**	2.81	-7.14*	-3.84	-7.75	-6.00	-7.09*
No. of observations	33	32	33	32	33	32	33	32
Panel C: EBIT margin								
Mean change (pp.)	4.05*	-10.1***	1.88	-11.9***	-8.00*	-10.13*	-7.79**	-9.28**
Mean BM Dev. (pp.)	4.60**	-10.6**	2.27	-12.8**	-8.19*	-10.54	-8.38*	-10.47*
No. of observations	33	32	33	32	33	32	33	32
Panel D: Profit margin								
Mean change (pp.)	2.88*	-6.62*	1.61	-8.40*	-6.37	-9.53	-7.76**	-7.26
Mean BM Dev. (pp.)	3.07*	-6.38	1.50	-8.18	-6.46	-8.62	-7.95*	-6.96
No. of observations	33	32	33	32	33	31	33	32
Panel E: Asset turnover								
Mean change (pp.)	-27.48***	-10.99	-28.62**	-4.22	-29.38***	-4.52	-33.50***	-1.67
Mean BM Dev. (pp.)	-26.00**	-4.42	-22.44*	6.76	-19.98*	12.93	-22.14	19.26***
No. of observations	33	32	33	32	33	32	33	32
Panel F: Operating return on assets								
Mean change (pp.)	0.45	-4.66**	-2.14	-7.17**	-9.37**	-5.80	-11.27**	-7.70**
Mean BM Dev. (pp.)	1.46	-3.66	-0.93	-6.26*	-8.22**	-4.33	-10.05**	-6.94
No. of observations	33	32	33	32	33	32	33	32
Panel G: ROA								
Mean change (pp.)	1.78	-3.89	-0.27	-10.17**	-9.16**	-6.87	-10.67**	-9.66*
Mean BM Dev. (pp.)	2.38	-3.42	0.22	-10.35*	-8.72*	-5.94	-10.21*	-9.58
No. of observations	33	32	33	32	33	31	33	32
Panel H: Cash flow return								
Mean change (pp.)	8.55***	-2.68	-0.27	-10.25**	-7.57**	-11.26**	-5.95*	-11.00**
No. of observations	32	32	32	32	32	32	32	32

*** Significant at 1 percent.

** Significant at 5 percent.

* Significant at 10 percent.

6.4 CRISIS EFFECTS ON IPO FIRM PERFORMANCE

Looking at Table 6.6 we can see that during crises firms overprice their stocks. It is difficult to conclude whether the overpricing stems from intentional decisions of managers or rather just a general drop in stock prices during the periods.³⁰ A more surprising discovery is that the sales of the crisis firms are twice as high as the non-crisis firms in Year -1. All other measures are lower for the crisis firms, operating return on assets being an exception with a difference between the groups of only 0.41 pp. For instance, the large difference in EBITDA margin is explained by differences between sales and assets, i.e. asset turnover.

Table 6.6 Descriptive statistics Year -1, firms divided by crisis/non-crisis years

Summary statistics of 111 Initial public offering (IPO) firms. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Crisis years are 2000-2002 and 2008-2009. Subscription price is the price paid per share by investors partaking in the offering. Initial return equals the percentage change from the subscription price to the closing price of the first day of trading. The float rate constitutes the percentage of total shares offered to the market through the IPO. Sales is the absolute sales figure. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets.

Variable (mean)	Crisis firms	Non-crisis firms
Subscription price	53.98	70.44
Initial return (%)	-4.17	19.14
Float rate (%)	36.15	41.73
Sales (000 SEK)	3364392	1631866
Asset turnover	1.20	1.50
EBITDA margin (%)	3.01	8.88
EBIT margin (%)	-3.29	5.26
Profit margin (%)	-6.76	2.34
Operating return on assets (%)	11.10	11.71
ROA (%)	1.81	3.76
Cash flow return (%)	10.05	4.62

Analyzing the growth numbers in Table 6.7 we observe that sales grow more for crisis firms than other firms. The crisis firms' adjusted sales grow by 94.1 percent from the year before the IPO to three years after. Furthermore we find that the crisis firms' superior adjusted sales growth commences the year after the IPO. The difference in growth from Year -1 to Year 0 is only about 2 pp. The result is statistically significant for all years. Looking at the long term effects on operating performance margins we see that only the crisis firms have statistically significant values, these are however largely negative, both the adjusted and unadjusted values. In order to draw any conclusions we compare statistically significant values of the crisis firms with the numbers in Table 6.1. Consequently, we observe that all of the used

³⁰ The IT crash saw stock market index drop over 70 percent.

performance measures, except sales, are substantially affected in a negative way by a crisis. The EBITDA margin for crisis firms is almost 3 pp. below the one presented in Table 6.1, EBIT margin is over 4 pp. lower for crisis firms. The differences are similar for all performance measures, and it must be kept in mind that the numbers in Table 6.1 includes the crisis firms, thus the true difference between crisis and non-crisis firms is even greater.

Considering the magnitude of the adjusted performance measures and comparing them to the ones in Table 6.1 we can also conclude that IPO firms seem to fare worse in crises than non-IPO firms. We have not found any theories in previous literature as to why newly listed firms are more sensitive to a crisis. However, if we consider the delicate situation that firms face when listing it is not unlikely that this could be the case.

Table 6.7 Operating performance of Initial public offering (IPO) firms divided by crisis/non-crisis years

The table displays the mean change in performance measures for 111 Initial public offering (IPO) firms on the Stockholm Stock Exchange 1997-2008. Firm accounting data is available through COMPUSTAT, Orbis and annual reports. Crisis years are 2000-2002 and 2008-2009. Non-crisis years are 1997-2008, excluding 2000-2002 and 2008-2009. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Mean BM (benchmark) Dev. is the mean change in the measure for IPO firms adjusted by national business cycles (see chapter 3). Sales is the growth in net sales. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets. Significance for company values obtained from associated OLS regressions (appendix, Regression 13, 14, 19 and 20).

Performance Measure	Years relative pre-IPO year							
	-1 to 0		-1 to 1		-1 to 2		-1 to 3	
	crisis	non-crisis	crisis	non-crisis	crisis	non-crisis	crisis	non-crisis
Panel A: Sales								
Mean change (%)	47.22***	40.08***	108.6***	55.00***	111.2***	86.46***	123.8***	67.31***
Mean BM Dev. (pp.)	40.39***	42.50***	96.6***	39.23***	93.4***	37.33**	94.1***	47.60***
No. of observations	27	78	51	54	62	43	70	35
Panel B: EBITDA margin								
Mean change (pp.)	0.91	-1.01	-4.45	0.72	-8.39**	0.62	-7.47***	-0.83
Mean BM Dev. (pp.)	1.25	-1.38	-3.67	1.49	-7.19**	2.16	-8.26***	-1.61
No. of observations	27	77	51	53	62	42	69	35
Panel C: EBIT margin								
Mean change (pp.)	0.54	-1.98	-9.18**	-0.54	-13.7***	-0.27	-11.6***	-1.89
Mean BM Dev. (pp.)	0.65	-2.34	-8.68**	0.69	-12.9***	1.97	-12.6***	-2.60
No. of observations	27	78	51	54	62	43	70	35
Panel D: Profit margin								
Mean change (pp.)	0.95	-1.61	-7.73**	1.06	-14.2***	2.21	-11.4***	-0.22
Mean BM Dev. (pp.)	1.22	-1.84	-7.12*	2.08	-12.6***	4.08	-10.8***	-1.16
No. of observations	27	73	51	48	60	38	65	35
Panel E: Asset turnover								
Mean change (pp.)	-16.06**	-19.30***	-23.4***	-13.44*	-14.50**	-30.26***	-25.2***	-13.90
Mean BM Dev. (pp.)	-12.14*	-18.05**	-14.9*	-4.43	-3.61	-14.75	-2.0	-1.03
No. of observations	27	78	51	54	62	43	70	35
Panel F: Operating return on assets								
Mean change (pp.)	-1.08	-0.81	-6.97**	-1.22	-9.6***	-3.04	-11.9***	-5.05
Mean BM Dev. (pp.)	-0.51	-0.53	-5.69*	0.84	-7.8**	-0.71	-10.0***	-4.34
No. of observations	27	77	51	53	62	42	69	35
Panel G: ROA								
Mean change (pp.)	0.21	-0.36	-9.45**	-0.15	-13.8***	-0.91	-13.1***	-3.73
Mean BM Dev. (pp.)	0.59	0.43	-8.59**	2.26	-12.1***	1.54	-12.3**	-3.55
No. of observations	27	73	51	48	60	38	65	35
Panel H: Cash flow return								
Mean change (pp.)	5.69	6.52**	-6.32	-1.59	-13.0***	-1.39	-6.28**	-8.42**
No. of observations	26	72	49	48	58	39	64	34

*** Significant at 1 percent.

** Significant at 5 percent.

* Significant at 10 percent.

6.5 MAIN REGRESSION MODEL

The results from regressions (1) and (2) are presented in the appendix. Comparing these two regressions, accounting for all explanatory variables used in the thesis, we observe several interesting features. First, we find that the beta values of the year dummies and float dummy for adjusted sales growth is statistically significant (at the 1 percent level) even when accounting for the other variables. Interestingly, we find that regarding the crisis analysis only the first crisis has any effect on sales since the significance of the dummy for second crisis is very low.³¹ Furthermore, the negative impact of float rate on sales remains.

We also see that the negative impact of float rate on sales remains. In addition there is evidence that low managerial retention leads to superior margins and ratios. In these two regressions we find overall positive betas of underpricing with high significance, implying a higher performance of underpriced IPO-firms. As is evident in these regression results, the crisis effect on overall performance stems mostly from the first crisis, given the low significance of the second crisis. The year dummy variables have lost virtually all of their significance in the main regression models. This is expected since regressions (3) and (4) were not used in order to explain why the effects on performance occurred; they were merely a way of observing the timing of the effects. This implies that, when accounting for float rate, initial return and crises, the significance of the year dummies is reduced, i.e. time relative to the IPO does not have an effect in itself. Consequently the findings reported in the growth tables still hold.

We expected the R^2 values to be low, but somewhat surprisingly we find relatively high r-square values, ranging from 0.087 to 0.207 depending on the regressed measure. A possible explanation is that an IPO has a high and overwhelming effect on the firms' operating performance.

³¹ This is probably due to a very low number of observations during the second crisis.

7. CONCLUSION

In accordance with our first and second hypothesis we find that the ex-post profitability of IPO-firms declines while simultaneously the sales increase. This is coupled with an initial decline in asset turnover, implying a greater increase in assets than sales. The growth in sales can potentially be attributed to large pre-IPO investments (Pagano et al. 1998). Increased publicity is an additional possible explanation. An explanation of the radical asset growth, implied by the asset turnover, could be that firms continue to raise external capital through secondary offerings during years after the IPO (Welch 1989). Contrary to our third hypothesis we observe a negative relationship between managerial retention and post-issue profitability. The sales, however, is positively affected by managerial retention, as hypothesized. This could be explained by market-wide managerial entrenchment causing managers to make non-profitable investment, thus increasing sales but reducing profitability. Due to the decline in operating performance we cannot confirm the existence of interest alignment, why we reject our third hypothesis. We observe a positive effect of underpricing during the short-term post-IPO years on operating performance. Specifically, the effect is recognized in sales Year 0 and Year 1 and in profitability in Year 0. We conclude that crises have a negative impact on IPO-firm profitability but, surprisingly, a positive effect on sales. Furthermore, these effects stem from the first crisis in our analysis, the IT crash. The significance of the second crisis was low, probably due to an insufficient amount of observations.

Due to the limitations in our sample window we cannot determine whether the observed negative effects on profitability are also caused by timing or window dressing techniques.

7.1 DELIMITATIONS

We deviate from previous studies in terms of chosen performance measures as we also include a range of measures scaled by sales. However, there is a set of measures that we have chosen not to include, due to data unavailability. Examples of these are; development in leverage, CAPEX and operating cash flow. Furthermore, we study the Stockholm Stock Exchange, thus only IPOs on the Swedish market.

One limitation of our thesis is the process in which we select our data sample. As we exclude a large number of firms from the original source, based on a set of criteria, our final sample might differ from a corresponding study. Another limitation is that we do not use industry matched firms as a benchmark. This makes us unable to measure performance devoid of industry specific effects. We are only observing one year prior to the IPO and three years after, differentiating our sample window from previous studies which in general include a wider set of observations.

7.2 FURTHER RESEARCH

Our study does not attempt to maximize the R^2 value of the model, i.e. we do not aim to fully explain the development of the performance measures, but rather to observe to what extent certain parameters, such as managerial ownership retention, affect performance. Consequently, further research could involve an attempt to construct a complete model, thus increasing the R^2 , explaining changes in operating performance post-IPO. A complete model would attempt to include all variables of importance when

explaining the different post-issue performance measures, for instance bonus and incentive programs for managers as well as dividend policies. Examples of different questions which would be answered by this study are why cash flow streams in Year 0 are greater than expected and to what degree pre-IPO investments effects post-IPO sales. This could be achieved using a more qualitative method involving interviews with managers, owners and other IPO-specific expertise.

It would also be of interest to examine to what extent window dressing or timing affect the post-issue performance of IPO-firms. This could be done by including more years before the IPO, but such a study would have contain a certain degree of qualitative methods as well in order to differentiate between window dressing and timing.

As an explanation for underpricing we have theorized that firms aim to conduct a seasoned secondary offering in order to compensate for the loss of underpricing the IPO. In order to test this theory one would need to include second offerings in the dataset and investigate whether these are more prevalent among firms that underprice their IPOs.

8. REFERENCES

Articles and books

- Allen, F., Faulhaber, G. (1989), "Signaling by underpricing in the IPO market", *Journal of Financial Economics* 23, pp. 303-323.
- Barber, B., Lyon, J. (1996), "Detecting abnormal operating performance: The empirical power and specification of test statistics", *Journal of Financial Economics* 41, pp. 359-399.
- Bodnaruk, A., Kandel, E., Massa, M., Simonev, A. (2008), "Shareholder diversification and the decision to go public", *Review of financial studies* 21, pp. 2779-2824.
- Boubaker, A., Mezhoud, M. (2011), "Impact of managerial ownership on operational performance of IPO firms: French context", *International journal of Management Science and Engineering Management* 6(3), pp. 191-197.
- Carter, R., Manaster, S. (1990), "Initial Public Offerings and Underwriter Reputation", *The Journal of finance* 45, pp. 1045-1067.
- Chi, J., Padgett, C. (2006), "Operating Performance and Its Relationship to Market Performance of Chinese Initial Public Offerings", *Chinese Economy* 39, pp. 28-50.
- Claessens, S., Djankov, S., Xu, L. C. (2000), "Corporate performance in the East Asian financial crisis", *The World Bank Research Observer* 15, pp. 23-46.
- Degeorge, F., Zeckhauser, R. (1993), "The reverse LBO decision and firm performance: Theory and evidence", *The Journal of finance* 48, pp. 1323-1348.
- Demsetz, H., Lehn, K. (1985), "The Structure of Corporate Ownership: Causes and Consequences", *Journal of Political Economy* 93, pp. 1155-1177.
- Demsetz, H. (1983), "The Structure of Ownership and the Theory of the Firm", *Journal of Law and Economics* 26, pp. 375-390.
- Grinblatt, M., Hwang, C. (1989), "Signalling and the Pricing of New Issues", *Journal of Finance* 44, pp. 393-420.
- Holthausen, R., Larcker, D. (1996), "The financial performance of reverse leveraged buyouts", *Journal of Financial Economics* 42, pp. 293-332.
- Ibbotson, R., Sindelar, J., Ritter, J. (1988), "Initial Public Offerings", *Journal of Applied Corporate Finance* 1, pp. 37-45.

- Ibbotson, R. (1975), "Price performance of common stock new issues", *Journal of Financial Economics* 2, pp. 235-272.
- Jain, B., Kini, O. (1994), "The Post-Issue Operating Performance of IPO Firms", *The Journal of finance* 49, pp. 1699-1726.
- Jensen, M., Meckling, W. (1976), "Theory of the firm: Managerial behavior, agency costs and ownership structure", *Journal of financial Economics* 3(4), pp. 305-360.
- Kaplan, S. (1989), "The effect of management buyouts on operating performance and value", *Journal of Financial Economics* 24, pp. 217-254.
- Lang, M. (1991), "Time-varying stock price response to earnings induced by uncertainty about the time-series process of earnings", *Journal of Accounting Research* 29, pp. 229-257.
- Ljungqvist, A., Wilhelm, W. J. (2003), "IPO Pricing in the Dot-Com Bubble", *The Journal of Finance* 58, pp. 723-752.
- Loughran, T., Ritter, J., Rydqvist, K. (2010), "Initial Public Offerings: International Insights", *Pacific-Basin Finance Journal* 2, pp. 165-199.
- Mayur, M., Kumar, M., Mahakud, J. (2007), "Relationship between the Changes in Ownership and Performance of Indian Firms around IPO: A Panel Data Analysis", *Munich Personal RePEc Archive Paper*.
- Mikkelson, W. H., Partch, M., Shah, K. 1997, "Ownership and operating performance of companies that go public", *Journal of financial economics* 44, pp. 281-308.
- Morck, R., Visnhy, R. (1988), "Management ownership and market evaluation: An empirical analysis", *Journal of Financial Economics* 20, pp. 293-315.
- Narjoko, D., Hill, H. (2007), "Winners and losers during a deep economic crisis: Firm-level evidence from Indonesian manufacturing", *Asian Economic Journal* 2007 21, pp. 343-368.
- Newbold, P., Carlson, W. L., Thorne, B. (2007), "Statistics for Business and Economics", sixth edition, *Pearson Education*.
- Oskarsson, M., Strömberg, D. (2009), "The usage and effects of over-allotment arrangements in Swedish IPOs", Master's thesis, Stockholm School of Economics.
- Pagano, M., Panetta, F., Zingales, L. (1998), "Why Do Companies Go Public? An Empirical Analysis", *The Journal of finance* 53, pp. 27-64.
- Pagano, M., Panetta, F., Zingales, L. (1996), "The stock market as a source of capital: Some lessons from initial public offerings in Italy", *European economic review* 40, pp. 1057-1069.

Ritter, J. R. (1991), “The Long-Run Performance of Initial Public Offerings”, *The Journal of finance* 46, pp. 3-27.

Shleifer, A., Vishny, R. W. (1989), “MANAGEMENT ENTRENCHMENT: The Case of Manager-Specific Investments”, *Journal of Financial Economics* 25, pp. 123-139.

Wang, C. (2004), “Ownership and operating performance of Chinese IPOs”, *Journal of Banking & Finance* 29, pp. 1835-1856.

Welch, I. (1989), “Seasoned Offerings, Imitation Costs, and the Underpricing of Initial Public Offerings”, *The Journal of Finance* 44, pp. 421-449.

9. APPENDIX

Figure 8.1 Frequency of Initial public offerings (IPOs) and stock price index

Graph showcasing frequency of Initial public offerings conducted per year 1997-2008 on the Stockholm stock exchange 1997-2008. Stock price index equals the OMXS 30 index rebased as of 1st January 1997, obtained through *Nasdaq OMX Trader*. The primary Y-axis embody the index values, while the secondary Y-axis denote number of IPOs per year.

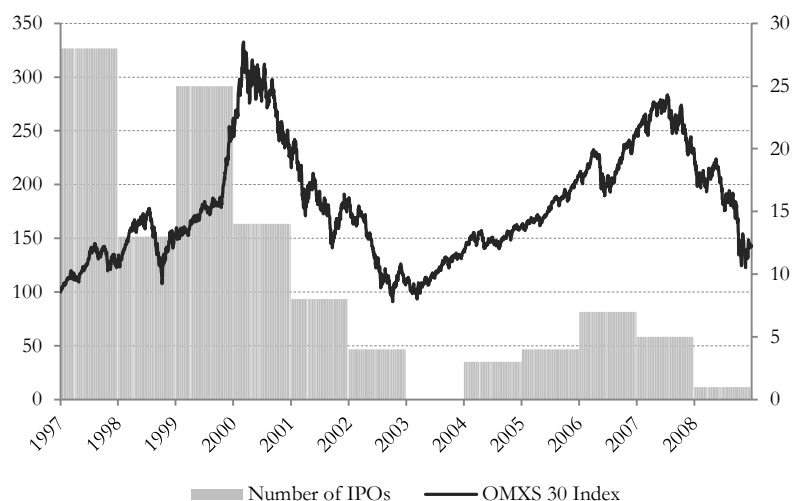


Figure 8.2 Average EBIT margin, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). EBIT margin is defined as operating income scaled by sales. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to reported changes (pp.) in table 6.1, panel C.

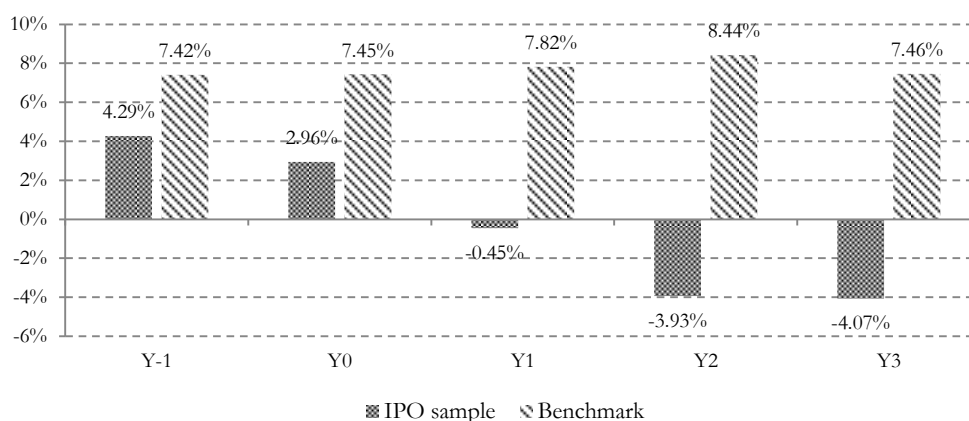


Figure 8.3 Average PTP margin, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). PTP margin is the pre-tax profit divided by sales. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to reported changes (pp.) in table 6.1, panel D.

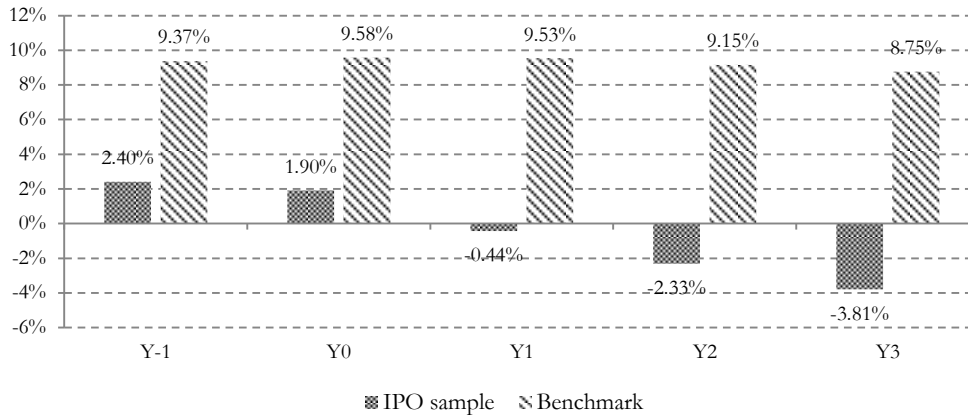


Figure 8.4 Average Profit margin, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Profit margin is the earnings deflated by sales. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to reported changes (pp.) in table 6.1, panel E.

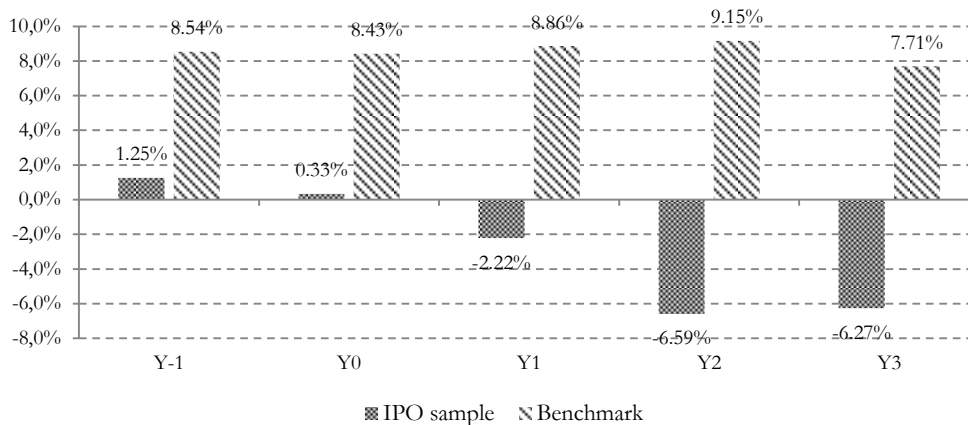


Figure 8.5 Average ROA, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). ROA is the earnings scaled by sales. *Shaded bars* represent sample firms, whereas *downward diagonal bars* represent the benchmark. Values are related to reported changes (pp.) in table 6.1, panel H.

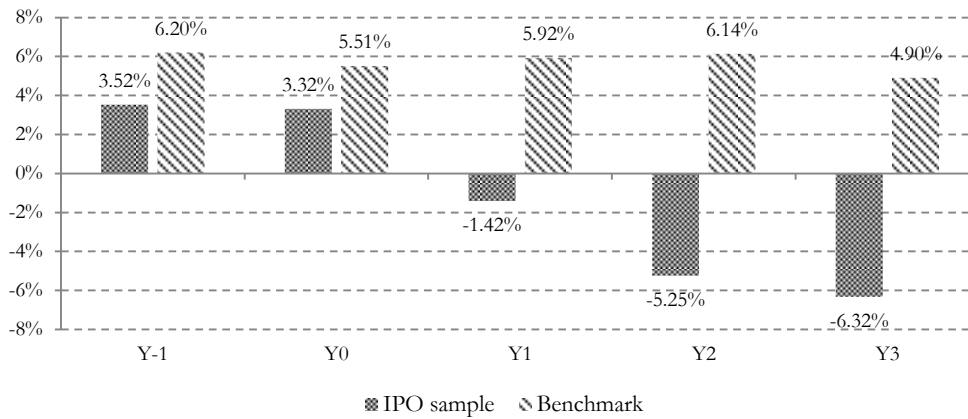


Figure 8.6 Average Cash flow return, Year -1 to Year 3

Graph showcasing measure for 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Y-1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Cash flow return is the total cash flow scaled by total assets. *Shaded bars* represent sample firms. Due to data unavailability benchmark numbers are not displayed. Values are related to reported changes (pp.) in table 6.1, panel I.

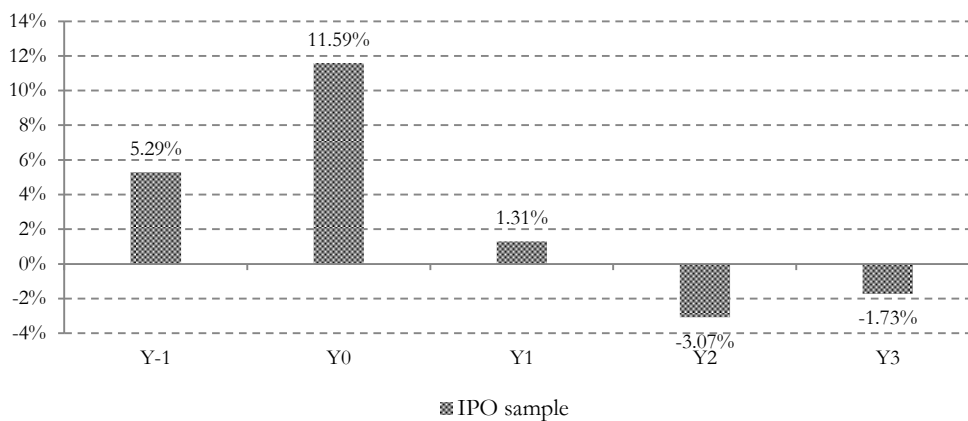


Table 8.1 Operating performance of Initial public offering (IPO) firms divided by crisis 1/non-crisis years

The table display the mean change in performance measures for 111 Initial public offering (IPO) firms on the Stockholm Stock Exchange 1997-2008. Firm accounting data is available through COMPUSTAT, Orbis and annual reports. Crisis 1 years are 2000-2002. Non-crisis years are 1997-2008, excluding 2000-2002 and 2008-2009. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Mean BM (benchmark) Dev. is the mean change in the measure for IPO firms adjusted by national business cycles (see chapter 3). Sales is the growth in net sales. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets. Significance for company values obtained from associated OLS regressions (appendix, Regression 15, 16, 19 and 20).

Performance Measure	Years relative pre-IPO year							
	-1 to 0		-1 to 1		-1 to 2		-1 to 3	
	crisis 1	non-crisis	crisis 1	non-crisis	crisis 1	non-crisis	crisis 1	non-crisis
Panel A: Sales								
Mean change (%)	48.78***	40.08***	118.9***	55.00***	127.4***	86.46***	128.8***	67.31***
Mean BM Dev. (pp.)	41.89***	42.50***	106.8***	39.23***	109.4***	37.33**	99.8***	47.60***
No. of observations	26	78	45	54	50	43	59	35
Panel B: EBITDA margin								
Mean change (pp.)	0.72	-1.01	-5.32	0.72	-10.6***	0.62	-8.10***	-0.83
Mean BM Dev. (pp.)	1.03	-1.38	-4.60	1.49	-9.3**	2.16	-9.76**	-1.61
No. of observations	26	77	45	53	50	42	58	35
Panel C: EBIT margin								
Mean change (pp.)	0.41	-1.98	-10.70**	-0.54	-16.7***	-0.27	-12.6***	-1.89
Mean BM Dev. (pp.)	0.48	-2.34	-10.31**	0.69	-15.9**	1.97	-15.0***	-2.60
No. of observations	26	78	45	54	50	43	59	35
Panel D: Profit margin								
Mean change (pp.)	0.86	-1.61	-9.06**	1.06	-15.3***	2.21	-12.3***	-0.22
Mean BM Dev. (pp.)	1.03	-1.84	-8.71	2.08	-14.0	4.08	-12.8	-1.16
No. of observations	26	73	45	48	48	38	54	35
Panel E: Asset turnover								
Mean change (pp.)	-15.37**	-19.30***	-25.4***	-13.44*	-21.4***	-30.26***	-28.1***	-13.90
Mean BM Dev. (pp.)	-11.36	-18.05**	-16.3*	-4.43	-9.00	-14.75	-1.75	-1.03
No. of observations	26	78	45	54	50	43	59	35
Panel F: Operating return on assets								
Mean change (pp.)	-1.16	-0.81	-8.16**	-1.22	-13.0***	-3.04	-13.4***	-5.05
Mean BM Dev. (pp.)	-0.60	-0.53	-6.84**	0.84	-11.0***	-0.71	-12.3**	-4.34
No. of observations	26	77	45	53	50	42	58	35
Panel G: ROA								
Mean change (pp.)	0.11	-0.36	-11.16**	-0.15	-17.1***	-0.91	-14.8***	-3.73
Mean BM Dev. (pp.)	0.45	0.43	-10.40**	2.26	-15.5***	1.54	-15.2**	-3.55
No. of observations	26	73	45	48	48	38	54	35
Panel H: Cash flow return								
Mean change (pp.)	4.92	6.52	-7.57	-1.59	-16.4***	-1.39	-6.30*	-8.42
No. of observations	25	72	43	48	46	39	53	34

*** Significant at 1 percent.

** Significant at 5 percent.

* Significant at 10 percent.

Table 8.2 Operating performance of Initial public offering (IPO) firms divided by crisis 2/non-crisis years

The table display the mean change in performance measures for 111 Initial public offering (IPO) firms on the Stockholm Stock Exchange 1997-2008. Firm accounting data is available through COMPUSTAT, Orbis and annual reports. Crisis 2 years are 2008-2009. Non-crisis years are 1997-2008, excluding 2000-2002 and 2008-2009. Year -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). Mean BM (benchmark) Dev. is the mean change in the measure for IPO firms adjusted by national business cycles (see chapter 3). Sales is the growth in net sales. All margins are defined as the underlying metric deflated by sales. EBITDA is the earnings before interest, taxation, depreciation and amortization. Operating return on assets refer to the equivalent metric deflated by total assets. EBIT is the operating income and profit is the net earnings. Asset turnover is calculated as sales over total assets. ROA is profit over total assets. Cash flow return matches the total cash flows divided by total assets. Significance for values obtained from associated OLS regressions (appendix, Regression 17, 18, 19 and 20).

Performance Measure	Years relative pre-IPO year							
	-1 to 0		-1 to 1		-1 to 2		-1 to 3	
	crisis 2 ³²	non-crisis	crisis 2	non-crisis	crisis 2	non-crisis	crisis 2	non-crisis
Panel A: Sales								
Mean change (%)	6.68	40.08***	31.66***	55.00***	43.59***	86.46***	96.63**	67.31***
Mean BM Dev. (pp.)	1.29	42.50***	19.84	39.23***	26.98	37.33**	75.61	47.60***
No. of observations	1	78	6	54	12	43	11	35
Panel B: EBITDA margin								
Mean change (pp.)	5.95	-1.01	2.07	0.72	0.68	0.62	-4.20	-0.83
Mean BM Dev. (pp.)	7.07	-1.38	3.27	1.49	1.08	2.16	-3.35	-1.61
No. of observations	1	77	6	53	12	42	11	35
Panel C: EBIT margin								
Mean change (pp.)	3.86	-1.98	2.24**	-0.54	-1.52	-0.27	-6.22	-1.89
Mean BM Dev. (pp.)	5.13	-2.34	3.55	0.69	-0.07	1.97	-4.79	-2.60
No. of observations	1	78	6	54	12	43	11	35
Panel D: Profit margin								
Mean change (pp.)	3.31	-1.61	2.24**	1.06	-9.78	2.21	-7.44**	-0.22
Mean BM Dev. (pp.)	6.28	-1.84	4.82	2.08	-7.08	4.08	-4.95	-1.16
No. of observations	1	73	6	48	12	38	11	35
Panel E: Asset turnover								
Mean change (pp.)	-33.89	-19.30***	-8.30	-13.44*	14.20	-30.26***	-9.29	-13.90***
Mean BM Dev. (pp.)	-32.50	-18.05**	-4.44	-4.43	18.86	-14.75	-2.74	-1.03
No. of observations	1	78	6	54	12	43	11	35
Panel F: Operating return on assets								
Mean change (pp.)	1.05	-0.81	1.94*	-1.22	4.46	-3.04	-3.75	-5.05
Mean BM Dev. (pp.)	1.75	-0.53	2.95	0.84	5.49	-0.71	-2.66	-4.34
No. of observations	1	77	6	53	12	42	11	35
Panel G: ROA								
Mean change (pp.)	2.67	-0.36	3.35***	-0.15	-0.19	-0.91	-5.24**	-3.73
Mean BM Dev. (pp.)	4.28	0.43	4.99	2.26	1.52	1.54	-3.51	-3.55
No. of observations	1	73	6	48	12	38	11	35
Panel H: Cash flow return								
Mean change (pp.)	25.00	6.52**	2.66	-1.59	-0.09	-1.39	-6.15	-8.42**
No. of observations	1	72	6	48	12	39	11	34

*** Significant at 1 percent.

** Significant at 5 percent.* Significant at 10 percent.

³² Significance cannot be computed due number of observations

Regression 1 Growth operating performance, full model

$$y_{it} = \beta_0 + \beta_1 d_float + \beta_2 d_underpr + \beta_3 d_crisis1 + \beta_4 d_crisis2 + \sum_{j=0}^3 \beta_j d_year_j + u_{it} + \epsilon_{it}$$

The table displays results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column. d_float is a dummy taking on the value of 1 if the firm has above median float rate. $d_underpr$ is a dummy taking on the value of 1 if the initial return of the IPO is above median. $d_crisis1$ and $d_crisis2$ are dummies indicating whether the observation is from either the period 2000-2002 (first dummy) or 2008-2009 (second dummy).

Measure growth	d_float	d_underpr	d_crisis1	d_crisis2	d_year0	d_year1	d_year2	d_year3	constant	R2
Sales	-0.1644	0.0745	0.3327	0.0683	0.3284	0.6289	0.6984	0.7455	0.0034	0.1869
<i>P-value</i>	0.0582	0.3917	0.0021	0.6951	0.0002	0.0000	0.0000	0.0000	0.9582	
EBITDA margin	0.0917	0.0513	-0.0916	0.0170	-0.0140	0.0027	-0.0367	-0.0359	0.0389	0.1034
<i>P-value</i>	0.0015	0.0621	0.0041	0.7070	0.7054	0.9395	0.4013	0.3941	0.2960	
EBIT margin	0.1011	0.0654	-0.1259	0.0215	-0.0192	-0.0152	-0.0625	-0.0525	-0.0029	0.1232
<i>P-value</i>	0.0025	0.0423	0.0006	0.6591	0.6398	0.7113	0.2049	0.2773	0.9471	
PTP margin	0.0955	0.0997	-0.1209	-0.0170	-0.0029	0.0169	-0.0533	-0.0420	-0.0392	0.1345
<i>P-value</i>	0.0024	0.0011	0.0006	0.6701	0.9404	0.6763	0.2686	0.3763	0.3438	
Profit margin	0.0885	0.0905	-0.1184	-0.0146	-0.0076	0.0025	-0.0462	-0.0387	-0.0479	0.1439
<i>P-value</i>	0.0019	0.0012	0.0003	0.6908	0.8297	0.9439	0.3075	0.3646	0.1894	
Asset turnover	0.2816	0.3625	-0.0312	-0.1216	-0.1988	-0.1528	-0.1686	-0.1580	1.1117	0.1130
<i>P-value</i>	0.0003	0.0000	0.7018	0.3071	0.1027	0.2300	0.1835	0.2144	0.0000	
Operating return on assets	0.1309	0.0955	-0.0954	0.0058	-0.0150	-0.0201	-0.0550	-0.0779	0.0333	0.2658
<i>P-value</i>	0.0000	0.0000	0.0000	0.8351	0.5448	0.4195	0.0785	0.0186	0.1769	
ROA	0.1075	0.0939	-0.1197	0.0035	-0.0043	-0.0187	-0.0516	-0.0801	-0.0293	0.2275
<i>P-value</i>	0.0000	0.0001	0.0000	0.8782	0.8499	0.4891	0.1122	0.0286	0.2430	
Cash flow return	-0.0075	0.0614	-0.0452	0.0554	0.0239	-0.0465	-0.0958	-0.0948	0.0669	0.1291
<i>P-value</i>	0.7098	0.0026	0.0649	0.0115	0.4279	0.1417	0.0018	0.0018	0.0134	

Regression 2 Growth operating performance deviation from benchmark, full model

$$z_{it} = \beta_0 + \beta_1 d_float + \beta_2 d_underpr + \beta_3 d_crisis1 + \beta_4 d_crisis2 + \sum_{j=0}^3 \beta_j d_year_j + u_{it} + \epsilon_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column. d_float is a dummy taking on the value of 1 if the firm has above median float rate. $d_underpr$ is a dummy taking on the value of 1 if the initial return of the IPO is above median. $d_crisis1$ and $d_crisis2$ are dummies indicating whether the observation is from either the period 2000-2002 (first dummy) or 2008-2009 (second dummy).

Measure growth Dev.	d_float	d_underpr	d_crisis1	d_crisis2	d_year0	d_year1	d_year2	d_year3	constant	R2
Sales	-0.2012	0.1031	0.3074	0.1048	0.2868	0.5105	0.4969	0.4838	0.0125	0.1427
<i>P-value</i>	0.0217	0.2618	0.0066	0.5470	0.0038	0.0000	0.0009	0.0004	0.8593	
EBITDA margin	0.0890	0.0541	-0.0741	0.0207	-0.0057	0.0083	-0.0274	-0.0318	-0.0705	0.0869
<i>P-value</i>	0.0023	0.0544	0.0203	0.6470	0.8773	0.8176	0.5361	0.4599	0.0644	
EBIT margin	0.0975	0.0699	-0.1136	0.0298	-0.0094	-0.0082	-0.0517	-0.0466	-0.0797	0.1107
<i>P-value</i>	0.0042	0.0338	0.0020	0.5434	0.8182	0.8429	0.2994	0.3463	0.0702	
PTP margin	0.0873	0.1040	-0.0976	-0.0099	0.0052	0.0201	-0.0400	-0.0323	-0.1405	0.1113
<i>P-value</i>	0.0061	0.0009	0.0057	0.8083	0.8959	0.6322	0.4186	0.5080	0.0012	
Profit margin	0.0808	0.0954	-0.0947	-0.0094	-0.0006	0.0054	-0.0359	-0.0318	-0.1325	0.1184
<i>P-value</i>	0.0051	0.0008	0.0033	0.8024	0.9866	0.8785	0.4351	0.4660	0.0004	
Asset turnover	0.2857	0.3606	-0.0581	0.0016	-0.1468	-0.0708	-0.0648	-0.0279	0.4098	0.1106
<i>P-value</i>	0.0003	0.0000	0.4734	0.9894	0.2389	0.5859	0.6159	0.8307	0.0008	
Operating return on assets	0.1311	0.0943	-0.0860	0.0211	-0.0048	-0.0090	-0.0397	-0.0655	-0.0417	0.2480
<i>P-value</i>	0.0000	0.0000	0.0002	0.4493	0.8523	0.7280	0.2211	0.0546	0.1091	
ROA	0.1053	0.0946	-0.1082	0.0141	-0.0003	-0.0149	-0.0419	-0.0721	-0.0820	0.2065
<i>P-value</i>	0.0000	0.0001	0.0000	0.5387	0.9899	0.5967	0.2113	0.0564	0.0018	

Regression 3 Growth operating performance

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4192	0.8104	1.0104	1.0495	0.4159
<i>P-value</i>	0.0000	0.0000	0.0000	0.0000	
EBITDA margin	-0.0051	-0.0182	-0.0475	-0.0524	0.0347
<i>P-value</i>	0.7415	0.2992	0.0378	0.0074	
EBIT margin	-0.0133	-0.0474	-0.0822	-0.0835	0.0698
<i>P-value</i>	0.4253	0.0318	0.0023	0.0006	
PTP margin	-0.0050	-0.0284	-0.0473	-0.0621	0.0244
<i>P-value</i>	0.7726	0.2434	0.1409	0.0258	
Profit margin	-0.0092	-0.0347	-0.0784	-0.0752	0.0572
<i>P-value</i>	0.5694	0.1155	0.0058	0.0034	
Operating return on assets	-0.0088	-0.0404	-0.0694	-0.0956	0.0970
<i>P-value</i>	0.5196	0.0189	0.0017	0.0000	
ROA	-0.0021	-0.0494	-0.0877	-0.0985	0.0883
<i>P-value</i>	0.8759	0.0290	0.0009	0.0003	
Asset turnover	-0.1847	-0.1827	-0.2095	-0.2142	0.1196
<i>P-value</i>	0.0001	0.0011	0.0001	0.0002	
Cash flow return	0.0630	-0.0398	-0.0835	-0.0702	0.0765
<i>P-value</i>	0.0059	0.0804	0.0011	0.0019	

Regression 4 Growth operating performance deviation from benchmark

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4180	0.7488	0.7974	0.7461	0.3178
<i>P-value</i>	0.0000	0.0000	0.0000	0.0000	
EBITDA margin	-0.0051	-0.0172	-0.0491	-0.0547	0.0303
<i>P-value</i>	0.7887	0.4371	0.0866	0.0246	
EBIT margin	-0.0136	-0.0514	-0.0924	-0.0839	0.0672
<i>P-value</i>	0.5071	0.0657	0.0066	0.0038	
PTP margin	-0.0072	-0.0301	-0.0451	-0.0560	0.0182
<i>P-value</i>	0.7312	0.3271	0.2645	0.0883	
Profit margin	-0.0081	-0.0379	-0.0845	-0.0668	0.0510
<i>P-value</i>	0.6792	0.1595	0.0134	0.0217	
Operating return on assets	-0.0053	-0.0322	-0.0607	-0.0763	0.0596
<i>P-value</i>	0.7323	0.1327	0.0215	0.0036	
ROA	0.0049	-0.0466	-0.0871	-0.0855	0.0663
<i>P-value</i>	0.7554	0.0926	0.0062	0.0088	
Asset turnover	-0.1611	-0.1095	-0.0633	-0.0158	0.0322
<i>P-value</i>	0.0032	0.1119	0.2931	0.8137	

Regression 5 Growth operating performance, firms above median float rate

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Float rate is described as the percentage of retained equity by the original owners in the offering. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.1961	0.4802	0.7530	0.9695	0.4575
<i>P-value</i>	0.0000	0.0000	0.0000	0.0000	
EBITDA margin	-0.0253	-0.0063	-0.0170	-0.0193	0.0230
<i>P-value</i>	0.2096	0.6643	0.3894	0.1814	
EBIT margin	-0.0329	-0.0147	-0.0476	-0.0300	0.0511
<i>P-value</i>	0.1578	0.3654	0.0744	0.0640	
Profit margin	-0.0179	0.0037	-0.0258	-0.0086	0.0109
<i>P-value</i>	0.4740	0.8558	0.3395	0.6818	
Operating return on assets	-0.0174	-0.0219	-0.0437	-0.0641	0.0956
<i>P-value</i>	0.2443	0.2489	0.0071	0.0060	
ROA	-0.0007	-0.0040	-0.0276	-0.0257	0.0175
<i>P-value</i>	0.9659	0.8536	0.1884	0.3154	
Asset turnover	-0.0782	-0.0988	-0.1910	-0.1999	0.1295
<i>P-value</i>	0.0807	0.0693	0.0044	0.0016	
Cash flow return	0.0234	-0.0153	-0.0095	-0.0114	0.0107
<i>P-value</i>	0.3684	0.5187	0.6368	0.5793	

Regression 6 Growth operating performance deviation from benchmark, firms above median float rate

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Float rate is described as the percentage of retained equity by the original owners in the offering. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.1705	0.3922	0.5015	0.5960	0.3298
<i>P-value</i>	0.0017	0.0000	0.0002	0.0001	
EBITDA margin	-0.0279	-0.0041	-0.0117	-0.0229	0.0182
<i>P-value</i>	0.3239	0.8402	0.6722	0.2570	
EBIT margin	-0.0352	-0.0113	-0.0491	-0.0358	0.0447
<i>P-value</i>	0.2690	0.5975	0.1869	0.0926	
Profit margin	-0.0197	0.0085	-0.0242	-0.0027	0.0093
<i>P-value</i>	0.5391	0.7411	0.4850	0.9152	
Operating return on assets	-0.0018	-0.0049	-0.0168	-0.0353	0.0198
<i>P-value</i>	0.9283	0.8479	0.4133	0.2354	
ROA	0.0060	0.0066	-0.0149	-0.0063	0.0033
<i>P-value</i>	0.7754	0.8200	0.5811	0.8566	
Asset turnover	-0.0109	0.0174	-0.0243	-0.0190	0.0025
<i>P-value</i>	0.8239	0.7907	0.7297	0.7940	

Regression 7 Growth operating performance, firms below median float rate

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Float rate is described as the percentage of retained equity by the original owners in the offering. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.6650	1.1949	1.2833	1.0912	0.4463
<i>P-value</i>	0.0000	0.0000	0.0000	0.0000	
EBITDA margin	0.0164	-0.0355	-0.0949	-0.0940	0.0698
<i>P-value</i>	0.5424	0.3202	0.0371	0.0189	
EBIT margin	0.0060	-0.0867	-0.1385	-0.1347	0.1129
<i>P-value</i>	0.8286	0.0536	0.0072	0.0041	
Profit margin	-0.0008	-0.0762	-0.1426	-0.1331	0.1166
<i>P-value</i>	0.9741	0.0716	0.0080	0.0043	
Operating return on assets	-0.0040	-0.0706	-0.1201	-0.1560	0.1607
<i>P-value</i>	0.8745	0.0292	0.0067	0.0000	
ROA	-0.0085	-0.0999	-0.1620	-0.1873	0.1889
<i>P-value</i>	0.6982	0.0186	0.0015	0.0000	
Asset turnover	-0.3526	-0.3255	-0.2815	-0.2639	0.1985
<i>P-value</i>	0.0000	0.0008	0.0018	0.0076	
Cash flow return	0.1046	-0.0687	-0.1731	-0.1458	0.1732
<i>P-value</i>	0.0097	0.1058	0.0004	0.0003	

Regression 8 Growth operating performance deviation from benchmark, firms below median float rate

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Float rate is described as the percentage of retained equity by the original owners in the offering. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.6737	1.1325	1.0747	0.8741	0.3783
<i>P-value</i>	0.0000	0.0000	0.0000	0.0000	
EBITDA margin	0.0143	-0.0353	-0.0962	-0.0910	0.0619
<i>P-value</i>	0.6329	0.3884	0.0615	0.0464	
EBIT margin	0.0042	-0.0969	-0.1522	-0.1406	0.1159
<i>P-value</i>	0.8915	0.0644	0.0104	0.0102	
Profit margin	0.0018	-0.0846	-0.1490	-0.1295	0.1128
<i>P-value</i>	0.9484	0.0753	0.0121	0.0131	
Operating return on assets	-0.0128	-0.0668	-0.1231	-0.1423	0.1452
<i>P-value</i>	0.6052	0.0679	0.0095	0.0009	
ROA	-0.0015	-0.1023	-0.1633	-0.1822	0.1732
<i>P-value</i>	0.9494	0.0312	0.0037	0.0004	
Asset turnover	-0.3555	-0.2699	-0.1656	-0.0708	0.1224
<i>P-value</i>	0.0000	0.0153	0.0997	0.5346	

Regression 9 Growth operating performance, firms above median initial return

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Initial return equals the percentage change from the subscription price to the closing price of the first day of trading. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4664	0.8163	0.8459	0.8640	0.3892
<i>P-value</i>	0.0010	0.0000	0.0000	0.0000	
EBITDA margin	0.0403	0.0223	-0.0418	-0.0599	0.0631
<i>P-value</i>	0.0614	0.3542	0.2377	0.0847	
EBIT margin	0.0405	0.0188	-0.0800	-0.0779	0.0929
<i>P-value</i>	0.0585	0.4395	0.0684	0.0451	
Profit margin	0.0288	0.0161	-0.0637	-0.0776	0.0868
<i>P-value</i>	0.0737	0.3741	0.1263	0.0386	
Operating return on assets	0.0045	-0.0214	-0.0937	-0.1127	0.1423
<i>P-value</i>	0.8029	0.3531	0.0140	0.0103	
ROA	0.0178	-0.0027	-0.0916	-0.1067	0.1154
<i>P-value</i>	0.2348	0.8870	0.0277	0.0363	
Asset turnover	-0.2748	-0.2862	-0.2938	-0.3350	0.1842
<i>P-value</i>	0.0058	0.0173	0.0062	0.0061	
Cash flow return	0.0855	-0.0027	-0.0757	-0.0595	0.1068
<i>P-value</i>	0.0049	0.9415	0.0324	0.0681	

Regression 10 Growth operating performance deviation from benchmark, firms above median initial return

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Initial return equals the percentage change from the subscription price to the closing price of the first day of trading. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4420	0.7357	0.6902	0.6470	0.2900
<i>P-value</i>	0.0045	0.0002	0.0006	0.0015	
EBITDA margin	0.0473	0.0281	-0.0384	-0.0600	0.0642
<i>P-value</i>	0.0395	0.2852	0.3132	0.1202	
EBIT margin	0.0460	0.0227	-0.0819	-0.0838	0.0971
<i>P-value</i>	0.0448	0.3929	0.0852	0.0539	
Profit margin	0.0307	0.0150	-0.0646	-0.0795	0.0871
<i>P-value</i>	0.0689	0.4594	0.1441	0.0514	
Operating return on assets	0.0146	-0.0093	-0.0822	-0.1005	0.1074
<i>P-value</i>	0.4458	0.7127	0.0453	0.0395	
ROA	0.0238	0.0022	-0.0872	-0.1021	0.0996
<i>P-value</i>	0.1432	0.9200	0.0529	0.0732	
Asset turnover	-0.2600	-0.2244	-0.1998	-0.2214	0.1063
<i>P-value</i>	0.0168	0.0862	0.0865	0.1121	

Regression 11 Growth operating performance, firms below median initial return

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Initial return equals the percentage change from the subscription price to the closing price of the first day of trading. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.2447	0.6133	0.7474	0.8504	0.3998
<i>P-value</i>	0.0015	0.0000	0.0000	0.0000	
EBITDA margin	-0.0842	-0.0692	-0.0728	-0.0597	0.1095
<i>P-value</i>	0.0107	0.0270	0.1262	0.0867	
EBIT margin	-0.1007	-0.1197	-0.1013	-0.0928	0.1421
<i>P-value</i>	0.0082	0.0068	0.0694	0.0444	
Profit margin	-0.0662	-0.0840	-0.0953	-0.0726	0.0798
<i>P-value</i>	0.0973	0.0696	0.1243	0.1292	
Operating return on assets	-0.0466	-0.0717	-0.0580	-0.0770	0.1069
<i>P-value</i>	0.0327	0.0264	0.1410	0.0458	
ROA	-0.0389	-0.1017	-0.0687	-0.0966	0.1057
<i>P-value</i>	0.1030	0.0251	0.1389	0.0537	
Asset turnover	-0.1099	-0.0422	-0.0452	-0.0167	0.0188
<i>P-value</i>	0.1400	0.6164	0.6244	0.8320	
Cash flow return	-0.0268	-0.1025	-0.1126	-0.1100	0.1299
<i>P-value</i>	0.4792	0.0238	0.0141	0.0235	

Regression 12 Growth operating performance deviation from benchmark, firms below median initial return

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Initial return equals the percentage change from the subscription price to the closing price of the first day of trading. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.2123	0.4958	0.5644	0.5238	0.2787
<i>P-value</i>	0.0137	0.0014	0.0006	0.0036	
EBITDA margin	-0.0913	-0.0714	-0.0775	-0.0709	0.1118
<i>P-value</i>	0.0184	0.0559	0.1660	0.0763	
EBIT margin	-0.1060	-0.1283	-0.1054	-0.1047	0.1427
<i>P-value</i>	0.0159	0.0132	0.1071	0.0518	
Profit margin	-0.0638	-0.0818	-0.0862	-0.0696	0.0633
<i>P-value</i>	0.1668	0.1386	0.2266	0.2049	
Operating return on assets	-0.0366	-0.0626	-0.0433	-0.0694	0.0711
<i>P-value</i>	0.1401	0.0975	0.3431	0.1172	
ROA	-0.0342	-0.1035	-0.0594	-0.0958	0.0886
<i>P-value</i>	0.2189	0.0555	0.2624	0.1000	
Asset turnover	-0.0442	0.0676	0.1293	0.1926	0.0819
<i>P-value</i>	0.5559	0.4545	0.1384	0.0065	

Regression 13 Growth operating performance, firms in crisis years

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Crisis years are 2000-2002 and 2008-2009. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4722	1.0861	1.1115	1.2377	0.4623
<i>P-value</i>	0.0026	0.0000	0.0000	0.0000	
EBITDA margin	0.0091	-0.0445	-0.0839	-0.0747	0.0885
<i>P-value</i>	0.7347	0.1529	0.0130	0.0010	
EBIT margin	0.0054	-0.0918	-0.1373	-0.1158	0.1469
<i>P-value</i>	0.8371	0.0251	0.0007	0.0001	
Profit margin	0.0095	-0.0773	-0.1420	-0.1144	0.1489
<i>P-value</i>	0.5939	0.0393	0.0004	0.0004	
Operating return on assets	-0.0108	-0.0697	-0.0959	-0.1185	0.1471
<i>P-value</i>	0.6236	0.0227	0.0049	0.0000	
ROA	0.0021	-0.0945	-0.1375	-0.1314	0.1536
<i>P-value</i>	0.8917	0.0168	0.0008	0.0002	
Asset turnover	-0.1606	-0.2338	-0.1450	-0.2517	0.1374
<i>P-value</i>	0.0209	0.0045	0.0253	0.0003	
Cash flow return	0.0569	-0.0632	-0.1304	-0.0628	0.1182
<i>P-value</i>	0.1724	0.1226	0.0000	0.0249	

Regression 14 Growth operating performance deviation from benchmark, firms in crisis years

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Crisis years are 2000-2002 and 2008-2009. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4039	0.9655	0.9342	0.9414	0.3744
<i>P-value</i>	0.0091	0.0000	0.0000	0.0000	
EBITDA margin	0.0125	-0.0367	-0.0719	-0.0826	0.0715
<i>P-value</i>	0.6357	0.2419	0.0323	0.0088	
EBIT margin	0.0065	-0.0868	-0.1285	-0.1258	0.1361
<i>P-value</i>	0.7999	0.0353	0.0014	0.0009	
Profit margin	0.0122	-0.0712	-0.1262	-0.1084	0.1224
<i>P-value</i>	0.4764	0.0626	0.0017	0.0068	
Operating return on assets	-0.0051	-0.0569	-0.0780	-0.1001	0.0930
<i>P-value</i>	0.8138	0.0630	0.0208	0.0078	
ROA	0.0059	-0.0859	-0.1212	-0.1233	0.1190
<i>P-value</i>	0.6942	0.0311	0.0031	0.0104	
Asset turnover	-0.1214	-0.1492	-0.0361	-0.0198	0.0307
<i>P-value</i>	0.0775	0.0658	0.5700	0.8206	

Regression 15 Growth operating performance, firms in crisis 1 years

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Crisis 1 years are 2000-2002. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4878	1.1887	1.2736	1.2883	0.4870
<i>P-value</i>	0.0026	0.0000	0.0000	0.0000	
EBITDA margin	0.0072	-0.0532	-0.1057	-0.0810	0.1068
<i>P-value</i>	0.7972	0.1301	0.0089	0.0016	
EBIT margin	0.0041	-0.1070	-0.1666	-0.1259	0.1692
<i>P-value</i>	0.8801	0.0202	0.0006	0.0002	
Profit margin	0.0086	-0.0906	-0.1531	-0.1226	0.1548
<i>P-value</i>	0.6428	0.0320	0.0011	0.0015	
Operating return on assets	-0.0116	-0.0816	-0.1296	-0.1339	0.1851
<i>P-value</i>	0.6116	0.0176	0.0012	0.0000	
ROA	0.0011	-0.1116	-0.1714	-0.1475	0.1799
<i>P-value</i>	0.9432	0.0119	0.0006	0.0005	
Asset turnover	-0.1537	-0.2540	-0.2139	-0.2814	0.1666
<i>P-value</i>	0.0327	0.0055	0.0045	0.0003	
Cash flow return	0.0492	-0.0757	-0.1641	-0.0630	0.1408
<i>P-value</i>	0.2495	0.1027	0.0000	0.0561	

Regression 16 Growth operating performance deviation from benchmark, firms in crisis 1 years

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Crisis 1 years are 2000-2002. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4189	1.0678	1.0936	0.9981	0.4074
<i>P-value</i>	0.0092	0.0000	0.0000	0.0000	
EBITDA margin	0.0103	-0.0460	-0.0934	-0.0976	0.0921
<i>P-value</i>	0.7077	0.1941	0.0201	0.0117	
EBIT margin	0.0048	-0.1031	-0.1592	-0.1496	0.1665
<i>P-value</i>	0.8576	0.0261	0.0010	0.0015	
Profit margin	0.0103	-0.0871	-0.1401	-0.1275	0.1381
<i>P-value</i>	0.5627	0.0424	0.0028	0.0138	
Operating return on assets	-0.0060	-0.0684	-0.1099	-0.1226	0.1288
<i>P-value</i>	0.7912	0.0469	0.0057	0.0101	
ROA	0.0045	-0.1040	-0.1554	-0.1518	0.1504
<i>P-value</i>	0.7732	0.0199	0.0019	0.0155	
Asset turnover	-0.1136	-0.1632	-0.0900	-0.0175	0.0400
<i>P-value</i>	0.1103	0.0710	0.2275	0.8689	

Regression 17 Growth operating performance, firms in crisis 2 years

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Crisis 2 years are 2008-2009. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.0668	0.3166	0.4359	0.9663	0.4392
<i>P-value</i>	0.0000	0.0000	0.0012	0.0165	
EBITDA margin	0.0595	0.0207	0.0068	-0.0420	0.0565
<i>P-value</i>	0.0000	0.1279	0.8686	0.3689	
EBIT margin	0.0386	0.0224	-0.0152	-0.0622	0.0999
<i>P-value</i>	0.0000	0.0231	0.7223	0.1883	
Profit margin	0.0331	0.0224	-0.0978	-0.0744	0.1799
<i>P-value</i>	0.0000	0.0117	0.2065	0.0273	
Operating return on assets	0.0105	0.0194	0.0446	-0.0375	0.1109
<i>P-value</i>	0.0000	0.0682	0.2939	0.2675	
ROA	0.0267	0.0335	-0.0019	-0.0524	0.2126
<i>P-value</i>	0.0000	0.0006	0.9410	0.0275	
Asset turnover	-0.3389	-0.0830	0.1420	-0.0929	0.1153
<i>P-value</i>	0.0000	0.5550	0.1077	0.5339	
Cash flow return	0.2500	0.0266	-0.0009	-0.0615	0.3000
<i>P-value</i>	0.0000	0.1127	0.9734	0.1151	

Regression 18 Growth operating performance deviation from benchmark, firms in crisis 2 years

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Crisis 2 years are 2008-2009. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is j - t , where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.0129	0.1984	0.2698	0.7561	0.3279
<i>P-value</i>	0.0000	0.0006	0.0281	0.0442	
EBITDA margin	0.0707	0.0327	0.0179	-0.0335	0.0595
<i>P-value</i>	0.0000	0.0206	0.6639	0.4749	
EBIT margin	0.0513	0.0355	-0.0007	-0.0478	0.0719
<i>P-value</i>	0.0000	0.0058	0.9878	0.3169	
Profit margin	0.0628	0.0482	-0.0708	-0.0495	0.1095
<i>P-value</i>	0.0000	0.0011	0.3661	0.1370	
Operating return on assets	0.0175	0.0295	0.0549	-0.0266	0.1307
<i>P-value</i>	0.0000	0.0068	0.1928	0.4304	
ROA	0.0428	0.0499	0.0152	-0.0351	0.1931
<i>P-value</i>	0.0000	0.0000	0.5633	0.1245	
Asset turnover	-0.3250	-0.0444	0.1886	-0.0274	0.1266
<i>P-value</i>	0.0000	0.7472	0.0383	0.8547	

Regression 19 Growth operating performance, firms in non-crisis years

$$\Delta y_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Non-crisis years are 1997-2008, excluding 2000-2002 and 2008-2009. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth (Δy_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4008	0.5500	0.8646	0.6731	0.3748
<i>P-value</i>	0.0000	0.0000	0.0000	0.0000	
EBITDA margin	-0.0101	0.0072	0.0062	-0.0083	0.0026
<i>P-value</i>	0.5916	0.6623	0.8099	0.8223	
EBIT margin	-0.0198	-0.0054	-0.0027	-0.0189	0.0064
<i>P-value</i>	0.3381	0.7569	0.9226	0.6571	
Profit margin	-0.0161	0.0106	0.0221	-0.0022	0.0065
<i>P-value</i>	0.4489	0.6059	0.4866	0.9560	
Asset turnover	-0.0081	-0.0122	-0.0304	-0.0505	0.0304
<i>P-value</i>	0.6310	0.4479	0.1514	0.1323	
Operating return on assets	-0.0036	-0.0015	-0.0091	-0.0373	0.0115
<i>P-value</i>	0.8353	0.9375	0.5697	0.3421	
ROA	-0.1930	-0.1344	-0.3026	-0.1390	0.1198
<i>P-value</i>	0.0008	0.0806	0.0007	0.1739	
Cash flow return	0.0652	-0.0159	-0.0139	-0.0842	0.0602
<i>P-value</i>	0.0178	0.4105	0.7373	0.0308	

Regression 20 Growth operating performance deviation from benchmark, firms in non-crisis years

$$\Delta z_{it} = \sum_{j=0}^3 \beta_j d_year_{t-j} + e_{it}$$

The table display results for each variable listed using the described model. The sample consists of 111 Initial public offering (IPO) firms on the Stockholm stock exchange 1997-2008. Non-crisis years are 1997-2008, excluding 2000-2002 and 2008-2009. The explanatory variables d_year_{t-j} are dummy variables taking on the value of one if the year is $j-t$, where year t is the IPO year. Betas are reported in the grey highlighted areas and p-values are reported in the white areas. R-square values are reported in the rightmost column.

Measure growth Dev. (Δz_{it})	d_year0	d_year1	d_year2	d_year3	R2
Sales	0.4250	0.3923	0.3733	0.4760	0.2492
<i>P-value</i>	0.0000	0.0001	0.0472	0.0023	
EBITDA margin	-0.0138	0.0149	0.0216	-0.0161	0.0066
<i>P-value</i>	0.5916	0.5865	0.6857	0.6708	
EBIT margin	-0.0234	0.0069	0.0197	-0.0260	0.0096
<i>P-value</i>	0.4024	0.8039	0.7378	0.5519	
Profit margin	-0.0184	0.0208	0.0408	-0.0116	0.0111
<i>P-value</i>	0.5156	0.4880	0.4876	0.7761	
Asset turnover	-0.0053	0.0084	-0.0071	-0.0434	0.0195
<i>P-value</i>	0.7952	0.7403	0.7986	0.2110	
Operating return on assets	0.0043	0.0226	0.0154	-0.0355	0.0152
<i>P-value</i>	0.8475	0.4130	0.5649	0.3831	
ROA	-0.1805	-0.0443	-0.1475	-0.0103	0.0422
<i>P-value</i>	0.0160	0.7237	0.3246	0.9229	

Table 8.3 Companies included in the study

Firm	IPO date	Firm	IPO date
DGC One AB	2008-06-16	RKS AB	1999-05-17
Nederman Holding AB	2007-05-16	Adera AB	1999-06-10
Aerocrine AB	2007-06-15	Wilh. Sonesson AB	1999-06-15
Systemair AB	2007-10-12	ReadSoft AB	1999-06-22
HMS Networks AB	2007-10-19	Framtidsfabriken AB	1999-06-23
Duni AB	2007-11-14	Poolia AB	1999-06-23
KappAhl Holding AB	2006-02-23	BOSS MEDIA AB	1999-06-24
Diös Fastigheter AB	2006-05-22	NOVOTEK AB	1999-06-30
Biovitrum AB	2006-09-15	Clas Ohlson AB	1999-10-05
BE Group AB	2006-11-24	Proffice AB	1999-10-11
Rezidor Hotel Group AB	2006-11-28	Enlight Interactive AB	1999-10-12
Lindab International AB	2006-12-01	Perbio Science AB	1999-10-18
Tilgin AB	2006-12-15	A-Com AB	1999-11-04
Indutrade AB	2005-10-05	Cyber Com Consulting AB	1999-12-01
Hemtex AB	2005-10-06	Q-Med AB	1999-12-06
Tradedoubler AB	2005-11-08	Karo Bio AB	1998-04-03
Orexo AB	2005-11-09	Karolin Machine Tool AB	1998-04-03
Oriflame Cosmetics S.A.	2004-03-24	Nilörngruppen AB	1998-04-06
Unibet Group Plc	2004-06-08	MSC Konsult AB	1998-05-19
NOTE AB	2004-06-23	Prevas AB	1998-05-29
Alfa Laval AB	2002-05-17	Broström Van Ommeren AB	1998-06-17
Intrum Justitia AB	2002-06-07	SAAB AB	1998-06-18
Nobia AB	2002-06-19	CityMail Sweden AB	1998-07-01
Ballingslöv AB	2002-06-19	SIFO Group AB	1998-09-10
Studsvik AB	2001-05-04	SWECO AB	1998-09-21
BTS Group	2001-06-06	Drott AB	1998-09-24
BioInvent International AB	2001-06-12	Softronic AB	1998-12-03
Pergo AB	2001-06-19	Opcon AB	1998-12-30
rnb Retail and Brands AB	2001-06-26	ADB-Gruppen Mandator AB	1997-01-03
Vitrolife AB	2001-06-26	Sigma AB	1997-02-21
Transcom WorldWide S.A.	2001-09-06	Alfaskop AB	1997-02-24
Billerud AB	2001-11-20	AB Sardus	1997-04-07
Micronic Laser Systems AB	2000-03-09	MTV Produktion AB	1997-04-14
Tele1 europé Holding AB	2000-03-16	Ticket Travel Group AB	1997-04-25
JC AB	2000-04-19	AB Fagerhult	1997-05-13
Mekonomen AB	2000-05-29	Gränges AB	1997-05-21
Viking Telecom AB	2000-05-30	Castellum AB	1997-05-23
Beijer Electronics AB	2000-06-08	Semcon AB	1997-05-26
Telia AB	2000-06-13	Arkivator AB	1997-06-05
Axis AB	2000-06-27	Karlshamns AB	1997-06-05
I.A.R. Systems AB	2000-07-11	Scandinavia PC Systems AB	1997-06-06
AudioDev AB	2000-09-21	PartnerTech AB	1997-06-12
Eniro AB	2000-10-10	NIBE Industrier AB	1997-06-16
Capio AB	2000-10-16	Information Highway AB	1997-06-19
ORC Software AB	2000-10-19	ProfilGruppen AB	1997-06-19
NeoNet AB	2000-10-20	Pandox Hotellfastigheter AB	1997-06-23
NOCOM AB	1999-01-04	Hemköpskedjan AB	1997-06-27
SECTRA AB	1999-03-03	Wedins Norden AB	1997-07-01
Telelogic AB	1999-03-08	Svedbergs i Dalstorp AB	1997-10-03
Malmbergs Elektriska AB	1999-03-12	Munters AB	1997-10-21
HiQ International AB	1999-04-12	Svenska Orient Linien AB	1997-10-29
Teligent AB	1999-04-12	ConNova Group AB	1997-12-09
Kungsleden AB	1999-04-14	New Wave Group AB	1997-12-11
Jeeves Information Systems AB	1999-04-21	Gandalf AB	1997-12-18
Frango AB	1999-04-23	FB Industri Holding AB	1997-12-22
DV Sweden AB	1999-04-28		