STOCKHOLM SCHOOL OF ECONOMICS

Can First Day Returns of Initial Public Offerings be Explained by Individual Financial Ratios?

Master's Thesis in Accounting and Financial Management

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ABSTRACT

This thesis studies the relationship between historical financial ratios and first day returns of initial public offerings (IPOs). The empirical data is based on 49 IPOs that were made on the Stockholm OMX Stock Exchange during the period 2000 to 2008. The point of departure was to explore the ramifications of less favourable financial ratios and their impact on first day returns. The study has been based on theories of asymmetric information as a foundation to investigate how financial ratios possibly could bridge information uncertainties and affect the ex ante uncertainty when investing in an IPO. This has been examined through a large set of financial ratios. At a first stage the number of ratios has been reduced using a factor analysis and the remaining ratios were thereafter included in a multiple regression. The study concludes that no statistically significant relationship could be found between the financial ratios and first day returns in the studied sample.

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1. Introduction

1.1 Problem area

When a firm decides to make an initial public offering (IPO), the plausible behaviour of the issuers is that they desire to set the price as high as possible to maximize their wealth. Yet, previous research has shown that IPOs systematically have yielded very high first day returns, a phenomenon referred to as *underpricing*. This means that the issue price has been set below the market clearing price, in other words below the market consensus about of the fair value (Bodie et al. 2008). Schuster (2003) has among others examined this trend by collecting observations from several European countries. Between 1980-1998, an average first day return of 30.5 % could be observed on the Swedish IPO market. Loughran and Ritter (2004) examined how IPO underpricing has changed over time and across different markets and demonstrated that underpricing has been apparent in all markets and periods investigated.

The motives behind underpricing have been extensively examined and one credible theory that gives an explanation to this phenomenon is the theory of asymmetric information. With the absence of an extensive financial history and difficulties in estimating future growth and earnings, it has been argued that setting an issue price below the estimated market clearing price is a way to compensate investors for this ex ante uncertainty. Hence, the differences in the information availability among the issuers and the investors cause the IPOs to trade at a discount. In the academic community it has been highly debated whether financial information available in the firms' IPO prospectuses is relevant for deciding their respective returns (Klein 1996). Previous studies such as Ritter and Welch (2002), have examined the influence of negative or positive earnings per share (EPS), the year prior to the IPO. They concluded that a negative EPS was associated with a greater uncertainty for the investor, and that the group of firms with a negative EPS traded at a higher discount.

1.2 Aim of the study

According to Rasheed et al. (1997) accounting data is the only information that is readily available to all parties in the IPO: the issuer, the underwriter and the investor. Though, many academics and also US business press have contrary argued that historical financial information provided in the firms' prospectuses often is disregarded when determining the issue price and is irrelevant for projecting the first day return of the IPO. Accounting literature frequently describes financial ratios as an excellent source to evaluate firm risk, financial strength and operational performance (White et al. 2003). Thus, it has been debated whether the financial data provided in the prospectuses is an effective way to communicate valuable information about the firm. Although underpricing is a widely explored field of research, there are still inconsistencies in previous literature regarding the impact financial ratios might have in the IPO process.

The starting-point in this thesis will be that financial ratios may be an important source to reduce investor ex ante uncertainty. It could be argued that favourable ratios are able to lower the degree of underpricing needed to compensate the investors. With background of this debated topic, this study aims to investigate whether financial ratios can explain the first day return. By incorporating a larger set of financial ratios, this thesis extends the previous research and seeks to provide an increased knowledge about what influence that financial ratios could have on the first day returns in IPOs.

1.3 Scope of research

The study tests whether individual financial ratios can explain the first day returns. Some control variables have also been used to isolate the impact of financial ratios. The data used in the study is regarded as *public information*, available to all investors at the time of the IPO, such as the information provided in the prospectuses. The paper is delimited to investigating the period 2000–2008 and includes Swedish firms that have made an IPO on the Stockholm OMX Stock Exchange (now a part of the NASDAQ OMX Group).

1.4 Outline

The thesis will be presented in the following four parts. Firstly, previous research on IPO underpricing and related research is introduced to provide some background to the study. It is complemented with the theoretical frameworks relevant for explaining the relationship between financial ratios and first day returns. Different views in the economic community and their causes will be presented to create a solid foundation in order to provide an explanation of the market behaviour later in the thesis. Secondly, the empirical data collection is presented, describing the studied sample and the delimitations made in the study. This part will provide descriptive statistics of the dataset and explain how the independent variables have been identified and also describe the methodology used for testing the hypothesis.

This is followed by a result section summarizing the findings from the tests of the independent variables. This is complemented with several robustness tests to verify the reliability of the findings in the regression models that were used to study the relationship. The results are thereafter interpreted and analyzed with reference to the theoretical frameworks utilized in the study. Finally, the thesis will finish with a concluding section with some discussions of the methods used in the study and their implications for the findings as well as some suggestions for future research.

2. Previous research

This section begins by providing some background to why firms choose to go public. It is then followed by a description of how the IPO process is fulfilled and the different parties involved in the process. Their diverging interests will be further discussed and how this can influence the studied relationship. Finally, the theory of asymmetric information is presented providing some possible explanations of how financial ratios could affect first day returns.

2.1 Why firms go public and the IPO process

There are several reasons for a firm to go public and the motives are often specific to the given firm. A primary reason described by Ritter and Welch (2002) is to increase the liquidity of the investment to the former owners. Another reason could be to attain resources for future expansion. Some more minor reasons are to render name recognition to the company and to be able to retain and attract a qualified management by initiating stock-compensation plans (Rasheed et al. 1997). It is important to note that an IPO offers different objectives and outcomes for the different stakeholders. The issuers desire to set a high issue price to maximize their wealth, while the investors seek to yield a maximum return of their investments and are therefore benefited from the price being set as low as possible. The last party in the process, the underwriter, has the most elaborate role since it acts a dual agent in the price setting process, where it has to consider the interest of the issuers and the investors respectively (Gordon and Jin 1993).

The complexity of the underwriter role is derived from its simultaneous involvement in the interests of the issuers and the investors as illustrated by Loughran and Ritter (2002). While trying to give the issuers the best possible deal from the IPO, they are at the same time helping the investors to locate favourable investment opportunities. An underwriter being opportunistic will soon lose either side of its clients if it under- or overprice new issues (Gordon and Jin 1993). Hence, it is argued that the underwriters are expected to be committed to setting the issue price as close to the market clearing price as possible. This is supported by Rasheed et al. (1997) who show some direct costs of either under- or overpricing the IPO for the underwriter. Yet, the disadvantages of overpricing appear to be larger and setting a lower price may imply a lower risk and it could also be an insurance against legal liabilities.[1] The diverging interests of the different stakeholders based on facts from Rasheed et al. (1997) are summarized in Exhibit 2.1.

	Issuer	***Underwriter***	***Investor***
High Price	(+) Maximize wealth (-) Under subscription	(+) Maximize income (-) Under subscription (-) Obligation to meet underwriting commitments	(-) Low return
Low Price	(+) Maximize initial return and thus reputation (-) Ownership transfer at below market prices	(+) Insurance against legal alienation (-) Low risk (-) Low commission income	(+) High return

EXHIBIT 2.1. *The illustration shows that the different stakeholders in the IPO have different objectives. This is demonstrated by showing how each party is positively or negatively affected by the issue price being set below or above the market clearing price.*

Source: Rasheed et al. (1997)

[1] In the US, law suits showed to be more common for large after-market price declines than initial underpricing (Rasheed et al. 1997).

2.2 The pricing process – the underwriter

As explained, the underwriter typically has a central role in the IPO process and the vast majority of the IPOs in the studied sample have gone through an extensive bookbuilding process. This process usually starts with the underwriter setting an offer spread based on their perception of the market clearing price. Estimating the market clearing price often is an elaborate process for several reasons and the pricing of IPOs has been argued to be one of the more puzzling phenomena in finance (Lowry and Schwert 2004). This has for example been shown by studying the volatility of the market clearing prices compared to the issue price (Lowry et al. 2008).

US business press has often argued that underwriters ignore most of the information available in the prospectuses (Klein 1996). Instead it has been asserted that underwriters tend to solely focus on firm multiples such as P/E and P/Sales, both historical and projected earnings and sales, and benchmarking these multiples with closely comparable firms. An alternative is to use forward looking valuation models, such as the discounted cash flow model. Kim and Ritter (1999) show that the application of cash flow valuations and the usage of firm multiples often is very imprecise. They argue that assigning a peer company to each IPO is crucial for obtaining an issue price that is close to the market clearing price. Klein (1996) underlines the many difficulties in setting the issue price close to the market clearing price. She further questions the statements made about the underwriters ignoring the financial information in the prospectuses. In her study she illustrates that the prospectuses include value-relevant information with significant relations for several accounting variables and other data included in the prospectuses.

Gordon and Jin (1993) refer to studies showing that IPOs led by investment bankers as underwriters had a significantly lower underpricing than comparable firms committing a self-underwritten IPO. Ritter and Welch (2002) argue that the underwriter takes advantage of the investors' information to be able to set the issue price. They mean that this involves that institutional investors provide *private information* about the market demand for the issue. According to Kim and Ritter (1999) this is a vital part of the IPO process in order to come as close to the market clearing price as possible. Finally, the price is updated and the trading in the secondary market and the first day return can be observed. The whole procedure is illustrated below in Exhibit 2.2.

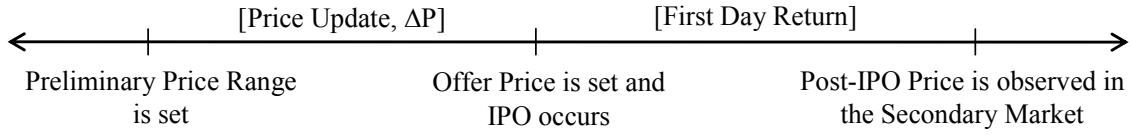

EXHIBIT 2.2. *Illustration of the IPO process from that the underwriter sets the offer spread until the first day returns can be observed on the Secondary Market.*

Source: Lowry and Schwert (2004)

There are several arguments both in favour and against this process being efficient and Krigman et al. (1999) argue that pricing errors made by underwriters are intentional. Benveniste and Spindt (1989) mean that the informed investors help the underwriters to set the issue price. In compensation, the underwriter sets the issue price below the market clearing price by not incorporating all *private information* about the market demand for the issue. Ljungqvist and Wilhelm (2002) confirm these results and argue that informed investors who reveal more information receive more favourable issue allocations.

While the investors provide *private information* regarding the market demand, their close collaboration with the underwriter makes it easier for them to obtain additional information about the IPO firm. Benveniste and Spindt (1989) indicated that informed investors also could be provided information about management qualities and the underwriter judgement on the future performance of the firm. According to Sigfrid at ABG Sundal Collier (2009), 90% of the investors in Swedish IPOs are institutional owners. Vindevåg (2009) confirmed these figures, and emphasised that this is a higher number compared to other international market places. Hence, it is reasonable to assume that the underwriters in the studied sample have had good possibilities to collect *private information*.

Lowry and Schwert (2004) investigated how underwriters treat public information. This was studied by examining the relationship between the prior market performance and the IPO price update and the first day returns respectively. They found a strong relationship between the prior market return and the price update, meaning that the underwriter incorporates this information in the IPO pricing process. Moreover they found a significant relationship between the prior market performance and the first day returns, but that this relationship was quite small in economic terms. This was interpreted as that the underwriters incorporate almost all public information in the issue price and that the IPO pricing process is rather efficient.

2.3 The pricing process – the investor

Even though IPOs on average are underpriced, it has been shown that the variations in the first day returns are high and that many firms trade below their issue price (Beatty and Ritter 1986). Their study illustrates that these variations increase the investor ex ante uncertainty, requiring the IPOs to be issued at an underprice to attract the investors. In other words the expected underpricing of the IPO will be determined by the ex ante uncertainty about the market clearing price of the firm. As earlier described, the issuers seek to maximize their wealth by setting the issue price as close to the market clearing price as possible. Hence they are expected to be devoted to communicate information to the market that will lower this ex ante uncertainty. Rasheed et al. (1997) suggest several factors affecting the price that the investors are willing to pay:

- The amount of information available about the stock of a company already listed
- The cost of collecting information about the new company that the investor has to bear
- The risk of investing in a company without previous history on the stock market

There are several sources that possibly could be used to communicate information about the IPO firm. Some examples include providing quantitative and qualitative information in prospectuses, press releases and news articles. Accounting literature often describes accounting data as an effective way to communicate information about the firm performance (White et al. 2003). This would indicate that the cost of obtaining this information is low for the investors. As argued by Rasheed et al. (1997), accounting data may be the only source of information that is equally available to all parties in the IPO and state, “corporate prospectuses have been considered as an excellent source of valid information for publicly held firms”. In their paper they conclude that accounting information to some extent influences the price set for the IPOs. This is supported by Klein (1996), showing that accounting data such as earnings per share and the book value of equity per share, are value-relevant for setting the IPO issue price. This would imply that the accounting data could be an effective way to lower the degree ex ante uncertainty, as described above by Rasheed et al. (1997).

However, if the accounting data provided is non-favourable to the firm, in other words if the financial ratios indicate that the firm performs weakly, the firms are likely to use other sources bridge this uncertainty. If this requires a higher cost for the investors to obtain this information, the investors must be compensated in order to participate in the issue. Sherman and Titman (2002) argue that there is an equilibrium amount of underpricing for compensating the investors to collect this information. Ritter and Welch (2002) refer to a study by Habid and Ljungqvist (2001) showing that underpricing the IPO can be seen as a substitute to marketing expenses in order to convince the investors about the market clearing price of the firm. Financial ratios could therefore be an effective source to bridge information gaps between the issues and the investors in order to lower the degree of underpricing.

2.4 Accounting data bridging information asymmetries

The theory of asymmetric information is highly relevant for understanding how financial ratios could be a source of bridging information gaps between the issuers and the investors. These theories are derived from the investors being less informed about the firm than the issuers. Rational investors therefore fear a phenomenon known as the lemons problem, first developed by George Akerlof in his article "The Market for Lemons: Quality Uncertainty and the Market Mechanism" from 1970. This theory is extensively examined by Rock (1986). It argues that there are two types of investors: informed and uninformed. The intuition is that the uninformed investors have problems to separate "good" and "bad" firms while informed investors are able to do this. Consequently, the uninformed investors receive small share allocations in underpriced issues and large allocations in overpriced issues and the opposite for informed investors. For this reason, the issuers are forced to set the IPO price below the fair value in order to make the less informed investors willing to participate in the issue.

The situation above is known as *the winner's curse*. A study by Schultz and Zaman (1994) confirms this theory by showing that informed investors will not participate in overpriced IPOs, but instead purchase the share after it falls on the stock exchange. This theory explains that there are costs associated with overpricing and investors will therefore be given a discount through underpricing. Högfeldt (1997) means that underpricing compensates the investor for the risks associated with the firm often being relatively unknown, the financial history short and the information in the prospectus not being complete.

Garfinkel (1993) suggests that ex-ante uncertainty may affect underpricing, which also is supported by Gordon and Jin (1993). They illustrate that the average underpricing increases with the ex ante market uncertainty about the market clearing price. Garfinkel (1993) summarizes different variables that could affect the ex-ante uncertainty of the investors. These include debt, intangible assets, age and the size of issue proceeds.

Financial ratios are commonly used to increase the investors' knowledge about the firm, to compare risk and return of different investment options and provide descriptive information about the firm's performance at the time of the investment as well as changes in performance over time. Thus, financial information has an ability to reduce information uncertainties (White et al. 2003). Since financial ratios provide information about operational ability, earnings potential and reflect financial stability, they are likely to be a factor that could affect the ex ante uncertainty about the market clearing price. This is in line with Klein (1996), who has shown the value relevance of several accounting variables in IPO valuations including book value of equity and earnings per share.

Haugen and Baker (1996) further support these findings by referring to former studies by Fama and French (1992). They found that accounting measures, such as earnings per share and book value of equity per share, were able to predict future stock prices. The studies by Rasheed et al. (1997) as well as the findings of Ritter and Welch (2002) also add empirical support to the probability that the financial ratios are able to affect first day returns of IPOs. The latter found a strong negative relation between negative earnings the year prior the IPO and the first day returns.

Financial information can also be seen as a relatively objective measure of the strength and performance as well as the riskiness of the firm (White et al. 2003). Loughran and Ritter (2004) examined how some financial ratios could explain the riskiness of the firm and thereby affect the first day returns. Their study also showed that sales size as well as asset size had a negative relation to first day returns. In their paper those variables were used as proxies for risk where a larger asset base and higher sales were equivalent to the firms being less risky. This is in line with the reasoning above that financial information can be used as proxies for risk and therefore be used as means to reduce the information asymmetry between issuers and investors.

As presented above, there are considerable indications that financial information could have an influence on the first day returns, also since it often is the most reliable information available to all parties in the IPO (Rasheed et al. 1997). Even though it is stressed in White et al. (2003) that financial information is not the sole source of information to the investors, this is indeed a topic to further investigate.

3. Hypothesis

Given the presented theories and the prior research, it is possible that financial ratios could have an impact on first day returns. As described in Gordon and Jin (1993), underpricing is likely to be an increasing function of ex ante uncertainty about the market clearing price. As implied in some accounting literature, financial information could be an efficient way to lower the ex ante uncertainty of the investor. Firms with less favourable financial ratios are therefore likely to use more alternative sources to bridge this uncertainty. If the collection of this additional information is a more costly way to reduce the uncertainty, the issuers are expected to underprice their offerings to a greater extent. In other words yielding higher first day returns.

Therefore, it will be tested whether there is a relationship between financial ratios and first day returns. The point of departure is that firms with less favourable financial ratios will have higher first day returns for the reasons described above. The hypothesis tested will therefore be as follows:

H_0: First day returns cannot be explained by individual financial ratios
H_1: First day return can be explained by individual financial ratios

The null hypothesis will be rejected if any of the financial ratios are shown to have a statistically significant impact on the first day returns. To be able to study this relationship it is assumed that the efficient market hypothesis holds. This assumes that the price of any security will be adjusted to the market consensus about the market clearing price (Bodie et al. 2008). Hence, it is assumed that any under- or overpricing will be efficiently reflected in the first day returns.

4. Empirical Data

In order to appropriately investigate the factors influencing the first day returns, some delimitations have been made. This includes the choice of time period as well as the market exchange investigated. Additionally, a strict criterion was set to ensure the quality and comparability as well as the objectivity in the selection of the firms to include in the sample.

4.1 Choice of the time period

A proper time period has been set by valuing the trade-off between obtaining a large sample and collecting data that is suitable for comparison. In order to obtain a large dataset with reliable and consistent data, the years 2000-2008 have been studied. The first reason for choosing this period is that it avoids the greatest turbulence of the dot-com bubble. One reason for this is that Ritter and Welch (2002) argue that the quality of firms decrease in "hot issue" markets such as the dot-com bubble. Including those years may therefore reduce the relevance of the findings for normal market conditions. Ritter and Welch (2002) further argue that asymmetric information by itself is not likely to explain the extreme behaviour during the dot-com bubble. It is therefore possible that including 1999 would disrupt the sample. Another reason for studying the most current period is due to the dynamics of the financial markets and the impact of information technology. An investigation of the most current time period is likely to be of most relevance for understanding and explaining the behaviour of today's markets.

4.2 Choice of the market exchange

The study only covers IPO listings on the Stockholm OMX Stock Exchange (Small, Mid and Large Cap)[2]. A primary reason for only looking at the Swedish market is due to national differences in IPO markets as shown by Ritter (2003). The Stockholm OMX Stock Exchange has been chosen because it has the highest trading liquidity in Sweden. It also ensures that the issues are of appropriate size[3]. This delimitation is similar to the approach of Kim and Ritter (1999) and is used to avoid stock price manipulation and extreme first day returns as a consequence of low trading liquidity and high trading spreads (differences between buyer and seller offerings). Another reason is the stronger regulations compared to the smaller market places. This minimizes the risk of management manipulation of the financial information in the IPO process, as implicated by Aharony et al. (1993).

4.3 Data Collection

4.3.1 The data set

In order to fulfil the quantitative research an extensive set of data has been collected. Moreover, to ensure that the information has been appropriately collected, former studies on underpricing have been used, where available. These have been used for guidance in the selection of variables and data sources. The following information has been collected:

- IPOs made between 2000-2008 (and their type and date of listing)
- Their issue price and their closing price on their first and fifth trading day[4]
- Their respective prospectuses with financial information
- Market index data for the Stockholm Stock Exchange PI between 2000-2008
- Forward looking consensus data for a three year period, extracted from Datastream[5]

[2] Previously named the A- and O-lists.

[3] Earlier studies have excluded firms where the issue proceeds are small, since this makes the firms more sensitive to manipulation because few shares are traded on the market (Loughran and Ritter 2004).

[4] The closing price on the fifth day of trading has been used as the dependent variable in the robustness test in Section 7.3.3.

It is highly important to collect an objective dataset. Therefore, all firms for the given time period have been included as long as they have fulfilled the set main criteria as defined in Exhibit 4.1. Consistent with Loughran and Ritter (2004), there has been no exclusion of any firm categories. The criteria used to determine what firms to include are based on former studies such as Klein (1996) and is summarized below.

Criteria for selecting firms	Firms	Excluded
1. Listed 2000 - 2008 on the Stockholm OMX Stock Exchange	149	
2. Pure IPO: No re-listings, carve-outs or spin-offs	58	-91
3. IPO payment is monetary	57	-1
4. Complete prospectuses available	52	-5
5. Must have own operations (No pure holding companies)	51	-1
6. Stock price data found	50	-1
Total	**49**	**-100**

EXHIBIT 4.1. *The table shows the criteria used for selecting the firms to include in the study. In the left column one can read about the reason for the exclusion.*

The stock price information for the individual stocks was collected using Datastream and verified against figures from a database provided by the NASDAQ OMX Group. One IPO during the time period was excluded due to missing stock data. Consistent with Klein (1996), only pure IPOs have been included. Secondary listings, equity carve-outs and spin-offs have been left out in the sample.

All financial ratios have been calculated from the information that was provided in the IPO prospectuses. The prospectuses were gathered from three different sources: the Swedish Financial Supervisory Authority[6], the Swedish Shareholders' Association[7] and the National Library of Sweden. Information regarding the issue price and raised capital were collected from press releases from respective company.

4.3.2 Sample Description

	Mean	Median	Stdev	Min	Max
Offer size (MSEK)	32	9	123.90	1.28	882
Assets (MSEK)	3582	384	11237.12	5	76604
Sales (MSEK)	2743	633	7680.42	0	52121
Age (in years)	23	13	27	1	119
First day return	5.66%	3.10%	17.13%	-22.25%	95.34%

EXHIBIT 4.2. *Descriptive statistics for the sample of the 49 IPOs issued on the Stockholm OMX Stock Exchange, during the period 2000-2008.*

Consistent with earlier studies there is an underpricing found in the studied sample and the average first day return is 5.66%. It should be noted though that this is much lower than earlier studies (Ibbotson et al. 1988, Schuster 2003).

[5] The consensus information was collected for the firms but could not be used since the publication dates of this information often were too long after the IPO issue.
[6] Finansinspektionen
[7] Aktiespararna

A classification of the firms in the sample has been made according to the Global Industry Classification Standard (GICS), used by Stockholm OMX Stock Exchange, and is summarized in Exhibit 4.3. As can be seen there are some differences in the average return between the different sectors. Notable is that the telecommunication services sector has the greatest first day returns and that the standard deviation for industrial firms and consumer staples are significantly lower than for the other sectors.

Sector	Number	Average Fdr	Min Fdr	Max Fdr	Stdev
Consumer Discretionary	10	2.10%	-22.25%	37.23%	16.57%
Consumer Staples	2	7.79%	5.84%	9.74%	2.75%
Financials	4	-1.95%	-15.00%	15.65%	13.10%
Health Care	6	-0.06%	-16.13%	12.00%	11.27%
Industrials	11	5.67%	-0.78%	15.79%	5.43%
Information Technology	13	9.47%	-12.00%	95.34%	27.69%
Telecommunication Services	3	14.99%	4.12%	28.74%	12.56%
Total	49	5.66%	-22.25%	95.34%	17.13%

EXHIBIT 4.3. *Descriptive statistics of the sample divided by GICS sector classification.*

4.4 Quality of the Material

Since accounting data can be presented in several different formats, it has been important to collect the financial information systematically and similarly among all firms. To ensure the objectivity of the data collection, all financial data has been collected independently by each author and has thereafter been compared. All discrepancies between the two sets have been verified and corrected to ensure a high degree of accuracy and objectivity. There could still be possibilities of errors in the numbers provided in the prospectuses due to misprinting. This risk has been considered small and accounting data that seemed to be extraordinary has been verified.[8] Some concerns have been raised regarding management manipulation of the financial information in prospectuses. This could affect the reliability of this information. However, Aharony et al. (1993) find little support that this would be the case. They found that any tendencies of manipulation were attributed to smaller firms and these are excluded in the studied sample by delimiting the sample to the Stockholm OMX Stock Exchange. In summary, the overall quality of the material is considered to be high.

Some former studies have only investigated one type of industry to increase the comparability of the firms in the sample. This approach was used by Skogsvik (2002), who tested whether financial measures are value relevant for determining the future returns in the manufacturing industries.[9] The authors recognize the benefits of this approach but have unfortunately been limited by the low number of IPOs made on the Stockholm OMX Stock Exchange during 2000-2000. 58 IPOs were made during this period and 49 of these remain as pure IPOs to be included in the study. As a result of this limited sample it has not been possible to make a distinction between different types of industries. It is evident that all financial ratios are not applicable to all industries, which will be further discussed in the analysis. Though, in the IPO research field, the majority of the authors, such as Ritter and Garfinkel do not sort their sample into industry categories. Including all different industries can for this reason be considered acceptable. Yet, some attempts have been made to overcome the effects of industrial differences. This will be described in more detail in the Section 5.3.

[8] One such example was Oriflame that had a negative equity base the year prior to the IPO. This was verified and the data was correct. It was a result of a major dividend made in the end of the reporting period.

[9] Skogsvik (2002) did not investigate IPOs, but the study will be referred to throughout this thesis since it includes some methods that are suitable to replicate in this paper.

5. Method

This section describes the dependent variable, the first day return, and the event window used in the study. Furthermore, the independent variables used in the study and their expected effect on first day return are presented. Finally, the test methodology is described.

5.1 The dependent variable

The dependent variable in the study will be the first day return. This variable is defined as the closing bid price at the end of the first day of trading, less the issue price, divided by the issue price. This is definition is used to increase the comparability with previous studies (Beatty and Ritter 1986, Garfinkel 1993, Ritter and Welch 2002). The calculation of the first day return is presented below:

$$FDR_i = (Closing\ Bid\ Price_i - Issue\ Price_i)/Issue\ Price_i$$

5.2 Event window

The event window studied is the first trading day of the firm in the secondary market as illustrated in Exhibit 5.1.

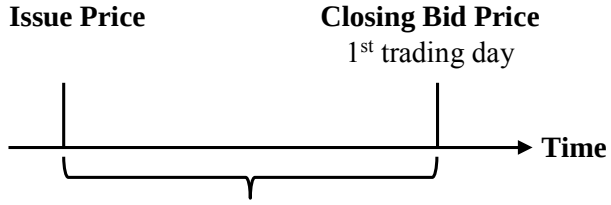

EXHIBIT 5.1 *Event window used in the study.*

5.3 The independent variables

Two types of variables have been collected in the study: financial ratios and control variables. The financial ratios are the variables used to test the hypothesis in the study. The control variables are only included to isolate the influence of the financial ratios. They are also important for testing the robustness of the findings by studying how they may impact on the investigated relationship. The collection of the variables that will be used in the regressions has been conducted in two steps as described below.

Firstly, the collection includes different methods to collect a larger initial set of variables, both financial ratios and control variables. Secondly, it involves the usage of a factor analysis on the financial ratios in order to find the variables those are most suitable to include in the regression model. How this procedure has been conducted is presented in more detail in Section 5.4.1.

The primary source used to collect the variables to include in the study is previous research that has studied the impact of financial ratios and first day returns. This approach has been important to ensure the validity of the study by replicating methods used in earlier research. The variables have been collected as prescribed in the original studies. Definitions and assumptions have also been consistently used wherever applicable to make the study comparable to earlier investigations.

As an extension to earlier studies, an additional set of financial ratios have been included using general accounting literature. According to White et al. (2003) one should use a small subset of ratios to represent the whole set. This requires choosing ratios that are:

1. Highly correlated with those ratios excluded.
2. Not correlated with the other ratios in the subset.

The former ensures that as little information as possible is excluded, while the latter ensures that there is no overlap among the ratios. These recommendations are consistent with the approach used in the study to collect a larger set of variables that is reduced into a smaller subset. This is important since the numbers of independent variables that can be used are limited by the sample size. The factor analysis will therefore be an essential part of the study.

The initial collection of all variables is summarized in Exhibit 5.2. The exhibit includes references to the studies from which the variables have been selected and short descriptions of how they could impact on the first day returns. Variables without references have been selected using accounting literature. Information regarding the assumptions made in the data collection is described after Exhibit 5.2.

Independent Variables Included in the Study

Independent variable	Effect on FDR	Variable name	Adjustment
Control Variables			
Issue size[1]	-	IS	Computed by the natural logarithm
Age group[2]	-	AGE	Dummy variable - **1:** The firm is older than 16 years
Owners selling their shares[3]	+	OLD	Dummy variable - **1:** The issue involves selling the previous owners' shares
Previous and planned dividends[4]	-	PrevPlan	Dummy variable - **1:** The firm has previously paid dividends and presents a future policy
Commitment to future expansion[5]	+	Commit	Dummy variable - **1:** The firm has stated that they will use the issue proceeds for expansion
Prior market returns[6]	+	OMX	
Price/Sales	-	P/S	Calculated from the midpoint of the offer spread

[1] Larger IPO issue proceeds are associated with larger firms and lower ex-ante uncertainty, which gives less underpricing (Garfinkel 1993).

[2] Age decreases the ex-ante uncertainty and lowers the degree of underpricing (Garfinkel 1993). Fields (1995) divide the sample into age groups (older or younger than 16 years) to easier grasp these differences. Age could be seen as a proxy for sales and assets (Ritter 1984).

[3] Kim et al (1995) tested for the type of offer and according to their hypothesis, previous owners selling out old shares would increase the investor uncertainty about the firm's market clearing price and the IPO would be more underpriced.

[4] Michaely and Shaw (1994) found that firms that are less underpriced tend to pay higher dividends and pay them sooner. This would imply a negative relationship with first day return, which is in line with the hypothesis about the ex-ante uncertainty in the IPO process.

[5] Kim et al. (1995) use a similar variable to grasp if the firm have a clear commitment to future expansion in the "motive for the IPO" section in the prospectus. It is reasonable to believe that a commitment to expansion is associated with a larger uncertainty about the future earnings of the firm.

[6] Loughran and Ritter (2002) found a positive relationship between the return on the stock exchange 15 days prior to the IPO and first day returns.

Financial Ratios			
D/E[7]	+	D/E	Calculated on interest bearing debt
EPS +/- in year 0[8]	-	EPS	Dummy variable - **1:** The firm had a positive EPS the year prior to the IPO
ROE in year 0	-	ROE	Calculated on an average of the closing and opening balance
ROA in year 0	-	ROA	Calculated on an average of the closing and opening balance
EBIT in year 0[9]	-	EBIT	
Net profit margin in year 0	-	NetProfit	
EBIT growth	-	EBITGrowth	Average of three previous years*
Sales growth	-	SalesGrowth	Average of three previous years*
EPS growth	-	EPSGrowth	Average of three previous years*
Intangible/Tangible Assets in year 0[10]	+	InA/TaA	
Cash flow +/- last years	-	CF	Dummy variable - **1:** The firm had a positive Cash Flow for all the years reported

[7] According to Garfinkel (1993) a leveraged firm sends a positive signal to the investors and decreases the underpricing. Though, Rasheed et al. (1997) find that a high D/E increases the uncertainty and gives a lower issue price . In this study the first day returns are expected to increase with D/E.

[8] Ritter and Welch (2002) show that firms with an EPS < 0 had a greater underpricing than firms with an EPS > 0, which could reflect the increased risk for the investors.

[9] According to Skogsvik (2002) EBIT was found to be the best measure of profitability for industrial companies 1972-1985.

[10] A larger fraction of intangible assets creates difficulties in the valuation process and could therefore lead to a larger uncertainty and a higher degree of underpricing (Garfinkel 1993).

* An average of two years was calculated when the firm lacked financial data from the third year prior to the IPO.

EXHIBIT 5.2. *The table shows the included independent variables in the study, their estimated effect on first day returns (FDR), their respective variable name and adjustments made to ensure the statistical reliability. The sources that have been used to select the ratios can be found in the footnotes. All ratios that do not have any footnotes have been selected using general accounting literature.*

5.4 Handling the data set

5.4.1 Methodology

As described in Section 5.3, an initial collection of variables was made to ensure that the most suitable variables for the studied sample were used in the regression. From the initial collection, a smaller subset of uncorrelated variables has been derived using a factor analysis. This was done using a principal component analysis. This is a method that parts the financial ratios into different components. The ratio with the highest absolute correlation in each component has been included in the regression. This approach was made in accordance with Skogsvik (2002). An alternative to conducting a factor analysis could have been to use the earlier factor analysis made by Skogsvik (2002) in order to determine the ratios to include. However, since both the time period and the chosen industry differ to the study above, a new factor analysis has been made.

After the principal component analysis has been conducted, the regression models that have been used to test the studied relationship have been set up. The relationship between financial ratios and first day returns has been tested by using two regression models. In the first regression, a backwards regression model has been used. This regression includes the control variables and the financial ratios that have been derived from the principal component analysis. The backwards regression tests the significance of the variables by running the regression in several steps. Ultimately, only the variables that are statistically significant remain (Edlund 1997). Both a manually-created and a stastistically computed by SPSS backwards regression have been conducted. This has been done since there are risks associated with using the SPSS stastically computed model (Edlund 1997).

The second regression model only includes the significant variables from the last step in the backwards regression. This regression is built on the SPSS enter method, which is used to complement the backwards model and to certify the statistical reliability of the findings, as described by Edlund (1997).

5.4.2 Adjustments of the collected data

Concerning the collection of financial ratios, there are large differences in how firms present their financial statements. When calculating the ratios some assumptions have been made, as presented below:

- Numbers for the accounting period (whole year) prior to the IPO have been used. When using closest the 12 months' figures the substantial amount of interest income from the IPO is not included. This is intuitive since interest income does not reflect the future growth potential of the firm. The choice of using these book values from the prospectuses is consistent with Kim and Ritter (1999).

- Foreign currencies have been recalculated to SEK using the currency rate of the last day of the period reported.[10]

- All financial ratios were calculated using the consolidated financial statements. Therefore, minority interest is included in all ratios.

[10] The financial information for Rezidor Hotel Group and Oriflame were converted from EURO into SEK.

Earlier IPO studies have adjusted for extreme values that disproportionally influence the sample. In Firth and Smith (1992) discrepancies in the dataset were driven by a few extreme observations and removing these resulted in a considerable improvement in the forecasting accuracy. Financial ratios can be extreme for several reasons and adjustments in the sample have been made with reference to Skogsvik (2002). Values outside five standard deviations from the mean have been replaced with the closest non-extreme value in the sample. A similar approach to Skogsvik (2002) has been used since accounting based financial ratios rarely are normally distributed but rather U-, J- or skewed. The usage of five standard deviations is an appropriate proxy for not risking to interpret too many values as extreme. The choice of replacing the extreme values by the closest non-extreme observation in that group is done since excluding the variable would reduce an already limited sample as suggested in Skogsvik (2002). The number of adjusted observations for each ratio is summarized in Exhibit 5.3.

	Missing Values	(%) Total Sample	Extreme Values	(%) Total Sample*
InA/TaA	0	0%	1	2.04%
ROA	0	0%	2	4.08%
ROE	0	0%	1	2.04%
EBITGrowth	2	4.08%	4	8.51%
D/E	0	0%	1	2.04%
EPSGrowth	2	4.08%	4	8.51%
EBITMargin	0	0%	1	2.04%
NetProfit	0	0%	1	2.04%
SalesGrowth	2	4.08%	0	0%
P/S	0	0%	3	6.12%

EXHIBIT 5.3. *The table illustrates the number of missing values for each financial ratios and the number of extreme observations that have been adjusted. All observations that have been outside 5 standard deviations of the mean of a population has been adjusted to the closest non-extreme value in that population.*
**The percentage of adjusted values in a given group has been calculated considering the missing values to illustrate the proportion of extreme values among those that can be used in the regression:*
% of extreme values for financial ratio $_i$ *= (Extreme Value* $_i$*)/(Total Sample* $_i$ *- Missing Value* $_i$*)*

Some former IPO studies have adjusted for the inflation in their samples (Klein, 1996). The only monetary variable in the sample is a control variable (issue proceeds) and the study covers a short time period, with a relatively low inflation rate. For these reasons an adjustment has not been considered to be necessary.

Consistent with Kim et al. (1995), the variable issue proceeds, which is a monetary value has been transformed using the natural logarithm in order to reduce the effect of heterogeneity. EPS and Cash Flow for the firm were made to dummy variables in order to increase the comparability to a study made by Ritter and Welch (2002).

Price-to-sales were calculated using the mid of the offer spread. This approach is used since former studies suggest that the midpoint price can be viewed as an unbiased proxy for the issue price (Loughran and Ritter 2002, Hanley 2003).

6. Results

In this section the results that have been found in the study are presented in three main steps. Firstly, the outcome of the principal component analysis is presented. This is followed by setting up a preliminary regression model. Then, the significant findings from the first model were tested again in a second model to ensure the statistical reliability of the regression results. The outcome of the regressions will be the basis for determining whether the null hypothesis can be rejected and if financial ratios can explain first day returns.

6.1 Principal component analysis

When extracting the relevant components in order to reduce the number of variables, the Kaiser-Meier-Olkin-measure (KMO) has been used to determine whether the principal component analysis is appropriate. The KMO measure in the study was 0.61, which can be interpreted as a satisfactory result.[11] The principal component analysis excludes a whole observation if one financial ratio is missing for a company. In total, two firms were excluded due to missing data.[12]

The results of the principal component analysis are presented below in Exhibit 6.1. In *Component 1,* the correlation is high for profitability measures, such as ROE, EBIT and Net Profit but has the highest correlation for ROA. *Component 2* has a significant correlation for growth measures such as Sales growth and EBIT growth. *Component 3* has a negative correlation with Intangible Assets-to-Tangible Assets. Pursuant to Skogsvik (2002) each measure with the highest absolute correlation was chosen to be used in the regression. A more detailed description about how the principal component analysis has been conducted can be read about in Appendix A1.

Components	1	2	3
InA/TaA	-0.11	-0.12	**-0.66**
ROA	**0.89**	0.00	-0.19
ROE	0.72	-0.13	-0.17
EBITGrowth	0.65	-0.74	-0.05
D/E	-0.11	-0.62	0.44
EPSGrowth	-0.18	-0.10	0.59
EBITMargin	0.74	-0.65	-0.02
NetProfit	0.84	-0.09	0.23
SalesGrowth	-0.14	**0.85**	0.24

EXHIBIT 6.1. *Rotated Components with the Direct Oblimin Method. A more detailed explanation of how the principal component analysis was conducted can be read about in Appendix A1.*

[11] The KMO measure should range between 0.5-1. Where KMO≥0.9 is "marvelous", 0.8≤KMO<0.90 is "meritious" 0.7≤KMO<0.80 is "middling", 0.6≤KMO<0.70 is "mediocre", 0.6≤KMO<0.50 is "miserable" and KMO<0.5 is unacceptable (Skogsvik 2002).

[12] The firms excluded in the principal component analysis were Diös Fastigheter AB and Mind AB. This was done since they lacked growth variables as they only had one year of operating history.

The bivariate correlations were tested between the financial ratios taken from each component in the factor analysis. No significant correlations could be established as can be seen in Exhibit 6.2. Hence, all the financial ratios from the factor analysis have been included in the regression model.

		ROA	InA/TaA	SalesGrowth
ROA	Corr.	1	0.04	-0.089
	Sig.		0.80	0.55
InA/TaA	Corr.	0.04	1	-0.090
	Sig.	0.80		0.55
SalesGrowth	Corr.	-0.089	-0.090	1
	Sig.	0.55	0.55	

EXHIBIT 6.2. *Pearson Bivariate Correlations between the chosen financial ratios showing no significant correlations between the variables.*

6.2 Regression models to test the hypothesis

The factor analysis showed that *ROA, SalesGrowth* and *InA/TaA* explained most of the variance of the tested financial ratios. They will therefore be used in the regression model along with the other variables presented in Exhibit 5.2. Since there were many variables included in study and that the number of observations was limited, two regressions models have used. *Regression 1* include all the variables investigated. *Regression 2* only tests the variables that were found to be statistically significant in *Regression 1*. This procedure was done to ensure the statistical reliability of the first regression. The primary regresssion is presented below. An explaination of how each measure is used in the regression can be seen in Exhibit 5.2, as earlier illustrated.

$$FDR_i = \alpha_i + \beta_1 \times ROA_i + \beta_2 \times InA/TaA_i + \beta_3 \times SalesGrowth \quad \textbf{(Regression 1)}$$

$$+ \beta_4 \times EPS_i + \beta_5 \times CF_i + \beta_6 \times P/S_i$$

$$+ \beta_7 \times IS_i + \beta_8 \times AGE_i + \beta_9 \times OLD_i + \beta_{10} \times PrevPlan_i + \beta_{11} \times Commit_i + \beta_{12} \times OMX_i + \varepsilon_i$$

where

FDR_i: *An estimate of the expected value of the dependent variable, first day returns*

ROA_i ; InA/TaA_i ; $SalesGrowth_i$: *Independent financial ratios derived from the factor analysis*

EPS_i ; CF_i: *Independent financial dummy variables*

P/S_i ; IS_i ; AGE_i ; OLD_i ; $PrevPlan_i$; $Commit_i$; OMX_i : *Independent control variables*

ε_i : *Error term*

A summary of the coefficients of *Regression 1* are presented in Exhibit 6.3. The regression shows that the only significant variables are the prior market performance, owners selling their old shares and if EPS was positive or negative the year prior the IPO. The regression has an adjusted R^2 of 0.288[13]. This can be interpreted as that it explains 28.8 percent of the variance of the first day returns.

The outcome shows that a negative EPS the year prior to the IPO is associated with a higher first day return. This is consistent with Ritter and Welch (2002) and our hypothesis that the first day returns will be higher when financial ratios are unfavourable. The market performance fifteen days prior the IPO listing date is positively related to the first day return. Similar to the findings of Loughran and Ritter (2002), this indicates that a positive prior market performance yields higher first day returns. Also, firms that are selling out their old shares have a higher degree of underpricing. This finding is intuitive since the previous owners selling their shares signals that they rather hold money than the shares in the firm, which increases the investor uncertainty.

Step		B (unstand)	Std. Error	Beta (stand)	t	Sig.
1	Intercept	-0.27	0.44	-	-0.61	0.55
	IS	0.02	0.02	0.12	0.66	0.52
	OLD	0.14	0.08	0.30	1.62	0.11
	AGE	0.02	0.06	0.06	0.36	0.72
	PrevPlan	0.00	0.07	-0.01	-0.03	0.98
	Commit	0.08	0.06	0.20	1.29	0.21
	OMX	1.77	0.50	0.51	3.53	0.00
	P/S	0.00	0.00	-0.07	-0.35	0.73
	EPS	-0.15	0.08	-0.39	-1.80	0.08
	CF	-0.01	0.07	-0.03	-0.17	0.87
	InA/TaA	0.00	0.01	0.11	0.64	0.53
	ROA	0.06	0.09	0.14	0.68	0.50
	SalesGrowth	-0.02	0.03	-0.10	-0.64	0.53
9	Intercept	-0.02	0.07	-	-0.38	0.71
	OLD	0.18	0.06	0.40	2.80	0.01
	Commit	0.05	0.05	0.14	1.08	0.29
	OMX	1.73	0.45	0.49	3.88	0.00
	EPS	-0.09	0.05	-0.25	-1.74	0.09
10	Intercept	0.02	0.05	-	0.34	0.73
	OLD	0.18	0.06	0.40	2.76	0.01
	OMX	1.68	0.44	0.48	3.78	0.00
	EPS	-0.10	0.05	-0.28	-1.93	0.06

EXHIBIT 6.3. *An illustration of the backwards (SPSS statistics) regression model. As can be seen, 10 steps have been conducted until only the statistically significant variables remain. The final step 10 shows that only three variables are statistically significant. The final regression has an adjusted R^2 of 0.288. The SPSS statistical method is solely presented since the same result was obtained with the manually created regression.*

[13] The adjusted R^2 is used instead of R^2 since it takes the sample size and the number of independent variables into account (degrees of freedom). This certifies that not an artificially high value is achieved because of the many independent variables in the model (Malhotra 2004).

According to Garson (2009b) the nominal significance level in each step in the backwards regression could be subject to inflation. Therefore could the real significance level in the last step be higher than the observed. To further verify the findings of the first regression, an additional regression has been set up, including the three significant variables from the first regression as presented below. Instead of using a backwards regression, the enter method has been used.

$$FDR_i = \alpha_i + \beta_1 \times EPS_i + \beta_2 \times OLD_i + \beta_3 \times OMX_i + \varepsilon_i \qquad \textbf{(Regression 2)}$$

where

FDR_i: An estimate of the expected value of the dependent variable, first day returns

EPS_i: Independent financial dummy variable

OLD_i: OMX_i : Independent control variables

ε_i: Error term

The results in *Regression 2* show that only *OMX* and *OLD* are statistically significant at a five percent significance level. The outcome of the regresssion is summarized in Exhibit 6.4. The regression has an adjusted R^2 of 0.247. This can be interpreted as that it explains 24.7 percent of the variance of the first day returns.

Since *EPS* is non-significant, it is not possible to reject the null-hypothesis. It shows that the financial ratios not are able to explain the first day returns. The difficulty in projecting the first day returns using financial ratios is supported in some previous studies, which will be discussed further in the analysis.

Before initiating the analysis of the findings, statistical tests have been needed to verify that the regression models are statistically reliable. In addition to this, some tests of the robustness of the findings have been conducted. These tests are needed to further ensure the statistical reliability of the models that have been applied in the study.

	B (unstand)	Std. Error	Beta (stand)	t	Sig.
Intercept	0.03	0.05	-	0.49	0.63
OLD	0.12	0.06	0.29	2.11	0.04
OMX	1.53	0.42	0.46	3.68	0.00
EPS	-0.06	0.05	-0.16	-1.18	0.24

EXHIBIT 6.4. *The second regression model, where EPS is excluded as a result of its high p-value. Regression 2 gives an adjusted R^2 of 0.247.*

7. Testing the Regression Model

The regressions have shown that it is not possible to reject the null hypothesis. In other words, the financial ratios tested are not able to explain first day returns. Before this result can be analyzed, some statistical tests are needed to verify that the results are statistically reliable. There are many econometric problems related to a multiple regression such as non-normal and heteroscedastic residuals and multicollinearity. Non-normal residuals have already been adjusted for since absolute numbers have been transformed by the natural logarithm. Both heteroscedasticity and multicollinearity will be examined in the next section. This has been complemented with several robustness tests that have been made in order to ensure the statistical reliability of the study.

7.1 Heteroscedasticity

To ensure that the results are reliable, the regression models have been tested. A problem with the data exists is if the variance is dissimilar among the error terms. In the regression, it is assumed that the variance of the residual error terms is constant for all values of the independent variable. This is referred to as the regression being homoscedastic. This must be true in order for the regression to be reliable. Hence, White's general heteroscedasticity test will be used to examine if there might be heteroscedasticity in the dataset. The methods in this section have been made in accordance with Gujarati (2003).

H_0: the variance of the error term is homoscedastic
H_1: the variance of the error term is not homoscedastic

When running the test, the residuals, $\hat{u}_i$ and their squared residuals, $\hat{u}_i^2$ are saved. The squared residuals are used as the dependent variable in the test. The independent variables are as seen below, consisting of the variables used in *Regression* 2, their squared values and their cross products.[14]

$$\hat{u}_i^2 = \alpha_1 + \alpha_2 \times OMX + \alpha_3 \times OLD + \alpha_4 \times EPS + \alpha_5 \times OMX^2 + \alpha_6 \times (OMX \times OLD)$$

$$+ \alpha_7 \times (OMX \times EPS) + \alpha_8 \times (EPS \times OLD) + v_i$$

The obtained R^2 from this test is multiplied with the sample size (n) to obtain the asymptotically followed χ^2_{obs}. χ^2_{df} is the critical value with degrees of freedom (df) equal to the number of coefficients, excluding the constant in the regression.

Decision rule: Reject H_0 if $\chi^2_{obs} > \chi^2_{df}$

The 5 % critical value for the χ^2_{df} is 14.067. The value of χ^2_{obs} (R^2*n) equals 31.703, which is larger than χ^2_{df}. It means that there is support that the null hypothesis can be rejected. In other words, there is evidence of heteroscedasticity found in the data according to White's test. This could mean that the results from *Regression 2* not are statistically reliable.

[14] The squared values of the dummy variables are excluded since these are perfectly correlated with the original dummy variables

Patterns of heteroscedasticity can also be studied graphically. This has been done by plotting the unstandardized residuals against the independent variable. As can be seen in Exhibit 7.1, there are no tendencies of heteroscedasticity seen in the graphical pattern.

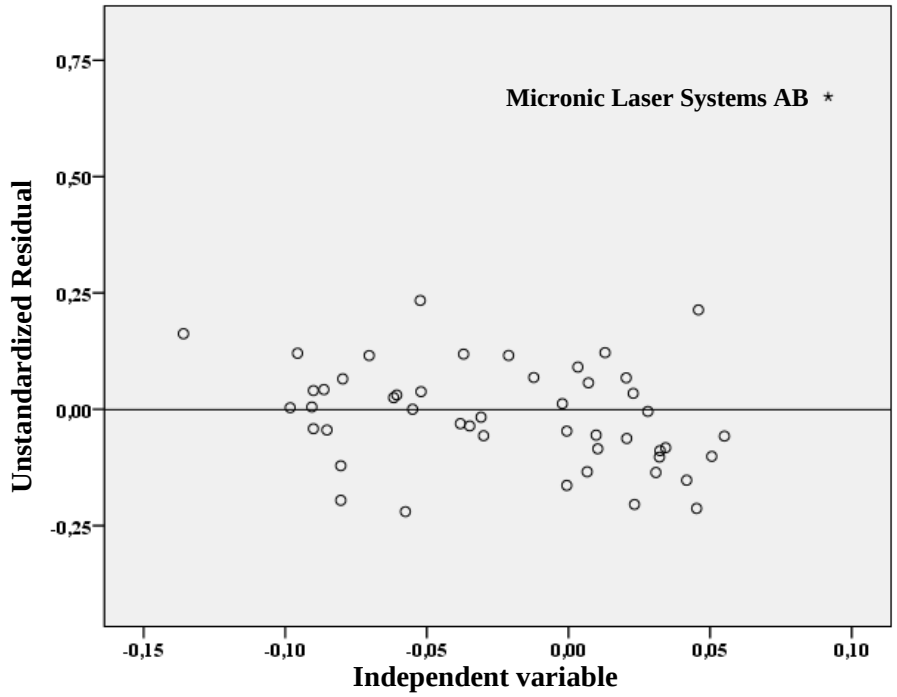

EXHIBIT 7.1. *Above one can observe the unstandardized residual plotted against the independent x-variable. As can be seen one outlier is clearly visible in the sample.*

The presence of outliers, especially in small samples, can substantially alter the results of the regression model (Gujarati 2003). In the scatterplot one outlier can be found, Micronic Laser Systems AB, having a first day return of 95%. Its' influence on the model will be further discussed in Section 7.3.1. An adjustment for this outlier was made according to the same procedure that was used in Section 4.2.1. It has therefore been set to the closest non-extreme value. Re-doing White's test after having adjusted for this extreme observation, χ^2_{obs} equals 6.664. Hence, the null hypothesis cannot be rejected on a five percent significance level. According to White's test, it cannot be rejected that the data is homoscedastic after having adjusted for the outlier. This implies that the regressions are statistically reliable. Before this can concluded some additional tests for multicollinearity and outliers have been conducted.

7.2 Multicollinearity

There are several methods to ensure that there is no collinearity between the independent variables. The methods and decision rules that have been applied when testing for multicollinearity are specified in accordance with Edlund (1997). Three methods have been used to test the collinearity between the independent variables.

1) The bivariate correlations between the variables were tested where a correlation larger than $|0.5|$ is an indicator of collinearity. All the correlations were below this value and according to the Pearson bivariate correlations no collinearity could be detected. The partial correlations were also tested and did not show any sign of collinearity.

2) The variance-inflating factor (VIF) has also been used to test for multicollinearity. A high VIF is a sign of multicollinearity. If there is no collinearity between two independent variables VIF will be 1. A general rule of thumb for deciding whether there is collinearity between the variables is VIF>10. The independent variables all have VIF values ranging between 1.002-1.167 indicating that there is no collinearity between the variables.

3) A third method that has been used is the condition index, defined as:
$CI = (Maximum\ Eigenvalue / Minimum\ Eigenvalue)^{0,5}$

The larger the quotient is between the maximum and the minimum eigenvalue the greater is the indicator of multicollinearity. A rule of thumb is that multicollinearity exists if 10<CI<30 and there is strong collinearity if the CI>30. The largest CI in the observation is 5.195, indicating that there is no collinearity among the independent variables according to the condition index.

In summary, there is strong evidence that no multicollinearity exists between the independent variables in *Regression 2*.

7.3 Robustness of the findings

To verify the robustness of the findings, three statistical tests have been conducted. Firstly, Cook's Distance and DfBeta have been used to verify the data for outliers. Secondly, the event window has been extended to five days to confirm that the same results are found as when using the first day return is used as the dependent variable. Lastly, it has been tested if the same results are obtained when the abnormal first day returns are used. This has been done by adjusting the first day returns by the market index.

7.3.1 Outliers

By using Cook's Distance, one can determine how influential observations are in the model. The measure gives the effect on the residuals for all other observations if excluding a certain observation. According to Cook's Distance, a strong indicator of an outlier is D > 1 (Garson 2009b). One outlier could be identified in the sample, with a distance of 1.241 and it can be observed in Exhibit 7.2. The extreme observation was Micronic Laser Systems AB, generating a first day return of 95%. The observation was checked for and deemed correct, but since this observation was judged to be influential according to Cook's D and also defined as an outlier in the heteroscedasticity test, it was adjusted according to the same procedure as the independent variables.

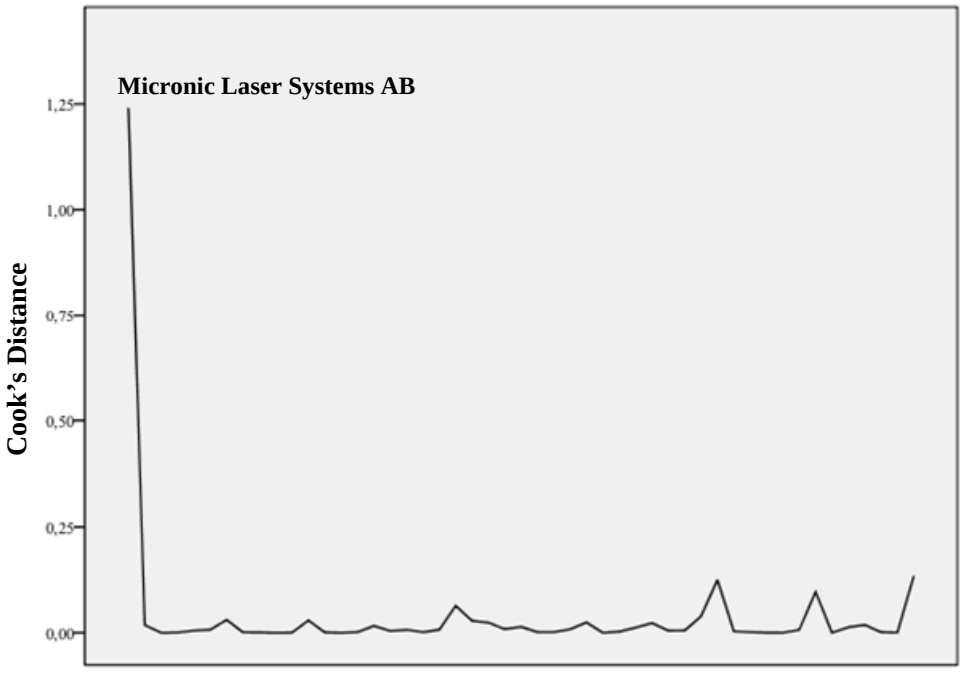

EXHIBIT 7.2. *The graph shows the results obtained from testing the sample for Cook's Distance. As can be seen, one outlier has been found in the data set, Micronic Laser Systems AB.*

To verify the findings in Cook's Distance test, DfBeta has also been calculated. DfBeta measures the change in the Beta coefficient when an observation is excluded. An observation is considered to be an influential outlier when $|DfBeta| > 2/\sqrt{(n)}$ (Garson 2009b). The DfBeta (change in beta) for OMX is 0.658 when excluding Micronic Laser Systems AB, which is judged to be influential since $DfBeta = 0.658 > 0.286 = 2/\sqrt{(n)}$. This also supports the adjustment of Micronic Laser Systems AB.

Several tests have now indicated that Micronic Laser Systems AB is an influential outlier. Henceforth, the regressions will be adjusted for this observation by setting its' first day return to the closest non-extreme value in the sample. To verify that the results from *Regression 1* and *Regression 2* still hold, these regressions have been repeated after having adjusted for Micronic Laser Systems AB.

7.3.2 Regressions excluding the outlier

When repeating the regressions after having adjusted for the outlier, the null hypothesis can still not be rejected. In other words, the financial ratios can still not be found to explain the first day returns. The adjusted *Regression 2* has a slightly lower adjusted R^2 of 0.235. A summary of the regression results can be found in Appendix A2.

To further ensure that the regression results are robust, two additional tests will be conducted on the sample. Firstly, an extension of the event window will be made to five days. Secondly, the first day returns will be adjusted for the market index.

7.3.3 Extending the event window

There is a trade-off between using first day returns or a longer event window as the dependent variable (Klein 1996). When using the first day returns, there is risk that the observations are affected by immediate institutional stabilization activities[15]. If the event window instead is extended, there could be information reflected in the market price that has been revealed after the IPO, creating noise, which could make the relationship more difficult to study.

To ensure the robustness of the earlier results, the five days returns will be used as the dependent variable. This is done to ensure that the first day returns have not been affected by some other factors, such as immediate institutional stabilization activities. In the sample there is a downward adjustment found in the average market prices between first and the fifth trading day. This could indicate that the dependent variable, first day return, could be a noisy estimator of the market clearing price. This could make the relationship more to difficult to study since many other factors could be influencing the first day of trading (Klein 1996).

When *Regression 1* is repeated using the five day returns as the dependent variable, the null hypothesis can still not be rejected. A summary of the regression results can be found in Appendix A3.

7.3.3 Using abnormal return as the dependent variable

The regression models have shown that the prior market performance have a statistically significant influence on first day returns. Since the beta value for the prior market performance was shown to be high in the regressions, this variable could be rather influential. It will therefore be tested whether abnormal returns, the first day returns adjusted for the market index, will show the same statistical result as when using the first day returns.

To enable this investigation, all firms in the sample are assumed to have a beta of one, perfectly following the market movements. This assumption is questionable since the betas among the studied firms are likely to be very different, varying both among the industries and among the firms. An alternative method would be to try to estimate the betas of the firms. The latter method is however seen as inferior since no reliable beta estimates can be obtained as the firms not have been previously listed. Since the former measure previously has been commented on in Beatty and Ritter (1986) it has therefore been seen as the better alternative. The dependent variable, abnormal first day returns, will therefore be defined as follows.

$$AFDR_i = (\text{Closing Bid Price}_i - \text{Issue Price}_i)/\text{Issue price}_i - (\text{Market Index}_1 - \text{Market Index}_0)/\text{Market Index}_0$$

where

$AFDR_i$: *First day returns adjusted for the market index*

$(\text{Market Index}_1 - \text{Market Index}_0)$: *Difference between the closing and the opening price of the market index*

[15] This could include that the underwriter purchases or sells shares to stabilize the market price (Klein 1996).

When *Regression 1* is repeated, using the abnormal first day return as the dependent variable, the null hypothesis can still not be rejected. A summary of the regression results can be found in Appendix A4.

Several robustness tests have now shown that the null hypothesis still not can be rejected. Consistent with *Regression 1* and *Regression 2,* the prior market returns and selling old shares are the only statistically significant variables. In other words, no major differences have been observed in the robustness tests compared to the initial regressions. Hence, the findings made in *Regression 1* and *Regression 2* are considered to show enough statistical robustness to be able to analyze the relationship between the financial ratios and the first day returns.

8. Analysis

In this section the findings from the regressions will be further discussed and evaluated with reference to earlier literature and research. Before starting to analyze the findings in more detail, some general remarks regarding the findings are presented.

As has been shown in the results section, no significant relationship could be established between financial ratios and first day returns. The quick conclusion would be to reject that the financial ratios can explain the first day returns in the studied sample. Nevertheless, the results are elaborate and require further analysis as there could be several factors influencing the findings. The analysis is divided into three sections discussing the results: the underwriter process, the ambiguity of financial ratios and the role of the institutional investors.

8.1 The IPO process

As earlier described, the IPO process is quite extensive and the financial information only constitutes one part of the information available to the investors. Merely the prospectuses hold much other information regarding operational history, future orders, sales estimates, management qualities and several other factors that could affect the investor perception of the company. Other sources that could be used to inform the investor include press releases, the firm website, earlier publications as well as investor meetings. These could all be alternative methods to bridge the information asymmetry between the issuers and the investors. In summary, the IPO listing process includes an extensive range of information to set the issue price, where accounting data is solely one part. This could be one explanation to the irrelevance of financial ratios for explaining first day returns.

It is also feasible that firms knowing that their financial information is unfavourable will be more prone to reduce the investor ex ante uncertainty using other sources, as earlier described. One such example could be young growth firms with negative earnings and cash flows. These firms could instead increase their usage of press releases, qualitative descriptions in the prospectuses as well as communicating information about upcoming sales agreements or patents to reduce the investor ex ante uncertainty. As earlier shown in Habid and Ljungqvist (2001), there is a one-to-one cost of substitution between giving a premium to investors by underpricing and marketing costs. Marketing efforts may therefore have been used as an alternative measure to reduce investor ex ante uncertainty. In other words, given the comprehensive bookbuilding process, it could be argued that financial ratios not are relevant for explaining first day returns since there are several other factors that could be used to overcome this problem.

The extent to which the investors use the financial information might also be a result of whether this information is assumed to reflect the actual company performance. The relevance of using financial ratios to determine the performance of a young firm, with negative earnings and cash flows, compared to an older firm, are likely to be very different. In the former case, the investors might neglect the financial data and instead look at other information such as patents and future sales prospects to determine the future performance of the firm. In other words, it is plausible that the importance of using other information sources is greater if there is a higher degree of ex ante uncertainty associated with the financial ratios.

In summary, it is reasonable that financial ratios are irrelevant for explaining first day returns since it is just one of many other alternative methods that can be applied to reduce the investor ex ante uncertainty. These interpretations are in line with White et al. (2003) who emphasize that while financial information is an effective way to communicate information, it is still only one of many sources that could be used to bridge information uncertainties. However, it should be noted that it is not possible to reject that the financial ratios can influence the investor perception of the firm. It has only been argued that the financial ratios cannot explain first day returns because it solely constitutes one of the many sources that could be used to reduce information asymmetries between the issuer and the investors.

8.2 Ambiguity of financial ratios

A second explanation can be found in the complexity of financial ratios. As shown in White et al. (2003), financial ratios often vary greatly over firm maturity stages and industries. Kim and Ritter (1999) have also shown that there can be wide variations in multiples, such as P/E and P/Sales, for young firms even within an industry. This suggests that it may be very difficult to capture any relationship between a single ratio and first day returns. Also, the different industries decrease the comparability of the financial ratios in the studied sample. As mentioned earlier, studying the financial ratios in a single industry would have been preferable as was made by Skogsvik (2002) and also by Rasheed et al. (1997).

Moreover, an individual measure only captures one part of the firm performance. In other words, the effect of a single variable may be of too little importance to have any significant impact on the investor ex ante uncertainty. While one financial ratio may signal financial strength, there could be several other ratios reflecting a poor financial performance. Hence, it can be argued that a single ratio not is able to capture enough information about the firm performance to reflect any impact on the investor ex ante uncertainty.

One other factor contributing to the complexity of the ratios is the possible non-linearity between some financial ratios and the investor ex ante uncertainty. The debt-to-equity ratio could be a good example of this non-linear relationship. As indicated in Garfinkel (1993), the existence of debt can decrease the uncertainty since it makes the firm more credible. This is consistent with the *Pecking-Order-Theory,* suggesting that equity financing should be made after possible debt infusion in a firm. Having no debt could therefore signal a lower firm quality as shown by Grinblatt and Titman (2002). Yet, Rasheed et al. (1997) found a negative relationship between high leverage, measured as D/E, in a firm and a high ex-ante uncertainty, which resulted in a negative impact on the issue price. As argued in Grinblatt and Titman (2002), there could be an optimum debt-to-equity level, where taking on debt decreases the ex ante investor uncertainty until a given point from where any additional debt has a negative impact on investor uncertainty. This ambiguity is hard to establish in a regression model.

It has also been argued by Kim and Ritter (1999) that historical earnings are noicy estimators of true economic earnings. The choice of converting two ratios to dummy variables was an attempt to reduce the problems of non-linearity, noisy observations and extreme observations in order to increase the reliability of the study. Nevertheless, neither the financial ratios nor the financial dummy variables did have any significant relationship with first day returns.

As argued above, it is questionable if an individual financial ratio by itself can reflect an enough proportion of the firm risk. It is likely that a single measure only may capture a fraction of the whole firm performance. The impact of a single measure may therefore be too small to be able to explain first day returns. In summary, this section has shown that the overall variability of financial ratios and their ability to only capture a fraction of the information about the firm are two plausible explanations to why no direct relationship has been found in the studied sample.

8.3 Institutional investors

A third factor that could explain the outcome is the relatively high degree of institutional investors on the Stockholm OMX Stock Exchange. In the theories of asymmetric information there are two types of investors: informed and uninformed. As previously mentioned, institutional investors often have higher a potential to collect information directly from the issuer and the underwriter. Therefore, a large institutional investor might be able to attain other valuable information that could make the financial ratios irrelevant. Larger investors are also likely to use forecasting models that incorporate much other information than the historical financial information provided in the prospectus, as has been argued in US business press (Klein 1996). Therefore, it is probable that the financial ratios are of little importance to this investor group. In others words, due to the investor climate on the studied market exchange, it is possible that a smaller underprice would be needed to compensate the investors for the ex ante uncertainty.

Benveniste and Spindt (1989) argue that informed investors also tend to help the underwriters to set the issue price from offer spread. A good investment opportunity could then be given as compensation to the investors by not incorporating all information in the issue price. As has been argued, a close collaboration between the investors and the issuers enables the investors to attain valuable information about the firm at a relatively low cost. Hence, the financial ratios may have very little influence on the investor ex ante uncertainty. The underpricing found in the sample could simply be a result of the investors being compensated for the *private information* provided to the underwriters regarding the market demand for the issue. It should be noted that this simply is an interpretation based on former theories and research and much more detailed studies are needed to confirm these findings.

9. Conclusion

The aim of this study has been to examine whether financial ratios can explain first day returns. Opposite to what was expected, the results show that the individual financial ratios used in the study cannot predict first day returns. In the analysis several interpretations have been provided in order to explain why financial ratios do not have any significant impact on the first day returns. The discussion has identified three main reasons: the many other sources that could be used to bridge the information asymmetries, the ambiguity of financial ratios and the high degree of institutional investors on the studied market exchange. Two notably strong theories are that the financial ratios only constitute a fraction of the information available in the IPO process and that the high variation in the financial ratios could make them noisy estimators of the firm performance. Collectively, they form a plausible explanation for the outcome of the study.

9.1 Inference and generalizability

It is questionable what conclusions that can be made from these findings and what implications the results could have on other populations. As earlier described, the study has been conducted on firms that have made an IPO on the Stockholm OMX Stock Exchange during the period 2000-2008. The delimitations in terms of the period studied and the selected stock exchange were made to ensure a higher degree of comparability among the firms by isolating other factors that could impact on the results. For these reasons the results are not considered to be representative for other time periods or stock exchanges, neither Swedish nor international.

There are two main reasons for this. Firstly, the firms in the studied sample could differ much in size and age compared to the other stock exchanges. As shown in Loughran and Ritter (2004), age and size may be important proxies for risk, which could have implications on the studied sample compared to other populations. Differences in the regulations compared to other the stock exchanges could also have impacted on the findings. Secondly, there are significant differences in the IPO processes on the studied exchange compared to the other market places. Another reason is that smaller firms generally do not go through an equally extensive pricing process, using a professional underwriter. As argued in the analysis, there are indications that the underwriter role and its close collaboration with the institutional investors has been one of the factors influencing the degree of investor ex ante uncertainty. The market places are also likely to differ in the proportion of institutional investors.

The possibility to generalize the findings, in other words applying them on other populations and time periods, is considered to be limited. It should also be noted that the study only tests a limited range of financial ratios and therefore only can reject that the studied variables are not able to explain the first day returns. Despite that the variables were chosen from a wide range of previous research and literature, the authors find that the results cannot be fully generalized to hold for other financial ratios. Yet, there are relevant points made in the analysis indicating that it is difficult to explain first day returns using individual financial ratios. Nevertheless, further studies are needed to confirm these interpretations.

The study has also been restricted to a given time period that is characterized by a certain macroeconomic climate and also investor preferences, such as risk aversion. For this reason, the study could be difficult to replicate with the same results on another time period. The dataset is also limited to a certain stock exchange, with the all the implications related to this, as earlier discussed. Therefore, it is not considered to be possible to generalize the findings on other time periods.

Despite having some implications on other populations, the conclusion that can be made from the results of the study is the following: *the tested financial ratios have not been able to explain the first day returns in the investigated sample.*

9.2 Reliability

The possibility to repeat the study with the same results is considered to be high. The methods used are to a great extent based on former studies and the assumptions made are clearly described in the study. Any relevant deviations from the original studies have been illustrated. The data collected has been controlled several times for errors and the authors find the empirical material to be of good quality. The treatment of extreme values has been thoroughly described and should be relatively easy to replicate.

9.3 Validity

Whether the study actually measures its' intended purpose could be discussed as there could be factors, both assumptions made by the authors and other external factors, affecting the investigated relationship. The theories and methodologies used in the study are to large extent based on former research made on IPOs. Since the focus in this thesis has been to investigate how well financial ratios could explain the first day return, some extensions to previous IPO research have been made to include a larger set of financial ratios. These ratios have been chosen with reference to general accounting literature. The study was complemented with a principal component analysis to ensure that the selection of the financial ratios was objective. The inclusion of the factor analysis is considered to be an advantage and uniqueness compared to earlier studies since it evaluates the financial ratios that are most suitable to apply on the studied sample. The methodology in the study has attempted to capture the impact of financial ratios by referring to their impact on first day returns. The authors find the ratios applied in the investigation in general to be valid for testing this relationship. Nevertheless, there are some areas of the study that could be further extended and this will be discussed below.

It can be questioned whether the event window used is able to fully capture the topic investigated. As shown in the descriptive statistics, there is a systematic downward adjustment between the first and five day returns[16]. In the study it has been assumed that the efficient market hypothesis holds, in other words that any mispricing of the IPO should be reflected in the first day returns. In reality, this may not always be the case. It has been shown in earlier literature that several other factors could influence the first day returns. This could create noise that complicates the studied relationship. This was one of the reasons to extend the event window when testing the robustness of the regression. The five day returns could on the other hand be affected by information revealed after the IPO issue. Yet, if considering that both regressions showed the same results, the authors are rather confident that the event window chosen has covered enough of the relationship between the financial ratios and the first day returns to make some valid conclusions regarding the studied sample.

The financial ratios used in the study have been based on data up to three years prior the IPO. When investors make evaluations of IPOs, they may look at financial data covering a longer period than what has been used in the study. One example showing this is the growth measures that have been based on three years of data. This could be a too short time period to reflect the relevant growth of the firm. In addition to this, a short time period also makes the growth measure sensitive to extreme observations. Even though the decision to use the most recent time period is aligned with previous research, the application of a longer period could possibly give different results.

Although there is support in this study that individual financial ratios are not able to explain first day returns, it is in the authors' view that it is not possible to fully reject that financial ratios could have a possible effect on the first day return.

[16] The average return on the first day of trading was 5.66%, while the average return of the five day period was 3.52%.

10. Suggestions to further research

The results of the study indicate that individual financial ratios are not able to predict the first day returns of IPOs. The outcome of the study therefore implies that there should be other explanatory factors affecting the underpricing. However, it would be interesting to conduct similar tests on other time periods to verify that the same results can be obtained. Likewise testing the same set of financial ratios on other markets exchanges would be highly relevant to be able to support the findings made in the study.

Earlier IPO literature has focused on studying the impact of individual financial variables. This study has been made in accordance to this scope of research, in order to ensure the validity as well as the comparability to earlier research. An extension to the former research is the factor analysis, which adds additional depth and statistical strength to the relationship studied. The inclusion of the principal component analysis is seen an advantage to earlier IPO literature since the factor analysis selects the most relevant measures to include in the regression model. For future research it is therefore suggested that a similar factor analysis should be conducted. An interesting expansion of the factor analysis would be to include a greater set of variables. This was not possible in the study due to the limited number of IPOs made on the studied market exchange. It would therefore be valuable to make a more exhaustive factor analysis.

As discussed in the analysis, there are many problems related to the variability of financial ratios. Alike former IPO studies this investigation was made across all industries. Some of the variations in the studied sample could be a result from differences among industries and this could have an impact on the study. It would therefore be valuable to isolate this effect by studying a single industry. This would though require a larger IPO sample than can be found on the Swedish markets.

It has been argued that there could be a non-linear relationship between some financial ratios and the ex ante uncertainty. Additionally it has been suggested that single financial ratios might not be able to capture enough information about the firm performance. A suggestion to future research would therefore be to broaden the field of research, concerning how financial information in general is applied when investigating first day returns. An interesting expansion in the field of IPO research could be to establish a model that collectively weighs several financial rations into one index. By combining a set of ratios into one model, a more accurate method to measure the risk of the firm could perhaps be achieved. One such attempt could be to use a multivariate model such as Altman's Z-Score, a measure of the bankruptcy risk of a firm, and test whether it could have an explanatory power on the first day returns.

In summary, it can be said that the study complements earlier findings in the IPO literature, while making an extension to the investigated field by including a larger set of ratios and by applying a factor analysis. The investigation has been able to conclude that the individual financial ratios included in the study could not be found to predict first day returns. It also demonstrates that a shift in the way research in the IPO field is conducted could lead to a greater understanding of how financial ratios can impact on the ex ante uncertainty of the investors. While the study has shown that no significant relationship could be found in the investigated sample, the authors' belief is that more research is needed in this field as there are yet interesting topics to be explored.

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11.2 Interviews

Sigfrid, A., ABG Sundal Collier, 2009-03-24

Vindevåg, L., Former Head of Business Development at the Stockholm OMX Stock Exchange, 2009-03-10

11.3 Prospectuses

Firm name	Date of listing
Micronic Laser Systems AB	2000-03-09
Tele1 Europe Holding AB	2000-03-16
JC AB	2000-04-19
Mekonomen AB	2000-05-29
Viking Telecom AB	2000-05-30
Scandinavia Online AB	2000-06-07
Mind AB	2000-06-13
Telia AB	2000-06-13
AU-System AB	2000-06-21
Axis AB	2000-06-27
PyroSequencing AB	2000-06-30
Jobline International AB	2000-09-15
AudioDev AB	2000-09-21
Netwise AB	2000-09-28
Eniro AB	2000-10-10
ORC Software AB	2000-10-19
NeoNet AB	2000-10-20
Dimension AB	2001-02-20
Carnegie & Co AB	2001-06-01
BTS Group AB	2001-06-06
Bioinvent International AB	2001-06-12
Retail and Brands AB	2001-06-26
Vitrolife AB	2001-06-26
Alfa Laval AB	2002-05-17
Intrum Justitia AB	2002-06-07
Ballingslöv AB	2002-06-19
Nobia AB	2002-06-19
Oriflame Cosmetics S.A.	2004-03-24
NOTE AB	2004-06-23
Indutrade AB	2005-10-05
Hemtex AB	2005-10-06
TradeDoubler AB	2005-11-08
Orexo AB	2005-11-09
Hakon Invest AB	2005-12-08
KappAhl Holding AB	2006-02-23
Gant Company AB	2006-03-28
Diös Fastigheter AB	2006-05-22
Biovitrum AB	2006-09-15
BE Group AB	2006-11-24
Rezidor Hotel Group AB	2006-11-28
Lindab International AB	2006-12-01
LinkMed AB	2006-12-12
Tilgin AB	2006-12-15
Nederman Holding AB	2007-05-16
Aerocrine AB	2007-06-15
Systemair AB	2007-10-12
HMS Networks AB	2007-10-19
Duni AB	2007-11-14
DGC One AB	2008-06-16

12. Appendices

APPENDIX A1 – The Principal Component Analysis

In the principal component analysis, the dependent variable is left out and only the relation between the independent variables is taken into account. According to Malhotra (2004) there should be at least four times as many observations as there are variables in the factor analysis. In the sample this number is 5.22, which is within the limit suggested by Malhotra (2004).

In the principal component analysis, components with an eigenvalue[17] greater or equal to 1 were extracted. The eigenvalue for each factor should be larger than 1, describing that it is then contributing to the explanation of the variance in the chosen components (Malhotra 2004). The number of extracted components in the analysis was 3. These accounted for 67.63% of the variation in the total sample (cumulative variance).

The extraction communalities, estimates of the variance in each variable accounted for by the components, were high. This indicates that the extracted components represent the variables well. To determine which variables that each component represents, the components are rotated. According to Skogsvik (2002), the rotation method Direct Oblimin is the most appropriate since it allows the components to be correlated with each other. However, another method called the Varimax[18] has an easy interpretability of the factors (Garson 2009a). Both the procedures were conducted, and resulted in the same chosen variables for each component. Therefore, only the Rotated Structure Matrix according to Direct Oblimin has been presented in the study, in Exhibit A1.

Components	1	2	3
InA/TaA	-0.11	-0.12	**-0.66**
ROA	**0.89**	0.00	-0.19
ROE	0.72	-0.13	-0.17
EBITGrowth	0.65	-0.74	-0.05
D/E	-0.11	-0.62	0.44
EPSGrowth	-0.18	-0.10	0.59
EBITMargin	0.74	-0.65	-0.02
NetProfit	0.84	-0.09	0.23
SalesGrowth	-0.14	**0.85**	0.24

EXHIBIT A1. *Rotated Components with the Direct Oblimin Method.*

Preferably, the components should grasp a group of correlated measures to form a descriptive group of measure as in Skogsvik (2002) and other non-descriptive measures should have a correlation close to 0. Though, in Skogsvik (2002) one descriptive dimension was occasionally explained by several components. The variables that capture the largest part of the variance in each component have been included in the regression model, as suggested by Malhotra (2004).

[17] The eigenvalue for a given component describes the variance of all variables for that component.

[18] The Direct Oblimin is a non-orthogonal (oblique) procedure, setting the delta-value at 0 as a maximum correlation of the components. This will give higher eigenvalues. The Varimax procedure is the most common and an orthogonal method minimizing the number of variables with high loadings on a factor (Garson 2009a).

APPENDIX A2 – Regression 1 and Regression 2 Re-Examined

		B (unstand)	Std. Error	Beta (stand)	t	Sig.
1	Intercept	-0.26	0.30	-	-0.85	0.40
	IS	0.01	0.02	0.12	0.63	0.53
	OLD	0.10	0.06	0.32	1.67	0.10
	AGE	0.04	0.04	0.18	1.01	0.32
	PrevPlan	0.03	0.05	0.11	0.59	0.56
	Commit	0.06	0.04	0.22	1.40	0.17
	OMX	1.13	0.34	0.47	3.29	0.00
	P/S	0.00	0.00	0.04	0.20	0.85
	EPS	-0.06	0.06	-0.24	-1.11	0.28
	CF	0.01	0.05	0.04	0.20	0.84
	InA/TaA	0.00	0.00	0.15	0.90	0.37
	ROA	0.02	0.06	0.06	0.27	0.79
	SalesGrowth	0.00	0.02	0.02	0.10	0.92
10	Intercept	0.00	0.04	-	-0.05	0.96
	OLD	0.12	0.05	0.38	2.58	0.01
	OMX	1.06	0.31	0.44	3.38	0.00
	EPS	-0.04	0.04	-0.15	-1.03	0.31
11	Intercept	-0.01	0.04	-	-0.30	0.77
	OLD	0.09	0.04	0.31	2.38	0.02
	OMX	1.06	0.31	0.44	3.38	0.00

EXHIBIT A2.1. *The table shows the results obtained after having adjusted for the outlier. Notable is that no financial ratios are significant in the new regression. The adjusted* R^2 *is 0.235.*

	B (unstand)	Std. Error	Beta (stand)	t	Sig.
Intercept	0.00	0.04	-	0.03	0.98
OLD	0.09	0.04	0.29	2.15	0.04
OMX	1.05	0.29	0.45	3.55	0.00

EXHIBIT A2.2. *When adjusting for the outlier, the adjusted* R^2 *of Regression 2 is the same as for Regression 1, 0.235. Both OLD and OMX are still significant.*

APPENDIX A3 – Extending the Event Window to Five Days

		B (unstand)	Std. Error	Beta (stand)	t	Sig.
1	Intercept	-0.31	0.35	-	-0.88	0.39
	IS	0.01	0.02	0.13	0.65	0.52
	OLD	0.07	0.07	0.22	1.12	0.27
	AGE	0.02	0.05	0.07	0.34	0.73
	PrevPlan	0.06	0.05	0.20	1.02	0.31
	Commit	0.06	0.05	0.21	1.25	0.22
	OMX	1.19	0.40	0.45	2.98	0.01
	P/S	0.00	0.00	0.04	0.18	0.86
	EPS	-0.02	0.07	-0.07	-0.32	0.75
	CF	-0.01	0.06	-0.05	-0.26	0.80
	InA/TaA	0.01	0.01	0.22	1.24	0.22
	ROA	0.03	0.07	0.09	0.38	0.70
	SalesGrowth	0.00	0.02	-0.03	-0.18	0.86
10	Intercept	-0.03	0.04	-	-0.73	0.47
	OLD	0.09	0.05	0.28	2.07	0.05
	OMX	1.11	0.36	0.42	3.10	0.00
	InA/TaA	0.00	0.00	0.14	0.99	0.33
11	Intercept	-0.02	0.04	-	-0.54	0.59
	OLD	0.09	0.05	0.28	2.08	0.04
	OMX	1.06	0.36	0.40	2.98	0.01

EXHIBIT A3. *The table shows the results obtained when using the five day returns as the dependent variable. No financial ratios are significant in the regression. Notable is that EPS is exluded earlier in the regresssion. The adjusted* R^2 *is 0.235.*

APPENDIX A4 – Using Abnormal Return as the Dependent Variable

		B (unstand)	Std. Error	Beta (stand)	t	Sig.
1	Intercept	-0.33	0.30		-1.09	0.28
	IS	0.01	0.02	0.15	0.86	0.40
	AGE	0.10	0.06	0.34	1.84	0.07
	OLD	0.05	0.04	0.20	1.11	0.28
	PrevPlan	0.03	0.05	0.11	0.58	0.56
	Commit	0.06	0.04	0.24	1.57	0.13
	OMX	1.13	0.34	0.47	3.33	0.00
	P/S	0.00	0.00	0.01	0.07	0.95
	EPS	-0.07	0.06	-0.26	-1.24	0.22
	CF	0.00	0.05	0.01	0.04	0.97
	InA/TaA	0.00	0.00	0.16	0.99	0.33
	ROA	0.01	0.06	0.04	0.17	0.86
	SalesGrowth	0.00	0.02	-0.02	-0.11	0.92
10	Intercept	0.00	0.04		-0.11	0.92
	OLD	0.13	0.05	0.42	2.83	0.01
	OMX	1.07	0.31	0.44	3.41	0.00
	EPS	-0.04	0.04	-0.17	-1.17	0.25
11	Intercept	-0.01	0.04		-0.39	0.70
	OLD	0.10	0.04	0.33	2.57	0.01
	OMX	1.06	0.31	0.44	3.39	0.00

EXHIBIT A4. *The table shows the results obtained when using the abnormal first day returns as the dependent variable. No financial ratios are significant in the regression. Notable is that EPS is exluded earlier in the regresssion. The adjusted* R^2 *is 0.247.*