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IPO UNDERPRICING AND ABNORMAL RETURNS ON NASDAQ STOCKHOLM

Bachelor's thesis

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I hereby declare that I have compiled the thesis independently
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has not been previously presented for grading.

The document length is 8542 words from the introduction to the end of the conclusion.

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ABSTRACT

The objective of this research is to investigate the specific characteristics of Initial Public Offering (IPO) underpricing and abnormal returns in the context of Nasdaq Stockholm. The methods used is a multiple linear regression model with undepricing as dependent variable and age, market capitalization, equity raised, profit margin, assets and a dummy variable as the independent variable.

In the empirical research outlined in this thesis, the first day initial returns will be studied to assess underpricing among IPO companies listed on Nasdaq Stockholm spanning the period from 2015 to 2023. Furthermore, the thesis will seek into the post-IPO performance of these companies, specifically the Buy-And Hold Abnormal Returns (BHAR) will be examined alongside with the linear regression analyses.

The research questions equipped for this thesis are:
1. Was there IPO underpricing observed on Nasdaq Stockholm during 2015-2023?
2. What factors contribute to IPO underpricing in the Nasdaq Stockholm market? How do the characteristics of IPO firms influence the extent of underpricing?
3. What is the level of abnormal returns experienced by IPOs on Nasdaq Stockholm?

Underpricing occurs on Nasdaq Stockholm spanning from year 2015 to 2023. The average level of undepricing ended up to 14,2%. The total amount of IPOs in the sample was 83, and the highest level of underpricing occurred in the financial sector. The variables that resulted in statistically significant results was the dummy variable (financials sector), the profit margin, and market capitalization. Furthermore, the thesis did not find similar results for the BHAR, as the previous empirical research did. Mainly, the IPO companies outperformed the OMXSPI index for the 12 month period.

Keywords: IPO, underpricing, Nasdaq Stockholm

INTRODUCTION

Companies that are seeking growth and opportunities often turn to Initial Public Offerings (IPOs), to get access to implement growth plans and use the proceeds from the listing. IPOs offer growth seeking companies' tremendous advantages over debt financing, such as no repayment obligations and interest payments (Ritter & Ibbotson, 1995). Still, there are costs and other aspects that companies face, when going public or seeking to go through the IPO process. The concept of IPO underpricing refers to the increase from the offer price, typically calculated for the first trading day (Ljungqvist, 2007). The reasons for the underpricing are discussed in this thesis. Furthermore, the performance of the IPO companies will also be examined. The study prevails to the Nasdaq Stockholm exchange spanning the years 2015 to 2023. The time period was chosen based on the number of IPOs, to create a reliable sample for valid empirical results. Similar studies have been conducted in Sweden by Ritter & Ibbotson (1995) for instance, but there is a need for more empirical research with recent data and samples.

The objective of the research is to investigate the specific characteristics of IPO underpricing and abnormal returns in the context of Nasdaq Stockholm. This research aims to address the following key research questions:

1. Was there IPO underpricing observed on Nasdaq Stockholm during 2015-2023?
2. What factors contribute to IPO underpricing in the Nasdaq Stockholm market? How do the characteristics of IPO firms influence the extent of underpricing?
3. What is the level of abnormal returns experienced by IPOs on Nasdaq Stockholm.

The outline of the thesis is the following. After the introduction the theoretical framework will be reviewed, theories and previous studies related to IPO underpricing and performance will be presented. Then, hypothesises for the research is formulated and the critical variables are selected. The empirical part of the thesis will follow the theoretical section. In the empirical section, first the methodology including data collection and formulas will be presented. Then, the descriptive statistics and linear regression analysis will be presented for the IPO underpricing. Finally, the results will be evaluated based on BHAR returns for the IPO companies.

1. THEORETICAL FRAMEWORK

In this section different types of concepts and theories related to IPOs, underpricing and performance of IPOs are covered. Theories related to underpricing include Efficient Market hypothesis, Asymmetric information theory, the Winners Curse theory, IPO waves as well as theory of Hot issues market. Additionally, the section will explore the listing process that apply in Sweden, alongside the examination of the variables and hypothesis development.

1.1. Initial Public Offering (IPO)

Companies usually have ambitions to grow and expand to new markets and in that way grow their business. At some point companies might need more capital to achieve their growth strategies. In simple terms, companies have two options to get access to capital: either to take debt (debt financing), or they can sell shares to the public (an Initial Public Offering, also known as going public). Taking debt is considered an internal way of financing, and raising equity is an external way, respectively. When a company goes public it allows many different investors to buy shares for that company. The IPO process is considered to have more favourable terms than other methods for getting hands on equity. The main reason why the terms are more favourable compared to debt financing, is that equity is not required to be repaid, however, companies can pay dividends to its shareholders at a later stage (Geddes, 2003).

Ritter and Ibbotson (1995) argue that there are costs associated with IPOs that need to be taken into consideration. These costs that Ritter & Ibbotson refer to are divided into direct costs and indirect costs. Costs to legal firms, auditing firms and for investment banks who do the underwriting itself. Indirect costs are more intangible associated to management time and costs that are lost due to underpricing (Ritter & Ibbotson, 1995).

There are also disadvantages with Initial Public Offerings, Khurshed (2019), points out that the IPO process may lead to issues for the company. Namely, the management is faced with concerns regarding transparency. Moreover, a new board strucure will have more obligations at a later stage if the company decides to go public. As previously mentioned, there are costs associated with going public; the total costs associated with an IPO could be around 11% of the total funds. The large costs are more crucial for smaller IPOs as those that raise above 35 million in funds pay just 4% costs of the IPO (Khurshed, 2019).

According to Krushed, the largst disadvantage of going public is the structure of the management, as the management is not united with the owners anymore, which might result in interests of conflicts (Khurshed, 2019).

IPO underpricing, which is at the heart of this thesis, refers to the phenomenon of when a company has decided to go public, and their shares are being traded for the first time. In case of underpricing, the first day initial return is above the offer price, the price in which it was sold in the beginning. As the Efficient Market Hypothesis (EMH) states, all the information for the parties in a transaction should be available, and will reflect immediately on the price, and that non-public information should not be possessed by anyone (Malkiel, 2003)

This raise a question; Why does IPO underpricing occur? In a study conducted by Ritter & Ibbotson (1995), it was found that in Sweden, the average initial returns were 39%. Similarly, during the period from 1970 to 1991, with a sample size of 213. Additionally, the study revealed that underpricing was a common phenomenon across all countries examined in the study.

1.2. Theories of underpricing and long-term performance

The EMH intended by Eugene Fama in 1970 indicates that financial markets are efficient in reflecting all available information in the share price. This makes it difficult for investors to over time outperform the market through strategies concerning timing and selecting of stocks. This is relevant to IPO underpricing as Fama states that in an efficient market all available information including stock prices and other data fully reflects on the stock performance and respective prices of the stocks (Fama, 1970).

Asymmetric information refers to the non-public information that occurs on the market. This phenomenon may lead to undepricing of IPOs when relevant information in the transaction is not available for the public. Some parties in a transaction within asymmetric information possess better information than the other, gaining an advantage in the transaction (Löfgren *et al*, 2002).

Authors Cheung & Kinsky (1994) refer in their article that there are several theories explaining undepricing in connection to IPOs. These theories state that information asymmetry has a significant role in the level of IPO underpricing. The definition of information asymmetry refers to higher management being better informed than other investors that invests their money in IPO companies. Less informed investors do not have all the knowledge that should be available on the market; thus, the benefit they receive is more limited (Cheung & Kinsky, 1994).

Rock (1986) introduced the Winners curse theory where he underscored the significance of investor behaviour in the context of underpriced IPOs. According to the Winner's curse theory, certain investors are better informed than the others and possess an advantage when requesting access to stocks when they know them to be underpriced (Lee *et al*, 1990). Within the market framework, a contrast is drawn between uninformed and informed investors. Therefore Rock´s (1986) theory points out that there is asymmetric information which accelerates the level of underpricing of IPOs. Hence, better informed investors gain a greater advantage. Ritter (1998) further expands the concept of the Winner´s curse theory. He suggest that investors that may possess better quality information, are less likely to accept large disbursements of shares. The reason being, that they acknowledge the risks associated within the theory (Ritter, 1998).

Continuing the discussion of the Winner´s curse theory, Thaler (1988) highlights in his research, that rational decision making among all participants is not a prerequisite for the occurrence of the

winner's curse phenomenon. Despite the fundamental challenges associated with acting rationally in such scenarios, Thaler's study suggests that the dynamics of IPOs, characterized by high investor demand for shares in a new company, inevitably result in a situation where not all participants can obtain their desired allocation of shares.

The "cursed" investors in such a situation are the ones that end up with a bad deal due to their optimism and might end up with shares of a company that is overpriced (Thaler, 1988). Also, the importance of accurate valuation methods is crucial to mitigate the negative effects of the winner's curse (Ritter & Welch, 2002). The connection between the Winners curse theory and IPO underpricing and abnormal returns lies in the aftermath of the winner´s curse. The investors who are the victims of overvalued IPOs due to lack of information may experience lower returns or even losses as the market corrects for the initial overpricing. On the other hand, the investors that understand the Winner´s curse behaviour have a better chance of making smart decision and earning greater returns.

When a company intends to undertake an IPO, it typically engages with various investment banks, which in turn reach out to potential investors, both domestically and international (Binay *et al*, 2007). If the company generates significant attention during the pre-IPO phase, there is a possibility of oversubscription. This is particularly observed within tech companies that has high growth potential (Helwege & Liang, 2004). The Hot issues theory or *hot issues market* is related to the concept of high volumes of IPOs (Ritter, 1998). This theory is highly associated with the phenomenon of high expected initial returns of the issue of the new shares, also denoted as "hot issues". Ritter´s (1998) findings indicate that the post-IPO performance of a company is influenced by the occurrence of a hot issues market.

Ritters first study of the Hot issues market dates back to 1984, where he explored the hot issues market of 1980, in the context of initial public offerings. Ritter examined the IPO market, focusing on the activity in the aftermarket. The study further explains the role of the underwriter in the hot issues market theory in the context of underpricing, where the underwriter tends to allocate different shares to different investors who are believed to offer the most profitable opportunities for aftermarket trading, which further explains the hot issues market (Ritter, 1984).

An underwriter in a transaction is often referred to as an investment banking analyst of an investment bank. The services of investment banks are typically called as underwriting services that they provide. Investment banks due to an extensive network are able to offer better quality services for the client, including assistance in different parts of the transaction process (Logue *et al*, 2002)

Furthermore, Ibbotson & Jaffe in 1975 defines the hot issues market as a period where the returns of the first month is abnormally high, which is followed by a hot market with many IPOs (Ibbotson & Jaffe, 1975). According to Lowry & Schwert (2002) there is a strong correlation between high initial returns and hot markets.

The IPO volume from 1960-1982 is illustrated in Figure 1. As Ritter analysed the hot issues market in 1980, the peaks of 1961, 1969 and 1981 represent periods of hot issues.
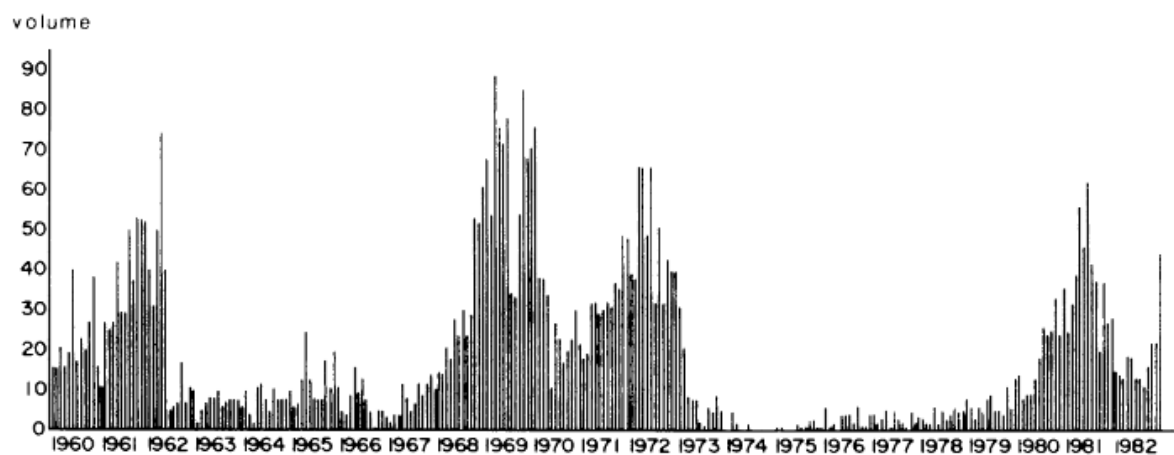
Figure 1: Hot issues market of 1980
Source: Ritter (1984)

In 2003 He (2007) introduced the IPO waves-theory. IPO waves indicate times when there are continuous intervals characterized by a sustained high volume of initial public offerings. Hot markets and cold markets can also be called as IPO waves. Hot markets are periods of exceptional high volume of IPOs, which result in a high level of underpricing, and cold markets are characterized by less volume of IPOs which in turn result in lower levels of underpricing (He, 2007).

This idea results in IPO waves, why are there more IPOs in some years and a few years later much less. Pástor and Veronesi (2005) argue that the reason behind the big fluctuations in the volume of IPOs and why the waves occur, is due to the opportunities that comes along with the investment. The corner stone of the investment opportunity according to Pastor and Veronesi (2005) is the model used in the valuation process of the stock. IPO waves occurs due to the demand changes in capital om the market, changes in investor sentiments and conditions on stock markets over time. The main reason being macroeconomic factors affecting IPO activity (Blum, 2011).

The theory by Ping He again discusses the role of the investment banks and market conditions in creating IPO waves of "hot" and "cold" activity. The theory suggests that during hot periods, poor information quality allows even low-quality companies to go public which leads to high volumes of IPOs and higher volumes of initial returns (He, 2007).

1.3. The listing process on Nasdaq Stockholm

In Sweden, stock exchanges are categorized into two main types: nonregulated markets and regulated markets. Among the regulated marketplaces in Sweden, the focus of this thesis lies on the Nasdaq Stockholm stock exchange, commonly referred to as Nasdaq or Stockholm stock exchange (Judge, 2012). Additionally, there exist smaller trading platforms, namely First North, NGM Nordic MTF, and Spotlight, where regulatory requirements are comparatively less strict. (Avanza, 2024).

The listing process begins with the decision of the company to go public, whereafter they acquire a financial advisor typically from an investment bank. This advisor guides the company in meeting various prerequisites, including legal and tax reviews, auditing procedures, internal control assessments, and takeover agreements (Stockholmsbörsen, 2024). Subsequently, upon the initial engagement with a financial adviser, the company meets with Nasdaq representatives where they present the company and intentions on going public. During this interaction, the exchange appoints an auditor, tasked with ensuring the company´s compliance with Nasdaq´s requirements. The auditor conducts an analysis of the company´s management and leadership culture to ascertain their alignment with Nasdaq´s standards of conduct and ethics.

Due diligence is a detailed analysis of company documents and financial statements. Auditing reports, analysis and interviews are conducted in the process of due diligence to avoid unwanted surprises in the future (Howson, 2017). The legal adviser does due diligence and analysis of the company, the analysis is done with a focus on risk and tax standpoint so that relevant documents are reliable and available for the public when the IPO takes place *(Rules & Regulations – Nasdaq Stockholm Stockholmbörsen, 2024)*.

If the company is not part of the Euroclear program, the application needs to be done. Euroclear is founded by JP Morgan & Co in 1968. It is a system responsible for the exchange of capital between parties in Europe, especially securities between two or more parties (Dinne, 1992)

Prior to the submission of the prospectuses to the Swedish Authority of Financial Supervision "Finansinspektionen", the chosen investment bank undertakes the valuation of the company, which determines whether the IPO will involve a new issuance of shares or not. The Authority of Financial Supervision has a pre-determined period of 20 days to evaluate and approve the IPO.

Until the acceptance of the Nasdaq exchange, the public represented mostly by investors can express interest in the IPO and participate in the acquisition of new shares. With the completion of the share's issuance process on Nasdaq, the company is officially listed for trading on the exchange place *(Rules & Regulations – Nasdaq Stockholm Stockholmbörsen, 2024)*.

1.4. Previous studies of IPO underpricing and long-term performance

IPO underpricing has been previously studied by many researchers. Ibbotson (1975) was one of the first to study IPOs and research on how they develop. He investigated stocks that were first offered to the public between 1960 and 1969. His research found that those IPOs tended to be underpriced at an average level of 11,4%, suggesting that they were priced lower than they should have been.

Following Ibbotson's study, Ritter followed the studying in 1991, that examined 1526 IPOs in the United States from 1975 to 1984. His research concluded that these IPOs had an average initial return of 16,4%, suggesting again that they were priced lower than they should have been. His study also introduced the theory of hot issues phenomenon, were companies go public during times of high market activity (Ritter, 1991). Previous researchers have also studied whether there may be correlation between age and underpricing of IPOs. Loughran & Ritter in 2004 found that older companies tend to be less underpriced compared to other companies. This phenomenon could be attributed to factors such as uncertainty surrounding newer companies and the longer established performance track record associated with older firms. Furthermore, older companies may be more stable and easier to value, potentially influencing the extent of underpricing observed in the IPO. Another reason for the tendency of older companies to experience lower levels of underpricing in IPOs could be attributed to the greater availability of information (Loughran & Ritter, 2004).

Market capitalization has also been studied before. Market capitalization is another measure of company size where the outstanding shares is multiplied by the price of the stock, giving information of the value of a company's outstanding shares. Ritter has also studied the market capitalizations effect on underpricing, which shows similar results to the study made in 2004 by Loughran & Ritter. The study suggests that an IPO with lower market capitalization tend to experience a higher level of underpricing compared to companies with larger market capitalization. Similarly, Ritter´s study underscores the significance of equity raised, referring to the amount of capital raised by the issuing firm though the IPO process.

The relationship between profitability and IPO underpricing will be also studied in this thesis. Companies that tend to not be underpriced, in other words overpriced experience also lower profit margins and lower sales. In other words, underpriced companies tend to have higher profit margins compared to their peers, but in turn have lower growth rates for the future (Purnanandam & Swaminathan, 2004). A study conducted between the profit margin as an independent variable and underpricing as the dependent, revealed that examining ratios instead of historical earnings refelct on more accutate findings. In the study made in 1999 by Kim&Ritter, it was found that the relationship based on financial ratios tend to experience a large number of variability, due to fluctations in market demand and different startegies for investment banks (Kim & Ritter, 1999).

Until this time, underpricing had only been studied in the short term, meaning the first days after the Initial Public Offering, Ritter also came up with findings of long-term average returns of 34,74% over the three years. This showcases that IPOs tend to be overvalued in the long run as the index over the same period was 61,8%. Long term performance will also be analysed in this study, with the only difference that the period will be up to 12 months and not three years. Following Ritter (1991) study, Loughran & Ritter (1995) together studied the long-term performance more, whether investors are over optimistic of IPOs or not. Their study included 4573 IPOs between and 1990 over a five-year period, as Ritter (1991) found in his study, they also came to the conclusions that IPOs underperformed in the long-term compared to the other companies. Finally, the study showed that they have an annual return of five percent, while other companies have an average annual return of 12 percent (Loughran & Ritter, 1995).

1.5. Variables and hypothesis development

This section will provide the variables for the thesis. The role of the variables and how affect the results in the analysis part is presented in chapter 3.2. Starting with the linear regression analysis, the dependent variable for the regression will be the level of underpricing of the IPO companies on Nasdaq Stockholm from 2015-2023. The level of underpricing and how it is calculated is presented in chapter 2.2. As independent variables for the linear regression analysis six different metrics will be included. Namely, the company age, equity raised, industry, market cap, financial assets before the offering, and profit margin will be regressed to the level of underpricing. The data for the variables have been taken from Refinitiv Eikon, as well as from company prospectuses. A dummy variable will be used in the regression analysis to represent the financials industry. The dummy variable will have a value of 1 and the other variables will have the value of 0. Dummy variables are used if there are categorical variables in the regression analysis.

The choice of these specific independent variables is highlighted by their influence on the level of underpricing observed with the IPO companies. Company age for instance reflect on the maturity and stability of the issuing company, which is followed by perceptions of investors towards the company. Company age is calculated in the following way.

$$Age = Year\ of\ IPO - Founding\ year \tag{1}$$

The company long-term performance will be compared to the OMXPSI index during the 1-year period. The OMXSPI index includes all the shares on the Nasdaq Stockholm index in Sweden, being relevant to use it as a benchmark as the thesis focuses on IPOs on the same exchange. The long-term performance in the context of this thesis is set at one year, and the intervals are 1,2,3,6 and 12 months. This time frame is considered to be long enough to make conclusions based on performance in the empirical analysis.

The research problem sets a stage for investigating the specific aspects of IPO underpricing and long-term abnormal returns in the context of Nasdaq Stockholm. Outlining the objectives and the scope of the study while highlighting its potential contributions to the existing literature. Furthermore, the hypothesises presented in this thesis is formulated based on previous theoretical and empirical research in the field of IPO underpricing and long-term abnormal returns.

By investigating whether Nasdaq Stockholm IPOs during 2015-2023 experience underpricing, this hypothesis aims to understand how the companies perform during the first trading day and investor behaviour in this specific context. Therefore, the first hypothesis regarding IPO underpricing is:

> H1: There is no significant level of underpricing observed in IPOS during 2015-2023 on Nasdaq Stockholm

The appeal of IPOs lies in the diversity among companies, where each entity has its unique characteristics. Even when IPOs occur simultaneously, it is uncommon for their end results to be identical or even similar. This diversity in outcomes can be attributed to numerous different factors (Khurshed, 2019; Geddes, 2003). For instance, younger companies tend to be more underpriced compared to older companies, same trend tends to occur for companies with lower market capitalization (Loughran & Ritter, 2004; Ritter, 1999). Additionally, industry factors and the amount of equity raised may also impact on underpricing based on findings from study made by Ritter in 1991. Therefore, the second hypothesis on IPO underpricing seeks to identify different caused of underpricing based on previous literature and empirical research. The second hypothesis is:

> H2: Independent variables, such as market capitalization, total assets, age of the company, profit margin, dummy variable and equity raised impact underpricing on Nasdaq Stockholm.

Previous studies on IPOs have found trends where investors experience abnormal returns in the short run (Loughran & Ritter, 1995). Despite short term abnormal returns, in a previous study made by Loughran & Ritter in 1991 they found that IPOs underperformed the index by 27%. This hypothesis aims to assess the competitiveness of Initial Public Offering market to the other companies that are already on the OMXSPI market, which the index follows. Therefore, the third hypothesis regarding IPO long term performance is:

> H3: Nasdaq Stockholm IPO: s significantly underperforms the OMXSPI index in the long term.

2. DATA AND METHODOLOGY

This chapter presents the data and methodology used in this thesis. The data and methodologies are used to conduct the empirical analysis. The data collection section provides detailed information on from where and how the data was collected from. Methodology in turn focuses on formulas and analysis techniques used in the thesis.

2.1. Data collection and sample

In the empirical study outlined within this thesis, the samples of the IPO companies have been collected from the Refinitiv Eikon Database (*Eikon*, 2024). The companies are selected from the period between 2015 and 2023. Between these years, the number of IPOs has been extremely high (19 IPOs in 2021) and extremely low (two IPOs in 2022). The time period selected for this study is determined by the need for a sufficiently large sample size for the thesis. In addition, the analysis covers the pre-COVID years, which further makes the time period relevant for this thesis.

Furthermore, to broaden the analysis, relevant functions were used in Eikon to gather additional data and variables, enhancing the depth and breadth of empirical investigation. This approach ensured the acquisition of a comprehensive dataset, enabling a thorough examination of factors influencing IPO underpricing and long-term performance. Additionally, for analysing the long-term performance of the IPO companies, daily returns of the companies were also gathered from the database to record the significance of benchmarking against the market performance. Moreover, data related to the OMXSPI benchmark index were also collected. Namely, closing prices of the index from 2015 through 2023 were transformed to daily percentual stock value changes, which in turn was used to evaluate long-term performance of IPO companies in Nasdaq Stockholm from 2015 to 2023.

Refinitiv Eikon, previously named Thomson Reuter is a leading platform within data and news. For instance, it provides detailed information about companies going public, making it a valuable tool for this thesis as it allows to delve deep into the world of IPOs and to analyse them thoroughly. Company prospectuses has also been used in the database to find information.

The following criteria was used to obtain the final sample.

- Dates: Issue date from 2015 to 2023.
- IPOs are in Sweden and on Nasdaq Stockholm Exchange.
- Transaction status is live.
- There is enough data available on Eikon for the regression analysis and long-term performance (up to 12 months).

The filter applied within Refinitiv Eikon enabled the extraction of a dataset comprising 83 companies that underwent transactions within the scope of 2015 to 2023. These companies were engaged in live transaction on Nasdaq Stockholm and had a substantial amount of data available for the objectives outlined in the thesis. Specifically, the dataset included crucial information such as the date for the IPOs, industries of the companies and the offer price as well as the closing price at the end of the first day of trading day to calculate the underpricing.

Moreover, independent variables crucial for the analysis were taken from Refinitiv Eikon, such as total assets before offering, company age, industry classification and market capitalization. Following this process in Refinitiv Eikon, the data was exported to Excel to further process an in-depth analysis.

The first Sample of IPOs that was extracted from Eikon totalled in 98 IPOs. Some adjustment to the sample were made due to wrong transactions statuses and not enough sufficient data; therefore, therefore the final sample consist of 83 companies.

2.2. Methodology

Underpricing in an IPO is often calculated as the difference between the offer price and the price at which the stock is trading after the first day of trading. The offer price is the price in which the different stakeholders in the IPO process has agreed on. In other words, it can be described as the price at which the stock is being sold at to the public. For instance, if the offer price of the IPO is 10, and the closing price of the stock at the end of the first trading day is 15, then the IPO has been underpriced and the level of underpricing is 50%. In this thesis and generally, underpricing is calculated with the formula:

$$Underpricing = \frac{Closing\ Price\ of\ The\ First\ Trading\ Day - Offer\ Price}{Offer\ Price} * 100\% \qquad (2)$$

The underpricing will be calculated separately for each IPO company. The results will be later used in the linear regression analysis to examine whether the relevant independent variables influence the level of underpricing.

Regression analysis is used for identifying which variables have impact on the underpricing. The regression analysis will include all the variables presented in section 1.5. For purposes of the regression, the logarithmic values will be used in the model to normalize the values which makes them suitable to use in the linear regression analysis. In table 1. it can be seen that the values for variables equity raised, total assets before offering and market capitalization are extremely high. The logarithmic values reduce the skewness and makes the regression model more accurate. The formula for the linear regression for the variables within the context for this thesis is as follows.

$Underpricing = \beta0 + \beta1 \text{ x Company Age} + \beta2 \text{ x Equity Raised} +$
$\beta3 \text{ x Market Capitalization} + \beta4 \text{ x Financial Assets Before the Offering} +$
$\beta5 \text{ x Profit Margin} + \beta6 \text{ x Industry Dummy} + \epsilon \qquad (3)$

where

$\beta0, \beta01, \beta2, \beta3, \beta4, \beta5, \beta6 -$ Present the intercept for company age, equity raised, market cap, financial assets before the offering, Profit margin and industry dummy variable.
$\epsilon - $ - represents the error term.

The linear regression analysis will describe the relationship between underpricing and the independent variables, from where the hypothesis can be either be accepted or rejected (Brooks, 2019). To further the analysis for the thesis, the long term performance will be similarly analysed.

Long-term performance is analysed using the Buy-and Hold Abnormal return (BHAR) that is compared to the OMXSPI index. BHAR is a suitable measure for performance with long term horizons, especially when compared to a benchmark asset (Dutta *et al*, 2015). Finally, from the BHAR, the cumulative BHAR will be examined to analyse the data. The long-term abnormal return is calculated as the BHAR and cumulative BHAR as the formulas below.

$$BHAR_{t,IPO} = Return_{t,IPO} - BenchmarkReturn_t \qquad (4)$$
where
$BHAR_{t,IPO} -$ Is Buy-and-Hold Abnormal Return for IPO at time t
$Return_{t,IPO} -$ Is the return of the IPO at time t
$BenchmarkReturn_t \_$ is benchmark return at time t

$$\text{Cumulative BHAR} = \sum t = 1T(ReturnIPO, t - ReturnIndex, t) \qquad (5)$$
where
$ReturnIPO, t=$ represents the return of the IPO company at time t
$ReturnIndex, t =$ represents the return of the OMXSPI index at time t.
$T=$ represent the number of time periods for which returns are calculated.

For the hypothesis testing, the p-value, or the significance level will be used to reject or accept the hypothesises. The p-value will reject the null hypothesis based on the size of the test, which is 5%, or alpha 0,05. The null hypothesis is rejected if the p-value of the test is higher than our alpha.

In the empirical part, the thesis will use p values as a method of rejecting or accepting hypothesises. For instance, this statistical formula is used for the first hypothesis, where the null hypothesis is expected to be zero. The t stat value in the thesis has been calculated to get the p value as follows:

$$T - Stat = \frac{Mean - Null\ Hypthesis\ Value}{Standard\ Error} \qquad (6)$$
where
$Mean -$ is the sample mean of the variable.
$Null\ Hypthesis\ Value -$ is zero. As the hypothesis expects underpricing to be zero.
$Standard\ Error -$ is the standard error of the mean.

When the t statistics value has been calculated the p-value can be determined with the help of the t statistics value.

In the empirical research conducted in this thesis, a correlation matrix has been conducted to see if there´s high correlation between the variables. High correlation between the variables could have

adverse effect on the linear regression analysis. A variance Inflation Factor (VIF) is a measure of the amount of correlation between multiple independent variables in a regression model. The VIF between the independent variables will be calculated (Mansfield & Helms 1982):

$$VIFj = \frac{1}{1-R2} \tag{7}$$

where
VIF $-$ Variance Inflaiton Factor
$R2 -$ is the square of the correlation coefficient.

A VIF value of >5 indicates that the independent variable has multicollinearity with the other variable, and is therefore not eligible for the linear regression model. A VIF of 5< is satisfactory and is included in the analysis.

3. EMPIRICAL RESEARCH

The empirical research results will be presented following data and methodology. Initially, descriptive statistics will be provided, serving as the basis for the subsequent presentation and discussion of thesis results. Additionally, the necessary data for the analysis, as detailed in section 2.4 will be presented. Graphs have been made to visually see the relationship within the sample. Following the presentation of data collection, sample, methodology the descriptive statistics are thoroughly examined. Finally, this section concludes by providing the empirical research results together with discussion. The empirical research consists of a multiple linear regression analysis between the selected independent variables and underpricing as the dependent variable. In addition, the long-term abnormal returns have been analysed.

3.1. Descriptive statistics

The descriptive statistics will give an overview of the data set, to get a better understanding later of the results of the analysis. The descriptive statistics will include both the dependent and independent variable, namely, the mean, median, standard deviation, minimum and maximum values will be presented. In Table 1. the results of the descriptive statistics are presented for the 83 companies studied.

Table 1. Descriptive statistics of the variables

Variables	Mean	Median	St.dev	Min	Max
Underpricing (%)	14	12	17	-16	65
Equity (millions)	2321	1025	3100	12	20000
Assets (millions)	8883	1719	30174	20	232038
Market cap(millions)	4551	2315	8173	87	63849
Age	29	22	24	2	139
Proft margin	19	10	36	-103	195
Dummy variable (financials sector)					
Equity (millions)	3278	2814	2636	788	9024
Assets (millions)	20305	2004	49307	20	150724
Market Cap (millions)	6755	3500	7532	920	24000
Age	31	26	16	2	60
Profit margin	26	14	25	-7	58

Source: Authors own calculations.

The descriptive statistics represent the dependent variable and the independent variables, with a particular focus on the dependent variable being the IPO underpricing of the sample. Without

making any statistical tests, it can be seen from Table 1. that underpricing occurs in the sample of the IPOs considered in this thesis. The maximum value for underpricing was 65% and the lowest, also called overpricing was -16%. The standard deviation of 17% for underpricing indicates a relatively large variation in the levels of underpricing. Furthermore, a value which stands out is the large negative value for the minimum profit margin, which belongs to a real estate company. This result is most likely due to the increase in expenses for real estate companies compare to the net income, an effect of the COVID crisis on the real estate industry.

In the table below, the underpricing has been furtherly divided in the blue bars into the years of when they occurred. The red chart line represents the OMXSPI index which will serve as the benchmark index in the thesis.
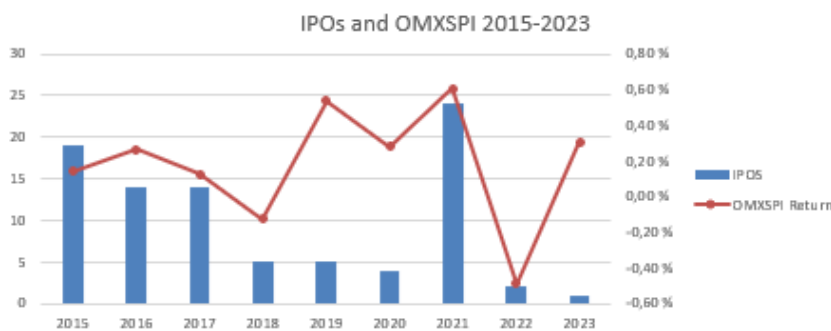
Figure 2. IPO volume against OMXSPI return 2015-2023.
Source: Authors own calculations.

Figure 2. shows a clear trend where IPO volumes correlate with the index, a phenomenon that aligns with findings from previous theories by such as Ritter (1984). The theory reckon that IPO activity tends to follow overall market conditions, where there is a positive relationship with stock market performance. In 2022 a clear decline in both the performance of the OMXPSI index and the IPO activity can be observed. Additionally, what can be seen in figure 2. Is the IPO waves that indicate times when there are continuous intervals characterized by a sustained high volume of initial public offerings (He, 2003).

An increase of IPOs may be explained by the high activity of special acquisition company transactions (SPACs) (Mackintosh, 2022). SPACs are financial entities with one sole purpose to merge or acquire with another company and get that private company to go public (Kolb & Tykvova, 2016).

The IPO companies were in total divided into six different industries: namely, consumer cyclicals, financials, healthcare, industrials, real estate, and technology. The industries Basic materials was changed to Consumer Cyclicals as it contains more industries compared to Basic materials. This change will give the representation of the data a more comprehensive understanding of the dynamics and consumer behaviour on the market.
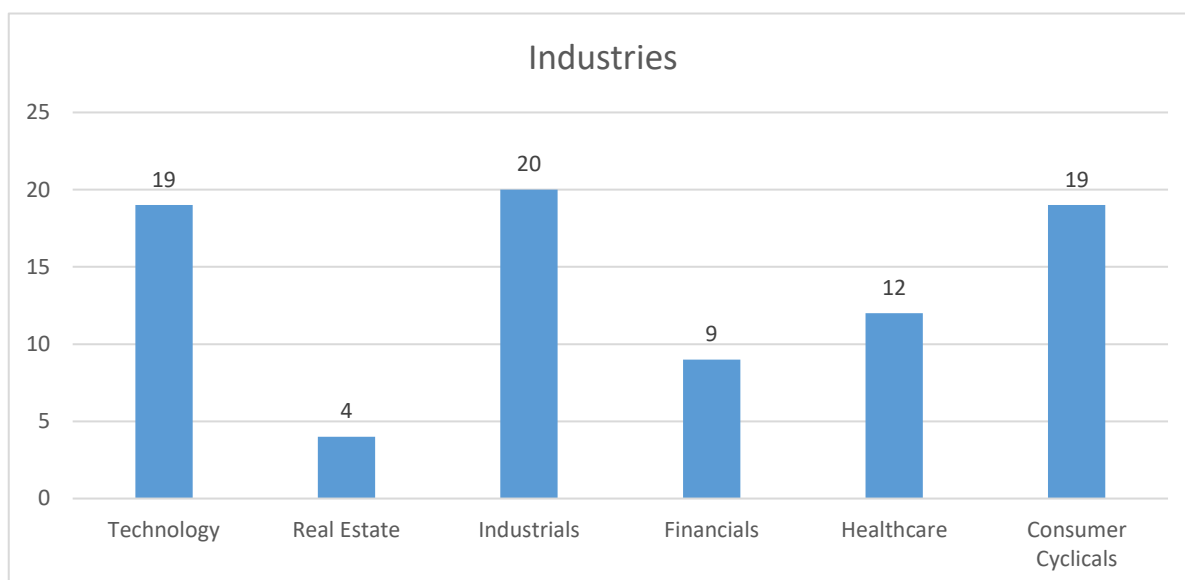
Figure 3. IPO industries on Nasdaq Stockholm 2015-2023
Source: Authors own calculations

Within these industries, the consumer cyclicals and Technology stand out with 19 IPOs, 9 in Financials, 12 in healthcare, 20 in industries and 4 in real estate.

The financials sector will be included in the analysis as a dummy variable. For a dummy variable to work, it is relevant to know the number of total observations as well as the frequency of companies that belong to the financials industry. The dummy variable, being the financial sector as seen above is 9 IPOs, that is 10,84% of the total final sample.

3.2. Empirical research results and discussion

The first hypothesis for this thesis was that there is no level of underpricing observed in IPOS during 2015-2023 on Nasdaq Stockholm. When examining the descriptive statistics, it can be said that there is undepricing in the sample, therefore the null hypothesis can be rejected with an average level of underpricing of 14,20%. Comparable results were also found by Ibbotson in 1975 and Ibbotson & Ritter in 1995, who found similar levels of underpricing in their studies.

The hypothesises need to be rejected or accepted. As shown in section 2.2 the p-value will be used to do so. To support the result to reject the null hypothesis, a statistical test on underpricing has been done to reject or accept the hypothesis within the help of calculating the p value for underpricing. The statistical test resulted in a P value of 0,0012. The P value was obtained by calculating the t stat first, using the mean, standard error, and the null hypothesis value. This result was predicted, as the descriptive statistics alone proved that the sample experience underpricing. Therefore, the p-value indicates strong evidence to reject the null hypothesis, it can be concluded that there is underpricing on Initial Public Offerings on Nasdaq Stockholm from 2015 to 2023, as the p-value is less than the significance level of alpha 0,05. As Rock (1986) introduced the winners curse theory, conclusions based on the literature review and empirical results in this thesis can be concluded that investors need to be careful when participating in IPOs and especially to make due diligence before the decision to invest. In Rock´s theory the "cursed" investors in such situations are the ones that end up with a bad deal due to their optimism and might end up with ownership of a company that eventually turn to be overpriced.

To further analyse the level of underpricing, the companies were divided into sectors to see how the underpricing reacts within the different industries. Additionally statistical testing is applied to see the level of significance.

Table 2. IPO underpricing and statistical testing by sector

Industry	Observations	Underpricing	*p*-value
Consumer Cyclicals	19	11,98 %	0,010
Financials	9	27,75 %	0,004
Healthcare	12	9,06 %	0,022
Industrials	20	17,09 %	0,001
Real estate	4	13,34 %	0,257
Technology	19	10,39%	0,019

Source: Authors own calculations

In Table 2 the distribution of underpricing is shown by industry. The main conclusions that can be done based on this table is that underpricing occurs in every industry in this dataset, namely the average underpricing has been calculated for the different industry sectors. The largest underpriced industry is the financials industry whereas the industry with smallest underpricing is the healthcare industry, with an average underpricing of 9,06%. The healthcare industry, characterized by its traditional nature and most often stable demand dynamics, has showcased resilience against market fluctuations. Within our sample, it´s notable that all healthcare IPOs occurred prior to 2019, before the COVID crisis. This could explain the smallest level of underpricing observed. The simple t-test indicates statistical significance, confirming the robustness of the results. The real estate industry stands out as the only sector where statistically significant results for the underpricing were not observed. Specifically, the p value of 0,257 largely exceeds the significance levels of 0,05 or 0,1. This result may be connected to market fluctuations experienced during the study period, which notably impact the real estate industry above all.

The analysis part of the thesis will continue with examining the correlation coefficient of the dependent and independent variables to see if there is correlation between the variables. It is ideal for a linear regression analysis to not have strongly correlated variables in the model. Following the correlation analysis, the analysis of the characteristics of IPO underpricing and abnormal long-term returns will follow.

A correlation implicates that a change in one variable is associated in a change in another variable. Correlation is measured from -1 to 1. If the two variables are perfectly correlated, the correlation result will be one, meaning that the relationship between them are perfectly correlated. On the other hand, if the correlation result is 0, they do not have any correlation between them. A negative correlation implicates that a change in one variable result in a negative change in the other. If they are perfectly negatively correlated the value is -1, meaning that if one variable increases, the other variable decreases in a perfectly predictable manner.

Table 3. Correlation matrix

	Assets	MCAP	Age	Margin	Dummy (financials)	Equity	UP
Assets	1						
MCAP	0,655	1					
Age	0,273	0,268	1				
Profit margin	0,289	0,177	0,097	1			
Dummy(financials)	0,056	0,179	0,026	0,056	1		
Equity	0,108	0,795	0,284	0,122	0,195	1	
UP	0,024	0,218	0,143	0,223	0,278	0,068	1

Source: Authors own calculations
Note: MCAP=Market Capitalization, UP=Underpricing, Assets=Total Assets Before Offering.

In Table 3. it can be seen how the correlation functions in practice. The correlation matrix shows that the strongest (medium strong correlation) correlations between the variables are MCAP and assets as well as equity and market capitalization, which is calculated by the outstanding shares multiplied with stock price. The correlation between MCAP and Assets is 0,655, respectively the correlation between equity and MCAP is 0,795.

High correlation between variables should be avoided in a linear regression analysis. To avoid this, an analysis of VIF has been calculated to examine whether there is multicollinearity between the independent variables or not. If there´s VIF values greater than 5, they shall be removed. The formula for VIF is presented in section 2.3.

Table 4. VIF analysis

Variable	VIF
Profit margin	1,036
Age	1,136
Equity raised	3,887
Dummy (financials sector)	1,979
Market cap	2,180
Assets	2,247

Source: Authors own calculations

The VIF Table shows that the values range between approximately 1 and 4, meaning that despite the high correlation between some independent variables, there is no multicollinearity between each of the variables as the values does not represent large numbers such as >5 that would refer to multicollinearity (Mansfield & Helms, 1982).

Analysis of the correlation matrix and verification of multicollinearity in the data guarantee that the variables are valid for the linear regression analysis. The reasoning behind strong correlations between the variable's equity raised and the total asset before offering is that they are both indicators of size. This information is particularly crucial for investors to acknowledge that despite both being a measure of size, they numbers are very different in practise for different companies in different sectors.

The independent variables are all proven to be eligible for the linear regression analysis, as seen in table 4. Following the correlation matrix and the VIF analysis, Table 5 present the results for the linear regression analysis. For purposes of the regression, the logarithmic values will be used in the model to normalize the values which makes them suitable to use in the linear regression analysis. A p-value of less than 0,05 or 0,1 result in statistically significant results and therefore can be concluded that there is a relationship between underpricing and the variable.

Table 5. Multiple Linear Regression Analysis

Variable	T-stat	P-value
Assets (Log)	-0,592	0,115
Market cap (Log)	0,645	0,009
Age	1,229	0,222
Profit Margin	1,998	0,049
Dummy	2,349	0,021
Equity raised (Log)	1,664	0,104

Source: Authors own calculations

In the regression model the intercept represent the estimation of underpricing percentage when all independent variables are equal to zero, in this case the intercept resulted is 0,042 and the p-value is 0,966. In practise it is not possible, but it gives a good estimation of how the model behaves. The linear regression model results in three different variables with statistically significant results. The model results indicates that the market capitalization, profit margin and the financial sector (dummy variable) influences underpricing with statistically significant results.

The result for profit margin with a p value of 0,049 which is less than alpha 0,05 imply that an increase by one profit margin results in statistically significant response in underpricing. Similar results were also be found by Purnanandam & Swaminathan (2004) in their study. While the regression analysis results for profit margin, the dummy variable, and the market capitalization are

statistically significant, it cannot be shown how much each of them contribute to the underpricing with this analysis.

Market capitalization resulted with a t stat value of 2,645 with a p-value of 0,009. The result indicates a statistically significant result as it is less than the level of significance alpha 1%. The variable significantly predicts underpricing at the 99% confidence level. The dummy variable resulted in a p value of 0,021.

Converesly, when considering the remaining variables Equity raised, Total Assets, and age of the company, none of these variables are statistically significant to the level of underpricing. Loughran & Ritter (2004) found a relationship between the age of the company and the underpricing, thus, this relationship was not found in this empirical research. For the second hypothesis, the null hypothesis can be rejected only with the three variables, progit marign, market capitalization and the dummy variable. Despite conducting the VIF analysis, variables with high correlation has been excluded to see if the variables remain stable or not. The two variabels with the highest VIF values, being the equity raised (3,887) and assets before offering (2,247) will be removed. This is being done to see how the regression model changes when excluding the variables with high correlation.

Table 6. Linear regresison analysis excluding highly correlated variables

Variable	Coefficient	t-stat	Significance
Market cap	0,054	1,192	0,236
Age	0,006	0,966	0,316
Profit margin	0,046	1,787	0,075
Dummy	0,162	2,716	0,044

Source: Authors own calculations

As seen in table 6. Variables Dummy and progit margin remained statistically significant at the 5% confidence level.

Finally, the thesis will examine the long term abnormal performance against the OMXSPI index where the cumulative Buy-and Hold Abnormal returns have been calculated. The BHAR is calculated for 1,2,3,6 and 12 months for the specific industries mentioned.

Table 7. Cumulative BHAR results

Industry	N	BHAR 1 m		BHAR 2 m		BHAR 3 m		BHAR 6 m		BHAR 12 m	
		Ret	Sig	Ret	Sig	Ret	Sig	Ret	Sig	Ret	Sig
Consumer	19	22%	**	30%	*	27%	**	19%	**	5%	
Financials	9	-9%		-11%		-4%		-4%		2%	
Healtcare	12	56%	**	58%	**	62%	**	77%	**	94%	**
Industrials	20	12%	***	14%	***	18%	**	23%	**	18%	**
Real etstate	4	21%	***	19%	***	22%	***	35%	**	11%	***
Technology	19	8%		10%		13%	***	14%	***	-6%	

Source: Authors own calculations
Note: Statistical significance: ***p<0.1. **p<0.05. *p<0.01. Ret=return

12 months can be considered to represent a long-term effect in the analysis. In Table 7 the only industry which did not result in abnormal returns was the technology industry with a cumulative BHAR of -6%. The result contradicts with previous empirical research conducted by studies made by Loughran & Ritter (1995). In their study the IPO companies performed on average worse compared to other companies. The results of this analysis does indicate that the IPO companies on Nasdaq Stockholm during 2015-2023 did perform better than the OMXSPI index, based on the industries. Therefore the Null hypothesis is accepted for H3.

The financial industry, which experienced the largest level of underpricing did result in abnormal returns of 2% during the one-year time period. Controversially, during the calendar year the returns were negative, which further explains the idea behind Loughran & Ritter (1995) study where companies with high levels of underpricing in fact underperform compared to other companies. This phenomenon cannot be confirmed with the help of this data set, but taking in to consideration that financials sector were underpriced with 27.75% the industry did not perform well compared to the OMXSPI index.

CONCLUSION

The aim of this thesis was to explore the Nasdaq Stockholm Exchange and analyse IPOs between 2015 and 2023 on whether underpricing has occurred or not. To further the depth of the thesis, the long-term performance of the IPO companies were analysed, the BHAR formula was used to calculate the long-term returns. The motivation behind the choice of the topic was motivated by the need for updated empirical insights into IPO underpricing within the Swedish market.

The objective of the research was to investigate the specific characteristics of IPO underpricing and long-term abnormal returns in the context of Nasdaq Stockholm during years of 2015 to 2023. The research aimed to address the following key research questions:

1. Was there IPO underpricing observed on Nasdaq Stockholm during 2015-2023?
2. What factors contribute to IPO underpricing in the Nasdaq Stockholm market? How do the characteristics of IPO firms influence the extent of underpricing?
3. What is the level of abnormal returns experienced by IPOs on Nasdaq Stockholm.

Key findings of the thesis confirmed a positive level of underpricing in the IPOs listed on Nasdaq Stockholm. The statistical testing showed evidence to reject the null hypothesis for the first hypothesis. Even though the underpricing was consistent across the different industries, the financial sector showcased the highest level of underpricing of 27,75%. Furthermore, the healthcare industry showed the least underpricing. A linear regression analysis was conducted between underpricing as the dependent variable and relevant independent variables. The financial sector(dummy) together with profit margin and market capitalization showcased statistically significant results explaining underpricing at the 95% significant level, these three variables get to reject the null hypothesis H2. To further analyse the linear regression, values with high VIF got excluded. Profit margin and the dummy variable remained statistically significant despite removing the highly correlated variables. BHAR cumulative returns were calculated and tested. The IPO companies performed better than the OMXSPI index, being the reason to accept the null hypothesis. Here the data speaks for the Asymmetric information theory and the winners curse theory which propose that initial underpricing leads to overperformance, which contradicts with previous empirical studies. However, a significant finding of the study shows that when the longer-term performance was evaluated, the performance varied widely among the industries.

The study´s main contributions are both theoretical and empirical. Theoretically, the thesis provides relevant theories that are applicable to IPO underpricing and long-term performance of the companies. In addition, the thesis supports the theoretical framework by the empirical research that provides recent data from Refinitiv Eikon for the companies within the thesis sample. However, there are limitations to the thesis. The focus was solely on a single geographic context as well as only one exchange, which limits the broader applicability of the empirical findings. For further research, the sample could cover multiple stock exchanges and highlight the influence of geographic factors on IPO undepricing and long-term abnormal returns.

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APPENDICES

Company	BHAR 1 month	BHAR 2 months	BHAR 3 months	BHAR 6 months	BHAR 1 year
Paradox Interactive AB	36,86	52,07	63,86	77,35	60,36
engcon AB	-18,75	-11,79	-12,99	-20,76	-7,57
K-Fast Holding AB	-62,15	-58,64	-55,18	-54,88	-45,17
Hemnet Group AB	-56,04	-48,61	-47,41	-39,43	-23,74
Swedish Logistic Property AB	-1,88	7,76	1,14	48,65	45,71
Garo AB	-37,55	-38,21	-27,28	44,38	32,97
Tobii AB	172,90	174,16	168,84	135,92	133,21
Cint Group AB	-61,68	-60,34	-58,50	-54,25	-52,34
Pierce Group AB	-63,31	-59,88	-58,84	-59,45	-43,12
FM Mattsson Mora Group AB	-68,87	-67,57	-64,67	-58,28	-46,40
Attendo AB	57,32	74,02	82,74	109,59	98,10
EQT AB	-39,87	-32,61	-35,66	-35,44	-42,81
Internationella Engelska Skolan	31,09	34,37	37,32	4,14	10,85
Storskogen Group AB	-7,38	8,89	9,69	15,18	6,47
Fasadgruppen Group AB	-88,35	-87,23	-85,50	-90,06	-95,88
Profoto Holding AB	-31,60	-27,84	-25,29	-26,36	-24,15
CLX Communications AB	-4,94	2,85	2,97	20,06	0,24
Arla Plast AB	17,36	8,14	6,59	16,20	27,59
Linc AB	-6,75	-11,36	-7,94	-9,89	41,36
Boozt AB	31,66	46,01	68,98	141,80	205,04
Cary Group Holding AB	-20,30	-14,34	-9,66	-22,47	-34,20
Volvo Car AB	-17,45	-28,70	-25,67	-19,57	-37,99
Ahlsell AB	-13,99	-15,34	-24,29	-19,21	15,21
BioArctic AB	77,61	102,29	92,39	61,38	116,23
Munters Group AB	2,87	5,36	29,09	21,36	24,50
Camurus AB	-4,55	-8,04	-10,49	-10,30	-2,69
Instalco Intressenter AB	-24,47	-25,85	-29,85	-21,90	-30,08
Troax Group AB	31,49	41,21	26,53	35,88	21,71
Dustin Group AB	-47,21	-49,46	-52,20	-61,01	-67,92
Balco Group AB	-54,56	-56,27	-53,06	-55,94	-60,20
Ascelia Pharma AB	45,03	55,42	56,92	101,55	162,33
Medicover AB	-17,10	-13,57	4,58	16,18	-26,55
Alligator Bioscience AB	111,88	133,61	154,90	123,99	56,90

Company	BHAR 1 month	BHAR 2 months	BHAR 3 months	BHAR 6 months	BHAR 1 year
Hoist Finance AB	-18,74	-24,31	-24,45	-43,12	-75,84
RVRC Holding AB	2,63	-6,79	-11,18	3,48	-5,00
Dometic Group AB	21,17	27,64	33,05	8,62	3,48
Sleep Cycle AB	1,86	72,87	25,76	-21,26	-56,16
John Mattson Fastighetsforetagen AB	-12,54	-15,28	-13,13	-18,56	-6,25
Humana AB	-16,90	-17,45	-22,47	-32,42	-24,13
Nivika Fastigheter AB (Publ)	-54,23	-54,66	-63,10	-67,55	-81,77
MIPS AB	-37,01	-30,60	-30,43	-29,83	-32,18
Handicare Group AB	1,97	2,27	6,23	-9,45	-15,01
Ovzon AB	-51,25	-51,66	-50,96	-53,95	102,39
Readly International AB	-56,39	-52,19	-48,77	-57,05	-56,81
Nordnet AB	36,92	26,61	19,89	9,50	-11,80
Ambea AB	-24,52	-28,21	-22,33	-11,89	12,35
Alimak Group AB	-44,46	-47,21	-52,31	-52,32	-77,71
Bravida Holding AB	-51,61	-56,91	-52,67	-53,09	-43,33
Eltel AB	85,58	89,87	150,92	183,07	221,50
Calliditas Therapeutics AB(WAS 71724F)	-68,78	-78,39	-69,12	-75,21	-85,61
eEducation Albert AB	-7,25	-7,84	-14,41	-1,24	30,38
Lime Technologies AB	123,03	120,76	113,26	140,88	164,97
Bonesupport Holding AB	14,01	35,35	32,91	44,85	108,14
Karnov Group AB	397,41	419,60	379,92	606,35	0,00
MilDef Group AB	204,54	196,48	235,64	227,63	279,52
ACQ Bure AB	137,08	144,97	213,77	225,30	326,94
Pandox AB	-29,44	-29,83	-21,24	-9,67	-14,88
Edgeware AB	-4,45	-2,57	-10,00	-18,06	-21,00
NCAB Group AB	233,39	185,97	241,25	199,60	-33,67
Resurs Holding AB	173,65	147,96	150,04	138,65	61,11
Actic Group AB	-6,38	-21,17	-11,26	-22,23	-37,58
Netel Holding AB	90,95	83,56	82,59	80,42	71,83
tbd30 AB	98,01	102,36	90,13	72,50	9,51
Projektengagemang Sweden AB	-65,65	-54,19	-53,32	-61,37	-46,09
Truecaller AB	50,16	38,68	60,46	10,62	-27,16
Coor Service Management Holding AB	44,37	23,18	48,10	84,77	-39,44
Nordisk Bergteknik AB	150,45	149,92	163,46	157,95	120,09
SERNEKE Group AB	282,55	272,19	284,35	278,76	220,45

Company	BHAR 1 month	BHAR 2 months	BHAR 3 months	BHAR 6 months	BHAR 1 year
Capio AB	84,94	124,98	105,64	67,74	19,06
SSM Holding AB	8,31	-5,19	-20,11	-23,17	-65,84
Nordic Waterproofing Holding A/S	-38,50	-25,34	-9,08	-54,93	-100,14
Creaspac AB	6,16	88,55	27,07	-4,77	-70,81
Nordax Group AB	-80,64	-76,24	-68,24	-60,71	-91,15
Aligro Planet Acquisition Co AB	63,05	35,08	32,04	10,35	-68,74
Scandic Hotels Group AB	-57,49	-63,13	-59,02	-52,11	-95,81
BYGGFAKTA GROUP Nordic HoldCo AB	5,79	19,00	19,24	12,95	-2,58
Nobina AB	19,03	24,22	15,06	13,40	-25,81
Oncopeptides AB	5,66	-15,09	-25,79	11,68	21,28
Bygghemma Group First AB	36,90	47,96	81,13	63,64	98,54
Norva24 Group AB	30,33	27,19	25,74	33,44	-61,93
Maxkompetens Sverige AB	3,17	-9,91	-8,68	-10,63	-32,35
Collector AB	-25,84	-26,02	-28,70	-45,42	-35,95
Wilson Therapeutics AB	-33,19	-14,84	-12,50	-9,62	-27,76

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	BHAR 1 month	BHAR 2 month	BHAR 3 month	BHAR 6 month	BHAR 12 month
Technology					
Average	8,16	10,06	13,47	13,72	5,56
Stdev	61,84	67,17	70,17	72,29	80,71
t stat	1,54	1,64	1,86	1,85	1,11
p value	0,141	0,118	0,080	0,081	0,280
Sig			***	***	
Real estate					
Average	21,50	19,36	21,95	35,25	10,55
Stdev	101,82	86,36	85,62	76,09	43,70
t stat	0,92	0,95	1,01	1,36	0,98
p value	0,426	0,413	0,386	0,267	0,398
Sig	***	***	***	**	***
Industrials					
Average	11,66	14,00	18,81	22,67	18,04
Stdev	74,55	75,14	79,88	81,73	83,03
t stat	1,77	1,93	2,17	2,36	2,08
p value	0,093	0,069	0,043	0,029	0,031
Sig	***	***	**	**	**
Healtcare					
Average	56,44	58,51	62,41	76,62	94,16
Stdev	138,87	139,17	134,40	188,07	214,17
t stat	2,21	2,25	2,36	2,21	2,30
p value	0,040	0,046	0,038	0,049	0,042
Sig	**	**	**	**	**
Financials					
Average	8,57	11,10	3,68	4,08	1,53
Stdev	76,15	72,93	91,19	93,69	126,93
t stat	1,01	1,17	0,60	0,63	0,33
p value	0,344	0,276	0,563	0,549	0,751
Sig					
Consumer					
Average	22,15	30,11	27,41	19,12	4,90
Stdev	68,67	68,73	73,56	72,11	83,65
T stat	2,48	2,88	2,66	2,24	1,05
P value	0,023	0,009	0,016	0,038	0,306
Sig	**	*	**	**	

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