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*Cross-Market Analysis of Post-IPO and SEO Long-Term  
Performance: Unraveling the Impacts of Market Capitalization  
and Timing in Swedish and American Equity Markets*

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## Abstract

This study examines the long-term abnormal returns of stocks following Initial Public Offerings (IPOs) and Seasoned Equity Offerings (SEOs) on the Swedish and American markets from January 2000 to March 2021. Additionally, it examines the differences between Swedish and American companies and investigates factors influencing these disparities, focusing on the importance of market capitalization at the time of the equity offer and the timing of the offering. Using macroeconomic and entity-level variables such as Market Cap at Offer, Debt-to-equity, Profit Margin, Interest Rate, Trade Volume, Industry, Volatility Index, Clusterings, and Consumer Sentiment indices, the study aims to provide detailed insights into the Swedish and American markets.

The findings reveal significant regional differences and confirm the underperformance phenomenon, particularly highlighting that Swedish IPOs and SEOs consistently underperform over three years, with the exception of SEOs in the first year. American markets also show consistent underperformance, but it becomes statistically significant only in the third year for IPOs and from the second year onwards for SEOs. Key variables affecting IPOs include the interest rate, VIX, and debt-to-equity ratio. For SEOs, these variables are similarly important, with profit margin replacing the VIX as a key factor. The study also highlights the impact of market capitalization on long-term performance, particularly for IPOs in Sweden across all years and in the three-year period for U.S. IPOs. Still, the results do not show any significant effect of the market cap on SEOs. While the size of a corporation appears to impact IPOs, the only significant differences between the subset groups are observed between small- and mid-caps, with no significant differences between small- and large-caps. The reasoning behind this could be the low number of large-cap IPO observations, resulting in insignificant test results. This research contributes to a deeper understanding of IPO and SEO dynamics, offering valuable insights for investors and policymakers navigating these complex markets.

Keywords: Initial Public Offerings (IPOs), Seasoned Equity Offerings (SEOs), Market Capitalization, Equity Offering Timing, Abnormal Returns, Long-term Performance, Underperformance Phenomenon

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## 1. Introduction

In recent years, the complex dynamics surrounding initial public offerings (IPOs) and seasoned equity offerings (SEOs) have obtained substantial attention within financial circles, particularly concerning the long-term performance based on abnormal returns. The long-term underperformance phenomenon was established by Ritter (1991) in his study on the long-run underperformance of IPOs, which was one of the first studies on equity offerings and their long-term performances. His study gave rise to several more studies, and later empirical findings suggest that the phenomenon might not hold for all periods and countries. While extensive discourse often compares global markets, the Swedish market stands out as a unique landscape for exploration and analysis. A fascinating element of this research is identifying the distinct impacts experienced by Swedish firms compared to their American counterparts following IPOs or SEOs. Delving into these differences not only illuminates the market characteristics of each country but also provides invaluable insights for investors and policymakers alike. This study embarks on a detailed investigation into the nuanced differences in long-term performance, covering one, two, and three years post-offer abnormal returns. The analysis encompasses offerings made between January 2000 and March 2021, aiming to unravel the factors contributing to these disparities.

Furthermore, although equity offering timing has received some attention, the impact of market capitalization at offer is less widely researched. This limited research on both factors motivates a thorough examination of their extent and significance in influencing the performance of IPOs and SEOs. We will therefore extend the existing empirical findings with this research by focusing on the impact of market capitalization, specifically the differences between small-cap and large-cap firms on long-run performance. Moreover, by reviewing the most influential factors affecting equity offering timing on both macro and micro levels, incorporating variables such as debt-to-equity-ratio, profit margin, interest rate, trade volume, industry, the volatility index, clusterings, and consumer sentiment, this research endeavors to offer a comprehensive understanding of the multifaceted dynamics at play expanding on prior research like Baker and Wurgler (2002).

Over the years, numerous IPOs and SEOs have been launched by a variety of companies, each with mixed levels of success. Understanding the factors that determine whether an IPO or SEO will be successful or unsuccessful in the long term is of great interest to both investors and firms. Hence, this research is structured around three distinct research questions, each addressing a specific aspect:

The first question entails a comparison between the Swedish and U.S. markets:

*“Are there any disparities in the long-term abnormal returns between Swedish and American companies following an IPO or SEO?”.*

The second question captures the effect of market capitalization at an equity offering:

*“Is there a difference in long-term abnormal returns between small- and large-cap stocks on the Swedish and American markets following an IPO or SEO?”.*

Our final research question tries to capture variables affecting the long-run performance to understand the importance of specific macro- and microeconomic variables:

*“To what extent does the equity offering timing on a macro and microeconomic level affect the long-term abnormal returns of an IPO or SEO, and which are the most significant factors affecting it?”.*

This analysis aims to gain deeper insights into the factors influencing abnormal returns following an IPO or SEO. Our study focuses on country variations, market capitalization, and equity offering timing. By examining these aspects, we seek to identify any long-run performance differences between Swedish and American companies. Additionally, we aim to determine the influence of market capitalization on abnormal returns and identify key macro and micro factors that affect long-term success or failure. This analysis will help investors and firms understand the expected long-term outcomes of an IPO or SEO based on the conditions at the time of the offering.

## 2. Theoretical Review

In this analysis, it is important to have a comprehensive understanding of why firms conduct equity offerings like IPOs and SEOs in order to truly grasp the outcomes. This understanding helps assess strategic goals, financial health, market conditions, and investor confidence, providing valuable insights for interpreting IPO and SEO results. Furthermore, it is crucial to have some knowledge of each of the three aspects upon which our thesis will be established. An explanation of elements that may differ between the two countries, which could impact abnormal returns, mainly includes the regulatory framework, market size, and ownership structure. Awareness of small- and large-cap stocks and their specific characteristics, especially concerning the relationship between market capitalization and return and risk, is needed. Finally, having some knowledge of macro- and microeconomic factors and their effects on stocks in the long run is essential. With this foundational knowledge, we can interpret our results more thoroughly and understand how they may answer our research questions.

### 2.1 Understanding Capital Needs and Structure

Companies pursue IPOs for various strategic reasons. Firstly, going public broadens access to capital by attracting investment from a wider range of investors. This increased capital can fuel business expansion and fund strategic ideas. Additionally, an IPO enhances a company's visibility and credibility in the market, which can attract customers and partners. Furthermore, IPOs provide liquidity to existing shareholders, enabling founders, early investors, and employees to monetize their investments. This liquidity can also facilitate mergers, acquisitions, and partnerships by offering publicly traded stock as a valuable currency. Moreover, going public allows companies to optimize their capital structure by using IPO proceeds to repay debt and reduce interest expenses.

The reasons for performing an SEO are slightly different. Businesses constantly need capital for various purposes, such as funding operations, seizing investment opportunities, and managing debt. The primary decision for the firm's board is to determine whether the capital should be acquired internally or externally. Internal capital originates from historical profits, enhancing financial leverage by reducing equity. External capital, on the other hand, is sourced from entities

outside of the company. It could be through pure debt, pure equity, or a mix of both. The choice will notably impact the firm's capital structure according to Hillier et al. (2011).

Throughout history, several studies have been developed in the pursuit of determining an optimal capital structure for a company. Key works include Modigliani and Miller (1958 & 1963), Miller (1977), Kraus and Litzenberger (1973), and Myers and Majluf (1984), which have introduced well-known empirical findings on capital structure.

According to Modigliani and Miller (1958), an entity's market value will remain constant regardless of its capital structure. The argument is that while an increase in financial leverage raises financial risks, it also balances the influence on the cost of capital. Their conclusion is that the cost of capital is constant, assuming perfect capital markets. Further, Ogden et al. (2003) propose that this theory overlooks the real-world imperfections in the capital markets. Modigliani and Miller (1963) refined their earlier concept by including tax advantages connected to financing with debt. Tax deductibility of interest costs is highlighted as a reason for debt to be a more favorable way to finance over equity. Additionally, Miller (1977) introduces the impact of personal taxation on capital structure, suggesting that the benefits of corporate taxation may diminish.

Other authors decided to further upon Modigliani and Miller's concepts, to try and establish an optimal debt-to-equity ratio. Kraus and Litzenberger (1973) established the traditional tradeoff proposition, based on tax advantages and financial distress costs. Later versions of this theory consider factors like spending too much on investments, a decline in business performance, and disagreements among investors (Ogden et al., 2003). To summarize, the tradeoff theories suggest a preference for debt financing over equity up to a certain level of financial leverage, recognizing that the optimal capital structure varies among firms.

A different analysis than the tradeoff theories is the pecking order theory from the authors Donaldson (1961) and Myers and Majluf (1984). Their concept is based on a financing hierarchy, prioritizing internal funds first, followed by risk-free debt, risky debt, hybrid securities, and



finally pure equity. The reason for debt consistently being advantageous compared to equity is because of its lower transaction costs, information asymmetry, and adverse selection cost.

## 2.2 Equity Offering Decision & Expected Market Reaction

The timing of a company performing an equity issuance depends on which theory to believe in. The pecking order theory illustrates that firms only issue equity when the other funding options are unavailable. Masulis and Korwar (1986) provide an example where, despite poor historical or current performance, the issuance of stocks can signal optimism about future opportunities. This take is challenged by Fama and French (2005) who found that a big portion of companies issue equity without being in any scenario of financial distress.

As previously brought up, when firms decide to issue equity, it alters their capital structure. Additionally, assuming the Efficient Market Hypothesis (EMH) holds, the market will respond to this information and reassess the stock value. A crucial aspect of this reaction is the presence of information asymmetry and signaling associated with an equity offering.

Information asymmetry, originating from Akerlof's work in 1970, underscores the issues arising when the quality of goods or services in a market varies. Such disparities give rise to adverse selection costs and an inefficient market price. In the context of equity offerings, information asymmetry implies that investors demand compensation for their informational disadvantage, leading to the undervaluation of stocks and making equity issuance costly for corporations (Ogden et al., 2003). Leland and Pyles' (1977) signaling model posits that changes in the stock holdings of a firm's management trigger fluctuations in the stock's market value. Reflecting the concerns of information asymmetry, investors presume that management possesses superior insight into anticipated future cash flows. Consequently, managers only hold substantial portions of firm equity when they anticipate future cash flows surpassing historical and current figures. Thus, rational investors perceive equity offerings to external parties as credible indicators of a decline in firm value (Leland and Pyle, 1977), a notion supported by empirical evidence from Downes and Heinkel (1982).

Another concept is introduced by Dobbin and Jung (1996) in relation to agency issues. When the objectives of management diverge from those of shareholders, such as maximizing firm value, managers may pursue value-decreasing growth endeavors by investing in projects with a negative net present value (NPV). This behavior stems from a desire to strengthen management's control and influence over the company. Investor awareness of such behavior results in negative reactions to equity issue announcements. The agency theory of Jensen and Meckling's (1976), model suggests that higher managerial ownership percentages shrink potential conflicts of interest between management and shareholders. Supposing that managers want to maximize their personal wealth, their interests align with shareholders' when managers hold significant company shares. Additionally, Miller and Rock (1985) propose that changes in external financing signal a reduction in current earnings. This theory operates under the assumption of consistent investment decisions on average, resulting in a proportional decrease in stock price following an equity offer announcement.

The adverse selection model, presented by Myers and Majluf (1984), suggests that rational investors assume managers only issue equity when they perceive the stock to be overvalued. This assumption rests on the premise that managers act in shareholders' interests, who benefit from issuing additional equity to external investors when the stock is deemed overvalued. Consequently, this theory concludes that rational investors interpret equity offering announcements as negative indicators of firm value.

However, not all research supports the uniformly negative view of equity offerings. McConnell and Muscarella (1985) point out that negative market reactions can be somewhat neutralized if the equity issue is partnered with announcements of increased capital expenditures. Moreover, Cooney and Kalay (1993) propose that an equity offer announcement may elicit both positive and negative market price reactions depending on certain circumstances. Additionally, Viswanath (1993) argues that equity issue announcements do not always result in a negative market response; rather, he finds that the market's reaction to such announcements can be positive, especially if it follows a recent uptrend in the stock's price.

## 2.3 Small- and Large-Cap firms

To comprehensively compare the performance of large- and small-cap stocks following IPOs and SEOs, it's imperative to delve deeper into the distinguishing characteristics of these two categories of firms. By examining how investors perceive and differentiate between large- and small-cap stocks, we can gain insights into their investment preferences, risk tolerance, and market expectations. This understanding is essential for conducting meaningful comparisons of stock performance post-IPO and SEO, connected to the impact of market capitalization.

Stocks commonly have a trade-off between exposure to risk and return, which implies that low levels of risk are connected to lower anticipated returns, while higher risk would give greater returns according to Markovitz (1952). In the end, Bodie et al. (2014) explain that returns often vary from the expected returns due to risk factors and market anomalies.

Historically market capitalization, which is defined as the value of all the shares outstanding for a firm, tends to have an inverse relationship to both risk and return based on research like Pettengill et al. (1995). Large-cap firms in Sweden and the U.S. are listed companies with a market capitalization greater than \$1.07 billion (€1 billion) and \$10 billion, respectively. Small-cap companies have a market cap lower than \$160 million (€150 million) in Sweden and between \$250 million and \$2 billion in the U.S. The inverse relationship suggests that large-cap stocks typically provide stability and dividend income, therefore lower returns and risk, while small caps offer higher growth potential but at a greater risk. Larger firms are usually more known to the public and accordingly, the value will be less uncertain. Ritter (1991; 2022) explains that more mature entities have a longer operational history, making them easier to value. Smaller-cap companies, on the other hand, tend to have lower prices, reflecting the higher risks associated with them. Investors' choices between smaller and larger-cap stocks are primarily influenced by their risk preferences, whether they are risk-averse or risk-seeking.

Further on, comparing large- and small-cap stocks aids in risk management. These two segments may respond differently to market conditions and economic cycles. Understanding how each category reacts to changes in the broader economy and market sentiment allows investors to mitigate potential losses during market downturns or periods of heightened volatility. Large-cap

firms tend to be more mature companies. During volatile market conditions, these large companies are usually considered more stable, which is why investors typically shift their investments to these firms and adopt a more risk-averse stance. However, during periods of economic expansion, small-caps may be favored for their potential for outsized returns, while large-caps are perceived as safer during economic downturns. This is something that Switzer (2010) decided to look deeper into in the U.S. and Canada and found that small companies usually perform better than big companies during the year after the economy hits a low point. Vice versa is true for the year prior when the economy hits a high point.

Lastly, assessing large- and small-cap stocks sheds light on market efficiency and pricing dynamics. Arnott and Hsu (2008) explain large-cap stocks as being more widely followed and researched, which may exhibit greater pricing efficiency, making it challenging for investors to identify undervalued opportunities. Conversely, small-cap stocks may offer opportunities to uncover hidden gems with growth potential. The information asymmetry will also be larger for the smaller companies compared to the large stocks, indicating increased risk.

In summary, comparing large and small-cap stocks enables investors to gain insights into diversification benefits, manage risk effectively, align investment strategies with market conditions, and assess market efficiency. By leveraging these insights, investors can make informed decisions that enhance portfolio performance and achieve their financial objectives. This analysis underscores the importance of examining small-cap and large-cap stocks separately to capture the differences in long-term abnormal returns following IPOs and SEOs.

## 2.4 Country Variations

The American market is considered a global influencer, impacting markets worldwide, and is widely regarded as the leading and most developed financial market globally. There is a valid argument that findings and assumptions drawn from such a major market should be applicable to smaller markets, such as Sweden. While this holds to a large extent, cultural, economic, and political circumstances can incentivize differences between markets. When comparing the performance of IPOs and SEOs between countries like Sweden and the U.S., it is crucial to consider various factors including different regulations, market size, globalization, and ownership structure.

### 2.4.1 Country Regulations

The regulations governing IPOs and SEOs in Sweden and the USA share many similarities but also exhibit some small differences, primarily related to variations in their legal frameworks, regulatory bodies, and market practices. The regulatory authority in Sweden is the Swedish Financial Supervisory Authority, while in the United States, it is the Securities and Exchange Commission (SEC). Regulations in Sweden are primarily based on the Swedish Securities Market Act and EU regulations, while in the U.S., they are mainly governed by the Securities Act of 1933, the Securities Exchange Act of 1934, and other securities laws and regulations implemented by the SEC. These regulatory frameworks can significantly impact IPOs and SEOs by influencing disclosure requirements, investor protections, and compliance costs. For instance, the stricter disclosure requirements in the U.S. may lead to higher compliance costs for companies, potentially deterring some firms from going public. Conversely, the harmonization of regulations within the EU aims to facilitate cross-border capital flows, potentially making it easier for Swedish companies to access a broader investor base. Differences in regulatory environments can also affect market perceptions and investor confidence, ultimately impacting the success of equity offerings (La Porta et al., 1998).

### 2.4.2 Ownership Structure

The ownership structure of the Swedish stock market differs substantially from countries like the United States. Unlike the diversified ownership seen in many listed companies in the U.S., Sweden often experiences ownership concentration among a few major shareholders, a trend that may also be observed in other European countries, according to Bruneckienė et al. (2020). Approximately half of the listed firms in Sweden have major shareholders who bolster their control through shares with enhanced voting rights. These shareholders typically play an active role in the company, sometimes serving on the board of directors and assuming significant responsibilities. A notable aspect of Swedish corporate governance is the involvement of shareholders in nominating board members and auditors, facilitated through participation in companies' nomination committees. Unlike in some jurisdictions, Swedish nomination committees are governed not by the Companies Act but by the Code. Comprising members appointed by the company's owners, these committees are distinct from the board, serving as a forum for shareholders to shape key decisions at shareholders' meetings.

Given these differences in ownership structure and governance practices, the behavior of stocks following IPOs and SEOs in the Swedish and American markets may be influenced by unique factors. It is important for investors to consider these distinctions and their potential impact on long-term abnormal returns when evaluating investment opportunities in each market.

### 2.4.3 Market Size & Globalization

Analysis of IPOs and SEOs often involves comparing global markets, and the Swedish market thus offers a unique landscape for investigation. The U.S. boasts one of the largest equity markets globally, representing a wide range of industries and firms. Shangquan (2000) explains the advantages and disadvantages of globalization for countries like the U.S., where equities are exposed to diverse market conditions and dynamics, creating greater growth prospects. However, this exposure also escalates the risk of global events precipitating economic recessions or geopolitical pressures. In contrast, the Swedish market is much smaller and less globally integrated, leading to a higher dependence on specific industries and greater vulnerability to local economic fluctuations. Lipsey (2004) further illustrates that this lack of globalization, coupled with a closer connection to neighboring European markets, can result in more stability during

global uncertainty, albeit at the cost of limiting growth potential compared to markets with a larger international investor base. In summary, different countries entail various risk factors unique to each nation. Therefore it is important for investors to comprehend country-specific elements such as economic stability, politics, currency risks, and industry composition, a subject investigated by Del Bo (2009).

The liquidity and volatility of stocks, which influence investor sentiment and returns, are highly dependent on market size. According to Caruana and Kodres (2008), more global markets like the U.S. experience higher liquidity and less volatility. The large market size may also decrease volatility due to diversification opportunities, mitigating risk and lowering volatility. Moreover, greater liquidity, characterized by higher trading volumes and a larger number of buyers and sellers, allows the market to efficiently absorb large buy and sell orders, thereby reducing the impact of individual trades and overall volatility.

At the same time, Biais and Foucault (2014) emphasize that a greater market size implies potentially more participants such as institutional investors, hedge funds, and algorithmic traders, leading to increased trading activity and possibly higher volatility due to fluctuations in buying and selling pressures. The increased risk of liquidity shocks, such as drastic changes in demand or supply, could have a more significant impact, creating higher volatility in larger markets. Additionally, larger markets are deeply interconnected with the global financial system, amplifying volatility in response to external shocks and events from other markets. In conclusion, while the U.S. and Sweden represent different ends of the spectrum in terms of market size and globalization, each presents unique opportunities and risks for investors.

## 2.5 Equity Offering Timing

There are four important aspects that constitute interconnected elements contributing to the relevance of timing for equity offerings in an IPO or SEO: market conditions, investor demand, firm valuation, and competitive landscape. Firstly, the overall condition of the market could significantly influence investor sentiment and desire for new equity offerings. Undertaking an IPO or SEO during a period of positive market sentiment and a bull market could result in higher demand and a greater price for the shares offered. Conversely, in a bear market characterized by

negative sentiment among investors, demand might be lower, resulting in a less favorable valuation.

Previous literature done by Schöber (2008) and Ritter et al. (1994), indicates that IPOs and SEOs are more common during bull markets, with stock prices being higher than in bear markets, indicating that IPOs and SEOs are cyclical. This is of great interest because it implies that the boards of firms might consider market conditions when deciding on an equity offering. The consideration may arise from expectations of higher stock performance in a booming market or the increased likelihood that a firm will need additional funds to fuel growth.

The condition of markets depends significantly on investor demand, whether they are willing to invest or hold onto their capital. When investors' sentiment and belief in the market are disrupted by economic and political factors, entities may be compelled to raise capital in ways other than through an IPO or SEO. The standardized financial model posits that in rational markets, unemotional investors will exert pressure on capital market prices to align with the rational present value of expected future cash flows. However, during periods of crisis such as the financial crisis of 2008 or the dot-com bubble in the late 90s to early 2000s, the standard financial model gets disrupted. Consequently, researchers have shifted their focus towards behavioral finance, particularly investor sentiment. According to DeLong et al. (1990), investors are influenced by sentiment, which encompasses beliefs about future cash flows and investment risks that cannot be fully explained by factual data. Furthermore, Shleifer and Vishny (1998) expand on this notion, asserting that betting against investor sentiment carries significant costs and risks. Specifically, shares of small-cap, emerging, unprofitable, high-volatility, and non-dividend-paying growth companies, as well as those of financially troubled firms, are expected to exhibit heightened sensitivity to overall shifts in investor sentiment. Essentially, these are harder to accurately price because their value is not as obvious, making mistakes more common and harder to notice.

In numerous behavioral models of securities markets influenced by DeLong et al. (1990), investors are categorized into two groups: rational arbitrageurs, who operate without sentiment, and irrational traders, who are susceptible to external sentiment. These groups compete within



the market, determining prices and expected returns. However, rational arbitrageurs face various limitations, stemming from short time horizons or the costs and risks associated with trading and short selling. Consequently, prices do not consistently reflect their fundamental values. In such models, mispricing occurs due to a combination of two factors: shifts in sentiment among irrational traders and constraints on arbitrage by rational actors. These are the main reasons why investor sentiment affects the value of the markets.

The basic demand connected to IPOs is regularly explained as highly sensitive to switches in investor sentiment. It is referred to as the “windows of opportunity”, and Ritter (1991) explains that an increase in the volume of IPOs over a specific time frame is because firms want to take advantage of this window of opportunity. This window of opportunity is based on investors being more optimistic and market valuation being higher; companies aim to raise capital during such a window to maximize the outcome of the offering as much as possible. When a window of opportunity arises, it creates a wave of companies conducting equity issues simultaneously, especially smaller firms eager to capitalize on the window.

Regarding the correlation between investor sentiment and stock prices, diverging perspectives exist among scholars. Some propose that investor sentiment acts as a catalyst for mispricing. Antoniou et al. (2013) observe that positive sentiment might prompt investors to adopt an optimistic stance toward asset price expectations, potentially influencing asset valuations. Conversely, an alternative viewpoint suggests that investor sentiment constitutes one of the various factors shaping stock pricing, rather than solely inducing mispricing. Frugier (2016) supports this by asserting that traders can achieve profitability by incorporating investor sentiment into their trading strategies. Moreover, Zhou and Yang (2019) highlight the enduring deviations of asset prices from fundamentals, attributable to stochastic investor sentiment and market crowding. This literature underscores the significant impact of investor sentiment on stock prices, yet it leaves unresolved whether such sentiment operates primarily as a pricing factor or as a catalyst for mispricing, warranting further investigation.

The final consideration for an offering is the competitive landscape and overall market conditions. Pástor and Veronesi (2005) argue that the optimal timing for an equity offering is

based on when market conditions are favorable. However, when market conditions improve sufficiently many firms are attracted to capital markets, which creates clusters of offerings. Even though this is considered the optimal timing, firms should strive to avoid launching their offerings at the same time as other similar companies announce theirs. The rationale is to prevent competing for investors' attention and funds. With less competition during the offering, the likelihood of achieving the desired valuation increases.

Another important aspect is the timing related to the company's valuation. Performing the equity offering with a greater company valuation usually results in greater returns in the long run. For instance, Basu (1977), describes that firms with higher price-to-earnings ratios on average show higher returns than a firm with a lower ratio. Further researchers such as Rosenberg et al. (1985) and Fama & French (1992) show that a company with a lower market-to-book ratio (value stocks) tends to on average outperform firms with higher market-to-book ratios (growth stocks). Additionally, aligning the timing of the IPO or SEO with both the market cycle and the company's own growth cycle can further boost valuation.

To conclude, for companies undertaking an IPO or SEO, the price evolution depends on several variables directly associated with these offerings. However, post-launch, the shares are traded like any other security on the stock exchanges. Considering this, factors that generally influence long-term returns for stocks become relevant for these newly traded shares from the IPO or SEO. There likely exists an ideal scenario encompassing both the macroeconomic environment and the company's financial state, dictating the optimal timing for an IPO or SEO. The objective is to identify the key variables that companies and investors should consider when issuing or acquiring shares from an IPO or SEO, thereby informing their investment decisions.

### 3. Empirical Review & Hypotheses

Based on our research questions, we examine the long-term stock performance following IPOs and SEOs through six hypotheses. These hypotheses explore the impact of geographical differences, company size, and equity offering timing, aiming to uncover long-term post-offering success or downfall and the reasons behind it.

#### 3.1 Long-Run Abnormal Returns for Sweden and the U.S.

The long-term performance of IPOs and SEOs has been a subject of great interest since Ritter's article in 1991. However, much of the research has yielded different results, rendering the conclusions unclear. Earlier studies have covered various countries, time periods, and methodologies. Comparing IPOs and SEOs between Sweden and the USA presents a fascinating opportunity to delve into the nuances of two distinct market landscapes, with many similarities but also some contrasts. These countries represent unique environments shaped by regulatory frameworks, investor behaviors, and economic conditions. By examining IPOs and SEOs in both contexts, we can uncover valuable comparative insights.

#### Initial Public Offerings (IPOs)

One of the earliest studies regarding the long-term performance of IPOs was Ritter's article titled "The Long-Run Performance of Initial Public Offerings" (1991). He found that American IPOs between 1975-1984 substantially underperformed over a three-year period compared to other companies, thus exhibiting what is known as the long-term underperformance phenomenon. This phenomenon is characterized by IPOs having negative returns compared to appropriate benchmarks during their first three years of trading. Since Ritter's study, further research has been conducted across different time periods, geographical regions, and using various methodologies. However, the results remain somewhat unclear due to contradictory findings in the research. Some analysts, for example, Gompers and Lerner (2003) and Jenkinson and Ljungqvist (2001) have argued that IPOs show no significant abnormal performance, which would support the efficient market hypothesis. However, many other empirical studies conducted in various time periods and markets, including the United Kingdom, Germany, Canada, and Finland, support Ritter's initial findings in the U.S. For instance, research by Georgen et al. (2007), Ljungqvist (1997), Kooli and Suret (2004), and Keloharju (1993) all support the

long-term performance patterns of IPOs identified by Ritter. Despite much research aligning with Ritter, studies by Da Silva Rosa et al. (2003), Schuster (2003), and Ahmed-Zaluki (2007) are among those that contradict the notion of the long-term underperformance phenomenon. From all the empirical studies conducted on IPOs, it is evident that the performance of the long-term abnormal returns is highly sensitive to the time period, geographical region, and methodology applied.

Ingman and Agner (2018) studied post-issue IPO performance in the Nordic and UK markets. Using a Buy-and-Hold Abnormal Returns (BHAR) model, they found significant underperformance in both regions over three- and five-year periods, but not over one year. However, with a cumulative abnormal return model, they found that the UK market outperformed in the first year but underperformed over three and five years. In contrast, the Nordic markets only underperformed over three and five years. Generally, both markets showed significant long-term underperformance, particularly over three and five years, with UK IPOs slightly worse than Nordic IPOs. Ingman and Agner suggest the UK market's first-year overperformance may be due to its slight inefficiency in valuing future IPO performance, possibly influenced by the more common occurrence of IPOs during hot markets compared to the Nordic markets, discussed further in the next chapter on equity offering timing. Research conducted by Aggarwal and Rivoli (1990), and Levis (1993) also confirmed the underperformance of UK IPOs, extending over three years after the launch date.

Further research on disparities in IPO performance between regions was conducted by Franke (2021), who studied the post-IPO performance of fintech companies in Europe and the U.S. His findings relate to those of Ingman and Agner in the sense that higher underpricing levels for fintech companies are more prevalent in the U.S. compared to Europe, resulting in short-term overperformance in the U.S. However, no significant difference between Europe and the U.S. could be observed in the long-term performance. The underpricing phenomenon is further investigated in the United States and Sweden by Ritter et al. (2022), who found that underpricing tends to average 17.5% (1960-2021) in the United States and 28.2% (1980-2021) in Sweden.

## Seasoned Equity Offerings (SEOs)

Numerous studies have shown that in the long run, U.S. markets often experience a drop in stock prices after seasoned equity offerings (SEOs). This finding is supported by research from Baker and Wurgler (2000), Jegadeesh (2000), and Loughran and Ritter (1995). However, there is less research available on SEOs in Europe. For the German market, Stele et al. (2000) and Bessler and Thies (2002) also reported declines in performance after SEOs. In the UK, Ho (2005) observed changes in stock prices after SEOs but noted that his findings depended on the method used for measurement.

Loughran and Ritter (1997) studied the performance and abnormal returns of SEOs in the U.S. during the years 1979 to 1989, and Kohonen (2019) followed their study by researching the Nordic market between 2005 and 2015. Their findings on long-term SEO performance showed significant underperformance over one year as well as five years. These results are consistent with the study conducted by Brunskog & Östgren (2015) on Swedish SEOs during the period 2007–2012, which also reported underperformance in average abnormal returns over a three-year period.

In a world of perfect capital markets, firms would encounter a demand curve that is infinitely elastic. This means that prices for shares should remain constant regardless of the market where the shares are offered. Nevertheless, numerous factors could hinder the smooth integration of domestic and global markets. These include taxes, government-imposed investment restrictions, transaction costs, and information expenses, according to Kim and Stulz (1998), Stulz and Wasserfallen (1995), and Amihud and Mendelson (1986). Having capital markets with such differences would indicate that capital markets follow a downward-sloping demand curve. Equity issues usually cause the supply of shares to expand, and with a demand curve sloping downwards, this should lead to a decline in price if everything else remains the same. Therefore, to achieve a higher offer price in a global issue, the increased supply needs to be met by higher demand for shares. Chaplinsky and Ramchand (2000) found in their empirical study that, on average, stock price development following an equity issue would be 0.8 percent lower for a global issuance compared to a domestic one. This opposes Foerster and Karolyis' (1999)

discovery that there exists an advantage for foreign companies to perform an equity offering on the U.S. market instead of their own domestic ones.

The IPO and SEO's long-term performance has been an ongoing discussion over the years. The research has been done in several different countries, time periods, and using different methods, all with a lot of varying results for long-term performance. Inconclusive results regarding specific market differences give rise to our first and second hypotheses of this thesis:

### Hypotheses 1 and 2

**Hypothesis 1:** *There are no significant disparities in the long-term abnormal returns for Swedish compared to American companies following an IPO*

**Hypothesis 2:** *There are no significant disparities in the long-term abnormal returns for Swedish compared to American companies following an SEO*

## 3.2 Market Capitalization's effect on Long-Term Abnormal Returns post Equity Offerings

The over- and underperformance is a topic that has been quite extensively studied. We aim to expand this research by incorporating a variable of interest for many investors: market capitalization. Some investors may prefer more stable and mature companies with generally lower risk and returns, while others may seek higher returns and are willing to take on more risk. For already listed companies, we often observe a different long-term performance trend between small- and large-caps, which could also be expected in the case of IPOs and SEOs.

### Initial Public Offerings (IPOs)

Unfortunately, research on the long-term performance comparison between small- and large-cap IPOs is not as extensive as IPO underperformance. However, there are some highly relevant studies that have been conducted on the matter. According to Xia (2022), small-cap stocks are more sensitive to IPOs and therefore come with greater risk compared to larger-cap stocks. While higher risk for small-caps could lead to higher potential returns and overperformance compared to large-cap stocks, it also entails a greater risk of underperformance and potentially more extreme underperformance. Another study supporting the significance of market

capitalization in IPO success is by Poulsen and Nielsen (2017), who found that large-cap IPOs outperform small-cap IPOs in Scandinavia between 2004 and 2014.

Further research conducted by Siev et al. (2022) between 2009 and 2019, focusing on IPOs launched in the U.S., suggests that a firm's size and age serve as predictors for price evolution. They explain that their results reveal a significant variation in long-term performance between small- and large-cap stocks within each sector, with small-cap stocks tending to underperform compared to large-cap stocks. The difference in performance at the three-year mark was as high as 88%. One possible explanation provided by Siev et al. is that older and larger firms have more publicly available information about their past performance and future prospects compared to smaller and younger firms. Furthermore, Khursed (1999) focused on IPOs in the UK between 1991-1995 and found that the more profitable a firm is before its launch, the worse its long-term performance tends to be. He also established that the larger the size of the company, the better its long-run performance.

Additionally, large-cap and older firms are considered less risky due to their greater capital resources and extensive managerial and organizational experience. Consequently, investors in larger and older firms are less affected by asymmetric information. Another empirical study based on the UK market between 1975 and 2004 confirmed that long-run IPO underperformance is more concentrated within smaller firms, according to Gregory et al. (2010). This could be because larger IPOs usually attract more investors, mainly because they receive more publicity and media attention, thereby reducing the risk of information asymmetry. Size has been found to be connected to a company's maturity, with previous studies implying that mature entities experience less underpricing due to investors demanding less compensation for the lower risk they take, according to Levis (2011) and Mogilevsky & Murgulov (2012).

### Seasoned Equity Offerings (SEOs)

A study conducted by Jegadeesh (2014) specifically focused on SEOs, explained that companies undertaking an SEO underperformed compared to companies that did not issue any equity. This result is consistent with previous evidence strongly suggesting underperformance of SEO stocks in the long run, such as the study of Loughran and Ritter (1997). Jegadeesh continues to explain

that much of the literature on underperformance believes that the lower returns for both IPOs and SEOs result from mispricing of the stock at the equity issue. Furthermore, his empirical study suggests that SEOs underperform because of a misspecified benchmark measure. The article argues that SEOs have lower risk or offer diversification benefits compared to their benchmarks, hence the lower returns. Ultimately, Jegadeesh argues that the lower returns are due to SEOs acting as a sign of overvaluation of a corporation. In the research, he also concludes that size and market-to-book ratio are variables that make the differences smaller when comparing SEO firms to their benchmarks.

A previous paper published by Brav et al. (2000) revealed that the underperformance of smaller firms is more pronounced compared to larger firms when conducting an SEO. However, Jegadeesh opposes this and claims that their findings are due to misspecified benchmarks. Furthermore, his paper summarizes that there should not be any performance difference between SEOs from large and small corporations. In Spain, Farinós (2001) found that small and medium-sized companies experienced poor performance in the year following their SEOs, whereas larger companies did not face the same decline.

There are empirical studies available for various countries and time periods regarding IPOs and SEOs' long-run abnormal returns and the impact of firms' market capitalization. The majority of them suggest that small-cap firms see a larger underperformance compared to larger firms. However, the existing research is far from being as extensive as that for over- and underperformance. Therefore, we aim to fill the gap in this study by focusing on market capitalization and especially comparing small-cap firms to large-cap firms. This leads us to our third and fourth hypotheses:

#### Hypotheses 3 and 4

**Hypothesis 3:** *There is a significant difference in long-term abnormal returns between small-cap and large-cap stocks following an IPO*

**Hypothesis 4:** *There is a significant difference in long-term abnormal returns between small-cap and large-cap stocks following an SEO*



### 3.3 Equity Offering Timing's Impact on Long-Run Abnormal Returns

The performance of shares following an IPO or SEO is influenced by various factors directly tied to these offerings. However, once trading commences, they are subject to the same market forces as any other security. Consequently, factors impacting long-term returns for stocks become applicable to these newly traded shares. Optimal timing for an IPO or SEO likely hinges on a blend of macroeconomic conditions and the company's financial health. Identifying these key variables informs both companies issuing shares and investors seeking to acquire them, guiding their investment decisions effectively.

#### Initial Public Offerings (IPOs)

Analyzing the correlation between equity offering timing and specific macroeconomic and microeconomic factors has gathered some attention in research, yet findings vary widely and are far from comprehensive. Empirical studies have explored the relationship between IPO fluctuations and macroeconomic variables. For instance, Loughran et al. (1994) studied IPOs in the UK to determine if the timing could be linked with GDP growth but found no significant relationship. Rydqvist and Högholm (1995) focused on eleven European countries and reached a similar conclusion, suggesting that IPO activity and the business cycle would not be connected. In contrast, Tran and Jeon (2011) discovered something totally different, indicating that a long-run equilibrium exists between macroeconomic variables and IPO activity. This finding was also supported by other studies such as La Porta et al. (1997) and a more recent study by Meluzin and Zinecker (2014) for Polish and Czech Republican markets.

In contrast to Rydqvist and Högholm (1995), Jedemark (2022) found that market conditions greatly affect the performance of IPO returns. Breeden (2005) highlights the impact of macroeconomic variables on consumption and investment opportunities, which consequently shape firms' output and returns. Building on this understanding, Rapach et al. (2005) delve deeper by examining data from twelve industrialized nations. Their analysis underscores the pivotal role of interest rates as the most influential variable in predicting stock returns, evident across both in-sample and out-of-sample analyses.

A very plausible assumption is that economic growth is correlated with firms' demand for capital, given that companies' need for capital is greater in better business conditions, according to Lowry (2003). This phenomenon is referred to as the capital demand hypothesis, which suggests that the number of IPOs tends to increase when firms are more inclined to raise capital, especially during periods of favorable business conditions. The clustering of IPOs is well acknowledged; however, the factors behind these clusters are extensively discussed in the literature of Dicle and Levendis (2017). One explanation of the clustering, as described by Pástor & Veronesi (2005), is the concept of “*optimal IPO timing*”, which would account for a larger volume of IPOs issued during hot markets. They explain that extreme improvements in market conditions create these clusters; in a poor market condition, a company may delay its equity issue as it would not maximize the outcome. Firms would rather wait to conduct the equity issue until market conditions have improved, and can capitalize on the window of opportunity. This creates a backlog of firms waiting to conduct an equity issue when the conditions have improved sufficiently, leading to a surge in IPOs once the market conditions are favorable again. Overall, this leads to long-term underperformance for IPOs that utilize these windows of opportunities, as offerings compete for the same capital from investors.

Several studies have analyzed the long-term performance of IPOs in hot markets. A study conducted by Coakley et al. (2008) on IPOs in the UK over the period 1985 to 2003 focused on investigating if they underperformed in the long run during hot IPO markets, measured over a five-year period. The results did not show any evidence of underperformance for the full sample in the long run, but they did indicate underperformance during hot IPO markets. The underperformance of IPOs conducted during hot markets is also supported by other studies such as Bergström et al. (2006) and Levis (2011). The results, therefore, suggest that the performance of IPOs will be dependent on IPO clusters.

In the context of understanding the impact of firm characteristics on IPOs, Lööf and Åkerlund (2022), found that the profitability measure return on equity had a positive impact on abnormal returns over a three-year period for Swedish IPOs. However, they did not find any significant evidence of it affecting abnormal returns over a two-year period. Moreover, no evidence was found to validate that the debt-to-equity ratio significantly affects abnormal returns. Several

studies have been conducted over the years to research the impact of the debt-to-equity ratio on stock returns, and the results are inconsistent. Hertina et al. (2021) and Astiti et al. (2014) studied the effects of firm characteristics on stock returns in Indonesian companies and found that debt-to-equity has a significant positive impact. However, further studies by Adami et al. (2015) and Andersson (2016) suggest that debt-to-equity for UK and Swedish-listed companies has a negative effect on stock returns. Ingman and Agner (2018), on the other hand, did not find a significant relationship between leverage and abnormal returns in the Nordic and UK markets. The effect of debt to equity ratio on stock returns is thus unclear; however, a higher level of debt to equity ratio could create an increased leverage effect (Black, 1976), generating higher abnormal returns. Moreover, Modigliani & Miller (1958) argue in their second proposition that return on equity would increase in a linear function with the debt ratio. A higher debt-to-equity ratio suggests that a company relies significantly on external funding, which increases its financial burden and diminishes shareholders' rights. Companies with a high ratio face greater risks of losses, yet they also have the potential for higher returns due to the leverage effect. On the other hand, companies with a lower debt-to-equity ratio experience less risk, but their opportunities for increasing returns on equity are limited (Hertina et al., 2021).

### Seasoned Equity Offerings (SEOs)

The established results from the sources above, regarding the effects of macroeconomic and microeconomic variables such as interest rates, consumer sentiment, and debt-to-equity ratios on stock returns in the absence of equity offerings, are also applicable to SEOs. Moreover, Erel et al. (2012) tested a model using recession and weak credit market indicators as proxies for financial conditions to capture the effect on SEOs. The outcome suggested that during a recession, the likelihood of SEO issuance decreases compared to no issuance or issuance of alternative securities. This finding aligns with previous studies by Hickman (1953), Moore (1980), and Choe, Masulis & Nanda (1993), which observed similar issuance patterns across different historical periods (1900-1938, 1946-1970, and 1971-1991, respectively), indicating that worsening financial conditions reduce firms' tendency to issue public equity.

Investor sentiment refers to how investors perceive and feel about the market, based on their emotions, attitudes, and opinions. Misunderstandings among investors can sometimes lead to incorrect pricing, a notion supported by various researchers such as Chang et al. (2012), Kaplanski and Levy (2010), Yang and Li (2013), and Zhou and Yang (2019). Baker and Wurgler (2006) define investor sentiment as investors' beliefs about a company's risks or future earnings that don't align with available information. Previous studies in behavioral finance, as demonstrated by Baker and Wurgler (2006), Brown and Cliff (2005), and Corredor et al. (2013), indicate the significance of investor sentiment in explaining stock returns and creating mispricing. Accurately measuring investor sentiment is challenging, leading researchers to use various proxies. Some studies use consumer confidence as a proxy for investor sentiment, as seen in research by Ho and Hung (2009), Schmeling (2009), and Zouaoui et al. (2011). While investor sentiment and consumer sentiment aren't identical, Fisher and Statman (2002) found a strong positive correlation between them. Thus, expectations from consumer sentiment on stock returns could have a similar effect.

Virolainen (2009) indicates that firms commonly pursue SEOs after periods of robust stock market performance while anticipating sales growth within listed firms. This trend suggests consistency with both market timing and demand for capital theories of equity issuance on a macroeconomic scale. Additionally, at the micro level, firms' choices to issue seasoned equity are driven by similar factors, alongside the impact of information asymmetry. Furthermore, Virolainen's study underscores firms' strategic exploitation of favorable circumstances for equity issuance, as evidenced by the study's finding of observed higher abnormal returns among issuers during high-volume periods compared to low-volume ones.

Microeconomic variables have also been researched to establish their effect, and a few sources have found that post-SEO performance is connected to certain firm features, such as the level of profit management prior to equity issuance according to Rangan (1998) and Teoh et al (1998). Their findings suggest that companies engaging in earnings management to increase net income prior to an equity offering experience lower abnormal returns in the long run compared to their benchmark.

Based on prior empirical studies of macroeconomic and microeconomic environments, certain factors are expected to impact long-run abnormal returns following IPOs and SEOs. Unfortunately, the existing studies at the time are limited and need to be further analyzed to establish which specific features seem to be influential over time and across countries. Therefore, this leads us to the last hypotheses of this thesis, which is based on equity offering timing and its impact:

#### Hypotheses 5 and 6

**Hypothesis 5:** *Equity Offering timing on both macro and micro levels has a significant effect on the long-term abnormal returns of an IPO*

**Hypothesis 6:** *Equity Offering timing on both macro and micro levels has a significant effect on the long-term abnormal returns of an SEO*

### 4. Empirical Analysis

The study tests six hypotheses through several regression models, distinguishing between IPOs and SEOs. Furthermore, the analysis focuses on the Swedish and American markets to discern any disparities attributable to the impact of a more global market. It is also essential to categorize companies into two groups, small-caps and large-caps, to effectively capture the influence of entity market capitalization on performance before an IPO or SEO. There is also considerable interest in examining how macroeconomic and microeconomic variables may affect post-IPO and SEO abnormal returns. The analysis comprises monthly data spanning from January 2000 to March 2021, representing a longer time frame compared to earlier research. The analysis aims to elaborate on how abnormal returns after an IPO or SEO vary depending on market capitalization, geographical market, and equity offering timing.

#### 4.1 Method

The methodology has been conducted based on established research methodologies proven to yield precise results. It is specifically tailored to accommodate the complexities and anomalies of our dataset, ensuring that the model is finely tuned to capture its unique characteristics. By striving to create a model that is both accurate and suitable, we aim to obtain trustworthy outcomes from the regression analysis. By using a robust model and a comprehensive dataset, we

aim to provide reliable insights and conclusions, contributing to the understanding of the factors influencing IPO and SEO performance.

#### 4.1.1 Market Adjusted Buy-and-Hold Abnormal Returns Method (BHAR)

Buy-and-Hold Abnormal Returns (BHAR) measure the total return that would have been earned by holding a security over a specified period, adjusted for the performance of a benchmark over the same period – in this case, the OMXSPI for Sweden and the Russell 3000 index for the U.S. This approach is particularly valuable in contexts where the compound effects of returns are crucial, such as in long-term investment analysis. An alternative to the market-adjusted model would be the constant mean return model. However, this would only work on SEOs, as the constant mean return model relies on returns before the event – which is problematic with IPOs since they are not listed before the event. Moreover, the constant mean return model does not take market conditions into consideration, which could significantly affect stock returns, leading to biased abnormal return calculations. According to Benninga (2008), the market model is most commonly used in event studies due to MacKinlay's (1997) reasoning that it generates robust results despite potential distribution problems in the data. Based on this, coupled with the fact that a constant mean return model would not work with our IPO data, we have chosen the market model.

#### Single-Period Abnormal Returns

For each firm  $i$  in our sample, the abnormal return for a given month  $t$  is calculated as the difference between the firm's return and the market index return:

$$(4.1) \quad AR_{i,t} = R_{i,t} - R_{m,t}$$

Where  $R_{i,t}$  represents the return of firm  $i$  during month  $t$ , and  $R_{m,t}$  is the return of the market index for the same period.

To prepare these returns for a buy-and-hold analysis, each monthly abnormal return is adjusted by adding one, transforming it into a multiplicative factor:

$$(4.2) \quad AR'_{i,t} = 1 + AR_{i,t}$$

This adjustment is essential to facilitate the subsequent compound calculation of returns over time.

### Calculation of Cumulative Abnormal Returns

The BHAR for firm  $i$  over  $n$  months is then computed by taking the product of these adjusted monthly abnormal returns, reflecting the total compounded abnormal return over the specified period:

$$(4.3) \quad BHAR_{n,t} = \left( \prod_{t=1}^n AR'_{i,t} \right) - 1$$

### Equally Weighted Approach

In our study, we employ an equally weighted approach for calculating abnormal returns. This method treats each firm's return as equally important, irrespective of its market capitalization. This is particularly relevant in the context of IPOs and SEOs, where the size of the firms can vary significantly, and larger firms could disproportionately influence the results if a value-weighted approach were used.

Research has shown that equally weighted returns can provide a more accurate reflection of market or sector behavior, especially when the focus is on understanding the broad effects across all firms involved in IPOs and SEOs. For example, studies testing IPO and SEO performance often use equally weighted measures to avoid bias introduced by larger firms and to capture a more generalized market response (Ritter, 1991; Loughran and Ritter, 1995). These studies suggest that equally weighted metrics more effectively capture the average investor experience, as they are not skewed by the performance of a few large entities.

Moreover, the equally weighted method has been preferred in academic research because it helps isolate the effects specific to the types of events being studied, like IPOs and SEOs, without the confounding influence of the varying sizes of the firms. This is supported by Brav et al. (2000) who compared equally weighted abnormal return to value-weighted abnormal return. It aligns with our goal to assess the true impact of market events across a diverse set of firms, providing insights that are potentially more applicable to the typical market participant.

#### 4.1.2 Model

##### Regression

We conducted individual regressions for both SEOs and IPOs in Sweden and the USA, focusing on their performance one, two, and three years post-launch. In total, we performed twelve independent regressions. A few of our regressions indicated that heteroskedasticity was present and some non-linear relationships in our explanatory variables. To address this, we utilized the iterative Huber-White robust regression model, which is a Robust Linear Model (RLM), instead of the standard Ordinary Least Squares (OLS) approach.

One of the key advantages of using the iterative Huber-White RLM regression is its ability to handle heteroskedasticity, autocorrelation, outliers, and non-linear data. This method iteratively reweighted observations based on the residuals from the previous iteration, reducing the influence of outliers and ensuring that heteroskedasticity and autocorrelation do not bias the results. The iterative reweighting process allows the model to adjust to the peculiarities in the data, providing more reliable parameter estimates and robust standard errors compared to OLS regression. This is particularly important when the relationship between the independent and dependent variables is not strictly linear. By adjusting the weights of the observations iteratively, the RLM model can more accurately capture the underlying patterns in the data, making the analysis more robust and trustworthy even in the presence of complex, non-linear relationships according to Rousseeuw & Leroy (1987). The regression model follows as:

$$(4.4) \quad \text{Abnormal Returns} = \beta_0 + \beta_1 \text{Market Cap at Offer} + \beta_2 \text{Clustering Dummy} \\ + \beta_3 \text{Profit Margin} + \beta_4 \text{D/E Ratio} + \beta_5 \text{Interest Rate} \\ + \beta_6 \text{Consumer Sentiment} + \beta_7 \text{VIX} + \beta_8 \text{Volume Change} \\ + \sum_{i=9}^n \beta_i \text{Industry Dummies} + \epsilon$$

The regression model we employ examines the relationship between abnormal returns and various factors, considering different contexts for IPOs and SEOs. The dependent variable Abnormal Returns is transformed with the Box-Cox method to resemble the normal distribution of the abnormal returns.



The independent variables in our model include the market capitalization at the offer, which is transformed using the Box-Cox method. Moreover, it includes a clustering dummy variable that indicates whether the observation occurs during a clustering period (with 1 representing a clustering period and 0 otherwise). We also incorporate the company's profit margin and debt-to-equity ratio as indicators of the firm's financial health. Market conditions are captured through variables such as the interest rate, a measure of consumer sentiment, and the VIX, which assesses market volatility. Additionally, we include the change in trading volume to reflect trading activity. The independent variables in our model that are not data specifically on the launch date are calculated as cumulative changes over the specified time period, much like how the cumulative abnormal returns are calculated. These variables are the interest rate, consumer sentiment index, VIX, and trading volume.

To account for industry-specific effects, we introduce dummy variables for different industries. This comprehensive set of variables allows us to control for various company-specific characteristics, market conditions, and industry effects, providing a detailed analysis of the factors influencing abnormal returns in both IPO and SEO contexts.

### Tukey's HSD Test

To more specifically analyze the performance differences between small- and large-cap firms, we created three dummy variables based on market cap at offer: small-cap, mid-cap, and large-cap. These dummies help determine the significance of entity size on post-equity issue performance. Given the small sample size of large-cap firms in Swedish IPOs and small-cap firms in Swedish SEOs, we included mid-cap firms in the analysis. By calculating the mean abnormal return and standard error for each market cap group and period we utilize Tukey's Honestly Significant Difference (HSD) test to test if there are any differences in abnormal return between the groups. Tukey's HSD test is based on a formula similar to a t-test, the difference is that it can compare multiple means. The formula for Tukey's test is:

$$(4.5) \quad q_s = \frac{|\mu_A - \mu_B|}{SE}$$

Where  $q_s$  is the test statistic,  $\mu_A$  and  $\mu_B$  are the two means being compared, and SE is the standard error for the sum of the means.

This approach allows us to specifically compare the performance of large-cap stocks to small-cap stocks, capturing the effect of market capitalization on performance over the specified timeframe. Moreover, by also calculating the mean abnormal return and standard error for Swedish and U.S. IPOs and SEOs over all time periods we can test if there are any significant differences in abnormal returns between the two markets.

## 4.2 Data

Our data has been downloaded either as monthly data between January 2000 and March 2021 or at an individual firm's IPO- or SEO launch date. All macroeconomic variables are monthly data, including interest rates, volatility index, and consumer sentiment index. Additionally, returns, stock traded volume, and index returns are also recorded monthly. The microeconomic variables debt-to-equity ratio, profit margin, and market cap at offer are data from the launch date for the individual firm performing an IPO or SEO.

### Sample selection

Our final data consists of 338 Swedish and 318 U.S. IPO companies, as well as 197 and 249 SEO companies. The selection of Swedish firms followed a simple procedure of retrieving all the firms that had performed an equity offering between January 2000 and March 2021, as well as all the firm-specific variables from the Bloomberg terminal. Cleaning the dataset by removing observations with missing variables, resulted in a drop of a few companies, and therefore being excluded from the final regression analysis.

The selection of U.S. companies, however, was done through a random selection process. This process involved retrieving general firm- and deal-specific information about all companies performing an IPO or SEO during our time period. After this step, all companies with missing values for market cap at offer were dropped. Due to there still remaining over 2000 firms in both the dataset for IPOs and SEOs we assigned a random number between zero and one to each observation using Excel's random number function. By doing this we could sort the companies from largest to smallest and pick a sample close to our Swedish data collection, in the end, we choose a sample of 350 IPOs and 250 SEOs. This way we ensured that we would end up with roughly the same number of companies that we had in our Swedish dataset and minimize the risk

of selection bias, but at the same time having enough observations if we were to drop some in case of other missing variables.

Overall, we had a few missing values for one or more explanatory variables which forced us to drop those specific observations. However, we were able to retrieve data from other sites such as Refinitiv Eikon, Capital IQ, as well as within specific companies' annual reports, to fill in as much as possible of the missing values.

It is important to note that while the dataset might appear substantial for Sweden with 338 IPO firms and 197 SEO firms, the sample sizes for specific market caps can be quite small. For instance, there are only about twelve large-cap firms that conducted IPOs during our time period, and 16 small-cap firms that issued an SEO. The same applies to U.S. IPOs, which only consist of 26 large-cap firms. This means that when dividing IPOs or SEOs into small, mid, and large-cap groups based on market cap at offer size, one of the subsets will have a significantly smaller sample compared to the others. As a result, the findings for this small subset might not be entirely reliable and could be due to random chance. Future research will be necessary to determine if these outcomes hold true as more IPOs and SEOs occur within these smaller groups.

### Variables

Abnormal returns are calculated using returns downloaded from the Bloomberg terminal and a broad stock index for Sweden and the U.S. We decided to use the OMXSPI and the Russell 3000 Index, obtained from Market Watch and Capital IQ. These indices were chosen because they include a wide range of small to large-cap companies, offering a comprehensive view of the market. Using an index like the S&P 500, which consists only of large-cap stocks, would result in a worse overall result when calculating abnormal returns for small- and mid-cap companies.

IPOs are especially known to cluster in different time periods, as recognized by Ibbotson and Jaffe (1975) as hot issue markets. In our analysis, we have therefore created dummy variables for both IPOs and SEOs based on clusterings over the years. If a certain year is above the 75th percentile in terms of the number of IPOs or SEOs launched during a year over our whole time

period, it will be assigned an IPO or SEO clustering dummy variable. With this approach, we aim to capture the effect clusterings may have on abnormal returns for IPOs and SEOs.

Beyond clusterings, we aim to capture equity offering timing based on both macro- and micro-variables to determine if there exists a preferable macroeconomic and microeconomic environment for conducting an IPO or SEO. The macroeconomic factors included in our regression analysis encompass the interest rate, the volatility index (VIX), and a consumer sentiment index. For Sweden, the interest rates are represented by the 10-year yield taken from the OECD platform, the VIX is obtained from Yahoo Finance, and the consumer sentiment index, called “Barometerindikator”, focuses on the current state of the Swedish economy based on household and industry sentiment, and is downloaded from “Konjunkturinstitutet”. For the U.S., the interest rate is sourced from the Federal Reserve Economic Data (FRED). The U.S. consumer sentiment index used is the University of Michigan's consumer sentiment index, downloaded from Bloomberg. The VIX used for the U.S. market is the same as that for Sweden, obtained from Yahoo Finance. The choice of consumer sentiment instead of, for example, investor sentiment, is based on the fact that consumer sentiment is surveyed in most countries. It is also the only real consistent way to acquire a sentiment proxy which makes it possible to do comparisons across countries.

However, timing considerations should not solely rely on macroeconomics; the micro-level characteristics of each company could also play a pivotal role, according to previous studies. Given that every company in the market possesses unique attributes, we have chosen to incorporate variables that are traditionally considered important for stock returns, as well as those specific to IPOs or SEOs that may hold significance. The explanatory variables utilized include market cap at offer, profit margin, debt-to-equity ratio, and trade volume, all sourced from the Bloomberg Terminal. All ratios and values except for trade volume are assessed based on the launch date of the IPO or SEO to capture the current financial status of the firm at the onset of its launch. Another variable considered is the industry to see if any specific industry reacts differently to the issue of new equity. The regressions include nine different industry segments, categorized by Bloomberg. In order to capture the industry effect, we add dummy variables for the industries included in the regression.

## Tests and transformations

Our dependent variable, abnormal returns, and our explanatory variable, market cap at offer, showed signs of non-normality based on the Shapiro-Wilk and Jarque-Bera tests. Therefore, we transformed the data using the Box-Cox method, resulting in a distribution much closer to normal. The non-normality of our data primarily stems from the fact that stock returns are seldom normally distributed. Additionally, outliers in our data create a right-skewed distribution with a heavier right tail, although these outliers are less extreme after the transformation.

We tested our dataset for multicollinearity among the variables using the Variance Inflation Factor (VIF) test, identifying any variables that should be dropped based on the results. We also created a heatmap of the correlation between all variables to detect high correlations. Initially, we collected data for inflation, GDP, and offer size. However, these variables exhibited signs of multicollinearity with interest rate, the Consumer Sentiment Index, and market cap at offer. Therefore, we chose to include only one of these variables. Ultimately, we retained the interest rate, consumer sentiment index, and market cap at offer as they explained abnormal returns better than the other variables that had to be dropped from the regressions.

## 5. Results

Tables 1-8 illustrate the outcomes of our regression analyses concerning IPOs and SEOs in Sweden and the USA. The results unveil remarkable parallels and enduring trends in IPO and SEO regressions between the two countries and across various times. However, certain variables show no clear relationship with the dependent variable and reveal differences across time and countries. These findings underscore the importance of considering both country-specific and time-specific factors when assessing performance. Furthermore, we examine whether the estimated parameters align with the study's three hypotheses and analyze how our results diverge from or align with prior research.

Table 1. IPO Mean abnormal returns

Year	Sweden	Mean	Std error	USA	Mean	Std error	Difference	p-adj
1	Abnormal return	0,096	<b>0,035***</b>	Abnormal return	0,002	0,030	0,094	<b>0,046</b>
2	Abnormal return	0,179	<b>0,053***</b>	Abnormal return	0,048	0,042	0,131	<b>0,053</b>
3	Abnormal return	0,303	<b>0,059***</b>	Abnormal return	0,087	<b>0,050*</b>	0,216	<b>0,006</b>

Note: The table above presents the results from the IPO regressions, displaying the mean of abnormal returns and standard errors over the three years. It also includes the difference in mean between Sweden and the U.S., with a p-value signaling if there is a significant difference between the countries. Standard errors are indicated with \*\*\*/\*\*/\*, representing significance levels of 1/5/10%.

Table 2. IPO regression summary

Country	Sweden						USA					
Year	1		2		3		1		2		3	
	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err
const	-0.292	<b>0.136**</b>	-0.656	<b>0.216***</b>	-0.815	<b>0.250***</b>	0.877	<b>0.340***</b>	0.446	0.494	0.085	0.632
Market Cap at Offer	0.112	<b>0.033***</b>	0.195	<b>0.050***</b>	0.236	<b>0.057***</b>	-0.195	<b>0.087**</b>	-0.097	0.126	0.006	0.162
Profit Margin	0.000	0.000	0.000	0.000	0.001	<b>0.001**</b>	-0.005	0.003	-0.001	0.004	-0.005	0.006
D/E Ratio	-0.042	<b>0.012***</b>	-0.052	<b>0.019***</b>	-0.022	0.022	-0.004	<b>0.002*</b>	-0.004	0.003	-0.006	0.004
Volume Change	-0.002	0.014	-0.004	<b>0.002*</b>	-0.004	<b>0.002*</b>	0.001	0.002	0.005	0.006	0.001	0.008
IPO Clustering	-0.026	0.076	-0.041	0.112	-0.064	0.130	-0.106	<b>0.055*</b>	-0.223	<b>0.081***</b>	-0.224	<b>0.105**</b>
Interest Rate	0.011	0.156	-0.473	<b>0.102***</b>	-0.375	<b>0.078***</b>	-0.145	<b>0.070**</b>	-0.195	<b>0.044***</b>	-0.163	<b>0.045***</b>
Consumer Sentiment	0.016	0.246	0.686	<b>0.324**</b>	0.594	<b>0.331*</b>	0.213	0.213	-0.030	0.239	0.193	0.255
VIX	-0.157	<b>0.090*</b>	-0.257	0.161	-0.311	0.194	0.162	<b>0.076**</b>	-0.019	0.099	0.189	0.126
R-Squared	0.064		0.137		0.146		0.082		0.131		0.130	
Adjusted R-Squared	0.018		0.094		0.103		0.030		0.082		0.081	
No. Observations	338		338		338		318		318		318	

Note: The table above presents the results from the IPO regressions, displaying the coefficients and standard errors for all variables in Sweden and the USA for each of the three years. Standard errors are indicated with \*\*\*/\*\*/\*, representing significance levels of 1/5/10%.

Tables 3 and 4. IPO market capitalization and mean abnormal return

Sweden							USA						
Year	Reference	Mean	Comparison	Mean	Difference	p-adj	Year	Reference	Mean	Comparison	Mean	Difference	p-adj
1	Large-Cap	0,063	Mid-Cap	0,042	0,106	0,851	1	Large-Cap	0,175	Mid-Cap	0,102	0,073	0,812
	Large-Cap	0,063	Small-Cap	0,139	0,075	0,912		Large-Cap	0,175	Small-Cap	0,098	0,274	0,051
	Mid-Cap	0,042	Small-Cap	0,139	0,181	<b>0,088</b>		Mid-Cap	0,102	Small-Cap	0,098	0,201	<b>0,004</b>
2	Large-Cap	0,278	Mid-Cap	0,079	0,357	0,435	2	Large-Cap	0,242	Mid-Cap	0,147	0,095	0,835
	Large-Cap	0,278	Small-Cap	0,251	0,027	0,995		Large-Cap	0,242	Small-Cap	0,055	0,298	0,164
	Mid-Cap	0,079	Small-Cap	0,251	0,331	<b>0,026</b>		Mid-Cap	0,147	Small-Cap	0,055	0,202	<b>0,051</b>
3	Large-Cap	0,249	Mid-Cap	0,001	0,250	0,722	3	Large-Cap	0,346	Mid-Cap	0,145	0,201	0,583
	Large-Cap	0,249	Small-Cap	0,397	0,149	0,880		Large-Cap	0,346	Small-Cap	0,007	0,339	0,205
	Mid-Cap	0,001	Small-Cap	0,397	0,399	<b>0,015</b>		Mid-Cap	0,145	Small-Cap	0,007	0,138	0,388

Note: The tables above present the results from the IPO subset groups small-, mid-, and large-cap, displaying the mean abnormal returns for each group in Sweden and the USA over the three years. It also includes the differences in mean abnormal returns between the subsets, signaling with the p-value if there exists any significant difference between the subsets.

### 5.1 Initial Public Offerings (IPOs)

When analyzing the results of IPOs' average abnormal returns for both Sweden and the USA during the three-year period in Table 1, it is noticeable that there is a significant difference between the countries. The U.S. IPOs outperformed Swedish IPOs in all three time periods, even though they both show underperformance over all years, with Sweden's results being significant in all of them and the U.S.'s results being significant in the three-year period. The average underperformance in Sweden is 9.57%, 17.9%, and 30.3% for year one, two, and three respectively, while the underperformance in the U.S. is 8.7% for the third year. The difference is 9.4%, 13.1%, and 21.6% on average, opposing hypothesis 1, which states that there is no significant difference in long-term abnormal returns between Swedish and American IPOs.

Upon reviewing the results of IPO abnormal returns for both Sweden and the USA during the three-year period in Table 2, it is noticeable that market capitalization at offer is positively significant in Sweden for all three years, but negatively significant in the U.S. in the first year. These results align with those in Tables 3 and 4, where we observe the mean of small, mid, and large-cap IPOs and their differences. It is evident that Swedish small-cap IPOs heavily underperformed compared to mid-cap IPOs. Small-cap stocks saw negative abnormal returns of 13.9%, 25.1%, and 39.7% over the three-year period, resulting in an underperformance ranging between 18% and 39% compared to mid-cap IPOs. No significant results can be drawn from the comparison between small-cap and large-cap abnormal returns in any period, even though large-cap had a less negative abnormal return in years one and three, and slightly more negative in year two compared to small-cap.

The results from the U.S. mean returns for the different market caps are almost the opposite of Sweden's. Small-cap significantly outperformed mid-cap IPOs in years one and two with positive abnormal returns of 9.8% and 5.5%, compared to negative abnormal returns of 10.2% and 14.7%. Moreover, there are no significant results of the difference in performance between small-cap and large-cap IPOs. However, small caps' lowest mean is in the third year with an underperformance of 0.7%, but large-caps have an underperformance ranging from 17.5% in the first year to 34.6% in the third year. These results do not show signs of support for hypothesis 3,

which suggests that there is a significant difference in long-term abnormal returns between small and large-cap IPOs, but they do indicate a difference between small- and mid-caps.

When investigating the macroeconomic variables in Table 2, it becomes evident that the interest rate negatively affects abnormal returns for both Sweden and the USA. There is an observable negative impact on Swedish IPOs, with a decrease of 0.47 and 0.37 percentage points in abnormal returns for every percentage point increase in the interest rate over the two- and three-year periods, respectively, at a 1% significance level. Similarly, the interest rate negatively affects U.S. IPOs' abnormal returns by 0.14, 0.19, and 0.16 percentage points per percentage point change over the three years. These results align with hypothesis 5, which suggests that macroeconomic conditions influence long-term abnormal returns.

Another notable finding from the table is that the impact of IPO clusterings is not evident for Swedish IPOs but is noticeable for U.S. IPOs. In the U.S., IPOs underperform in all three time periods when the IPO market is hot, with 10.5%, 22.3%, and 22.4% lower abnormal returns, respectively. While the results of Swedish IPO clusterings are not significant, the findings of U.S. IPO clusterings support hypothesis 5.

Moreover, the consumer sentiment index yields significant results for Sweden but not for the USA. In the two- and three-year periods, it positively affects abnormal returns by 0.68 and 0.59 percentage points, respectively, for every percentage point increase in the index. Additionally, the VIX index shows some significant results. In the one-year period, it negatively affects Swedish and U.S. abnormal returns by 0.15 and 0.16 percentage points, respectively, for every percentage point increase in the index. These findings suggest that market volatility, correlated with the macroeconomic climate, significantly impacts long-term abnormal returns.

The microeconomic variables yield varying results upon closer examination of Table 2. Profit margin does not appear to significantly affect abnormal returns, except for Sweden over a three-year period. A one percent increase in profit margin positively affects abnormal returns by only 0.001 percentage points. However, the impact of the debt-to-equity ratio on abnormal returns shows more significant results. In Sweden, there are negative impacts of 0.04 percentage



points and 0.05 percentage points per percent increase in debt-to-equity ratio for the one- and two-year periods, respectively. The only significant result for U.S. IPOs is observed in the one-year period, where there is a negative impact of 0.004 percentage points. Similarly, the change in volume, or the number of shares traded, only exhibits significance at the 10% level for Swedish companies over two and three years, with negative impacts of 0.004 percentage points per percentage point increase in volume.

When observing the industry dummy variables in IPOs (see Appendix A), it becomes apparent that most of them do not exhibit a significant difference in abnormal returns compared to the comparable category "Industrial sector," except for the technology sector. The abnormal returns of the technology sector show significant underperformance in Sweden over the two- and three-year periods by 34.3% and 41.9%, respectively, compared to the industrial sector.

Analyzing the explanatory power of our regression model for IPOs in Table 2, we can both detect an R-squared and also an adjusted R-squared. In Sweden, we can see that the explanatory power increases every year with an R-squared value moving from 6.4%, 13.7%, and 14.6% over the years. Reasonably adjusted R-squared is a little bit lower with values of 1.8%, 9.4%, and 10.3%. The value for the U.S. is approximately around the same levels with an R-squared value of 8.2%, 13.1%, and 13% over the years and the adjusted R-squared of 3%, 8.2%, and 8.1%. In total, the descriptive power seems to be a little bit higher for Sweden than for the USA. At first sight, the explanatory power of our models might seem low, but regression models on abnormal returns usually show very low R-squared values due to the reason that there exists a lot of different variables that affect the outcome of stock returns

Table 5. SEO Mean abnormal returns

Year	Sweden	Mean	Std error	USA	Mean	Std error	Difference	p-adj
1	Abnormal return	0,031	0,029	Abnormal return	0,027	0,022	0,004	0,905
2	Abnormal return	0,018	0,039	Abnormal return	0,083	<b>0,030***</b>	0,065	0,180
3	Abnormal return	0,030	0,051	Abnormal return	0,134	<b>0,036***</b>	0,104	<b>0,090</b>

Note: The table above presents the results from the SEO regressions, displaying the mean of abnormal returns and standard errors over the three years. It also includes the difference in mean between Sweden and the U.S., with a p-value signaling if there is a significant difference between the countries. Standard errors are indicated with \*\*\*/\*\*/\*, representing significance levels of 1/5/10%.

Table 6. SEO regression summary

Country	Sweden						USA					
Year	1		2		3		1		2		3	
	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err
const	-0.127	0.208	-0.112	0.290	0.424	0.364	0.005	0.103	-0.084	0.144	0.150	0.180
Market Cap at Offer	0.020	0.039	0.039	0.053	-0.038	0.068	-0.002	0.005	0.004	0.007	0.003	0.009
Profit Margin	0.008	<b>0.002***</b>	0.005	<b>0.003*</b>	0.011	<b>0.004***</b>	0.017	0.016	0.038	<b>0.021*</b>	0.053	<b>0.026**</b>
D/E Ratio	-0.019	0.016	-0.032	0.021	-0.050	<b>0.028*</b>	0.010	<b>0.002***</b>	0.006	<b>0.003*</b>	0.008	<b>0.004**</b>
Volume Change	0.007	0.012	-0.029	<b>0.012**</b>	-0.005	0.014	-0.001	0.001	-0.002	<b>0.001*</b>	-0.001	0.001
IPO Clustering	0.007	0.053	-0.067	0.072	-0.111	0.100	0.021	0.042	-0.050	0.060	-0.115	0.077
Interest Rate	0.175	<b>0.106*</b>	-0.112	<b>0.065*</b>	-0.104	<b>0.051**</b>	0.051	0.047	-0.049	0.030	-0.087	<b>0.03***</b>
Consumer Sentiment	-0.381	<b>0.129***</b>	0.132	0.165	0.170	0.246	0.164	0.169	0.144	0.174	0.185	0.170
VIX	-0.078	0.075	-0.025	0.115	0.046	0.116	0.070	0.057	0.097	0.078	0.079	0.121
R-Squared	0.136		0.150		0.144		0.074		0.082		0.125	
Adjusted R-Squared	0.056		0.075		0.068		0.006		0.015		0.061	
No. Observations	197		197		197		249		249		249	

Note: The table above presents the results from the SEO regressions, displaying the coefficients and standard errors for all variables in Sweden and the USA for each of the three years. Standard errors are indicated with \*\*\*/\*\*/\*, representing significance levels of 1/5/10%.

Tables 7 and 8. SEO market capitalization and mean abnormal return

Sweden							USA						
Year	Reference	Mean	Comparison	Mean	Difference	p-adj	Year	Reference	Mean	Comparison	Mean	Difference	p-adj
1	Large-Cap	0,071	Mid-Cap	0,010	0,080	0,390	1	Large-Cap	0,048	Mid-Cap	0,029	0,019	0,954
	Large-Cap	0,071	Small-Cap	0,099	0,028	0,965		Large-Cap	0,048	Small-Cap	0,002	0,050	0,539
	Mid-Cap	0,010	Small-Cap	0,099	0,109	0,582		Mid-Cap	0,029	Small-Cap	0,002	0,031	0,892
2	Large-Cap	0,012	Mid-Cap	0,015	0,027	0,942	2	Large-Cap	0,099	Mid-Cap	0,058	0,041	0,894
	Large-Cap	0,012	Small-Cap	0,265	0,253	0,215		Large-Cap	0,099	Small-Cap	0,072	0,027	0,911
	Mid-Cap	0,015	Small-Cap	0,265	0,280	0,140		Mid-Cap	0,058	Small-Cap	0,072	0,014	0,988
3	Large-Cap	0,069	Mid-Cap	0,013	0,082	0,727	3	Large-Cap	0,174	Mid-Cap	0,142	0,032	0,955
	Large-Cap	0,069	Small-Cap	0,126	0,057	0,955		Large-Cap	0,174	Small-Cap	0,080	0,093	0,469
	Mid-Cap	0,013	Small-Cap	0,126	0,139	0,751		Mid-Cap	0,142	Small-Cap	0,080	0,061	0,853

Note: The tables above present the results from the SEO subset groups small-, mid-, and large-cap, displaying the mean abnormal returns for each group in Sweden and the USA over the three years. It also includes the differences in mean abnormal returns between the subsets, signaling with the p-value if there exists any significant difference between the subsets.

## 5.2 Seasoned Equity Offerings (SEOs)

By examining Table 5, there is a significant difference in SEOs' long-run abnormal returns in the three-year time period, although only significant at the 10% level. For Sweden, we observe negative average abnormal returns for all three years, yet none of these years signal any significance. Consequently, we cannot draw trustworthy conclusions regarding whether Sweden underperformed in the long run. Similarly, negative average abnormal returns are evident for the U.S. Additionally, for America, the second and third years show significance at the 1% level. Hence, we can conclude that SEOs in the USA significantly underperformed from the perspective of the second and third year, with mean negative abnormal returns of 8.29% and 13.43%, respectively. The lack of significant difference between the countries in years one and two gives support to hypothesis 2, which describes that the results for SEOs should not significantly differ between the countries. However, the significant difference of 10.4% in average abnormal returns for year three contradicts the hypothesis.

Analyzing the outcomes from Table 6 does not reveal any significant effect of the explanatory variable market cap at offer on SEOs as the variable was not significant at any level for either Sweden or the USA across the three time periods. However, the coefficients of market cap at offer for Sweden are positive for one- and two-year while negative for the third. In contrast, the USA has a negative coefficient for the first year and positive coefficients for the other two periods. Everything aligns with what is also found in Tables 7 and 8, for the differences between our subset groups: small-, mid-, and large-caps. No significant difference in average abnormal returns between the market caps can be seen. All the results connected to the market capitalizations argue against hypothesis 4, which says that there are differences in long-run abnormal returns between small- and large-cap stocks post SEOs.

Additionally, we can investigate the macroeconomic variables included in the regressions in Table 6: the interest rate, consumer sentiment index, VIX, and SEO clustering. In Sweden, we identify the significance of the interest rate across all time periods. The first and second years are significant at the 10% level, and the third year at the 5% level, these coefficients suggest that an increase of the interest rate by one percentage point would lead to abnormal returns increasing by 17.49 percentage points in the first year, and decreasing by 11.24, and 10.38 percentage points in

the second and third year. These coefficients indicate different relationships between the interest rate and abnormal returns over the years where it has a positive effect in the first year and negative effects in the second and third years. The results in the U.S. are somewhat similar, with the interest rate being significant for the third year at the 1% level, with an increase of one percentage point in interest rate decreasing abnormal returns by 8.7 percentage points. Both Sweden and the USA imply that an increase in the cumulative interest rates over the longer term of three years would lead to a decrease in long-run abnormal returns of SEOs, supporting hypothesis 6. That the macroeconomic variables should have an impact on post-SEO abnormal returns.

For Sweden, we also notice a significant impact of the consumer sentiment index for the one-year period, on a 10% significance level. This specific result supports hypothesis 6. According to the coefficient, an increase in the consumer sentiment index by one percentage point would decrease abnormal returns for SEOs by approximately 0.38 percentage points. A negative relationship between consumer sentiment and abnormal returns is unexpected because historically, consumer sentiment tends to impact stock returns positively. Other than that, the consumer sentiment index shows no sign of impacting abnormal returns in either Sweden or the USA. This is also the conclusion for the VIX index, which is not significant for any year in either of the countries. The final macro variable, SEO clustering, seems to have no impact on the abnormal returns of SEOs. The lack of significance for the other variables contradicts hypothesis 6.

Finally, we will determine the effect of the microeconomic variables, including profit margin, debt-to-equity ratio, volume change, and the industry dummies. Both profit margin and debt-to-equity ratio are significant over many different time periods for the two countries and would therefore be considered important firm-specific variables. These results give support to hypothesis 6, that microeconomic variables affect abnormal returns in the long-run post SEOs. From Table 6, we can observe a positive relationship between profit margin and abnormal returns. All periods are significant for both countries except the one-year period for the United States. In Sweden, the significance levels for the one-, two-, and three-year time frames are at 1%, 10%, and 1% levels, respectively, with coefficients indicating that an increase in the profit

margin of one percentage point would increase abnormal returns by 0.007, 0.005, and 0.011 percentage points, for the respective time frames. A similar result can be observed in the U.S. for the two- and three-year time frames, with significance levels at 10% and 5%, respectively. The coefficients indicate that an increase of one percentage point in profit margin will increase abnormal returns by 0.038 and 0.053 percentage points.

Moving on to the variable debt-to-equity ratio, we observe different trends between the two countries. Sweden is only significant for the three-year period, with a negative coefficient of 0.0504, at a significance level of 10%. In the U.S., the relationship is significant for all periods and is positive. The significance levels are 1%, 10%, and 5% from years one to three. The interpretation of all coefficients indicates that an increase of one percentage point in the debt-to-equity ratio will increase abnormal returns by 0.01, 0.006, and 0.0075 percentage points, over each time period respectively. The significant results of the debt-to-equity ratio, especially in the third year, give support to hypothesis 6.

The trading volume only shows significance for the two-year time period in both countries with a negative relationship. It is significant at the 5% level in Sweden, and at the 10% level in the U.S. An increase in the volume by one percentage point will result in abnormal returns decreasing by 0.0293 and 0.0022 percentage points, respectively. The periods that show no significant impact of volume change would be considered arguments against the hypothesis, while the results from the two-year time period would give support to the hypothesis.

Our SEO dummy variables for industry (see Appendix A), show no significant difference compared to the reference group “Industrial Sector”, except for the following in Sweden: Technology for 1 year, Energy for 2 years, and Communication for 3 years. For the USA, the only significant ones are Energy for 2 and 3 years, and Consumer Cyclical for 3 years.

Examining the explanatory capacity of our regression model for SEOs in Table 6, both R-squared and adjusted R-squared values are observable. In the case of Sweden, we find explanatory R-squared values of 13.6%, 15%, and 14.4%, respectively. However, the adjusted R-squared values are slightly lower, standing at 5.6%, 7.5%, and 6.8%. Similarly, the U.S.

R-squared values are approximately 7.4%, 8.2%, and 12.5%, while the adjusted R-squared values are 0.6%, 1.5%, and 6.1%. Overall, descriptive power appears higher for Sweden compared to the USA. The same argument for the low R-squared values for the IPO regression is also a reason for the result of SEOs.

### 5.3 Discussion

The analysis of IPOs and SEOs and their long-term abnormal performance provides nuanced insights into the dynamics of country-specific factors, market capitalization, and the impact of equity offering timing. This discussion will focus on three primary areas: the difference in long-term abnormal performance between the Swedish and American markets, the disparities between small- and large-cap stocks, and the significance of equity offering timing on IPO and SEO outcomes. The regression results are consistent for certain aspects of the analysis but relatively incomplete for other variables. There are similarities and differences observed for both IPOs and SEOs between Sweden and the U.S., as well as differences between the three time periods.

#### 5.3.1 Initial Public Offerings (IPOs)

The hypothesis that there are no significant disparities in the experienced long-term abnormal returns between Swedish and American companies following an IPO is not supported by the results. The average long-term performance shows significant differences between Sweden and the U.S., with U.S. IPOs outperforming Swedish IPOs in all three time periods. However, both markets had negative abnormal returns on average, which is in line with earlier studies by Ritter (1991) and Aggarwal and Rivoli (1990), who identified a tendency for long-term underperformance in IPOs due to factors such as equity offering timing and initial overvaluation. The studies conducted on European and Australian markets by Schuster (2003) and Da Silva Rosa et al. (2003), which suggest that IPO overperformance occurs, do not align with the results of this study. However, even though the average abnormal returns for the U.S. in the first and second year are negative, they are not significant. Since we found significant differences in the average abnormal return between Swedish and U.S. IPOs in all time periods, it indicates a disparity between the U.S. and Sweden.

The varying results between the two markets could be attributed to differences in market liquidity, regulatory environments, and investor sentiment. The Swedish market, being smaller and less liquid, may not exhibit the same patterns as the more mature and sophisticated U.S. market. Previous studies, such as those by Brav and Gompers (1997), have noted that smaller markets can behave differently due to lower liquidity and different regulatory frameworks, which can affect long-term performance. This highlights the need for market-specific strategies for investors and policymakers.

The data does not support the existence of a significant difference in long-term abnormal performance between small-cap and large-cap stocks following an IPO. The findings indicate that while market capitalization at the offer is significantly positive across all periods for Sweden and negative for the U.S. in the first year, there are notable differences when considering specific market capitalizations. For instance, Swedish mid-cap stocks significantly outperform small-cap stocks over all three time periods, aligning with previous research suggesting that smaller firms often underperform due to higher volatility and lower investor attention. This observation is consistent with Siev et al. (2022) and Gregory et al. (2010), who found that smaller firms tend to underperform compared to larger firms due to increased risk, and investors are more widely affected by asymmetric information. The lack of significant results for large-cap stocks may be due to the small sample size of large-cap stocks that underwent an IPO in Sweden during the studied period. However, even though the differences aren't significant, large-cap's abnormal returns were greater than small-cap's in the one- and three-year periods, while slightly lower in the two-year period.

In contrast, the U.S. data shows that small-cap IPOs outperform mid-cap IPOs in one and two years. Moreover, market capitalization at offer shows a negative relationship to abnormal returns in a one-year period. These results could suggest different market dynamics, possibly influenced by information asymmetry and the scale and media attention of larger firms. The findings of Levis (2011), Mogilevsky and Murgulov (2012), and Ritter (1991) suggest that mature entities oblige less underpricing due to investors demanding less compensation for the lower risk they take, resulting in lower uncertainty and information asymmetry. This may explain the discrepancy in performance trajectories. Less underpricing combined with more publicly

available information about their past performance and future prospects may result in lower abnormal returns compared to more underpriced and risky small-cap IPOs that have the potential for very high abnormal returns. This discrepancy underscores the importance of considering regional market characteristics and investor behaviors when analyzing IPO performance. The result indicating a significant positive impact of market cap at offer on abnormal returns for all three periods in Sweden aligns with prior research in Scandinavia, done by Poulsen and Nielsen, (2017), who found that larger firms outperformed smaller firms. Market cap at offer also showed a significant influence in the U.S., but only for the third period, and in this case, the relationship was negative. This is not in line with a prior empirical study of IPOs in America by Siev et al. (2022), who suggest that firm size and age act as predictive variables, with small-cap stocks underperforming in the long run compared to large-caps.

Equity offering timing emerges as a crucial factor affecting IPO performance. The study finds that interest rates and market conditions significantly impact abnormal returns. For both Sweden and the USA, higher interest rates are associated with lower abnormal returns, aligning with broader economic theories that rising rates can downsize investment returns due to higher borrowing costs and reduced economic activity. Additionally, the clustering of IPOs in the U.S. market leads to lower abnormal returns, indicating that high volumes of IPOs during "hot" market periods can dilute investor interest and capital, resulting in lower returns. Moreover, consumer sentiment shows a positive relationship with Swedish abnormal returns in the two- and three-year periods. These findings support the hypothesis that equity offering timing, influenced by macroeconomic conditions and investor sentiment, plays a pivotal role in the success of IPOs. These results are consistent with the work of Coakley et al. (2008), Bergström et al. (2006), and Levis (2011), who noted that equity offering timing significantly affects IPO success, particularly during periods of high investor optimism.

The Volatility Index (VIX), also known as the "fear gauge," is another important factor. Higher VIX levels, indicating increased market volatility, are associated with lower IPO abnormal returns due to greater investor uncertainty and risk aversion. Based on prior research volatility is something that is expected to have a negative impact on stock returns. Further researchers point to this negative relationship to be based on volatility feedback, if expected future volatility would



rise it will follow that future required return on stocks also increase. The result of this is a direct negative impact on the current stock price. Evidence of this volatility feedback is found by Bekaert and Wu (2000), Kim et al. (2004), and Mayfield (2004). Our study shows that IPOs launched during periods of high VIX levels tend to generate lower abnormal returns in Sweden and the USA in the first year. These results suggest that investors are more risk-averse in volatile markets, and therefore may sell newly listed and highly uncertain companies. Moreover, our findings about the change in trading volume, where an increase in volume has a negative relationship with abnormal returns in Sweden for the two- and three-year periods, may be linked to the findings about volatility's negative impact on abnormal returns. Biais and Foucault (2014) emphasize that higher trading volumes mean increased trading activity, and possibly higher volatility due to fluctuations in buying and selling pressures.

The debt-to-equity ratio also plays a significant role in equity offering timing. The results suggest that higher levels of debt-to-equity affect both Swedish and American IPOs negatively in the first two years. Companies with higher D/E ratios may face tougher assessments during their IPOs, as high leverage can be perceived as a risk factor by investors. The study finds that firms with lower debt-to-equity ratios tend to perform better in the long run, suggesting that a strong balance sheet is favorable for IPO success. This aligns with previous research by Adami et al. (2015) and Andersson (2016), indicating that companies with high leverage are often seen as riskier investments, leading to lower post-IPO returns.

Profit margin has been identified as another critical variable influencing IPO long-term performance (Löf & Åkerlund, 2022). The analysis reveals that higher profit margins correlate with slightly better post-IPO performance in Sweden over three years. However, it was not found to be significant for any other time period or for U.S. IPOs at all. The notion of the importance of a strong profit margin to attract investor interest and ensure successful IPO outcomes may, in truth, not be as significant, according to our findings.

### 5.3.2 Seasoned Equity Offerings (SEOs)

Ritter's article "The Long-Run Performance of Initial Public Offerings" (1991) was pivotal in discussing the long-term underperformance phenomenon of IPOs, suggesting that similar patterns could be projected for SEOs. A historical analysis presented by Jegadeesh (2014) indicates that SEOs should underperform in the long term. The study also concluded that firms performing an SEO underperformed compared to other companies that didn't conduct any equity offerings. These results are in line with our findings in the USA for the two- and three-year perspectives. Jegadeesh argues that the underperformance of SEOs could be due to the reason that an SEO acts as a sign of overvaluation. The lack of significance in our results for underperformance in the one-year perspective might be because the time frame is too short. The expectation of underperformance of SEOs is supported by other studies such as Loughran and Ritter (1995), Baker and Wurgler (2000), and Jegadeesh (2000). For Sweden, we can not declare any underperformance. Although the average abnormal returns are negative, they are not significant. The result for Sweden is therefore not in line with what we found in the U.S., and it also speaks against prior research results from Kohonen (2019) and Brunskog and Östgren (2015) who analyzed the Nordic and Swedish markets. The different outcomes compared to earlier studies could be because of a few various reasons. The method of analysis, size of the dataset, and time period selected for the analysis differ.

In the comparison between SEOs in Sweden and America, we detect a significant difference over the three-year period, with the results suggesting greater underperformance in the American market. The differences between the markets are significant, but only at the 10% level, indicating that the variations are not very pronounced. In an ideal scenario of perfect capital markets, firms would face an infinitely elastic demand curve, implying that share prices should remain consistent irrespective of the market in which the shares are offered. Nevertheless, various factors such as taxes, government-imposed investment restrictions, transaction costs, and information expenses could impede the seamless integration of domestic and global markets (Kim and Stulz, 1998; Stulz and Wasserfallen, 1995; Amihud and Mendelson, 1986). If capital markets show such disparities, it suggests they follow a downward-sloping demand curve. In this scenario, equity issuances usually increase the supply of shares, which can lead to price decreases if demand remains static. Therefore, to achieve a higher offer price in a global issue,

the increased supply must be matched by a corresponding rise in demand for shares. The disparities might explain why a global market like the USA shows different results compared to Sweden in our regression analysis.

Further, our results for market cap at offer suggest no significant impact on abnormal returns. Moreover, no distinguished differences between our subsets small-, mid-, and large-cap can be seen either. The study by Brav et al. (2000) suggests otherwise. They describe how the inherent stability in larger firms may dampen the volatility typically associated with post-SEO performance, implying that smaller firms could experience more extreme underperformance. However, our regression analysis does not indicate any significant influence of market capitalization on abnormal returns. Jegadeesh (2014) argues that assumptions regarding performance differences are solely based on the misspecification of the benchmark, contending that in reality, there should be no performance distinction between SEOs from small and large corporations.

In accordance with Breeden (2005), macroeconomic variables exert a specific influence on consumption and investment opportunities, thereby affecting firms' output and returns. In our regression, SEOs showed a significant negative impact from the variable interest rates on abnormal returns, mainly in the two- and three-years. These results align with research such as that by Rapach et al. (2005), who analyzed data from twelve industrialized nations and identified the interest rate as the most influential variable in predictive power across both in-sample and out-of-sample analyses for stock returns. The captured negative relationship is expected because an increased interest rate usually means bad news for the stock market due to the increased cost of capital. Generally, increases in interest rates lead to decreases in stock prices, which holds true for our regression over the three-year perspective. The lack of significance in other periods for the interest rate suggests that this specific macroeconomic variable needs at least three years to show any impact in the US, while in Sweden, the negative impact is evident already in the second year.

Prior literature has also found that SEOs are more common in bull markets when stock prices are higher than in bear markets. This suggests that SEOs should be cyclical and typically occur in

clusters (Schöber, 2008; Loughran, Ritter, & Rydqvist, 1994). However, the clustering of SEOs from our regression analysis does not reveal any effect on long-run abnormal returns based on whether they appear during a bull market or not, as the variable "SEO clustering" is not significant at any level. This result would suggest that if SEOs appear in clusters it will not affect the long-run abnormal returns post-issuance.

Volatility is something that is expected to have an impact on stock returns, and a large amount of literature clarifies negative relationships based on prior arguments about volatility feedback. Therefore we might expect the VIX to have significant negative effects in our regression for SEOs. However, it is important to remember that our analysis investigates abnormal returns, not normal stock returns. It is reasonable to believe that the effect is neutralized because the VIX influences both stock returns and market returns. This could explain why we don't observe any significant effect. The coefficients might even show a positive effect instead of a negative one due to the possible impact of SEOs relative to the market. Still, the VIX indicated a significant effect on IPOs. The lack of significance in our SEO regressions might suggest that these companies are less influenced by volatility, possibly due to their longer presence in the stock market.

According to Shleifer and Vishny (1997), it would be unwise to invest in the opposite direction of consumer sentiment, especially for smaller firms. Following this, we would expect to see a significant impact from the consumer sentiment variable. However, our results show no relationship except in Sweden for the first year. The unexpected negative relationship suggests that an increase in sentiment would theoretically lead to decreased abnormal returns rather than increased ones.

Investor sentiment encompasses investors' perceptions and expectations about the market, shaped by their emotions, attitudes, and opinions. Misinterpretations among investors can lead to incorrect pricing, a concept supported by various researchers including Chang et al. (2012), Kaplanski and Levy (2010), Yang and Li (2013), and Zhou and Yang (2019). Previous studies in behavioral finance indicate that investor sentiment is influential in explaining stock returns and creating mispricing, as evidenced by research conducted by Baker and Wurgler (2006), Brown

and Cliff (2005), and Corredor et al. (2013). However, our findings only demonstrate a significant negative impact on Swedish SEOs over a one-year period. Similar to the conclusion drawn regarding the lack of influence of the VIX index on SEOs, this may be because consumer sentiment's effect tends to offset abnormal returns, influencing both stock and market returns in a similar direction and thereby neutralizing its impact.

Our result for the U.S., indicating that an increased debt-to-equity ratio increases abnormal returns in the long run, would be in line with explanations provided by Black (1976) and Modigliani & Miller (1958), suggesting that debt and return on equity follow a linear relationship possibly due to the leverage effect. However, this doesn't seem to be the case for Sweden, where it only has significance in the third year and it explains a negative relationship instead of a positive one.

Profit margin turned out to be an important variable for SEOs' long-run abnormal returns, being significant for all periods except for the first year in the U.S. The positive relationship therefore suggests that firms should take their profit into consideration when timing their offering. However, earnings management should not be of great interest to firms and investors when deciding to issue equity and invest. Rangan (1998) and Teoh et al. (1998) found that negative long-term abnormal returns following a seasoned equity offering (SEO) are caused by losses being recognized after the issue, leading to a devaluation of the firm.

## 6. Conclusion

In conclusion, this thesis presents a comprehensive analysis of the long-term abnormal return of IPOs and SEOs, conducted on the Swedish and American markets between January 2000 and March 2021. The empirical study offers a nuanced understanding of the long-run performance and the impact of market capitalization and timing of equity offerings on the abnormal returns behavior post-offering. The findings contribute significantly to the academic discourse by confirming some previously observed patterns while also highlighting distinct regional differences. For instance, our results confirm the underperformance phenomenon for Sweden's IPOs and SEOs for all three years except the first year of SEOs. America also shows signs of

underperformance, but the results are less significant than those of Sweden. It takes longer to capture the significant effect, appearing in year three for IPOs and year two for SEOs.

Further, this study has shown how Swedish and American markets differ significantly, especially in the long-run performance of IPOs. Although both markets underperformed in terms of abnormal returns, American IPOs significantly outperformed Swedish IPOs in all three time periods, with the largest difference of 21.6% occurring in the third year. On the other hand, American SEOs significantly underperformed compared to Swedish SEOs in the third year, with the difference being 10.4%.

Moreover, we can capture the important impact of market capitalization on IPOs. Market cap at offer has a significant positive relationship to Swedish abnormal returns in all years, while it has a significant negative relationship to American abnormal returns in year one. Moreover, Swedish small-cap IPOs significantly underperformed compared to mid-cap IPOs in all three time periods, with the difference ranging from 18% to 39.9%. Conversely, U.S. small-cap IPOs significantly outperformed mid-cap IPOs in the first and second year, with the differences being 20% for both time periods.

However, the results suggest that market cap at offer has no significant effect on SEOs in either Sweden or America. Furthermore, no significant difference in abnormal returns between small-cap and large-cap companies was found for either IPOs or SEOs in any market.

The most influential variables for IPOs in both countries are the interest rate, VIX index, and debt-to-equity ratio, highlighting the importance of market conditions, volatility expectations, and financial leverage in determining IPO performance. For SEOs, the key variables are largely similar, emphasizing the interest rate and debt-to-equity ratio. However, instead of the VIX index, which measures market volatility, the profit margin becomes a crucial factor, reflecting the importance of a company's profitability in the performance of seasoned equity offerings.

These insights not only enhance our understanding of market dynamics but also suggest practical implications for investors, firms, and policymakers. The study indicates that timing and regional

market characteristics are crucial in influencing the success or failure of public equity offerings. To summarize, future research needs to be conducted to establish the long-run abnormal returns of IPOs and SEOs, particularly regarding market capitalization and equity offering timing. Subsequent studies should address existing gaps from our research, especially concerning the limited sample size for subsets such as large-caps performing an IPO in Sweden, which affects the reliability of our conclusions regarding market capitalization. A beneficial expansion would be to focus on the entire Nordic market, given the similarities across countries, providing a more robust sample that includes a greater proportion of large-cap stocks. Additionally, incorporating more microeconomic variables, such as the price-earnings ratio, return on investment, and price to free cash flow, could further clarify the factors influencing abnormal returns post-IPOs and SEOs. This is particularly important as our findings indicate that firm-specific variables play a crucial role.

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## Appendices

### Appendix A: Industry Dummy Regression Results

Table 1A. IPO industry dummies

Country	Sweden						USA					
Year	1		2		3		1		2		3	
	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err
Consumer, Cyclical	-0.144	0.133	-0.033	0.203	-0.243	0.230	0.088	0.122	0.128	0.176	0.040	0.226
Consumer, Non-cyclical	-0.077	0.098	0.026	0.150	-0.059	0.170	-0.020	0.105	-0.019	0.152	0.038	0.193
Financial	0.003	0.129	0.039	0.195	-0.122	0.221	-0.072	0.131	-0.079	0.186	-0.023	0.239
Communications	-0.197	0.133	-0.282	0.202	-0.232	0.228	-0.144	0.115	-0.042	0.165	0.084	0.210
Technology	-0.181	0.114	<b>-0.344**</b>	0.174	<b>-0.419**</b>	0.198	0.030	0.114	0.039	0.162	0.195	0.207
Utilities	-	-	-	-	-	-	0.124	0.245	0.032	0.352	0.122	0.451
Basic Materials	-0.265	0.221	-0.365	0.337	-0.383	0.381	0.188	0.229	0.052	0.329	0.000	0.422
Energy	-0.192	0.169	-0.008	0.260	-0.360	0.293	-0.043	0.119	-0.058	0.170	-0.194	0.219

Note: The table above presents an appendix for the industry dummies from our IPO regressions, displaying the coefficients and standard errors for all variables in Sweden and the USA for each of the three years. Standard errors are indicated with \*\*\*/\*\*/\*, representing significance levels of 1/5/10%.

Table 2A. SEO industry dummies

Country	Sweden						USA					
Year	1		2		3		1		2		3	
	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err	coef	std err
Consumer, Cyclical	0.052	0.084	0.142	0.109	0.092	0.144	-0.048	0.092	-0.129	0.127	<b>-0.452***</b>	0.154
Consumer, Non-cyclical	-0.037	0.087	-0.118	0.114	-0.120	0.150	-0.021	0.089	0.077	0.122	-0.172	0.148
Financial	-0.001	0.088	0.121	0.114	0.025	0.152	0.002	0.098	0.104	0.134	-0.057	0.163
Communications	-0.025	0.093	<b>-0.233*</b>	0.122	<b>-0.570***</b>	0.163	0.016	0.099	0.078	0.137	-0.160	0.166
Technology	<b>0.270***</b>	0.102	0.067	0.136	-0.037	0.177	0.020	0.094	0.120	0.128	-0.043	0.156
Utilities	-	-	-	-	-	-	-0.086	0.134	-0.025	0.184	-0.188	0.226
Basic Materials	-0.089	0.119	-0.125	0.156	-0.158	0.211	0.122	0.119	0.154	0.164	-0.071	0.201
Energy	-0.028	0.167	<b>0.445**</b>	0.221	0.174	0.292	-0.115	0.096	<b>-0.233*</b>	0.131	<b>-0.430***</b>	0.161

Note: The table above presents an appendix for the industry dummies from our SEO regressions, displaying the coefficients and standard errors for all variables in Sweden and the USA for each of the three years. Standard errors are indicated with \*\*\*/\*\*/\*, representing significance levels of 1/5/10%.