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Founder-CEOs and Stock Market Performance in the Nordic Region

An empirical study conducted on publicly listed companies in the Nordic region during the period from 2008 to 2020

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Abstract

About nine per cent of the publicly listed companies in the Nordic region are managed by one of its founders. These companies are different from others in terms of firm valuation and to some extent, stock market performance. An equal-weighted portfolio containing only founder-CEO firms from the period from 2008 to 2020 has earned an abnormal return of 5.2% annually when controlled for its skewed sector-distribution. This portfolio performs significantly well during the generally challenging period from 2008-2013. These findings become somewhat mixed when looking at a value-weighted portfolio, and when controlling for a variety of equity characteristics, leaving a mixed conclusion for these firms' stock market performance. Nonetheless, these firms have a higher firm valuation despite no systematic differences in investment levels.

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1. Introduction

At the beginning of 2020, more than nine per cent of the publicly listed companies in the Nordic region[1] were managed by one of its founders. Do these firms perform differently than companies that are managed by successor-CEOs[2]? If that is the case, investors can achieve abnormal returns in the stock market by following a simple investing rule, buy or sell stocks of corporations that are managed by one of its founders.

There is growing evidence in favour of founder-CEO firms performing better than other firms, both operationally and in the stock markets (Fahlenbrach, 2009; Adams, Almeida and Ferreira, 2009; Joel, 2010; Zook and Allen; 2016). These findings have received increased amounts of attention the last couple of years, leading to the introduction of exchange-traded funds (ETFs) investing solely in entrepreneurial and founder-led companies, e.g., ENTR and BOSS (Global X Management Company LLC, 2020; ERShares, 2020). These ETFs have performed very well over the last couple of years since their inceptions. Looking at it on firm-level, some of the most successful and best-performing corporations in the last couple of decades have been founder-led, e.g., Amazon, Tesla, Microsoft, Facebook and Nvidia.

However, this recent research and findings are based on financial data and corporations from the United States with limited research having been conducted outside of America. In this thesis, I study the stock market performance of founder-CEO firms and explore whether investors in the Nordic stock markets could achieve excess returns based on this criterion while controlling for a range of factors. Furthermore, I examine whether founder-led firms differ in terms of firm valuation, which the efficient market hypothesis expects these firms to do if they are expected to perform differently than others. Finally, I also explore whether founder-CEO firms have systematically different investment levels. I explore investment-behaviour as this is an aspect of the firm where the CEO generally have significant influence, and thereby reveal whether founder-CEOs manage their firms differently. I also analyse these variables to seek

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[1] This thesis aims to explore the entire Nordic region, however, because of the limited activity in the Icelandic stock market I only include four of the Nordic countries in this thesis representing the region (Norway, Sweden, Denmark, and Finland).

[2] In this thesis, the terms successor-CEOs and professional CEOs are used to describe the non-founder CEOs. Moreover, founder-led companies are in this thesis defined as companies managed by a founder-CEO.

an explanation of why, or why not founder-led companies achieve different returns in the stock markets compared to successor-led companies.

This topic is closely related to the more widely explored subject that focuses on CEO-ownership. These topics both consider the so-called “skin in the game”-effect, and how this help aligning incentives and creates motivation for the manager. It is also related to the research which has been conducted on how family control affects firm performance.

Because of the lack of complete databases covering management-specific information for the Nordic region, I manually construct variables for 8,868 firm-years by hand-collecting these data points. This dataset contains 1,125 unique firms, 2,155 different CEOs, and I identify a total of 755 founder-led firm-years (8.5% of all firm-years in the sample) from 184 separate companies during the sample period from 2008 to 2020.

I start my analysis by exploring whether founder-CEO companies achieve abnormal returns in the stock market by creating both a value- and an equal-weighted portfolio based on the single criterion, do the company have a founder-CEO or not. I further expand my analysis by controlling for a variety of variables such as the Fama-French factors, to see whether these portfolios produce any abnormal returns considering common risk factors. In my thesis, I use similar methodologies and models as Fahlenbrach (2009). I follow his methods closely to allow for some comparison and thereby explore how transferrable his and others’ findings on this topic are across regions and time-periods.

Through my analysis on stock market performance, I find that an equal-weighted portfolio containing exclusively founder-CEO firms received an abnormal return of 5.2% annually when controlled for both its sector-distribution and the four risk factors included in a Carhart Four-Factor model. Furthermore, this portfolio performs significantly well during the first half of the sample period, outperforming the equal-weighted successor-CEO portfolio (p-value of 0.066). However, these findings of stock market performance become more unclear by the fact that the entire sample produces abnormal returns during the sample period. By using Fama-MacBeth regressions, which enables me to control for a selection of equity characteristics, I find that founder-led companies are associated with a significantly higher monthly return. However, when controlling for its disproportionate sector-distribution, the significance evaporates, leaving a mixed conclusion.

As pointed out by Adams, Almeida and Ferreira (2009), the relationship between founder-CEO status and performance is potentially endogenous. That means that while a founder-CEO can affect the firm performance, the performance of the firm can also affect whether the founder-CEO remain as the CEO. However, the direction of this effect is unclear. On the one hand, founder-CEOs can, for example, choose only to leave the firm if the firm is doing well and it is perceived as safe to leave. On the other hand, founder-CEOs can systematically be removed as CEOs following periods of poor firm performance. In order to mitigate this endogeneity issue, I use an instrumental variable approach in my analysis of firm valuation and investment levels. By following this approach, I find that founder-led companies have a significantly higher firm valuation, whereas I do not find any systematic differences in their investment levels.

I structure this thesis as follows. Section 2 starts with a presentation of previous findings and literature related to this topic, followed by a description of theories that are relevant for this thesis. Section 3 offers descriptive statistics of the sample. Section 4 describes the variables and methodologies I use in my models. Section 5 contains analyses of the results from the models. Section 6 touches on possible limitations of the findings being made in this thesis. The thesis ends with a conclusion in section 7.

2. Literature Review

2.1 Founder-led and Entrepreneurial Firms

Early research conducted on this topic provides evidence suggesting that founder-led firms perform better than other firms in the stock markets (Morck et al., 1988; Johnson et al., 1985). However, other researchers quickly followed, providing evidence of no significant differences in performance from companies managed by founder-CEOs (Daily and Dalton, 1992; Willard et al., 1992; Jayaraman et al., 2000; Himmelberg et al., 1999; Demsetz and Villalonga, 2001), creating a more mixed view on whether these firms perform differently than others. However, more recent empirical evidence from the American capital markets further strengthens the case that favours founder-led corporations. These papers conclude with the notion of investing in founder-led and entrepreneurial companies yield a higher return than investing in other companies (Fahlenbrach, 2009; McVey and Draho, 2005; Cox and Shulman, 2008; Shulman, 2009, 2010).

More specifically, Shulman (2009) recommends investing in entrepreneur-led companies during tough times. He argues that these firms are in a better position to do well in challenging economic conditions as such conditions favour efficient producers. Shulman (2009) finds entrepreneurs to have healthy and lean balance sheets and have expansion opportunities ready, allowing these firms to achieve better results with the capital given. These features of entrepreneurial companies are very beneficial during challenging economic conditions as capital restraints are common during such times.

Looking at operational performance, Begley (1995) provides evidence suggesting that founder-led companies achieve a higher return on their assets. However, like Adams, Almeida and Ferreira (2009) eminently point out, there exists an endogeneity problem. This issue stems from the fact that founder-CEOs might contribute to firm performance, but firm performance may also affect founder-CEO status. This endogeneity issue has potentially severe implications and causes regular OLS-estimations to be biased, and thus needs correction. Adams, Almeida and Ferreira (2009) corrects for this issue, and reveal what they argue to be unbiased evidence supporting Begley's (1995) notion that founder-led companies do indeed receive a higher return on assets than companies managed by professional CEOs.

Furthermore, there is evidence of founder-managed firms having higher firm valuation than their successor-led counterparts (Fahlenbrach, 2009; Adams, Almeida and Ferreira, 2009; Shulman and Cox, 2010; Barontini and Caprio, 2006; Villalonga and Amit, 2006). Contrastingly, other research finds evidence favouring descendants rather than the founder in terms of measured firm value (Livingston, 2007; McConaughly et al., 1998; Fahlenbrach, 2003).

Another characteristic of importance distinguishing founder-led companies from others is their investing behaviour, specifically levels of research and development (R&D) are observed to be elevated in this type of companies (Block 2012; Fahlenbrach 2009). Fahlenbrach (2009) presents results of founder-CEO companies reporting 22% more R&D spending in addition to 38% higher capital expenditures based on his sample consisting of 2,327 large U.S. listed firms in the period 1992-2002. All these findings are critical and impactful variables which have implications for investors and other stakeholders surrounding the company. To see why these differences exist, I present relevant findings from research conducted on this topic that shows factors potentially affecting the previously mentioned findings.

One key characteristic of founder-CEOs is that they generally have high ownership in the firm, significantly more ownership than successor-CEOs (Willard et al., 1992; Nelson, 2003; Certo et al., 2001; Fahlenbrach, 2009). This increased ownership concentration can potentially reduce the conflicts of interest between owners and managers (Berle and Means, 1932). However, it may also leave more room for the CEO to be more entrenched and enjoy private benefits at other shareholders expenses (Fama and Jensen, 1983a; 1983b; Shleifer and Vishny, 1988). I address these complications more closely in subsection 2.2.1, where I cover the agency theory that is central in this context. The literature focusing on founder-led companies generally expects the result of increased equity ownership within the executive management, particularly the CEO, to be increased firm performance (Hendricks, Howell and Bingham, 2019).

Through their increased equity ownership, their often charismatic leadership style, and ability to make employees commit more relative to what other managers do (Dobrev and Barnett, 2005; Kark et al., 2003), founders can retain and possess more control in their company compared to non-founders (Hamilton, 2000). Consequently, founder-CEOs are less likely to be removed from their positions (Fahlenbrach, 2009). This feature comes with its advantages in that it creates a safe working atmosphere without frequent executive departures, which are generally associated with reduced firm performance (Krug, 2003; Hambrick and Cannella, 1993; Krishnan et al., 1997). Whereas extended tenure lengths are associated with increased experience and firm- and industry-knowledge (Penrose, 1959). Moreover, lengthier CEO-tenures are linked to the creation of long-lasting and vital relationships, well-established routines and sources of information (Katz; 1982). Additionally, increased tenure lengths allow for a longer investment horizon, which helps to explain the observed increased levels in R&D for these firms.

This safe environment and increased levels of control combined with founder's incentives to think long-term, can in itself help to explain why founder-led firms invest more into R&D. Indeed, research find founder-CEOs to be more likely to think and act long-term (Ling, Zhao and Baron, 2007; Peterson, Galvin and Lange, 2012). Other research shed light on additional factors affecting founder-CEOs ability to think more long-term, such as the founders' intrinsic motivation, increased emotional attachment and personal connection with the company (Miller and Le Breton-Miller, 2006; Nelson, 2003; He, 2008; Wasserman, 2003; Fahlenbrach, 2009).

These unique features have the potential to make founder-CEOs less likely to react to the pressure coming from the capital markets which favour short-term performance over long-term value creation (Schuster, Nicolai, and Covin, 2020). In line with this theory, research finds founder-CEOs to behave less myopic (Schuster, Nicolai and Covin, 2020), in that they do not jeopardise long-term growth to meet their earning-forecasts. One possible reason to why CEOs might behave myopic (Bushee, 1998; Graham et al., 2005; Bhojraj and Libby, 2005; Lundstrum, 2002; Mizik, 2010) is because of the incentive misalignment and asymmetrical information between managers and owners (Bebchuk and Stole, 1993; Lundstrum, 2002; Mizik, 2010). This incentive misalignment is potentially corrected for by having a founder-CEO managing the corporation, which I will explore more closely in the subsection about agency and stewardship theory.

However, the increased levels of control that founder-CEOs generally possess can potentially destroy value in that it allows founders to remain as CEOs for a more extended period even if they do not possess the skills to perform well in the role. In fact, according to Flamholtz (1986) and Adizes (1989) as cited by Jayaraman et al. (2000), founders struggle to let better-suited candidates manage their firm. This unwillingness to let go of control can often be problematic because, while founders often have organisation-specific skills that match the entrepreneurial challenge well, they often lack the administrational skills needed as the organisation grows and direct supervision is no longer possible (Willard et al., 1992; Tushman, 1985; Stevenson and Jarillo, 1990; Wasserman 2012; Boeker and Karichalil, 2002; Pollock, Fund and Baker, 2009). The lack of administrational skills explains the fact that founders often are replaced as their company grows (Hendricks, Howell and Bingham, 2019; Jayaraman et Al. 2000; Stevenson and Jarillo, 1990; Wasserman, 2003).

It is in the start-up phase of the firm's life cycle in which founders, or rather the managers, have the most substantial influence and impact on the company. Founder-CEOs are naturally highly involved in this critical phase, shaping the firm's structure, culture, and strategy, a process that has been named "founder imprinting" (Baron et al., 1999; Nelson, 2003). Taking this into consideration, the potential positive effects of having one of the company's founders leading the firm should be most observable while the company is young and small. In line with this statement, Jayaraman et al. (2000) argue and present evidence suggesting that both firm size and firm age negatively correlates with the effects of founder management.

Despite the evidence suggesting it would be beneficial for firm value in many cases to replace the founder-CEOs, some of these founders remain in their positions for decades. For these CEOs, it would seem logical to surround themselves with a strong top management team to correct for the founder's potentially lacking administrational skills (Jain and Tabak, 2008). However, founder-CEOs tend to be less likely to listen to and rely on their team (Hendricks, Howell and Bingham, 2019). This finding goes back to the fact that founders generally desire and have the ability to remain their control over the company. However, if they instead choose to give up some of their control of the firm, the company can gain vital capital and partners, which allows for better firm performance, and thus the founders find themselves in a dilemma, having to choose between keeping their control over the business, or growing it (Wasserman, 2017).

By giving up ownership the possibility to be replaced as CEO by the board of directors increases (Boeker, 1992; Daily and Johnson, 1997). This replacement could be warranted for some of these CEOs as there is evidence suggesting founder-CEOs use worse management practices than other CEOs, and that firms replacing these CEOs improves their managerial practices (Bennett, Lawrence and Sadun, 2015). The reasons seemingly being that founder-CEOs are unaware of their less efficient managerial practices, and the fact that implementing better practices may reduce their benefits of the retained control (Bennett, Lawrence and

Sadun, 2015; Hamilton, 2000). The loss of these benefits seems to be a critical factor, as these benefits are often one of the main reasons why founders establish businesses in the first place (Hurst and Pugsley, 2011).

Therefore, it appears that it is not the managerial skills of a founder that provide better firm performance. There are, however, other essential differences which make founder-CEOs attractive as managers, such as their passion, motivation, and commitment to the firm (He, 2008; Wasserman, 2003). Moreover, founder-CEOs brings external legitimacy, provides trust and functions as a symbolic leader externally (Bamford, 2006). Founders also possess the skill to make stronger relationships, both with internal and external stakeholders (Fischer and Pollock, 2004). A unique feature of founder-CEOs, which perhaps differentiates them the most from other CEOs, is the personal identification, commitment, and emotional attachment to their firms (Cardon et al., 2009; Fauchart and Gruber, 2011; Wasserman 2006). Founders reportedly describe their firms as their babies (Dobrev and Barnett, 2005; Wasserman, 2012), and view their business as their life's achievement (Fahlenbrach, 2009). This intense personal identification with the company and its success (Peterson et al., 2012; Arthurs and Busenitz; 2003) links the founder-CEOs to a more non-monetary incentive scheme, which is tied to stewardship theory (Donaldson, 1990) and might be one of the reasons why founder-CEOs act less myopic. I present the stewardship theory in subsection 2.2.2.

Entrepreneurs tend to take on more risk than others (Begley, 1995; Chandler and Janssen, 1992); indeed, the willingness to take on risk is one of the main characteristics of entrepreneurs (Timmons, 1978; Welsh and White, 1981, as cited by Jayaraman et al., 2000). Founder-CEOs are thus suggested to have a different attitude toward risk compared to professional CEOs, which may result in different investment-behaviour (Fahlenbrach, 2009). Furthermore, Lee et al. (2016) finds evidence of founder-led companies being more inventive and can extract more value from those innovations than companies led by successor-CEOs.

Finally, founder-CEOs seems to be more overconfident than their non-founding counterparts (Lee, Hwang and Chen, 2017; Bennett, Lawrence and Sadun, 2015). Not only are the founder-CEOs themselves seemingly more overconfident, but other executives within these firms also tend to be more overconfident than non-CEO executives in other companies. These findings imply that founder-CEOs spreads confidence and beliefs through their charismatic and overconfident beings, and thereby affects stakeholders inside and outside the company, making them believe in the business. This feature of founder-CEOs may help to explain why these companies trade at a premium in the stock markets. However, overconfidence is a double-edged sword in that overconfidence among CEOs are associated with both increased innovative performance through investing more into innovation and issuing more patents (Hirshleifer et al., 2012; Galasso and Simcoe, 2011), but it is also associated with overpaying for acquisitions and undertaking value-destroying M&As (Malmendier and Tate, 2008).

As just presented, there are many characteristics distinguishing founder-CEOs from others. In the next section, I present two theories which help to explain why founder-CEOs may act differently than professional CEOs.

2.2 Agency Theory and Stewardship Theory

In this section, I describe in more detail two theories that can help to explain different managerial behaviour, and I suggest how these theories predict founder-CEOs to act. I start this section by introducing the infamous agency theory, followed by the contradicting theory of stewardship, which may do a better job of explaining why founder-CEOs potentially lead better-performing firms.

2.2.1 Agency Theory

Agency theory is essentially a theory seeking to explain behaviour occurring in an agency relationship, i.e., a relationship between two parties where one, the agent, acts on behalf of or as a representative for the other, the principal (Ross, 1973). This theory is not strictly related to economics or business, but it is a central piece within the discipline. Theoretically speaking, agency theory is a combination of several disciplines and theories, including the *theory of agency, the theory of finance* and *the theory of property rights* (Jensen and Meckling, 1976). The focus of the agency theory is to identify problems and costs related to these agency relationships and to explore mechanisms which can reduce these costs. Berle and Means (1932) explain that these agency costs are created through the separation between ownership and control, which is a prominent feature in modern corporations. These problems become more pronounced as the information asymmetry between the principal (shareholder) and the agent (the management) become increasingly more severe. Due to the nature of their different roles, there is bound to be asymmetrical information between shareholders and CEOs. CEOs usually have more knowledge and skills about what the company produces, in addition to being generally more involved in the firm’s activities (Spremann, 1987). It is this asymmetrical information that enables the CEO to act on her own interests as the shareholders cannot observe every action being taken, and therefore not able to punish unwanted behaviour.

Jensen and Meckling (1976) discuss how an agency relationship where all parties are utility maximisers may end up with the agent(s) acting in its self-best interest instead of the principal's best interest. Moreover, they suggest it may generally be impossible for a principal or an agent without inducing cost to make sure that the agent will make optimal decisions from a principal's viewpoint. This statement supports what Adam Smith (1776) famously expressed 200 years earlier, that people will act with their self-interest in mind, and therefore should not expect others to act differently. These theories about agent-principal relationships are, therefore, not only applicable to financial or economics topics but can be used to explain behaviour for all principal-agent relationships.

However, there are few principal-agent relationships where agency costs and the need for these theories become as evident as it does in a relationship between shareholders and CEOs. The basic of this specific relationship is that the owners of the company hire a CEO with more knowledge and skills than themselves to act on their behalf as they have the potential to create more value through the firm. Generally, in these relationships, the owners bear the most risk as they often invest considerable amounts of their wealth in the company, which consequently is being managed by the CEO (Fama and Jensen, 1983b). When these relationships between the owners and CEOs exists, the possibility for two main issues arises, goal-discrepancy and distinction in risk preferences (Eisenhardt, 1989). Goal-discrepancy is an issue that can occur if the manager's goals differ from the ones of the stockholders, which Friedman (1970) argue should be to achieve maximum return from the business. The CEO's goals can, on the other hand, be more related to personal gain such as working less, purchasing better offices solely for the status that it comes with, or taking a higher salary. These interests conflict with the ones of the shareholders and can create significant problems for different stakeholders of the company (Bebchuk and Fried, 2004).

The CEO can be inclined to act on her own interests and goals as it will be at the shareholders' expense, this reveals the misaligned incentives that occurs in these types of relationships if there are no measures implemented to change this. This misalignment in incentives, which is created by the fact that the CEO spends money that is not their own, is what causes the moral hazard problem (Shleifer and Vishny, 1989). The second issue is related to differences in risk preferences between the shareholders and the management. This distinction in risk preferences can cause the management to carry out different actions than what would be optimal for a given shareholder. The differences in risk preferences are likely to arise from the fact that it is usually only the shareholders that can diversify their holdings, not the CEOs. CEOs are generally restricted in their abilities to diversify as all of their compensations usually comes from the one company. This limitation in the ability to diversify generally inclines CEOs to become more risk-averse. However, Founder-CEOs tend to be more risk-seeking than professional CEOs (Tang et al., 2015; Kerr et al., 2018). As a result, founder-CEOs may carry out more decisions that are optimal for the shareholders and thereby add more value to the company.

While it may not appear to be entirely ideal to have such a separation between ownership and control, it does come with its advantages. The most critical benefit arising from this separation between ownership and control is that the owners of the companies do not have to play an active role in the organisation and therefore do not need to be experts in the field of business to expose themselves to the firm's earnings. This feature allows for specialisation, where investors can focus on allocating capital to the best projects and firms in a wide variety of industries. In other words, the separation between ownership and control allows for increased diversification, which in turn enables investors to reduce the idiosyncratic risk associated with their investments. By reducing risk, the investors require less return, which in turn reduces the cost of capital for the company (Fama and Jensen, 1983b). These advantages explain why there is usually a separation between the ones taking on risk and the ones acting on their behalf in modern corporations (Fama and Jensen, 1983a).

By focusing on the benefits arising from the separation between ownership and control, it becomes clear that this is a necessary feature that needs to be in place for modern corporations and financial markets to function efficiently. The focus should, therefore, be to mitigate potential agency problems and to reduce the costs arising from these problems.

As seen in this section, people act according to their own self-interest, and because there is information asymmetry present in modern corporations, CEOs can act on their interests even though it is generally other people's money they are managing (Shleifer and Vishny, 1997). These two facts reveal that the incentives of the owners (principals) and the managers (agents) are not always aligned as managers can pursue value-destroying activities for their personal gain. In other words, this misalignment in incentives and the presence of information asymmetry have the potential of making managers better off at the shareholders' expense. It is therefore clear that it is in the principal's best interest to reduce this opportunistic behaviour from their agents. The most straightforward way to make sure the managers (agents) do not act opportunistically is to reduce the asymmetrical information, which can be done by monitoring their actions.

By monitoring the agent's actions, and thereby reducing the asymmetrical information, the principal reduces the agent's opportunity to act on their temptations since the principal could immediately correct such behaviour. Shareholders could, in theory, monitor the actions of the management and make sure they acted with the shareholders best interest at heart. However, monitoring introduces huge costs in practice. Hence, it exists a trade-off between the advantages gained and the costs introduced by monitoring, in which the advantages need to outweigh the monitoring-related costs (Jensen and Meckling, 1976). Monitoring is not only costly; it can also be hard or even close to impossible to conduct appropriately (Sappington, 1991). Generally, monitoring is simply too costly and comprehensive for a single shareholder to conduct.

As an attempt to reduce this problem, public companies are required to appoint a board of directors who are instructed to do most of the monitoring on behalf of the shareholders. This solution is, however, far from a perfect, as can be seen through stewardship theory which I present in the next subsection. An alternative solution for shareholders can be to sell their stake in the company. If more shareholders follow and do the same, this weak governance and agency problems causes the company's stock price to decline. This loss of value is also considered a part of the agency costs.

Another possible way of reducing agency costs can be to implement measures aligning the managements incentives with the ones of the company's stockholders. To align the incentives between the principal and agent, they need to share the costs and gains related to the firm's performance. The target for these incentive-aligning measurements should therefore be to expose the management for the same risks and gains as the shareholders (Frydman and Jenter, 2010). A proposed solution to this problem is to base the CEO's compensation to the company's equity (Bebchuk and Fried, 2004). In terms of equity-based compensation, there are two different approaches which yield different results. The first equity-based compensation is options, and the second one is pure stock ownership. The critical difference between these two is that CEOs with options generally are not exposed to downside risks, as she could choose not to exercise the option and thereby have her wealth unchanged if the company's share price tanked. This nature of options in which the manager does not participate in losses but get the full advantage of the company's gain incentivises the manager to participate in more risky decisions as this increases the value of their options. This feature of options favours a pure stock compensation, as compensating the manager with shares essentially turns the manager into a shareholder of the company alongside with the other owners.

However, stock compensation is not entirely fair either as Diamond and Verrecchia (1982) point out. Linking the CEO's compensation to the company's stock price in its entirety exposes the CEO's pay to systematic risks, i.e., macroeconomic factors which is out of the CEO's control. On the other hand, this unintended outcome can also go the other way around, in that compensation related to the stock price can reward CEOs for performance which is pure luck and not a result of their effort and skills (Bertrand and Mullainathan, 2001). All in all, there is evidence favouring firms being managed by CEOs who hold significant portions of the firm's common stock, in that they perform better than other firms in the stock markets (Lilienfeld-Toal and Ruenzi, 2014).

As previously mentioned, one of the main differences between professional CEOs and founder-CEOs is the distinction in equity ownership between the two types of CEOs (e.g., Fahlenbrach, 2009; Adams, Almeida and Ferreira, 2009; Frydenberg and Neegard, 2018). This unique trait should help to align the incentives between shareholders and management better when a founder-CEO manages a company. Additionally, as seen previously, founder-CEOs are found to be more committed to the company and view their corporation as their life's achievement. Given these findings, founder-CEOs seem to be more invested in their firm both financially and psychologically, leading founder-CEOs to have more "skin-in-the-game" than most. Consequently, by following the agency theory, founder-CEOs have everything in place to maximise their firm's performance.

However, according to Palia, Ravid and Wang (2007), founders seem to be less responsive to performance incentives suggesting that founder-CEOs are motivated by other factors than exclusively their compensation. This finding suggests that agency theory may be less applicable to founder-CEOs and thus need another theory to predict the actions of founder-CEOs in order to get a more detailed and nuanced description of why founder-led firms potentially perform differently than others.

2.2.2 Stewardship Theory

Agency theory builds on a model of what is known as a Theory X model (McGregor, 1960, as cited in Donaldson, 1990). This model attributes an actor's actions to an underlying desire to receive rewards and avoid punishment. The agency theory further builds on assumptions that these actors calculate each potential outcome and chooses the outcome maximising their utility. These assumptions generally do not hold in the real world, both because of human's lacking mental capacity to predict and calculate each possible outcome of every scenario, but also because every human being does not act solely on its self-interests. Agency theory has therefore been subject to criticism for being too pessimistic in their description of managers (Donaldson, 1990). As previously explained through the agency theory, managers are perceived to be opportunistic beings who act on their self-interest if they are not monitored or incentivised to put the firm and its shareholders first. There are, however, disagreements about to what extent this behaviour can be observed in the real world, and whether there exists more "pro-firm" behaviour. Due to the immense focus exclusively on unwanted behaviour from managers, and not on the ideal behaviour that some managers showcase, it creates an issue in itself in that all behaviours deviating from the theory are rejected and not picked up by the theory (Jensen and Meckling, 1976).

As a reaction to the received criticisms, a contradicting theory has been proposed, the stewardship theory. This theory suggests that there is no underlying conflict of interest between the managers and owners, and that the focus of corporate governance should be on finding and implementing a structure that allows for effective coordination (Donaldson, 1990). In stewardship theory managers are viewed as good stewards (Donaldson and Davis, 1991), it is therefore in the best interest for the firm to allow these managers to act freely to realise the potential of the firm. This theory is in line with other models coming from the field of organisational psychology, in which individuals are motivated by their need to achieve, by receiving satisfaction from completing challenging work, by acting responsibly and exercising authority, and by receiving recognition from others within the organisation (McClelland, 1961; Herzberg et al. 1959, as cited in Donaldson and Davis, 1991). More specifically, increased identification and attachment to the company allows for a merging of the company and the manager's ego, linking the person's self-esteem to the corporate's prestige (Donaldson and Davis, 1991). Following stewardship theory, the CEOs are not necessarily opportunistic beings but rather individuals who sincerely want to perform well, which predict no underlying issue with the managers' motivation. Hence, the focus in this theory is more on implementing structures in corporations that allow managers to coordinate and take action effectively, favouring CEOs with elevated levels of control. Accordingly, Donaldson and Davis (1991) provide empirical evidence of higher firm performance in the presence of CEO-duality, i.e., the CEO is also chairman of the company. This result contradicts the predictions of the agency theory which states that the shareholders' best interest is only achievable to the degree that the CEO is not the chairman (as this hampers with the monitoring of the CEO's actions), or by aligning the CEO's incentives with the owners' through its compensation.

Moreover, the role as founder-CEO is comparable to the CEO-duality role as the founder-CEO have as much, if not more, power and control over the firm through its status as both CEO and founder, in addition to their usually increased equity ownership in the firm. These characteristics of founder-CEOs results in tremendous voting power and general influence over the board. Additionally, founder-CEOs identifies strongly to their firm and view their firms as their life's achievements which supports the notion of their stronger motivation to perform well, suggesting that stewardship theory might do a better job of describing and predicting the action of founder-CEOs. To sum up these theories, the increased levels of ownership, commitment and identification to the firm that characterises founder-CEOs, help to explain why founder-led firms potentially perform better than other corporations.

Based on these theories and findings regarding founder-led companies, I state three hypotheses that I examine in this thesis.

Hypothesis 1: «Founder-led firms perform better in the stock markets than other firms.»

Hypothesis 2: «Founder-led companies have a higher firm valuation than other companies.»

Hypothesis 3: «Founder-led corporations invest more than other corporations.»

2.3 Portfolio Theory

In this section, I present some portfolio theory which I base my analysis on and is used to explore the stated Hypothesis 1, i.e., to evaluate the stock market performance of founder-led companies. First, I present a fundamental theory which seeks to explain how stock markets functions and their efficiency, the efficient market hypothesis. Then

I describe the capital asset pricing model (CAPM) and its extension with help from the works made by Fama and French (1993) amongst others.

2.3.1 Efficient Market Hypothesis

One of the firsts researchers providing evidence of efficient markets was Bachelier (1900), he finds that securities trading in capital markets reflect past, present, and to some extent, discounted future events. However, it was not until the 1960s and the computer-era the interest for the efficient market hypothesis began, as new and more powerful computers enabled investors to compare and analyse a more considerable amount of stock data than ever before. Eugene Fama (1970), who is one of the most prominent researchers on the field, argue that an efficient market is a market in which security prices fully incorporates all available information at any time.

The basic idea for this efficient market hypothesis builds on the fact that capital markets involve a multitude of unique investors with vastly different information which the investors utilise when investing. If some investors have information revealing that buying a share would yield investors a positive net present value (i.e., a positive return on the investment considering the risks involved), these investors will purchase this share and drive the price up until the share no longer yield a positive net present value (NPV). The case is the same if investors have information indicating that a stock would yield a negative NPV, investors holding the stock would sell the stock until the market price equals a price in which the NPV is equal to zero for the investors. It is the immense competition between investors that remove all opportunities to trade on securities with NPV different from zero and is the driving factor behind what is called the efficient market hypothesis (Berk and DeMarzo, 2017, pp. 333). The hypothesis implies that security's market prices always include all information available and consequently prices the securities appropriately. Moreover, the hypothesis implies that securities with equivalent risk should have the same expected return (Berk and DeMarzo, 2017, pp. 338). Put differently, in an efficient market, the security's price fully reflects all available information, and thus eliminating all unexploited profit opportunities (Mishkin and Eakins, 2018, pp 160).

In the financial literature, it is common to divide into three different types of efficient markets: a weak, a semi-strong and a strong form of efficiency (Berk and DeMarzo, 2017, pp. 499). The weak form of efficiency describes a market where it is not possible to achieve abnormal returns based on past information—implying that these markets have securities trading at market prices which fully reflect information from the past. The semi-strong form of efficiency describes markets in which it is not possible to consistently achieve abnormal returns based on public information, e.g., news announcement on the firm. The last type of efficient market is the strong form of efficiency; this form of efficient markets describes a capital market where it is not possible to, on average, earn abnormal returns based on private information.

2.3.2 Risk and Return

In the following subsections, I present some asset pricing theory which seeks to explain the relationship between risk and returns.

The total return for an investor who owns shares in a public company consists of two parts, dividends, and capital gains (Mishkin and Eakins, 2018, pp 158). This total return can be formulated into the following equation:

$$R = \frac{P_{t+1} - P_t + C}{P_t} \tag{2.1}$$

Where C is the cash dividends, P_t is the stock price at time t, and R is the total return for the investor. This formula for total return can be split up into two parts, dividend yield and capital gains rate (Berk and DeMarzo, 2017, pp. 311):

$$D = \frac{C_{t+1}}{P_t} \ and \ G = \frac{P_{t+1} - P_t}{P_t} \tag{2.2}$$

Where the dividend yield is denominated with a D, and the G represents the capital gains rate, which together makes up the total return for an investor. The dividend yield is simply the dividend received during the period relative to the purchase price for the stock at time zero (t=0). The capital gains rate is the change in the stock price over the period. Total return for the entire holding period, i.e., the time which the investor owns the share in the company, is typically called the holding period return or the HPR. When an investor invests in a stock, she does not know what the holding period return will be. The investor can, however, calculate the expected return by identifying different possible scenarios and assigning the probability of each scenario accordingly. Using p as probability, Re as expected return, n as the number of possible outcomes and Ri as the return of each possible outcomes, the calculation of the expected return can be written as (Berk and DeMarzo, 2017, pp. 107):

$$Re = p1R1 + p2R2 + \cdots + pnRn \tag{2.3}$$

However, the expected return is risky in that we do not know which scenario will happen. The uncertainty about which outcome will happen is unattractive to the investors as investors are generally risk-averse, i.e., investors would rather have a safe cash flow than a risky cash flow, even if both cash flows yield the same expected NPV. Investors generally measure the risk associated with investments by calculating the standard deviation of the returns (Berk and DeMarzo, 2017, pp. 108). By using the same notations as in equation 2.3, the standard deviation of the returns can be computed using the following equation:

$$\sigma = \sqrt{p1(R1 - Re)^2 + p2(R2 - Re)^2 + \cdots + pn(Rn - Re)^2} \tag{2.4}$$

By taking on this risk, investors expect a reward in return, a risk premium. The risk premium is the difference between the expected return and the risk-free rate, i.e., the risk-free return. The risk premium is the expected additional return investors expects to gain by taking on the extra risk associated with the investment, the expected excess return. Excess return is the difference between the actual return received, and the return achieved by a risk-free asset in the same period.

2.3.3 Capital Asset Pricing Model (CAPM)

Building on Harry Markowitz's (1952) mean-variance optimisation analysis, the three researchers Sharpe (1964), Lintner (1965) and Mossin (1966) invented one of the most used and mentioned concepts of modern financial theory, the Capital Asset Pricing Model (CAPM). Whereas Markowitz (1952) focus on explaining how investors can optimise their investments regarding risk-return (mean-variance), the capital asset pricing model focuses on explaining the relationship between risk and expected return. For investors, it is the investment's contribution to the total portfolio risk that matters. Consequently, it is this risk the investors should demand a risk premium on (Bodie et al., 2018, pp. 282). Accordingly, the total expected rate of return consists of two parts, the risk-free rate representing time value of money, and the risk premium which investors demand as a compensation for the investment's risk-contribution to the investors' overall portfolio.

In order to get an understanding of an investment's risk-contribution to the overall portfolio, it is necessary to split risks into two types, systematic and unsystematic risks. Systematic risk is uncertainty about the whole economy, i.e., uncertainty in macroeconomic factors which affects most companies. Unsystematic risk, which is often called firm-specific or idiosyncratic risk, is uncertainty regarding an individual firm. However, this unsystematic risk is diversifiable (Bodie et al., 2018, pp. 247). Since the idiosyncratic risk is diversifiable and therefore relatively easy to get rid of, investors do not get compensated for taking on this firm-specific risk. As a result, investors only get compensation for adding more systematic risk to their portfolios, which can be measured by beta. More specifically, beta measures the securities' sensitivity to the market risk and can be calculated as (Berk and DeMarzo, 2017, pp. 419-420):

$$\beta_i = \frac{Cov(R_i, R_{Mkt})}{Var(R_{Mkt})} \tag{2.5}$$

Equation 2.5 computes the relative volatility of security i compared to the volatility of the market by using variance and covariance as volatility measures. By combining the knowledge that this beta is the only risk that investors can demand a risk premium for with the fact that the total rate of return consists of the risk-free rate and the risk premium, it is possible to calculate the expected return for a given risk. By putting r_f as the risk-free rate and denominate the expected return as E[R], I can calculate the expected return on any security by using the following equation:

$$E[R_i] = r_f + \beta_i \times (E[R_{Mkt}] - r_f) \tag{2.6}$$

This equation is what is called "the CAPM equation for the expected return" and has important implications, such as implying that investors only can increase their expected returns by taking on more market risk. The CAPM also states that the market portfolio is the efficient portfolio, i.e., offers the highest expected return for any given level of volatility. However, the model relies on a group of strict assumptions, and as these do not predict investors behaviour all too well, the CAPM do not hold in every situation (Berk and DeMarzo, 2017, pp. 424).

Furthermore, it is necessary to have an understanding of the relationship between expected and actual returns when using regressions to analyse stocks. By factoring in an error term (residual) called ε, and a constant alpha α, the actual return can be written as:

$$E[R_i] = \alpha_i + r_f + \beta_i \times \left(E[R_{Mkt}] - r_f\right) + \varepsilon_i \tag{2.7}$$

The error term ε corresponds to the diversifiable risk of the stock, the firm-specific risk. This error term is on average zero, and do not play a significant role in a portfolio. The alpha reveals the security's actual performance relative to the expected return in the market. CAPM, therefore, predicts an alpha of zero (Berk and DeMarzo, 2017, pp. 448). A positive alpha shows that a security has performed better than expected, and consequently performed better per market-risk than the market provided, which the CAPM predict is not possible. Since the release of the capital asset pricing model, researchers have been able to identify several more factors that can help to explain returns on securities and thereby capture some of the alphas picked up using the model.

2.3.4 Fama-French Three-Factor Model

In addition to the systematic market risk, two more factors affecting the relationship between risk and return have been identified. Reinganum (1980; 1981) and Banz (1981) finds that small firms, on average, achieve higher return adjusted for the market risk compared to larger firms. Roll (1981) argue that there are risks associated with owning smaller firms that the CAPM does not incorporate, and that the riskiness of small firms generally has been measured poorly. Rosenberg, Reid and Lanberg (1985) find another factor that, on average yield a higher risk-adjusted return to investors. They observe that firms with higher book-to-market ratios perform better than firms with low book-to-market ratios, i.e., the value effect.

Fama and French (1993) incorporate these effects into an extended version of the Capital Asset Pricing Model, the Fama-French Three-Factor Model. This model incorporates the two factors SMB and HML, which essentially tries to capture the size and value effect. Fama and French argue that this model better helps to explain the relationship between risk and expected return for investors, and therefore more successfully captures the risks investors take on, and thereby also the expected return investors demand. The Fama-French Three-Factor model can be formulated as the following equation (Bodie et al., 2018, pp. 325; Fama and French, 1996):

$$r_{it} = \alpha_i + r_{f,t} + \beta_{iM} \times R_{Mt} + \beta_{iSMB} \times SMB_t + \beta_{iHML} \times HML_t + \varepsilon_{it} \tag{2.8}$$

Where, if I assume that the alpha is zero, r_{it} is the expected total return for security i at time t. SMB is an acronym for small minus big which is the incorporation of the size factor. HML is the acronym for high minus low, which is the incorporated factor for the book-to-market ratio. R_{Mt} is the market factor and is in this equation the excess return from the market, i.e. expected return from the market in excess of the risk-free rate. The different betas are the security's sensitivity to the different factors.

In the last part of this subsection, I present the approach Fama and French use to compute the SMB and HML factors, which is the same approach being used to compute these factors in this thesis. Fama and French calculate these factors by using a six value-weighted portfolios method. First, the sample is divided into two groups based on size, i.e., small firms, and big firms. Then these two groups are each divided into three portfolios based on their book-to-market ratio, i.e., value firms, neutral firms, and growth firms. More specifically, Fama and French compute the SMB-factor by using the following equation (French, 2020a):

$$SMB = \frac{1}{3}(Small\,Value + Small\,Neutral + Small\,Growth) - \frac{1}{3}\,(Big\,Value + Big\,Neutral + Big\,Growth) \tag{2.9}$$

Furthermore, they construct the HML-factor by using the following equation (French, 2020a):

$$HML = \frac{1}{2}(Small\,Value + Big\,Value) - \frac{1}{2}(Small\,Growth + Big\,Growth) \tag{2.10}$$

2.3.5 Carhart Four-Factor Model

One more factor has since the release of the Capital Asset Pricing Model proven itself to predict, on average, higher returns, and that is the momentum factor. Momentum is a phenomenon in which stocks with excellent recent performance outperform stocks with bad recent performance, i.e., their performance continues over a short period (Bodie et al., 2018, pp. 349). Jegadeesh and Titman (1993) provide evidence that reveals, on average, significantly higher excess return from stocks with excellent recent performance compared to the ones with poor recent performance. They do, however, point out that this momentum performance for an individual security is unpredictable, but that portfolios of shares with an excellent recent performance generally perform better in the intermediate-term compared to portfolios of shares with bad recent performance.

The evidence of this momentum-effect leads to an extension of the Fama-French three-factor model. This extended version of Fama-French’s model is often called the Carhart four-factor model, named after the finance researcher Mark Carhart, who proposed the model (Carhart, 1997). Including the momentum factor, the actual returns can be explained by the following equation (Berk and DeMarzo, 2017, pp. 504):

$$r_{it} = \alpha_i + r_{f,t} + \beta_{iM} \times R_{Mt} + \beta_{iSMB} \times SMB_t + \beta_{iHML} \times HML_t + \beta_{iPR1YR} \times PR1YR + \varepsilon_{it} \tag{2.11}$$

Where PR1YR is the incorporated momentum factor. In this thesis, I instruct UMD instead of PR1YR as momentum factor simply because of the convenience of data-availability for the multi-nation sample that I use. The variables are similar in that they both aim to capture the momentum factor. However, whereas UMD is constructed based on a six-portfolio strategy, the PR1YR is computed by using a three-portfolio strategy (top 30% best recent performers minus the bottom 30%), which was the original implementation by Carhart. The approach of calculating UMD follow a similar methodology as the SMB and HML factors, which all divides the securities into six portfolios. More specifically, to compute the UMD-factor, the portfolio is divided into two groups based on firm size, small firms, and big firms. Each of these portfolios is then divided into three portfolios each based on the past 1-year return skipping the last month, creating portfolios of recent high, medium, and low returns. The variable can then be calculated by taking the average of the two portfolios with high past returns subtracting the average of the portfolio with low past returns. Using the same equation-form as the two Fama-French factors, UMD can be computed by the following equation (French, 2020b):

$$UMD = \frac{1}{2}(Small\ High + Big\ High) - \frac{1}{2}(Small\ Low + Big\ Low) \tag{2.12}$$

3. Data

In this chapter, I provide a description of the sample that I use in this thesis and how I gather the various data.

The sample I use in this thesis consists of all companies listed on one of the main indices on a stock exchange in one of the Nordic countries, except for Iceland. These indices are OSE (Oslo) All-Share, OMX Stockholm All-Share, OMX Finland All-Share and OMX Copenhagen All-Share. From the original selection, I remove all companies that do not have a market cap above 30 million USD at any point in the period. Another eleven companies got removed from the sample due to lack of available information. To not introduce an upward bias, I include all firms listed during this period, not removing companies that went bankrupt or were delisted, however, doing this increased the difficulty of the data collecting process quite a bit. As a result of the lack of complete databases covering the Nordic companies, I manually go through the entire sample collecting data for a couple of variables. The focus of the data collection is to include as many firms as possible to get enough data points for my analysis of stock market performance. I focus on including as many firms as possible to base my results on more robust portfolios containing more firms, thus reducing the potential effects outliers have on the results. There is, however, a trade-off that needs to be considered between sample size and the number of variables that is possible to gather manually. I tailor this dataset to help provide robust results in the analysis of stock market performance rather than gathering a wide variety of CEO characteristics which is more useful when considering other causal relationships for founder-led companies.

Table 1 presents sample statistics describing the companies included in the sample and provides information of the sample structure. From Panel A, I observe that the final sample consists of 1,125 unique firms, of which 184 were at one point in the sample period led by one of its founders (16.4%). Furthermore, I identify 2,155 different CEOs from 8,868 firm-years, of which 755 of these firm-years were founder-led (8.5%).

As seen in Panel B, the total number of firms in the sample trends downward from 2008 until 2014. This trend may have been caused by the poor performance many firms experienced during and after the financial crisis. The percentage of firms managed by a founder-CEO follows the same trend, probably for the same reason, poor performance. Panel C reveals the apparent fact that there are no founder-led companies in this sample which were incorporated prior to 1950. I use this observation as a foundation for constructing an instrumental variable later on in this thesis, which I utilise to deal with the endogeneity issue.

By sorting firm-years into the eleven sectors created by the Global Industry Classification Standard (GICS), I construct Table 2. Table 2 reveals that founder-led firm-years are concentrated within the industrials, health care and information technology sectors. However, the percentages of founder-led firm-years compared to the total firm-years is the largest within the energy, health care, information technology and real estate sectors. Since there is an unevenly spread distribution of founder-led companies in specific sectors, I need to control for this fact during my analysis of stock market performance.

Table 3 presents descriptive statistics of the firms in this sample divided into two groups based on whether a founder-CEO manages the company or not. Through this table, I observe that founder-led companies are generally smaller firms measured by their market value, total assets, common equity, and net sales. Founder-led companies are also naturally younger companies with less time spent listed on a stock exchange. Furthermore, I observe from the table that founder-led firms are represented with a lower ROE, ROA, and dividend yield, but is somewhat more volatile than other firms. Keep in mind that this is only a description of firm characteristics and is not an analysis of any performance or causality, nor should these observations be interpreted as results in any way.

Table 1: Sample Statistics

The following panels provide a descriptive overview of the sample by dividing observations of the sample into two groups. Panel A presents a distribution of firms, CEOs, and firm-years which is in the Founder-CEO group compared to the total number of observations from the entire sample. Panel B show the distribution of founder-led firms for each year in the sample period. Panel C presents a distribution of the firms in the sample sorted by the decade of incorporation.

Panel A. Full Sample (2008-2020)

	Founder-CEO	Total	Frequency (%)
Firms	184	1,125	16.4
CEOs	170	2,155	7.9
Firm-years	755	8,868	8.5

Panel B. Firm-Years by Fiscal Years

Fiscal Year	Founder-CEO	Total	Frequency (%)
2008	79	725	10.9
2009	68	692	9.8
2010	68	678	10
2011	65	685	9.5
2012	56	672	8.3

2013	47	645	7.3
2014	41	637	6.4
2015	44	639	6.9
2016	46	659	7
2017	52	678	7.7
2018	61	703	8.7
2019	62	727	8.5
2020	66	728	9.1

Panel C. Firms by Decade of Incorporation

Year of Incorporation	Founder-CEO	Total	Frequency (%)
1950 or prior	0	322	0
1951-1960	2	44	4.5
1961-1970	1	50	2
1971-1980	5	62	8.1
1981-1990	32	171	18.7
1991-2000	58	240	24.2
2001-2010	68	204	33.3
2011-2019	18	36	50

Table 2: Firm-Years by Sector

Table 2 presents the distribution of founder-led companies compared to the total number of firms within each of the eleven GICS-sectors. The table also includes the fraction of founder-led companies within each sector as a percentage in the frequency-column.

Sector	Founder-CEOs	Total	Frequency (%)
Energy	91	703	12.9
Materials	17	556	3.1
Industrials	110	2,238	4.9
Consumer Discretionary	61	875	7
Consumer Staples	20	476	4.2
Health Care	117	866	13.5
Financials	79	1,110	7.1
Information Technology	165	1,118	14.8
Communication Sector	19	366	5.2
Utilities	15	96	15.6
Real Estate	61	464	13.1

Table 3: Firm Characteristics

Table 3 contains descriptive statistics for the firms in the sample divided into two groups based on whether the company is managed by one of the company's founders or not. I present means and medians calculated for each group in separate columns in the table, column (1) and (2) presents the results for firms managed by a professional-CEO, and column (3) and (4) presents the results for the founder-led firms. The means and medians are calculated from each firm's average value of the respective variable over the sample period. I run a non-parametric statistical Wilcoxon test on the medians for the two groups in order to check whether the differences reported in the medians for each group is statistically different from each other.

For a full description of this test, I refer to Wilcoxon's article (1945). Statistical significance is indicated by * and ** which represent a significance level of 5% and 1% respectively.

	Other firms		Founder-led firms	
Characteristics	Mean	Median	Mean	Median
Panel A. Firm Characteristics				
Market Value (MM$)	5,955.26	818.19	1,831.55	477.87**
Total Assets (MM$)	12,190.28	1,151.99	2,558.30	567.20**
Net Sales (MM$)	4,752.42	722.96	1,094.73	330.37**
Common Equity (MM$)	2,843.39	448.8	963.17	284.51**
Firm Age	52.88	30	14.85	13.5**
Days Listed	4,702.16	4,437.17	2,777.32	2,018**
Long-term debt/Assets	0.18	0.15	0.16	0.12*
CAPEX/Assets	0.07	0.05	0.06	0.04
R&D/Assets	0.06	0.02	0.1	0.03
No R&D reported (%)	71.93	-	76.89	-
Panel B. Valuation and Performance				
ROE[3] (%)	2.93	9.05	-7.93	2.36**
ROA[4] (%)	0.37	2.82	-4.67	1.24**
Dividend Yield	2.79	1.81	1.62	0**
Historic Volatility	0.4	0.35	0.45	0.45**
Q[5]	1.87	1.36	2.34	1.51

[3] To reduce the effect of erroneous outliers the ROE-variable has been winsorized to the 1st and 99th percentile.

[4] For the same reasons as with the ROE-variable, the ROA has also been winsorized to the 1st and 99th percentile.

[5] This is a proxy for Tobin's Q, see subsection 4.2.2 for a full description of this variable and how I compute it.

4. Variable Description and Methodology

The hand-collection of the data I needed to identify founder-CEO companies was an extensive process which may have introduced some errors in itself, which I elaborate on in the chapter covering limitations to the analyses. This thesis defines a founder-CEO to be a CEO who is either a founder or a member of the group that founded the company, which is in line with the definition of Fahlenbrach (2009). To collect this information, I used a wide variety of sources and techniques, focusing on annual reports and the history pages on the companies' webpages. I also base some observations on press releases and databases such as Thomson Reuters Eikon and Bloomberg. To gather information about companies that no longer exist, I frequently utilised the "Wayback Machine" (http://www.archive.org/web/), as this tool enabled me to go back in time and find information which is no longer accessible. Another tool I used regularly was "Google Translate", I used this tool for the simple reason that a lot of the smaller companies in the sample solely published information in their local language, e.g., Finnish.

In this chapter, I provide a description of the variables and methodologies I use when I conduct the analyses and examining the stated hypotheses.

4.1 Stock Market Performance

To carry out my analysis of the stock market performance of founder-led companies, I construct portfolios consisting of companies managed by founder-CEOs and successor-CEOs, respectively. I start the analysis of stock market performance by presenting the pure returns coming from these portfolios before I implement a Carhart Four-Factor model, thereby controlling for the four most common risk factors. Moreover, to further explore the stock market performance, I construct alternative portfolios controlling for and revealing additional factors that potentially affect the stock market performance for the companies in the sample. Lastly, in order to control for more equity characteristics, and directly compare founder-led to successor-led firms' stock market performance, I run a couple of Fama-MacBeth regressions. This section describes in more detail the methodology of, and the variables I use in each model to examine Hypothesis 1.

4.1.1 Portfolio Construction

In order to analyse the stock market performance of founder-led firms, I divide the sample into portfolios. The portfolio-selection is based on a founder-CEO dummy variable, i.e., a variable that is equal to one if a founder-CEO manages the firm at the beginning of the year, and zero otherwise. This variable is constructed through the manually collected dataset mentioned previously. I update these portfolios at the beginning of each year to exclude companies that undergo founder-CEO succession, i.e., companies that hire a non-founder as CEO, or vice versa, to include companies that hire a founder as CEO during the year. I also update the portfolios to only include active publicly listed companies, removing companies that went bankrupt, got delisted, merged with another firm, or got acquired during the year. The number of firms included in the founder-CEO portfolio each year is shown in Table 2.

To make sure that a couple of large firms do not cause the results from my analysis on the stock market performance, I create both a value-weighted and an equal-weighted portfolio. The value-weighted portfolio invests a fraction equal to the proportion of each company's total market capitalisation relative to the market capitalisation of the entire portfolio. The equal-weighted portfolio, on the other hand, is instructed to invest the same fraction into each security in the portfolios. I compute the portfolios' weights at the beginning of each month; in other words, I rebalance the portfolios monthly.

4.1.2 Carhart Four-Factor Model

Variable Description

This subsection contains a description of the variables I use in the Carhart Four-Factor Model, which is central to the analysis of stock market performance in this thesis.

To calculate the monthly returns for each stock, I gather the variable "Return Index as Paid" through Refinitiv Datastream. This variable takes into consideration the dividend payments showing a theoretical total return over the holding period for an investor. By including the dividend payments, the returns reflect the actual return an investor receives over the period, in addition to making the return comparable to the return of indices as indices also typically incorporate dividend payments. These data, like the rest of the data I use in this thesis, is denominated in U.S. Dollar as there is no common currency shared by the four countries included in my sample, and as I do not want to favour one of the four countries' companies, I use neither of the local currencies. Before I construct the portfolios, I carefully go through all outliers, correcting a couple of monthly returns that do not reflect the actual return over the period for the respective security.

An additional challenge regarding this thesis is the fact that there is not a single country in focus but an entire region with multiple nations. Consequently, there is no specific risk-free interest rate shared for the entire Nordic region. I solve this problem by gathering the monthly interbank offered rates from each of the four countries, STIBOR, NIBOR, EURIBOR[6] and CIBOR and assigns a weight of ¼ to each of the four interest rates and thereby creating a synthetic Nordic Interbank Offered Rate "NORDIBOR". This synthetic interest rate serves as a proxy for the risk-free interest rate throughout this thesis.

Following a similar approach, I collect the Fama-French Factors *SMB, HML*, and the momentum factor *UMD* for each of the four Nordic countries included in my sample through AQR Capital Management LLC's (2020) webpages. They keep an up-to-date dataset following Asness' and Frazzini's (2013) and Fama and French's (1992; 1993; 1996) methodology. I collect the three factors which are computed by following Fama and French's approach. Furthermore, by taking the average of these four countries' factors, I construct synthesised Nordic Fama-French factors which I use in the Carhart Four-Factor regression.[7]

To control for the portfolios' exposure to the market, the systematic risk factor, I employ the OMX Nordic All-Share index as a market benchmark. I use this index as it is the Nordic index containing the most companies and should therefore be exposed to all industries and is consequently in the best position to measure the systematic risk. OMX Nordic All-Share is a value-weighted index which at the beginning of September 2020 contains 640 different companies' securities.[8]

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[6] Finland has since 1998 followed this reference rate.

[7] I compare these results using the synthesised Nordic-factors to the results using the more widely used Norwegian factors computed by Bernt Arne Ødegaard (2020). The observed differences in results are small and in line with expectations, I, therefore, focus on using these Nordic factors in the rest of this thesis.

[8] I compare the results I get by using OMX Nordic All-Share with the results I get by running the same regressions using the narrower OMX Nordic 120 and OMX Nordic 40 indices. OMX Nordic 120 is a value-weighted index consisting of the 120 largest companies out of the 150 most traded companies listed in the four Nordic countries included in my sample. OMX Nordic 40 is an even more concentrated value-weighted index containing only the 40 most traded stocks from the four stock-exchanges Stockholm, Copenhagen, Helsinki, and Reykjavik. However, there is currently no Icelandic companies included in the index (Nasdaq, 2020).

Methodology

By running a regression on this Carhart Four-Factor model, it is possible to analyse if founder-CEO companies' shares perform systematically better per identified risk, thus achieving better returns than expected. In other words, by implementing this model, I can control for the most common risk factors which should help explain whether founder-led companies provide a higher return per risk associated with the investment. More specifically, I apply OLS (ordinary least squares) regression on the following equation (Santos, 2019).

$$r_{it} - r_{f,t} = \alpha_i + \beta_{iM} \times R_{Mt} + \beta_{iSMB} \times SMB_t + \beta_{iHML} \times HML_t + \beta_{iUMD} \times UMD_t + \varepsilon_{it} \quad (4.1)$$

In this equation, the dependent variable is the monthly portfolios return in excess of the risk-free rate. The alpha, which is the intercept in the regression equation, captures the abnormal return. R_{Mt} is the monthly market return in excess of the risk-free interest rate, and controls for market-systematic risks. SMB is the small minus big factor that controls for the portfolio's exposure to small firms, which are associated with increased risk. Furthermore, the equation contains an HML factor controlling for the portfolio's exposure to value-firms. Finally, UMD is the acronym for up minus down taking into consideration the momentum effect mentioned earlier, which is the effect where firms with excellent recent performance outperform recent bad performers.

4.1.3 Alternative Portfolio-Specifications

Variable Description

I analyse these alternative portfolios by using the same Carhart Four-Factor model described above. Hence, the model uses the same explanatory variables that are described in subsection 4.1.2.

Methodology

As I present in Table 2, there are sectors with relatively more founder-led companies than others; this uneven distribution within specific sectors may therefore affect the stock market performance I observe by using regular portfolios. The unbalanced sector-distribution of founder-led companies may cause founder-led companies to achieve different returns because there may be relatively more founder-led companies within sectors performing abnormally, rather than the actual firms themselves. To control for sector-returns, I compute the monthly returns in excess of the corresponding sector's returns, using these returns as the dependent variable in the regression. The dependent variable is thus computed as the monthly return by holding a company's share subtracting the coherent sector's monthly return from the same period. The monthly sector-returns are calculated by creating portfolios of each sector sorted by using the GICS sector-codes[9]. I collect the sector identification, Global Industry Classification Standard (GICS) in this case, through Wharton Research Data Services.

The sample period, or rather periods within the sample period, can also potentially affect the results and is, therefore, worth exploring. The sample period in this thesis takes place during both the financial crisis and the substantial recovery that followed. Consequently, there may be significant differences in the returns coming from the first half compared to the second half of the sample period. It is therefore exciting to see whether the return from founder-led corporations deviates from others differently in a period containing a recession, versus a period of expansion. It is also interesting to divide the sample period into two smaller periods as it allows me to get a better understanding of the results, in that it reveals whether one shorter period significantly affect the total results. To explore whether this is the case, I simply divide the data frame into two periods and run the same regression-equation (4.1), i.e., I use the same Carhart Four-Factor model.

The financial crisis was a rough period in terms of stock market performance for most companies, specifically for financial and real estate firms. Because of this, I include a regression that I run on the four-factor model excluding financial and real estate firms, which is companies with GICS-codes of 40 and 60, respectively. I do this to try to get a firmer understanding of what has driven the stock market performance and to make sure these companies do not affect the total results substantially. However, I do emphasise the results arising by using these returns as it would not be fair to compare the returns from a portfolio that removes the potential worst-performers to a market-index that includes all firms.

[9] These sector portfolios' monthly returns are computed using equal-weighted portfolios.

4.1.4 Fama-MacBeth Regression

Variable Description

I also perform Fama-MacBeth cross-sectional regressions as this will allow me to control for other security characteristics than those being controlled for in the Carhart four-factor model. This subsection presents the variables that I use when I run the Fama-MacBeth regressions, in addition to a thorough description of the methodology for this approach.

The dependent variable in these regressions is both regular *monthly returns* and *sector-adjusted monthly returns*, with the primary independent variable being the founder-CEO dummy. I use both types of monthly returns in this regression as the sector-adjusted returns will reduce the possibility for the sector-distribution of founder-led companies to influence the results (for more details about these sector-adjusted returns see subsection 4.1.3). Moreover, I also include the regular returns as this will give a more nuanced result that reveals more information. The returns are otherwise calculated in the same way as in the Carhart four-factor model described in subsection 4.1.2.

The *Founder-CEO* dummy is simply a proxy for founder-CEO status, and the variable turns one if the company is managed by one of its founders at the beginning of the period and is zero otherwise. This dummy is based on the hand-collected data previously described. In addition to this dummy-variable, I also include most of Brennan, Chordia and Subrahmanyam (1998) factors such as lagged returns, market value, book-to-market ratio, and dividend-yield as security characteristics. Additionally, I include the variables days listed, historical volatility and capital expenditure as well.

Lagged Returns are instrumented as the compounded gross return with the variable-name revealing the number of months it is lagging. For instance, Return 2_3 computes the compounded gross return from the period t-3 to t-2, which is the gross return an investor would have earned if she bought the security three months ago and sold it after holding it for one month. These variables are based on the “Return Index as Paid” which is described in subsection 4.1.2.

Market Value controls for firm-size and is implemented as the market value of the company’s equity value, i.e., its market capitalization. This market capitalization is calculated as the total number of outstanding shares multiplied by share price and is collected from FactSet.

I calculate the *Book-to-Market* ratio as the inverse of P/B, i.e., book equity divided by market equity. Book equity is in my thesis calculated as the book value of common equity plus the value of deferred taxes reported on the company's balance sheet. Deferred taxes are gathered from Refinitiv Datastream. This book-to-market variable is only an approximation since it is calculated using the deferred tax-values and book equity from the last quarterly report while the market value is updated for each month.

Dividend-Yield is expressed as the dividend paid per share as a percentage of its share price. This variable is gathered through Refinitiv Datastream and is calculated based on an anticipated annual dividend excluding special dividends.

I compute the variable *Days Listed* as the date of the observation minus the date of the company's initial public offering (IPO) and is expressed in days. The date of the IPO is gathered through FactSet's databases.

Historical Volatility is a variable which measures each security's standard deviation over the past five years. This variable is gathered through Refinitiv Datastream and is the variable named historical volatility in this database.

Capital expenditure is a bit different than the rest of the variables in that it is an annually variable based on the company's annual reports. I construct this variable as the total reported capital expenditure divided by the company's total assets to create a variable showing the company's relative capital expenditure. Both of the variables I use to create this variable is collected through FactSet.

Methodology

Within the field of asset pricing theory, one of the primary objectives is to explain how returns correlate with the exposure to different risk factors. The Carhart Four-Factor model I use in my analysis of stock market performance, help to explain in parts this relationship between risk and returns. However, the Carhart Four-Factor model only implements four of the most common risk factors. Fama-MacBeth regression is because of this often preferred as it allows for testing and controlling for other risk factors and their associated risk premiums.

Fama-MacBeth regression is a variation of cross-sectional regression which is popularly used within the field of financial econometrics. The original approach of a Fama-MacBeth regression is based on creating zero-investment portfolios that are heavily exposed to the risk factors being analysed, then run a regression of the monthly returns from the securities on these portfolios' returns. To create these portfolios, I sort the securities each month by the risk factors I want to include. I then construct the portfolios to go long in the quantile of securities that are most exposed to the risk factor and equivalently go short in the quantile of securities that are the least exposed to this variable. After creating these portfolios, the next step is to run the first regression. The first regression is a regression of monthly returns for each stock to the monthly returns of each risk factor portfolios[10]. This regression produces estimates for the loading/exposure to each risk factor for all stocks included in the regression.

The second regression for this approach is a cross-sectional regression, which for this sample equals 144 monthly cross-sectional regressions. These cross-sectional regressions use the estimated betas from the first regression. By running this second cross-sectional regression, the model estimates a risk-premiums to each risk factor for every month. The last step in the original Fama-MacBeth procedure is thus to average all these cross-sectional estimations for each factor, allowing for an estimation of a single risk premium associated with each risk factor.

More specifically, the procedure starts with running an ordinary least squares (OLS) regression that estimates the betas for all securities to each of the risk factors. This regression can be formulated into the following equation for each of the *n* securities' monthly return *i* at time *t* and each of the *m* factors *F* (Procházková, 2020, pp. 32):

$$R_{1,t} = \alpha_1 + \beta_{1,F1} \times F_{1,t} + \beta_{1,F2} \times F_{2,t} + \cdots + \beta_{1,Fm} \times F_{m,t} + \epsilon_{1,t}$$

$$R_{2,t} = \alpha_2 + \beta_{2,F1} \times F_{1,t} + \beta_{2,F2} \times F_{2,t} + \cdots + \beta_{2,Fm} \times F_{m,t} + \epsilon_{2,t}$$

$$\vdots$$

$$R_{n,t} = \alpha_i + \beta_{i,F1} \times F_{1,t} + \beta_{i,F2} \times F_{2,t} + \cdots + \beta_{i,Fm} \times F_{m,t} + \epsilon_{i,t} \quad (4.2)$$

After estimating the betas for all of the securities, i.e., the exposure to the unique factors for each security, the next step is to run a cross-sectional regression of each return on the

[10] These monthly portfolio returns are computed using sector-adjusted returns when using the security's sector-adjusted returns in the regressions. However, the portfolios uses normal returns when using the security's normal return in the regressions.

previously estimated beta. This second regression allows for estimation of the risk premiums. The second regression can be written in equation form as:

$$R_{i,1} = \lambda_{1,0} + \lambda_{1,1}\hat{\beta}_{n,F1} + \lambda_{1,2}\hat{\beta}_{n,F2} + \cdots + \lambda_{1,m}\hat{\beta}_{n,Fm} + \varepsilon_{n,1}$$

$$R_{i,2} = \lambda_{2,0} + \lambda_{2,1}\hat{\beta}_{n,F1} + \lambda_{2,2}\hat{\beta}_{n,F2} + \cdots + \lambda_{2,m}\hat{\beta}_{n,Fm} + \varepsilon_{n,2}$$

$$\vdots$$

$$R_{i,T} = \lambda_{T,0} + \lambda_{T,1}\hat{\beta}_{n,F1} + \lambda_{T,2}\hat{\beta}_{n,F2} + \cdots + \lambda_{T,m}\hat{\beta}_{n,Fm} + \varepsilon_{n,T} \quad (4.3)$$

Where lambda $\lambda_{t,m}$ is the risk-premium being rewarded for taking on exposure to the risk factor F_m. The last step, as explained earlier, is to average the lambdas that result from the cross-sectional regressions to estimate one risk premium for each risk factor. The last step can be written as:

$$\lambda_m = \frac{1}{T}\sum_{t=1}^{T} \lambda_{m,t} \quad (4.4)$$

In addition to following the original Fama-MacBeth approach based on factor loadings, I also run a version of the Fama-MacBeth regression based on the risk characteristics itself. The two models are implemented using both sector-adjusted and regular returns.

4.2 Firm Valuation and Investment Levels

This section contains a presentation of the models and variables I use to analyse firm valuation and investment levels for the companies in my sample. To be able to make an unbiased estimation, I need to take care of an endogeneity issue. This endogeneity issue arises from the fact that founder-CEOs may affect firm performance, but at the same time, firm performance may also affect the founder-CEO status (Adams, Almeida and Ferreira, 2009). That means that the founder-CEOs in my sample may be the best performing founder-CEOs as the founder-CEOs contributing to poor firm-performance may lose their jobs. It may also go the other way around, in that founder-CEOs that perform well might quit their jobs as they know the firm can survive without them, or that they lead the firm to grow so massively that the company requires a new CEO with more suitable administrational skills. In any case, the estimations will likely be biased if this issue is not taken into consideration and rectified.

In my analysis, I correct for this endogeneity problem by using an instrumental variable approach in the regressions. In the first subsection, I describe this instrumental variable procedure in more detail and present the variables that are included in the regression models. To test Hypothesis 2 and Hypothesis 3, I conduct a separate analysis for each hypothesis implementing the same models and the same independent variables which I specify in the two last subsections of this chapter.

4.2.1 First Stage Instrumental Variable Regression

Variable Description

In the following, I show the variables that I use in my analyses of firm valuation and investment levels and clarify how I construct and gather these.

The dependent variable of the first-stage IV regression is the *Founder-CEO* dummy that indicates the founder-CEO status. This dummy variable is the same as described in subsection 4.1.1 and is based on my hand-collected dataset.

The instrumental variable that I use in the two-stage IV regression models is the *Early Incorporation* variable. I construct this variable as a dummy variable as well. The variable takes the value of one if the company was incorporated before 1955, and is zero otherwise, which is equivalent to the methodology of Fahlenbrach (2009). This binary variable is constructed based on the *Founded* variable I have manually collected, which is simply a variable showing a value equal to the year in which the corporation was founded. The binary instrumental variable *Early Incorporation* is used as a proxy for measuring whether the founders of the company are dead or not, and thus not leading the company in question. Through Table 1 Panel C, we can see that this is valid by the fact that the sample contains no founder-led companies that are incorporated before 1950. I elaborate further on the use of this instrumental variable in the methodology subsection below.

In addition to the instrumental variable, I include two control variables, *log(Sales)* and *Historical Volatility*. The total sales for each company are gathered on an annual basis from the databases of FactSet. This variable is used in the logarithmic scale when included in the regressions.

Historical Volatility is identical to the variable described in subsection 4.1.4, the variable measures the individual security's standard deviation over the past five years, and I collect this variable through Refinitiv Datastream.

Methodology

To address the endogeneity problem, I instruct an instrumental variable using a two-stage least square method. For this to work, I need to use a variable that fulfils two requirements. First, the instrument variable is required to be exogenous and uncorrelated with omitted variables, i.e., instrument exogeneity. Second, the instrumental variable needs to be related to the endogenous explanatory variable, i.e., instrument relevance (Wooldridge, 2020, pp. 497). These requirements can be more readily understood by using equations. By formulating a general case, what I intend to measure can be written as:

$$y = \beta_0 + \beta_1 x + u \tag{4.5}$$

In my case, x is the founder-CEO dummy variable, and y is what I want to measure, e.g., Tobin's Q (the firm valuation). Since I believe I have an endogeneity issue in this equation in that x and u are correlated, I need to find a variable z *(Early Incorporation)* that is uncorrelated with the error term u:

$$Cov(z, u) = 0 \tag{4.6}$$

Additionally, this variable z needs to be correlated with the variable x:

$$Cov(z, x) \neq 0 \tag{4.7}$$

Where equation (4.6) states that the instrumental variable z needs to be exogenous in equation (4.5), this is the requirement of instrument exogeneity, and equation (4.7) states the requirement of instrument relevancy (Wooldridge, 2020, pp. 497).

In this case, I use the instrumental variable *early incorporation* as previously described, both because this variable is used in other widely cited papers on the field (Fahlenbrach, 2009; Adams, Almeida and Ferreira, 2009), but also because I believe it fulfils the two mentioned requirements. Early incorporation is used as a proxy for a dead founder variable. I use this proxy as it works well, and because of the considerable sample size being used in this thesis. The proxy for the variable *dead founder* meets the two conditions by that it is hard to believe that a company would perform differently because its founder(s) are dead (instrument exogeneity). Moreover, it is also (negatively) correlated with being a founder-CEO (instrument relevance), which I provide supporting evidence of in my analysis of this first stage in the IV regression.

To confirm my belief and intuition of having a dead founder, measured by *Early Incorporation*, is efficient as an instrumental variable, I need to confirm that it is with statistical significance (negatively) correlated to the founder-CEO dummy. To see whether this is the case, I run a linear regression on the following equation:

$$FCEO = a + Early\ Incorporation + log(Sales) + Volatility + \varepsilon \quad (4.8)$$

In which I include the two control variables in the regression, *log(sales)* and *volatility*, presented earlier.

To further test the instrument relevance, I run a hypothesis test and report the resulting f-statistic in a table together with the result from the linear regression. It is worth mentioning that a common rule of thumb for an instrument to be relevant, it through a hypothesis-test be measured with an F-statistic greater than 10 (Wooldridge, 2020, pp. 512)

4.2.2 Firm Valuation

Variable Description

To test Hypothesis 2, I analyse the differences in firm valuation between founder-led and non-founder-led firms. For me to analyse this, I construct a proxy for *Tobin's Q*, using this as a measurement for firm valuation. I construct this proxy for *Tobin's Q* as the ratio between the market value and the book value of a company's total assets. Moreover, I compute the market value of total assets by taking the total book value of assets adding the market capitalization of the firm's equity and subtracting the book value of equity and deferred taxes[11]. I collect these variables through the databases of FactSet.

Furthermore, since different sectors have significantly different levels of valuation than others, I compute a sector-adjusted version of Tobin's Q, i.e., I subtract each firm's calculated value of Tobin's Q with the median Tobin's Q value for the corresponding sector. This sector-

[11] I winsorize these proxies for Tobin's Q at the 1% and 99%-levels to mitigate the effect of potential erroneous outliers.

adjusted variable should allow for a more objective analysis of the two types of firms' valuation.

Methodology

To examine whether there are any systematic differences in firm valuation I use two models, the first model I implement is the second stage of the 2SLS IV regression using the estimates I got from the regression equation (4.8).[12] I also run a fixed-effects model on a subsample that only consist of firm-years from firms experiencing a succession event in the sample period. In this fixed-effects model, I do a two-way fixed-effects regression controlling for both the firm- and year-fixed-effects, as this should allow me to isolate and therefore estimate the effect of succession from a founder-CEO, i.e., an event where a founder-CEO steps down, and a non-founder takes on the role as CEO. This regression does not correct for the endogeneity-problem and is therefore assumed to be biased.

I include three periods for the models mentioned above, one for the whole sample period, one containing Tobin's Q values observed between 2008 and 2013, and one model for the last period lasting from 2014 until the end of 2019. The reason why I include models from different sample periods is that it reveals more information allowing me to gain more knowledge of the potential systematical differences that exist in the firm valuation between these two types of companies.

4.2.3 Investment Levels

Variable Description

To examine Hypothesis 3, I use the two accounting variables capital expenditure (CAPEX) and research and development (R&D). I collect the *CAPEX* and *R&D* data for each company through the databases of FactSet. In order to analyse the relative investment-levels, I compute the *CAPEX*-variable relative to the company's total assets, merely dividing *CAPEX* with *total assets*, and is essentially the identical variable to the capital expenditure variable described in the subsection 4.1.4. I follow the same procedure for the *R&D* variable, i.e., I construct the *R&D* variable as the company's reported R&D divided by the company's assets. All of these variables are extracted from the annual reports and is thus annual data.

[12] To be specific, I run the model in one go to increase the accuracy of the results.

Methodology

In my analysis of investment levels, I use the same two-stage IV regression models and fixed-effect models as in the analysis of firm valuation. Additionally, I also include a regular simple fixed-effects model which do not correct for the endogeneity-problem and may thus be biased and is included to shed light on the differences in results between a model which aims to correct for this bias and one that do not.

The goal of this analysis is to uncover whether founder-led companies behave any differently when it comes to investing and expanding the corporation. Differences in investment-behaviour could be a decisive factor in terms of a company's stock market performance, especially in challenging economic conditions. The reason why this could affect the stock market performance in uncertain times is that higher levels of investments could be perceived as riskier during uncertain times as huge investments may not pay off if there is a massive downturn in the entire economy. On the other hand, downturns in the economy are usually followed by lower interest rates, making investments easier to finance (if the corporation can find available capital), which makes these investments look more attractive as this reduces both the costs and the alternative returns that could be achieved instead.

5. Empirical Analysis and Results

In this chapter, I present the results I observe using the models described in chapter 4. I analyse these results and compare my findings to the three stated hypotheses and other findings from related work.

5.1 Analysis of Stock Market Performance

This section examines Hypothesis 1, thereby the stock market performance of founder-led firms compared to other companies. I start this analysis of the empirical results by presenting the pure returns I find for each portfolio during the sample period, i.e., the return an investor would have received if she invested in the specific portfolio at the beginning of January 2008 and sold the portfolio at the start of January 2020. An investor that invested in an equal-weighted (value-weighted) portfolio consisting of exclusively founder-CEO companies in the Nordic region during the period 2008-2020 would have earned a pure return of 86.22% (184%), which is an average annual return of about 7.19% (15.37%). In comparison, the same investor would have earned the following return if invested in a professional-CEO equal-weighted (value-weighted) portfolio, 45.94% (99.78%), which equals an annual return of 3.82% (8.32%).

The key takeaway from these returns is the relatively higher returns earned from founder-led companies compared to other companies in the stock markets. Additionally, value-weighted portfolios seem to have performed significantly better than equal-weighted portfolios during the sample period. However, there can be a wide variety of factors causing these results, such as higher risk-levels that makes investing in founder-led companies less attractive than how it appears at first glance. To further explore the stock market performance, and thus Hypothesis 1, I start by presenting the results from a Carhart Four-Factor model to see whether the observed differences in returns are caused by different amounts of exposure to four common risk factors, the market risk, SMB, HML, and UMD. Furthermore, I present the results using the same model for alternative portfolio-specification in subsection 5.1.2, to get more knowledge about what potentially influence the stock market performance for the companies in my sample. In the last subsection of the analysis of stock market performance, I present the results from the Fama-MacBeth cross-sectional regressions controlling for a variety of equity characteristics.

5.1.1 Carhart Four-Factor Model

Table 4: Stock Market Performance (January 2008-January 2020)

Table 4 presents the results from the Carhart Four-Factor model following the regression-equation (4.1). The table includes two different types of portfolios, one Founder-CEO portfolio and one portfolio of firms managed by professional CEOs. I present the regression-results using both equal-weighted and value-weighted portfolio returns in excess of the risk-free rate for both types of portfolios. The standard errors are reported in parentheses[13], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model			
	Founder-CEO		Professional-CEO	
	EW	VW	EW	VW
	(1)	(2)	(3)	(4)
Monthly Alpha (%)	0.463*	0.623	0.287*	0.441**
	(0.215)	(0.402)	(0.122)	(0.137)
RMRF	1.026**	1.082**	0.938**	0.924**
	(0.040)	(0.049)	(0.025)	(0.031)
SMB	0.921**	0.327	0.554**	-0.171
	(0.155)	(0.203)	(0.044)	(0.099)
HML	0.156	-0.158	0.099	0.070
	(0.166)	(0.148)	(0.095)	(0.114)
UMD	-0.036	-0.031	-0.132**	-0.215**
	(0.082)	(0.145)	(0.045)	(0.048)
Adjusted R^2	0.811	0.675	0.903	0.859

Table 4 presents the results of the Carhart Four-Factor model for the two types of portfolios. Column (1) and (2) shows the results, i.e., the alpha- and beta-estimates when using the founder-CEO portfolio's returns in the model. In comparison, the results of the professional-CEO portfolio are presented in column (3) and (4). Column (1) and (3) shows the results from the portfolios using equal-weighted returns, and column (2) and (4) presents the results using value-weighted returns.

From the results in Table 4, I observe three statistically significant alphas at the 5%-level, and I observe the largest alphas for the founder-led portfolios. The value-weighted returns report higher monthly alpha for both types of portfolios, which is in line with what I find by looking at the pure returns these portfolios produced. Considering the size of the observed alphas from

[13] First, I check for stationarity using a Dickey-Fuller test (Dickey and Fuller, 1979). Then I check for the presence of autocorrelation by running a Breusch-Godfrey test for each model (Breusch, 1978, Godfrey, 1978), if autocorrelation is present at the 5% significance level, I use Newey-West estimators returning autocorrelation- and heteroskedasticity-robust standard errors (Newey and West, 1987; 1994). I want to thank Ola Silgjerd for the implementation of this neat function.

the value-weighted portfolios compared to the equal-weighted portfolios, they seem to suggest that smaller firms in my sample have performed worse than larger firms during the period when controlling for their exposure to the four risk factors.

In absolute terms, the alphas presented are economically significant with monthly abnormal returns from the equal-weighted (value-weighted) founder-CEO portfolio 0.46% (0.62%), which equals to 5.56% (7.48%) annually. However, I also find significant alphas coming from the successor-CEO equal-weighted (value-weighted) portfolios with monthly abnormal returns in the size of 0.29% (0.44%), which is about 3.44% (5.29%) annually. Moreover, by running the entire sample as an individual portfolio, this model produces significant monthly alphas in the size of 0.30% (0.44%). Consequently, it is not enough to find abnormal return coming from the founder-led portfolio through the model to prove that they perform better than others, as the entire sample has performed somewhat better per controlled risk factor than the market benchmark I use. Furthermore, it is essential to point out the fact that even though the value-weighted founder-led portfolio reports the most extensive monthly alpha, it is the only alpha that is not statistically significant at the 5% level when I control for its exposure to the four risk factors.

Another finding from Table 4 is that the founder-CEO portfolio is considerably more exposed to the SMB factor than the professional-CEO portfolio, measured by the beta-coefficient. This increased exposure to the SMB factor confirms the result presented in Table 3, i.e., the founder-CEO firms are, on average, smaller in terms of market valuation compared to firms managed by professional CEOs. Furthermore, the table naturally confirms that the equal-weighted portfolios are more exposed to the SMB factor, i.e., small firms, than the value-weighted portfolios.

The findings I present in this subsection are similar to those of Fahlenbrach (2009) in that I observe the largest alphas for the founder-led companies. My findings do, however, deviate from those of Fahlenbrach (2009) as I also find statistically significant monthly abnormal returns coming from the successor-portfolios, and for the entire sample. These observations suggest that the observed alphas may potentially arise from a sample bias, or that other risk factors should be included in the models such as a liquidity factor. Taking these observations into consideration, I do not find evidence of a significant better stock market performance coming from the founder-CEO portfolio by implementing a Carhart Four-Factor model on the two different portfolios.

Two equivalent tables to Table 4 are presented in Appendix 1 and Appendix 3, using OMX Nordic 40 and OMX Nordic 120 as market benchmarks. These tables present results of increased significance both economically and statistically when using these two market indices as benchmarks. This increased significance is caused by the fact that these indices have underperformed the OMX Nordic All-Share during the sample period.

To sum up these findings, I observe large alphas coming from both the founder-led portfolio and the successor-led portfolio by using the Carhart Four-Factor model. Moreover, the entire sample also produces positive significant monthly alphas, which needs to be considered before interpreting the results. Consequently, I do not find evidence supporting Hypothesis 1 through the results coming from these regressions. However, there may be other factors driving these results; it is, therefore, necessary to explore the stock market performance more extensively before rejecting the hypothesis.

5.1.2 Alternative Portfolio-Specifications

Table 5: Alternative Specifications Stock Market Performance

Table 5 presents the results from a monthly Carhart Four-Factor Model using alternative portfolio-specifications. Panel A presents the results using the founder-CEO portfolio, whereas panel B contains the corresponding results using a portfolio consisting of corporations managed by other CEOs. The first two columns (1) and (2) shows the result by using portfolios excluding companies with GICS sector-codes of 40 and 60, i.e., financial and real estate firms, respectively. Column (3) and (4) contains the results by using the sector-adjusted returns for both portfolios, see subsection 4.1.3 for a full description of how these returns are computed. Column (5) and (6), and (7) and (8), presents the results using portfolios containing the first and last half of the sample period. All four portfolio-specifications' results are shown by using both equal- and value-weighted returns. Please see subsection 4.1.2 for a description of the risk factors, and subsection 2.3.3-2.3.5 for a presentation of the Carhart Four-Factor Model. The standard errors are reported in parentheses[14], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model							
	Selected Sectors		Sector-Adjusted Returns		Jan 2008 - Jan 2014		Feb 2014 - Jan 2020	
	EW	VW	EW	VW	EW	VW	EW	VW
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Founder-CEOs								
Monthly Alpha (%)	0.491	0.547	0.433*	-0.015	0.755*	1.295*	0.178	-0.258
	(0.314)	(0.458)	(0.202)	(0.306)	(0.318)	(0.518)	(0.355)	(0.407)
RMRF	1.044**	1.088**	0.985**	1.015**	1.065**	1.081**	0.965**	1.074**

[14] The calculation of these standard errors follow the same approach as in Table 4 (footnote 13), i.e., if autocorrelation is evident through a Breusch-Godfrey test, I use Newey-West estimators returning autocorrelation- and heteroskedasticity-robust standard errors (Newey and West, 1987 and 1994).

	(0.054)	(0.078)	(0.037)	(0.054)	(0.039)	(0.070)	(0.090)	(0.103)
SMB	0.978**	0.409	0.936**	0.398**	1.114**	0.412	0.754**	0.220
	(0.146)	(0.214)	(0.155)	(0.152)	(0.211)	(0.325)	(0.172)	(0.197)
HML	0.171	-0.131	0.169	-0.499**	-0.027	-0.210	0.372*	0.033
	(0.131)	(0.192)	(0.162)	(0.167)	(0.226)	(0.278)	(0.164)	(0.188)
UMD	-0.078	-0.039	-0.041	-0.042	0.008	-0.117	0.016	0.311
	(0.102)	(0.149)	(0.086)	(0.117)	(0.096)	(0.220)	(0.157)	(0.180)
Adjusted R^2	0.790	0.644	0.810	0.712	0.847	0.689	0.677	0.605
Panel B: Other CEOs								
Monthly Alpha (%)	0.330**	0.362*	0.021	0.285*	0.177	0.512*	0.389*	0.416*
	(0.108)	(0.150)	(0.020)	(0.132)	(0.186)	(0.233)	(0.155)	(0.192)
RMRF	0.947**	0.890**	0.001	-0.003	0.949**	0.943**	0.915**	0.845**
	(0.024)	(0.032)	(0.004)	(0.023)	(0.026)	(0.034)	(0.061)	(0.070)
SMB	0.566**	-0.200**	-0.045**	-0.705**	0.566**	-0.261**	0.591**	0.068
	(0.048)	(0.077)	(0.016)	(0.062)	(0.061)	(0.085)	(0.084)	(0.088)
HML	0.120	0.125	-0.005	-0.111*	-0.033	-0.100	0.288**	0.318**
	(0.107)	(0.118)	(0.012)	(0.055)	(0.130)	(0.136)	(0.075)	(0.078)
UMD	-0.134**	-0.173**	-0.017*	-0.075	-0.117*	-0.192*	-0.101	-0.233*
	(0.045)	(0.063)	(0.007)	(0.043)	(0.056)	(0.077)	(0.069)	(0.101)
Adjusted R^2	0.895	0.836	0.122	0.494	0.913	0.882	0.862	0.774

Table 5 presents the regression results from the Carhart four-factor model using alternative portfolio-specifications. Panel A shows the results from the portfolios containing exclusively founder-led companies. In comparison, Panel B contains the results using portfolios based on corporations managed by professional CEOs. Column (1) and (2) presents results by using portfolios that exclude firms with GICS sector-codes of 40 and 60. Column (3) and (4) shows the results of using sector-adjusted portfolio returns in the four-factor model. In column (5) and (6), and (7) and (8), the table presents the resulting coefficients by using the portfolios returns from the first and second half of the sample period, respectively. Column (1), (3), (5) and (7) offer the results using equal-weighted portfolio returns, whereas column (2), (4), (6) and (8) displays the resulting coefficients using value-weighted portfolio returns. Equivalent tables can be found in Appendix 3 and Appendix 4, using the two other market indices OMX Nordic 40 and OMX Nordic 120 as benchmarks.

Looking at both panel A and panel B in Table 5, I do not observe a significantly different size in the alphas reported in columns (1) and (2) compared to those reported in Table 4. These results provide evidence that the financial and real estate companies in the sample have limited influence on the general stock market performance, and thereby do not affect the results substantially.

Column (3) and (4) presents some fascinating results, by using the sector-adjusted returns, the equal-weighted portfolio now reports a larger monthly alpha than the value-weighted founder-CEO portfolio. Moreover, it is only the equal-weighted portfolio of the two that reports a statistically significant alpha at the 5%-level. These results suggest that some large firms in the founder-CEO portfolio have performed abnormally-well because they operate within sectors that have provided relatively high risk-adjusted returns in the period.

Furthermore, the successor-led equal-weighted portfolio does not produce statistically significant abnormal returns when using these sector-adjusted returns. This observation provides evidence which is line with theories presented earlier in this thesis, which suggest that founder-CEOs are better suited to lead companies while they are still relatively small, before the complexity of the organization increases and demands more administrational skills of its CEO. Taking this observation together with the statement of Jayaraman et al. (2000), who states that the founder-CEOs have the most potential impact in a smaller company, this finding provides evidence suggesting that founder-CEO may lead to a better stock-market performance until a certain point in which a different skill set is demanded of the CEO.

Contrastingly, the opposite is the case considering the value-weighted portfolios. By sector-adjusting these returns, it is only the successor-led value-weighted portfolio that produces a statistically significant alpha. Which further confirms the suggested theory of founder-CEOs may be better suited to lead smaller, and perhaps, younger firms, compared to professional CEOs. In contrast, the case is the other way around when it comes to larger firms. I do, however, need to point out that sector-adjusting the professional-CEO portfolio, due to its relative size compared to the entire sample, almost corrects for itself which causes the variation in monthly returns from the portfolio to be minimal. This flaw becomes evident through the relatively low adjusted R^2 and correlation with the market index being reported from these regressions, presented in column (3) and (4) in panel B.

I find another exciting result from the two separate halves of the sample period. By comparing the results found under panel A column (5) and (6) to the ones presented in column (7) and (8), I observe substantial differences between the two periods. Looking at the results from the first sample period, I observe that the founder-CEO portfolios produce large, statistically significant abnormal returns in the period. This result is contrasted by the alphas presented for the second sample period, which is non-existent. Moreover, the alphas produced in the first sample period are also economically significant with a monthly abnormal return in the size of

0.76% (1.30%) for the equal-weighted (value-weighted) portfolio, which roughly equals 9.06% (15.54%) of abnormal annual return. Comparing the results presented in panel B column (5) and (6) to the ones shown in column (7) and (8), the story is quite different in that it is only the value-weighted portfolio that produces any statistically significant alpha in the first period. Considering the second sample period, both the equal- and value-weighted professional-CEO portfolios reports statistically significant alphas, which starkly contrasts the results observed for the founder-CEO portfolio.

To examine whether the founder-CEO portfolio performs significantly better than the professional-CEO portfolio, I take the differences in monthly returns between the founder-CEO portfolio and the professional-CEO portfolio and use it in a Carhart Four-Factor model. I implement this model for both of the two halves of the sample period and present these results in Appendix 5 and Appendix 6. From these results, I observe that the equal-weighted *difference-portfolio* produces a monthly alpha in the first period with a statistical significance of a p-value of 0.066[15]. Economically, the equal-weighted difference-portfolio provides a monthly abnormal return of 0.62%, or about 7.48% annually. In other words, this result suggests a relatively sizable outperformance by founder-led companies compared to others during this period.

Interestingly the founder-CEO portfolios, especially the equal-weighted portfolio, seem to perform abnormally well in uncertain and harsh market conditions. These results coincide well with Fahlenbrach's (2009) findings, as he reports significant abnormal returns from founder-CEO companies in the period from April 1998 to December 2002, a period including the "dotcom-bubble" which were also characterized by uncertainty and poor stock market conditions. These findings are also in line with the recommendations made by Shulman (2009), as he recommends investing in entrepreneurial companies during uncertain economic times.

To summarize the findings from this subsection, I start by making sure that the stock market performance during the period is not strongly influenced by an unusual return from these types of firms due to the financial crisis. By controlling for a skewed distribution of founder-led

[15] Conclusions based on statistical significance with a p-value of 0.066 may not be universally regarded as worthy of a discussion. I do, however, regard this finding as significant since it is a confirmatory finding as it is consistent with what previous research finds (Jayaraman et al., 2000).

companies within specific sectors, the abnormal return from the value-weighted founder-CEO portfolio alongside with the equal-weighted successor-CEO portfolio disappears. Furthermore, it appears that small founder-led companies perform better than both large founder-led firms and small successor-led firms. These observations are in line with the theories presented in this thesis and with the works of Jayaraman et al. (2000).

Furthermore, I provide evidence suggesting that smaller founder-led companies perform extraordinary well during the first half of the sample period. This finding is contrasted by the evidence of no abnormal returns from the founder-CEO portfolios during the second half of the sample period. For the professional-CEO portfolios, these results were profoundly different with only the value-weighted portfolio producing a significant positive alpha in the first half of the sample period. However, both professional-CEO portfolios produced positive significant abnormal return during the last half of the sample period, whereas the founder-CEO portfolios did not.

5.1.3 Fama-MacBeth Regression

Table 6: Fama-MacBeth Regressions

Table 6 presents the average coefficients following the Fama-MacBeth cross-sectional regressions. See subsection 4.1.4 for a more extensive description of the Fama-MacBeth procedure and the variables being used in the model. This table presents the results using the original approach, which focuses on each security's exposure to the risk factors, but it also includes the average coefficients following Fama-MacBeth regressions using the actual risk characteristics itself. Furthermore, both methods are calculated using both regular and sector-adjusted returns. Standard errors are reported in parentheses, and statistical significance is represented by *, ** and *** indicating significance at the 10%, 5% and 1% levels, respectively.

	Returns		**Sector-Adjusted Returns**	
	Loadings	Characteristics	Loadings	Characteristics
	(1)	(2)	(3)	(4)
Constant	0.100	-0.633	-0.012	-1.845*
	(0.237)	(1.014)	(0.019)	(0.977)
Founder-CEO	0.551	0.433**	0.069	0.323
	(0.635)	(0.214)	(0.214)	(0.208)
Book-to-market	-0.105	-0.259**	0.075	-0.196***
	(0.236)	(0.070)	(0.203)	(0.061)
Market Value	0.374		0.317	
	(0.300)		(0.274)	
Log(Market Value)		0.062		0.095**
		(0.050)		(0.047)
Return 2_3	0.378	1.041	0.315	0.804
	(0.279)	(0.719)	(0.209)	(0.693)
Return 4_6	0.642	0.940	0.320	0.583
	(0.605)	(0.569)	(0.247)	(0.540)
Return 7_12	0.103	0.770	-0.047	0.679
	(0.392)	(0.467)	(0.274)	(0.425)

Dividend Yield	-0.501	0.031	0.128	0.054**
	(0.657)	(0.024)	(0.176)	(0.022)
Days Listed	-0.286		-0.008	
	(0.459)		(0.186)	
Log(Days Listed)		0.084		0.112
		(0.088)		(0.079)
Historic Volatility	0.274	-0.284	0.085	-0.366
	(0.431)	(0.852)	(0.305)	(0.749)
CAPEX/Total Assets	-0.265	-1.031	0.106	-0.460
	(0.374)	(0.766)	(0.171)	(0.627)

Table 6 presents the empirical results by running Fama-MacBeth regressions using both risk loadings and risk characteristics. Column (1) and (2) contains the average coefficients using regular returns, whereas column (3) and (4) holds the results produced by using sector-adjusted returns. The coefficients presented in column (1) and (3) comes from the Fama-MacBeth regressions that focus on the exposure to each variable. In comparison, the coefficients presented in column (2) and (4) comes from the Fama-MacBeth regressions that are based on the risk characteristic itself.

From Table 6 column (1) and (3), I observe that neither of the Fama-MacBeth regressions based on exposure to the risk factors produces any statistically significant estimates. However, by using the risk-characteristics itself, I find that the founder-CEO dummy is economically and statistically significant at 0.43% monthly, or 5.20% annually. This result is similar to the findings of Fahlenbrach (2009) and supports Hypothesis 1 in this thesis. However, Fahlenbrach uses the industry-adjusted returns in his implementation of the Fama-MacBeth regressions. When I control for the sector distribution by using sector-adjusted returns, the significance disappears. Therefore, it appears that the observed strong stock market performance from founder-led companies in this sample, as seen from column (2) and the pure returns mentioned in the start of this chapter, stems from the skewed sector-distribution of these firms. When I corrected for this uneven sector-distribution, the outperformance of founder-led firms are reduced to insignificant statistical levels, leaving a mixed result from this analysis of founder-led companies' stock market performance. That being said, there are, however, inaccuracies in this model, which I state in chapter 6.

I end this section with a summary of the presented findings of the stock market performance. By running a plain Carhart four-factor regression, I observe large alphas for the founder-led portfolio. However, I do also find significant alphas for the professional-CEO portfolio and the entire sample, leaving no conclusion. Further, I make sure that financial and real estate companies do not affect the returns significantly during the period. The equal-weighted founder-led portfolio provides both an economically and statistically significant alpha when using sector-adjusted return. This finding suggests that smaller founder-led companies outperform their sectors considering their exposure to the four risk factors and the disproportionate distribution of founder-led companies within specific sectors. Contrastingly, it is only the successor-CEO portfolio of the two value-weighted types of portfolios that produce abnormally returns. These findings suggest that founder-CEOs may help improve stock market performance for smaller firms until a certain point where the importance of administrational skills becomes more important than the firm- and industry-specific knowledge that the Founder-CEO often possess. This finding is consequent with theories and findings presented earlier in this thesis.

By splitting up the sample period into two halves, I observe that the equal-weighted founder-led portfolio performs better than the equal-weighted professional-CEO portfolio (with a p-value of 0.066). This finding reveals that smaller founder-led companies perform abnormally well during periods of uncertainty and challenging economic conditions. The results are different when it comes to the second half of the sample period, in which only the professional-CEO portfolios produce abnormal returns. They do, however, not perform significantly better than the founder-CEO portfolios (see Appendix 6). Interestingly, the period in which I observe the smaller founder-led companies performing unexpectedly well coincides with the time most of the prominent papers focusing on founder-led companies were published (e.g., Fahlenbrach, 2009; Adams, Almeida and Ferreira, 2009; Villalonga and Amit, 2006). These papers present evidence of founder-led firms performing better operationally as well as in the capital markets compared to companies managed by non-founders. This observation leaves me with two reasons that potentially help to explain the observed strong stock market performance during the first half of the sample period. The first possible explanation is in line with the work of Shulman (2009), suggesting that founder-led companies are better prepared for harsh economic conditions and uncertainty. The second plausible cause for this observed outperformance is that investors investing in the Nordic region might have picked up on the reported strong performance made by founder-led companies in the U.S. and have therefore also invested more in these types of firms in this region, increasing these firms' stock prices. The second explanation complies with the efficient market hypothesis (EMH), which is presented in subsection 2.3.1.

By controlling for a wide variety of equity characteristics through Fama-MacBeth regressions, I find mixed results with the founder-CEO dummy only providing statistically significant results when using regular returns and the risk-characteristics itself. Consequently, I do not find conclusive evidence that allows me to state that founder-led companies generally perform better in the stock market, and therefore do not provide evidence confirming Hypothesis 1.

5.2 Analysis of Firm Valuation and Investment Levels

To supplement the analysis of the stock-market performance, I will in this section take a closer look at other firm characteristics which potentially differentiate founder-CEO firms from other firms. More specifically, I take a closer look at their firm valuation and their investments-levels, thereby examining Hypothesis 2 and Hypothesis 3 from this thesis.

5.2.1 First Stage Instrumental Variable Regression

Table 7: Instrumental Variable First Stage Results

Table 7 presents the results by running the regression-equation (4.8). See subsection 4.2.1 for a description of the included variables. Sector-dummies and year-dummies are included in the regression to control for sector-fixed and time-fixed effects. The table also contains the F-statistic resulting from a hypothesis-test of instrument relevancy. The standard errors are reported in parentheses[16], and statistical significance is represented by *, ** and *** indicating significance at the 10%, 5% and 1% levels, respectively.

	Founder-CEO
Constant	0.151***
	(0.022)
Early Incorporation	-0.099***
	(0.005)
log(Sales)	-0.009***
	(0.001)
Historical Volatility	0.081***
	(0.018)
Sector-Fixed Effects	Yes
Year-Fixed Effects	Yes
R^2	0.066
Hypothesis-test regarding the instrumental relevancy: F-Statistic: 224.03 Df: 8247	

[16] I run a Breusch-Pagan test (Breusch, and Pagan, 1979) to test for presence of heteroscedasticity, using Eicker-Huber-White standard errors (Eicker, 1967, Huber, 1967 and White, 1980) if heteroscedasticity is present at the 5% significance level.

Table 7 presents the results from the first stage in the instrumental variable regression. The most critical information to take away from this table is the direction and statistical significance of the estimated beta-coefficient associated with the instrumental variable, in addition to the reported F-statistic. Table 7 confirms the negative correlation with a statistical significance of 99% for the instrumental variable, as stated in subsection 4.2.1. This result confirms the hypothesis that the instrument variable fulfils the requirement of instrumental relevancy. Moreover, Table 7 presents the results of the hypothesis-test for instrumental-relevancy and reports an F-statistic of 224, which is undoubtedly more prominent than the mentioned rule of thumb, which requires an F-statistic of at least 10. These results are in line with my expectations and with the requirement for the variable to serve as a valid instrument. I can, therefore proceed to carry out the analysis of firm valuation and investment levels.

5.2.2 Firm Valuation

In this subsection, I examine whether the firm valuation of founder-CEO companies is different from other companies. Considering the fact that several papers have reported abnormally high returns produced by portfolios containing founder-led companies; this could lead investors into allocating more capital and valuing these companies at higher prices to account for this effect. According to the efficient market hypothesis, this should be the case. Investors could also be investing more into founder-led companies due to their increased "skin in the game" following the agency theory and the stewardship theory, believing these corporations should earn better returns in the stock markets than other companies.

Table 8: Tobin's Q and Founder-CEOs

Table 8 presents the results from running the regressions described in subsection 4.2.2. Columns (1), (3) and (5) reports results from the Two-Stage IV regressions, and column (2), (4) and (6) reports results from the fixed-effects models. All models use the same dependent variable, a sector-adjusted proxy for Tobin's Q. All variables are described in subsection 4.2.1 and 4.2.2. I include year-dummies in all models to control for year-fixed-effects. Additionally, I control for sector-fixed effects in the models presented in column (1), (3) and (5), and I control for firm-fixed effects in the model presented in column (2), (4) and (6). Furthermore, I use heteroskedasticity-robust standard errors clustered on firm-levels. The standard errors are reported in parentheses, and statistical significance is represented by *, ** and * indicating significance at the 10%, 5% and 1% levels, respectively.**

	Total Period		**2008-2013**		**2014-2019**	
	Two-Stage IV	Fixed Effects	Two-Stage IV	Fixed Effects	Two-Stage IV	Fixed Effects
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.099		0.042		0.108	

	(0.219)		(0.245)		(0.292)	
Founder-CEO (instrumented)	2.064**		2.070*		2.138**	
	(0.905)		(1.077)		(0.996)	
Founder-CEO		0.001		-0.349		0.154
		(0.165)		(0.281)		(0.274)
log(Sales)	-0.052**	-0.160	-0.002	-0.028	-0.086***	-0.327*
	(0.021)	(0.107)	(0.024)	(0.066)	(0.026)	(0.193)
Historical Volatility	0.560**	-0.142	-0.082	0.405	0.913***	-1.950
	(0.229)	(0.805)	(0.343)	(0.882)	(0.275)	(1.241)
Sector-Fixed Effects	Yes	No	Yes	No	Yes	No
Year-Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Fixed Effects	No	Yes	No	Yes	No	Yes
Observations	6,894	578	3,022	236	3,872	342
R^2	0.054	0.016	0.089	0.031	0.025	0.078

Table 8 presents the results from the second stage in IV regressions, as well as the results from fixed-effects regressions. The table contains the results for the total period and each of the two halves of the sample period. I start this analysis by considering the whole sample period, conducting a general analysis of the valuation for founder-led firms. Column (1) presents the results from the second stage of the instrumental variable regression (Two-stage IV). Column (2) presents the results by using only observations from firms experiencing a succession event during the period in a fixed-effects model.

From Table 8, I find statistically significant higher levels of Tobin's Q in founder-led companies at the 5%-level from the results of the 2SLS IV model. This discovery is intriguing as it suggests that investors have picked up on the reported strong stock market performance made by founder-led companies, causing these investors to increase their valuation of these companies which leads to higher prices. Observing higher levels of Tobin's Q is also in line with what other papers on this topic reports (Fahlenbrach, 2009; Adams, Almeida and Ferreira, 2009). However, my findings are significantly larger, reporting twice the size of what Fahlenbrach (2009) finds.

In contrast, I do not find any significant results from the fixed-effects model, meaning that the model does not find any systematic differences in firm valuation after a founder-CEO succession-event. It is worth mentioning that the fixed-effects model does not correct for the endogeneity issue and is therefore assumed to report biased estimates. Due to this weakness of the model, I do not put much emphasis on these results.

By looking closely at the other columns in the table, the presented results are relatively close with no significant differences in either of the two halves compared to the total period. Neither of the fixed-effects models reports any significant results; however, as mentioned, I do not put much emphasis on these results. The conclusion from this section is, therefore, that I find evidence confirming that founder-led companies have a higher firm valuation than corporations managed by other CEOs. Accordingly, I find evidence that supports Hypothesis 2.

5.2.3 Investment Levels

Until now in this thesis, I have presented some evidence suggesting that small founder-led companies, especially during challenging economic conditions provide strong stock market performance, and that founder-led companies tend to have a higher firm valuation than others. I will now explore whether I can observe differences in these companies' investment levels, thereby examine Hypothesis 3 in my thesis.

Table 9: Capital Expenditures and R&D

Table 9 presents the results by running the regressions described in subsection 4.2.3. Column (1) and (2) reports the results from the Second Stage IV regressions, column (3) and (4) reports the results from the fixed-effects models containing solely observations from firms experiencing a succession-event in the sample period. Column 5 and 6 present the results from a simple fixed effects model. The models in columns (1), (3) and (5) use the dependent variable CAPEX, whereas the models that are shown in columns (2), (4) and (6) use the dependent variable R&D. All variables are described in subsection 4.2.1 and 4.2.3. I control for year-fixed effects in all regressions. Additionally, I control for sector-fixed effects in the models presented in columns (1), (2), (5) and (6) and for firm-fixed effects in the models reported in columns (3) and (4). Furthermore, I use heteroskedasticity-robust standard errors clustered on firm-levels. The standard errors are reported in parentheses, and statistical significance is represented by *, ** and * indicating significance at the 10%, 5% and 1% levels, respectively.**

	Second Stage IV		Fixed Effects		Simple Fixed Effects	
	CAPEX	R&D	CAPEX	R&D	CAPEX	R&D
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.431	0.064**			0.410	0.060***
	(0.373)	(0.027)			(0.335)	(0.023)
Founder-CEO (IV)	-0.166	-0.032				
	(0.423)	(0.085)				
Founder-CEO			-0.017*	0.008	-0.044*	-0.009
			(0.010)	(0.028)	(0.024)	(0.022)
log(Sales)	-0.015	-0.011***	0.014***	0.001	-0.014	-0.010***

	(0.013)	(0.003)	(0.004)	(0.007)	(0.011)	(0.002)
Historical Volatility	0.197	0.062**	-0.041	-0.203	0.190	0.061**
	(0.232)	(0.026)	(0.062)	(0.187)	(0.239)	(0.025)
Sector-Fixed Effects	Yes	Yes	No	No	Yes	Yes
Year-Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Fixed Effects	No	No	Yes	Yes	No	No
Observations	7,428	2,424	690	214	7,428	2,424
R^2	0.005	0.274	0.034	0.051	0.006	0.275

Table 9 presents the results from running regressions on the models described in subsection 4.2.3. Column (1) and (2) shows the estimated coefficient of the independent variables in the two-stage IV model by using the dependent variable capital expenditure in column (1), and research and development as the dependent variable in column (2). Column (3) and (4) presents the results using CAPEX and R&D in a fixed-effects model, which is based on a subsample containing only firm-years from firms undergoing a transition from a founder-CEO to a professional CEO, or vice-versa, during the period. Finally, I also include a simple fixed-effects (FE) model on the entire sample in column (5) and (6), both fixed-effects models are considered to be biased due to the endogeneity issue.

None of the second stage IV regressions reports any differences in capital expenditure nor research and development. In comparison, both fixed-effects models report a slightly negative correlation between capital expenditure and founder-led firms. However, these findings are only significant at the 10%-level and are do not correct for the endogeneity problem. The conclusion from these models is, therefore, that I do not find any evidence that suggests any systematical differences in investment-levels for founder-led companies compared to others.

I also implement a two-stage IV model for both CAPEX and R&D for the first and second half of the sample period and present these results in Appendix 7. Neither of these extra models produces any significant results. I thereby reject Hypothesis 3.

My findings from the analysis on investment levels are different from the research conducted on American data. There are, however, potential weaknesses in this analysis and the models that I use, with the main weakness being the low percentage of firm-years in which companies have reported any research and development. As I report in Table 3, only 28.07% of the successor-led firm-years reports any research and development, and even fewer founder-led firm-years at only 23.11%. I elaborate more on these and other potential weaknesses to my analyses in the next chapter.

6. Limitations to the analyses

In this thesis, I have to settle with some suboptimal practices, which is mainly due to the limited data-availability regarding the Nordic region compared to the U.S., and the fact that I use a multi-nation sample.

Since the sample contains several independent nations that use their separate currencies, the data is converted into U.S. Dollar. This approach introduces a currency risk factor which is uncontrolled for in my analyses and may have introduced errors in both estimates and standard errors. Moreover, due to the lack of complete databases covering the Nordic region, some regressions do not contain all relevant control variables and thus can produce inaccurate estimates. This potential flaw applies specifically to the regression-models that I use in the analysis of firm valuation and investment levels. However, by comparing the results from models with and without CEO characteristics that Adams, Almeida and Ferraira (2009) and Fahlenbrach (2009) reports, the differences being observed are not critically large. Furthermore, the restricted access of great databases for this region restrained the possibility to adjust both the returns and the proxies for Tobin's Q by industry, causing this thesis to adjust by sectors instead, which is a little less nuanced.

Gathering founder-CEO status for each firm-year was done manually and therefore may have introduced measurement errors, e.g., through innocent mistyping. Moreover, there were a couple of cases which required judgement regarding whether the company was founder-led or not. This judgement, however, can be assumed to have been completed objectively. Such measurement errors should, therefore, not cause any biasedness in that these errors are assumed to be uncorrelated to the observed factor.

When interpreting the regression results coming from the founder-led portfolio, it is necessary to be aware of the fact that some of the years include a somewhat limited amount of companies. This weakness causes outliers to have relatively more impact on the results, particularly for the value-weighted portfolio returns. I do, however, argue that I have included enough data points to make the findings in this thesis robust to this potential flaw. Additionally, before starting the analysis, I went through each outlier manually, making sure the observed returns reflected the actual returns an investor could have earned through the stock market in the same period for the given stock. Consequently, the findings made from these data should not be caused by wrongfully measured outliers.

7. Conclusion

In this thesis, I identify 8,868 firm-years, of which 755 or 8.5% are founder-led. The main focus of this thesis has been to explore whether these firms performed differently in the stock markets. Additionally, I examined if founder-led companies have a higher firm-valuation, and to what extent they can be observed to invest differently than other companies.

I base my analysis of stock market performance on a portfolio-creation methodology by creating one portfolio with exclusively founder-led firms and one portfolio with all other firms from the sample. In terms of pure stock market returns from these portfolios, I find that investing in a portfolio containing only founder-led companies would have yielded a higher return for an investor in the Nordic region if the investor invested at the beginning of 2008 and did not sell until January 2020 compared to investing in a portfolio of successor-led companies. By controlling for these portfolios' exposure to four of the most common risk factors, i.e., market-risk, small firm risk, value investing, and the momentum factor, I obtain mixed results. Specifically, I find abnormal returns for both types of portfolios, leaving no conclusive evidence for different stock market performance, considering the two types of firms when using this model.

By using sector-adjusted returns, and thereby adjusting for the skewed sector-distribution of founder-led companies, I find significant abnormal returns from only the equal-weighted founder-CEO portfolio. However, I do also find abnormal returns from the value-weighted successor-led portfolio using these sector-adjusted returns. These findings suggest that small founder-led companies provide higher risk-adjusted returns than both larger founder-led companies, as well as smaller firms managed by professional CEOs. This finding is in line with theories presented in this thesis that suggests founder-CEOs are well suited to manage small firms through the first phases of the firm's life-cycle until the complexity increases, demanding more administrational skills from the CEO.

Furthermore, I revealed evidence of strong abnormal returns from the founder-CEO portfolios during the first half sample period, using both equal- and value-weighted portfolios. By taking the difference in monthly returns between the portfolios, I find that the equal-weighted founder-led portfolio produces 0.62% monthly or 7.48% annually larger abnormal returns than the professional-CEO portfolio during this first half of the sample period (with a p-value of 0.066). These results support the works done by Fahlenbrach (2009) and Shulman (2009;

2010), suggesting that founder-led companies, especially smaller founder-led firms, are better positioned to perform well during challenging economic conditions. Contrastingly, in the second half of the sample period, it is solely the successor-led portfolio that produces abnormal returns. However, by taking the difference in returns between the two portfolios, the successor-led portfolio does not provide significantly larger risk-adjusted returns in this period.

I expand the analysis of stock market performance by implementing four different Fama-MacBeth regressions for the whole sample period, controlling for a variety of firm and security characteristics. By focusing on the risk characteristic itself and using regular returns, I observe that the founder-CEO dummy produces significantly larger monthly returns. However, after controlling for the sector-distribution of founder-led firms, this significance disappears. These findings seem to suggest that founder-led companies in my sample have in this period produced significantly larger risk-adjusted returns because they operate within sectors that have been successful during this period. Taking all these conclusions into consideration, I do not provide evidence that fully proves the stated Hypothesis 1 from this thesis.

To analyse the firm valuation, I constructed a proxy of Tobin's Q to measure firm valuation. Furthermore, following Adams, Almeida and Ferreira (2009), I control for the endogeneity problem using a two-stage IV regression-model to get an unbiased estimator. This model provides evidence of substantially higher firm valuation for founder-led firms, supporting the findings of (Fahlenbrach, 2009; Adams, Almeida and Ferreira, 2009; Shulman and Cox, 2010; Barontini and Caprio, 2006; Villalonga and Amit, 2006), and thereby confirming Hypothesis 2 from this thesis.

In my analysis of investment levels, I use the same instrumental variable approach and fixed-effects model as in the firm valuation analysis. By using these models, I find no evidence that reveals any systematical differences in investment levels regarding founder-led companies. These results are inconsistent with the founder-CEO literature. It specifically contrasts findings made by using American data (Fahlenbrach, 2009). Furthermore, my findings on investment levels for these firms deviate from Hypothesis 3, causing me to reject the hypothesis. However, these results may be driven by the fact that this Nordic sample has a significantly smaller fraction of firms which reports any research and development-levels compared to the sample based on firms listed in the United States.

Summing up all the findings from this thesis, one could make an argument suggesting that the Nordic stock markets perhaps is more efficient than the American stock markets. This could be the case regarding founder-led companies since I only find abnormal returns for smaller founder-led firms, especially during an uncertain time-period, which is a period these companies are predicted to perform better (Shulman, 2009). Through both agency theory, stewardship theory and other research regarding founder-led companies, these companies can be expected to perform better than companies managed by professional CEOs. This better performance should, according to the efficient market hypothesis, be priced into these firm's stock prices and thereby not yield abnormally higher returns in the periods following these observations. Moreover, most of the acknowledged research that presents evidence of better firm performance from founder-led companies were published during the period 2006-2010, e.g., Fahlenbrach (2009), Adams, Almeida and Ferreira (2009), Shulman (2009; 2010) and Villalonga and Amit (2006). Accordingly, it would make sense that these findings were picked up by investors, who consequently adjust their valuation of these firms, leading the investors to invest relatively more in founder-led corporations. The increase in valuation, and thereby the demand for these companies, can potentially result in outperformance by founder-led firms in the first sample period (2008-2014), which is in line with my findings.

This thesis does, therefore, not provide evidence that founder-led companies generally perform better than other companies. I do, however, find evidence supporting the notion of smaller founder-CEO companies perform better, especially during times of uncertainty. Moreover, I find that these companies have a higher firm valuation which is in line with what could be expected through presented theory in this thesis. At the same time, I do not find evidence suggesting any differences in investments levels related to founder-led companies.

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Appendix

Appendix 1: Stock Market Performance OMX Nordic 40 (Jan 2008-Jan 2020)

This table presents estimated coefficients resulting from regression-equation (4.1), using OMX Nordic 40 as the market index. I include two different types of portfolios, a founder-CEO portfolio and a portfolio consisting of firms managed by other CEOs. For both portfolios, I present the regression results using both equal-weighted and value-weighted portfolio returns. The standard errors are reported in parentheses[17], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model			
	Founder-CEO		Professional-CEO	
	EW	VW	EW	VW
	(1)	(2)	(3)	(4)
Monthly Alpha (%)	0.904**	1.079**	0.689**	0.833**
	(0.299)	(0.379)	(0.20)	(0.244)
RMRF	1.031**	1.096**	0.944**	0.933**
	(0.053)	(0.050)	(0.036)	(0.043)
SMB	1.024**	0.443*	0.649**	-0.075
	(0.143)	(0.212)	(0.096)	(0.117)
HML	0.237	-0.072	0.173*	0.144
	(0.127)	(0.166)	(0.085)	(0.104)
UMD	-0.047	-0.035	-0.141*	-0.221**
	(0.099)	(0.133)	(0.066)	(0.081)
Adjusted R^2	0.786	0.661	0.878	0.84

Appendix 2: Stock Market Performance OMX Nordic 120 (Jan 2008-Jan 2020)

This table presents estimated coefficients resulting from regression-equation (4.1), using OMX Nordic 120 as the market index. I include two different types of portfolios, a founder-CEO portfolio and a portfolio consisting of firms managed by other CEOs. For both portfolios, I present the regression results using both equal-weighted and value-weighted portfolio returns. The standard errors are reported in parentheses[18], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model			
	Founder-CEO		Professional-CEO	
	EW	VW	EW	VW
	(1)	(2)	(3)	(4)
Monthly Alpha (%)	0.565**	0.732	0.384**	0.522**
	(0.203)	(0.390)	(0.107)	(0.114)
RMRF	1.027**	1.081**	0.936**	0.933**
	(0.037)	(0.052)	(0.022)	(0.029)

[17] I control for autocorrelation by a running a Breusch-Godfrey test (Breusch, 1978, Godfrey, 1978), if autocorrelation is present at the 5% significance level, I use Newey-West estimators returning autocorrelation- and heteroskedasticity-robust standard errors (Newey and West, 1987; 1994).

[18] See footnote 17.

SMB	1.024**	0.435*	0.647**	-0.071
	(0.153)	(0.209)	(0.041)	(0.093)
HML	0.180	-0.133	0.121	0.092
	(0.152)	(0.127)	(0.077)	(0.094)
UMD	-0.029	-0.026	-0.129**	-0.202**
	(0.080)	(0.146)	(0.036)	(0.040)
Adjusted R^2	0.823	0.684	0.913	0.88

Appendix 3: Alternative Specifications Stock Market Performance OMX Nordic 40

Table 5 presents the results from a monthly Carhart Four-Factor Model using alternative portfolio-specifications with the OMX Nordic 40 as the market benchmark. Panel A presents the results using the founder-CEO portfolio, whereas panel B contains the corresponding results using a portfolio consisting of corporations managed by other CEOs. The first two columns (1) and (2) shows the result by using portfolios excluding companies with GICS sector-codes of 40 and 60, i.e., financial and real estate firms, respectively. Column (3) and (4) contains the results by using the sector-adjusted returns for both portfolios, see subsection 4.1.3 for a full description of how these returns are computed. Column (5) and (6), and (7) and (8), presents the results using portfolios containing the first and last half of the sample period. All four portfolio-specifications' results are shown by using both equal- and value-weighted returns. Please see subsection 4.1.2 for a description of the risk factors, and subsection 2.3.3-2.3.5 for a presentation of the Carhart Four-Factor Model. The standard errors are reported in parentheses[19], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model							
	Selected Sectors		Sector-Adjusted Returns		Jan 2008 - Jan 2014		Feb 2014 - Jan 2020	
	EW	VW	EW	VW	EW	VW	EW	VW
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Founder-CEOs								
Monthly Alpha (%)	0.939**	1.004*	0.854**	0.419	1.180*	1.722*	0.634	0.231
	(0.327)	(0.459)	(0.204)	(0.374)	(0.476)	(0.752)	(0.376)	(0.415)
RMRF	1.049**	1.104**	0.991**	1.022**	1.072**	1.093**	0.948**	1.083**
	(0.058)	(0.082)	(0.039)	(0.067)	(0.070)	(0.111)	(0.101)	(0.112)
SMB	1.083**	0.528*	1.037**	0.501**	1.217**	0.523	0.838**	0.322
	(0.157)	(0.220)	(0.174)	(0.179)	(0.219)	(0.347)	(0.189)	(0.208)
HML	0.253	-0.044	0.247	-0.418**	0.095	-0.087	0.403*	0.069
	(0.139)	(0.195)	(0.176)	(0.159)	(0.192)	(0.303)	(0.179)	(0.197)
UMD	-0.089	-0.041	-0.05	-0.051	-0.005	-0.124	-0.01	0.297
	(0.108)	(0.152)	(0.086)	(0.124)	(0.133)	(0.211)	(0.171)	(0.188)
Adjusted R^2	0.766	0.632	0.787	0.691	0.828	0.679	0.616	0.566
Panel B: Other CEOs								
Monthly Alpha (%)	0.735**	0.744**	0.022	0.281*	0.558	0.885*	0.809**	0.817**
	(0.210)	(0.257)	(0.020)	(0.130)	(0.338)	(0.397)	(0.225)	(0.254)
RMRF	0.954**	0.894**	0.001	-0.001	0.953**	0.953**	0.916**	0.828**

[19] The calculation of these standard errors follow the same approach as in Table 4 (footnote 13), i.e., if autocorrelation is evident through a Breusch-Godfrey test, I use Newey-West estimators returning autocorrelation- and heteroskedasticity-robust standard errors (Newey and West, 1987; 1994).

	(0.037)	(0.046)	(0.004)	(0.023)	(0.050)	(0.059)	(0.061)	(0.076)
SMB	0.663**	-0.111	-0.045**	-0.703**	0.654**	-0.165	0.675**	0.141
	(0.10)	(0.123)	(0.015)	(0.062)	(0.156)	(0.183)	(0.113)	(0.095)
HML	0.195*	0.195	-0.005	-0.111*	0.075	0.008	0.318**	0.344**
	(0.089)	(0.109)	(0.012)	(0.055)	(0.136)	(0.160)	(0.107)	(0.101)
UMD	-0.142*	-0.183*	-0.018*	-0.072	-0.131	-0.198	-0.116	-0.257
	(0.069)	(0.085)	(0.008)	(0.043)	(0.095)	(0.111)	(0.102)	(0.138)
Adjusted R^2	0.871	0.813	0.121	0.494	0.891	0.87	0.812	0.712

Appendix 4: Alternative Specifications Stock Market Performance OMX Nordic 120

Table 5 presents the results from a monthly Carhart Four-Factor Model using alternative portfolio-specifications with the OMX Nordic 120 as the market benchmark. Panel A presents the results using the founder-CEO portfolio, whereas panel B contains the corresponding results using a portfolio consisting of corporations managed by other CEOs. The first two columns (1) and (2) shows the result by using portfolios excluding companies with GICS sector-codes of 40 and 60, i.e., financial and real estate firms, respectively. Column (3) and (4) contains the results by using the sector-adjusted returns for both portfolios, see subsection 4.1.3 for a full description of how these returns are computed. Column (5) and (6), and (7) and (8), presents the results using portfolios containing the first and last half of the sample period. All four portfolio-specifications' results are shown by using both equal- and value-weighted returns. Please see subsection 4.1.2 for a description of the risk factors, and subsection 2.3.3-2.3.5 for a presentation of the Carhart Four-Factor Model. The standard errors are reported in parentheses[20], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model							
	Selected Sectors		Sector-Adjusted Returns		Jan 2008 - Jan 2014		Feb 2014 - Jan 2020	
	EW	VW	EW	VW	EW	VW	EW	VW
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Founder-CEOs								
Monthly Alpha (%)	0.592	0.654	0.532**	0.076	0.821	1.357	0.279	-0.130
	(0.302)	(0.449)	(0.193)	(0.352)	(0.431)	(0.728)	(0.351)	(0.411)
RMRF	1.047**	1.089**	0.985**	1.023**	1.052**	1.071**	1.012**	1.111**
	(0.051)	(0.076)	(0.037)	(0.060)	(0.060)	(0.102)	(0.093)	(0.109)
SMB	1.086**	0.520*	1.035**	0.506**	1.236**	0.540	0.794**	0.260
	(0.143)	(0.212)	(0.153)	(0.167)	(0.197)	(0.333)	(0.172)	(0.202)
HML	0.196	-0.105	0.193	-0.474**	0.048	-0.135	0.334*	-0.010
	(0.127)	(0.189)	(0.144)	(0.148)	(0.173)	(0.292)	(0.163)	(0.192)
UMD	-0.070	-0.032	-0.036	-0.029	-0.003	-0.124	0.048	0.338
	(0.099)	(0.146)	(0.087)	(0.115)	(0.119)	(0.201)	(0.157)	(0.184)
Adjusted R^2	0.804	0.654	0.821	0.731	0.860	0.703	0.679	0.59
Panel B: Other CEOs								
Monthly Alpha (%)	0.426**	0.438**	0.022	0.280*	0.238	0.564**	0.485**	0.494**
	(0.103)	(0.131)	(0.020)	(0.132)	(0.177)	(0.201)	(0.152)	(0.188)

[20] The calculation of these standard errors follow the same approach as in Table 4 (footnote 13), i.e., if autocorrelation is evident through a Breusch-Godfrey test, I use Newey-West estimators returning autocorrelation- and heteroskedasticity-robust standard errors (Newey and West, 1987; 1994).

RMRF	0.946**	0.901**	0.0004	-0.0004	0.935**	0.936**	0.959**	0.897**
	(0.021)	(0.028)	(0.004)	(0.022)	(0.023)	(0.032)	(0.068)	(0.073)
SMB	0.661**	-0.102	-0.045**	-0.703**	0.671**	-0.147	0.628**	0.106
	(0.046)	(0.077)	(0.016)	(0.062)	(0.056)	(0.089)	(0.076)	(0.084)
HML	0.143	0.147	-0.005	-0.111*	0.033	-0.034	0.252**	0.285**
	(0.088)	(0.099)	(0.012)	(0.055)	(0.108)	(0.117)	(0.076)	(0.073)
UMD	-0.129**	-0.159**	-0.018*	-0.072	-0.129**	-0.196**	-0.071	-0.199*
	(0.036)	(0.057)	(0.008)	(0.043)	(0.046)	(0.069)	(0.067)	(0.098)
Adjusted R^2	0.906	0.859	0.121	0.494	0.923	0.899	0.864	0.790

Appendix 5: Differences in Portfolio Returns, First Period

Appendix 5 presents the results from a Carhart Four-Factor Model using monthly returns from the first half of the sample period. See subsection 4.1.2 for a description of this model, and the variables being used in it. Column (1) and (2) contain the result for the equal-weighted and value-weighted founder-CEO portfolio, whereas column (3) and (4) show the equivalent results for the professional-CEO portfolio. The last two columns (5) and (6) present the results from the portfolio that takes the difference in monthly returns from the founder-CEO portfolios to the professional-CEO portfolios. The standard errors are reported in parentheses[21], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model					
	Founder-CEO		Professional-CEO		Difference	
	EW	VW	EW	VW	EW	VW
	(1)	(2)	(3)	(4)	(5)	(6)
Monthly Alpha (%)	1.180*	1.722*	0.558	0.885*	0.623	0.837
	(0.476)	(0.752)	(0.338)	(0.397)	(0.332)	(0.650)
	p = 0.016	p = 0.026	p = 0.105	p = 0.029	p = 0.066	p = 0.203
RMRF	1.072**	1.093**	0.953**	0.953**	0.119*	0.139
	(0.070)	(0.111)	(0.050)	(0.059)	(0.049)	(0.096)
	p = 0.000	p = 0.000	p = 0.000	p = 0.000	p = 0.019	p = 0.151
SMB	1.217**	0.523	0.654**	-0.165	0.563**	0.687*
	(0.219)	(0.347)	(0.156)	(0.183)	(0.153)	(0.30)
	p = 0.00000	p = 0.137	p = 0.0001	p = 0.371	p = 0.0005	p = 0.025
HML	0.095	-0.087	0.075	0.008	0.020	-0.095
	(0.192)	(0.303)	(0.136)	(0.160)	(0.134)	(0.262)
	p = 0.622	p = 0.775	p = 0.583	p = 0.962	p = 0.884	p = 0.719
UMD	-0.005	-0.124	-0.131	-0.198	0.126	0.074
	(0.133)	(0.211)	(0.095)	(0.111)	(0.093)	(0.182)
	p = 0.973	p = 0.560	p = 0.174	p = 0.081	p = 0.181	p = 0.687
Adjusted R^2	0.828	0.679	0.891	0.870	0.135	0.029

Appendix 6: Differences in Portfolio Returns, Second Period

[21] The calculation of these standard errors follow the same approach as in Table 4 (footnote 13), i.e., if autocorrelation is evident through a Breusch-Godfrey test, I use Newey-West estimators returning autocorrelation- and heteroskedasticity-robust standard errors (Newey and West, 1987; 1994).

Appendix 6 presents the results from a Carhart Four-Factor Model using monthly returns from the second half (Feb 2014-Jan 2020) of the sample period. See subsection 4.1.2 for a description of this model, and the variables being used in it. Column (1) and (2) contain the result for the equal-weighted and value-weighted founder-CEO portfolio, whereas column (3) and (4) show the equivalent results for the professional-CEO portfolio. The last two columns (5) and (6) present the results from the portfolio that takes the difference in monthly returns from the founder-CEO portfolios to the professional-CEO portfolios. The standard errors are reported in parentheses[22], and statistical significance is represented by * and ** indicating significance at the 5% and 1% levels, respectively.

	Monthly Carhart Four-Factor Model					
	Founder-CEO		Professional-CEO		Difference	
	EW	VW	EW	VW	EW	VW
	(1)	(2)	(3)	(4)	(5)	(6)
Monthly Alpha (%)	0.634	0.231	0.809**	0.817**	-0.175	-0.586
	(0.376)	(0.415)	(0.225)	(0.254)	(0.271)	(0.403)
	p = 0.097	p = 0.580	p = 0.001	p = 0.002	p = 0.520	p = 0.151
RMRF	0.948**	1.083**	0.916**	0.828**	0.032	0.255*
	(0.101)	(0.112)	(0.061)	(0.076)	(0.073)	(0.109)
	p = 0.000	p = 0.000	p = 0.000	p = 0.000	p = 0.667	p = 0.023
SMB	0.838**	0.322	0.675**	0.141	0.163	0.181
	(0.189)	(0.208)	(0.113)	(0.095)	(0.136)	(0.203)
	p = 0.00004	p = 0.127	p = 0.00000	p = 0.139	p = 0.237	p = 0.375
HML	0.403*	0.069	0.318**	0.344**	0.084	-0.275
	(0.179)	(0.197)	(0.107)	(0.101)	(0.129)	(0.192)
	p = 0.028	p = 0.727	p = 0.005	p = 0.001	p = 0.515	p = 0.157
UMD	-0.010	0.297	-0.116	-0.257	0.106	0.553**
	(0.171)	(0.188)	(0.102)	(0.138)	(0.123)	(0.183)
	p = 0.955	p = 0.120	p = 0.260	p = 0.064	p = 0.390	p = 0.004
Adjusted R^2	0.616	0.566	0.812	0.712	-0.028	0.203

Appendix 7: Capital Expenditures and R&D

This table contains results from the second stage of a two-stage least squares IV model on the two accounting variables capital expenditure (CAPEX) and research and development (R&D), see section 4.2.1 and 4.2.3 for more information of the variables included in these models. Column (1)-(3) presents the estimated variables of observed levels in capital expenditure. Column (4)-(6) presents the same results using observed levels of research and development. I control for both sector-fixed effects and year-fixed effects in all models. I use heteroskedasticity-robust standard errors clustered on firm-levels; these are reported in parentheses. Statistical significance is represented by *, ** and * indicating significance at the 10%, 5% and 1% levels, respectively.**

	CAPEX			**R&D**		
	Total	2008-2013	2014-2019	Total	2008-2013	2014-2019
	(1)	(2)	(3)	(4)	(5)	(6)

22 The calculation of these standard errors follow the same approach as in Table 4 (footnote 13), i.e., if autocorrelation is evident through a Breusch-Godfrey test, I use Newey-West estimators returning autocorrelation- and heteroskedasticity-robust standard errors (Newey and West, 1987; 1994).

Constant	0.431	0.727	-0.038	0.064**	0.038	0.089**
	(0.373)	(0.453)	(0.210)	(0.027)	(0.026)	(0.041)
Founder-CEO (instrumented)	-0.166	-0.439	0.174	-0.032	0.003	-0.092
	(0.423)	(0.916)	(0.289)	(0.085)	(0.090)	(0.124)
log(Sales)	-0.015	-0.036	0.005	-0.011***	-0.007***	-0.014***
	(0.013)	(0.028)	(0.010)	(0.003)	(0.003)	(0.004)
Volatility	0.197	-0.061	0.415	0.062**	0.052*	0.059
	(0.232)	(0.170)	(0.398)	(0.026)	(0.028)	(0.037)
Sector-Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,428	3,319	4,109	2,424	1,160	1,264
R^2	0.005	0.007	0.005	0.274	0.226	0.288