THE EXECUTIVE EXECUTIONER: HOW BAD IPO PERFORMANCE LEADS TO FORCED CEO TURNOVER

AN EMPIRICAL INVESTIGATION OF THE RELATIONSHIP BETWEEN IPO PERFORMANCE AND FORCED CEO TURNOVER

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Abstract:

This study aims to evaluate the relationship between IPO performance and forced CEO turnover on companies that went public on the New York Stock Exchange between 2010-2018. We develop a composite measurement of IPO performance that is distinctive from firm performance post IPO. Our results show strong evidence that firm's IPO performance negatively correlates with forced CEO turnover. The findings could be explained by two *turnover effects*. First being the direct effect of the IPO performance and the second being the proxy that the IPO performance constitutes of managerial abilities. Interestingly, neither of the individual parameters that make up the composite IPO performance measure explain the relationship individually. This indicates that boards' evaluations of CEOs are based on more than solely a single parameter. The findings of a negative relationship between IPO performance and forced CEO turnover contributes to the IPO literature.

Keywords:

IPO, IPO PERFORMANCE, CEO, CEO TURNOVER

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1 INTRODUCTION

Going public is an important milestone in a firm's lifecycle. The front figure of the listing process is often the company's chief executive officer. Many see the CEO as responsible for the strategy and execution of the IPO; the perception investors have of the company's CEO affects the success of the IPO (Blankespoor et al., 2017). Thus, even though advisors to the firm and others are the ones preparing the material for the roadshows, the CEO's execution, strategy and conduct is likely to have an impact on the IPO performance and the value of the firm.

We know little from previous literature of how activities related to the company's IPO process affect the board's evaluation of the CEO. The misaligned interests between the company's CEO (agent) and the board (principle) is perhaps the most traditional case of an agency problem. The board cannot precisely monitor everything the CEO does. Instead, as research has shown, the evaluation of CEOs is (among other things) based on performances such as return on equity or stock development. But there are indications of that the IPO performance influences termination decisions, too. The Swedish financial newspaper Dagens Industri labelled newly listed firms as 'CEO turnover carousels'[1] and many industry professionals believe that the IPO execution is the responsibility of the CEO and failing to perform could lead to a forced turnover[2]. The following research question is formulated:

Is there a negative relationship between IPO performance of a firm and forced CEO turnover?

This paper empirically examines the relationship between forced CEO turnover and IPO performance for companies that have been listed on the New York Stock Exchange between 2010-2018. Previous literature discusses various short-and long-term performance indicators of the IPO, but there is no consistent way of determining IPO performance. We aim to distinguish *IPO performance* from *firm performance post IPO*. The former being a composite measure of various parameters closely linked to the IPO event, and the latter being solely financial or stock performance, measured over a longer time-period.

[1] Dagens Industri (15th of September 2017): *Vd-karusellen är ett varningstecken*:
[2] *"It is often the CEO who is blamed in a bad IPO [...] It is difficult to mitigate, dismissal is the best tool."* – Johan Pålsson, CapMan.

The *Scapegoat theory* suggests that the front figure in the IPO process, the CEO, is most likely to be held responsible for a low performing IPO[3]. The *Upper echelons* and *Hot/cold-hand fallacy* theories suggest that CEO characteristics, and his/her past performance is a predictor of future performance. From these theories, the forced turnover decision can be explained by two effects: (i) the CEO is dismissed as a direct effect of the IPO performance. (ii) the IPO performance serves as a proxy for the CEO's managerial abilities. This means that the CEO's past performance is indicative of future performance; if a CEO performs poorly during the roadshows and other events associated to the listing process, those lack of managerial abilities will continue to be shown in the future and will subsequently result in a dismissal.

"The CEO is responsible for the sale process of the firm during the IPO […] CEO's conducts during the IPO are very generic skills that are used throughout his tenure. CEOs with the ability to persuade investors are usually very good for the organisation in general." - Erik Lautmann,

Therefore, the forced CEO turnovers that are of interest after the listings are not only those in proximity to the IPO, but also turnovers during the following years.

We contribute to previous literature in following ways: (i) by extending the IPO literature by creating a consolidated measure of IPO performance to capture multiple dimension in the IPO event; (ii) by finding evidence that IPO performance negatively correlates with forced CEO turnover. This could imply that CEOs are evaluated based on the IPO performance, and/or that the *IPO performance* serves as a proxy for his/her managerial abilities; (iii) by finding that none of the underlying parameters, making up the composite IPO performance measure, can solely explain forced CEO turnover. This could indicate that the boards' evaluations of CEOs are based on more

[3] **Blue Apron Case Study:** A badly executed IPO that led to a CEO dismissal is Blue Apron's IPO. Blue Apron is an American ingredient-and-recipe meal kit service that went public in 2017. Prior to Blue Apron's roadshow, Amazon announced that they would acquire Wholefoods. Amazon was notorious for outcompeting incumbents in new verticals that they entered. The Blue Apron CEO Matt Salzberg tried to be optimistic, but the investors were not convinced. Blue Apron went public at $10 a share, far below expected range. The months following the IPO, a substantial part of its market capitalization from the listing day was wiped out. Mr Salzberg was 'replaced' just five months after the IPO.

Companies very seldom provide an exhaustive transparent reason why CEOs are replaced if it is not on voluntary terms (e.g. retirement). One plausible explanation of the dismissal could be that Mr Salzberg failed to sell the equity story during the listing process. Thus, his managerial inabilities to pursue the market could have had a negative impact on investors' perception of the stock. That could have affected the board's view on Mr Salzberg's ability to show leadership skills and build on investors' trust, which led to the removal of him as the CEO.

than one parameter (linked to the IPO event), and/or that these parameters individually do not serve as proxies for the CEOs' managerial abilities.

The thesis outline is as follows: in section (2) *Literature Review,* we present and analyse previous literature on IPOs, IPO performance and corporate governance. We end the section by formulating the hypothesis. In section (3) *Methodology,* we first develop a composite IPO performance measure. In addition, we elaborate on the statistical tools used to analyse the relationship. In section (4) *Data* we present the selected data and the framework used to categorize forced CEO turnovers. In section (5) *Results* we present and analyse the finding of the study. In the section (6) *Conclusion* we further discuss and summarize the results. We end this paper with suggestions of (*7*) *Limitations* and (8) *Future research*.

2 LITERATURE REVIEW

The following section is a brief description of the literature review structure: we begin the literature review by mapping out the background to our study, i.e. from a scientific perspective, we discuss why firms tend to go public and the CEOs' roles in these events. Subsequently, we have a thorough discussion about the determinants of IPO performance, and how previous research addresses this topic. With multiple theories, we develop our hypothesis of how we believe the level of performance of the IPO affects forced CEO turnover.

2.1 Why firms go public

One important milestone for many companies is to go public (Certo et al., 2009). The process is often not only extensive, but also complex and uncertain (Daily et al., 2003). The likelihood of going public increases as the size of the company increase, but that alone does not explain the decision to do so; but it is rather a choice (Pagano et al., 1998). Many companies point to the enhanced visibility, financial flexibility and enhanced reputation but the reasons why going public differ across firms depending on geography, legal systems and more. A single theory thus cannot explain why firms IPO, since firms by going public seek multiple advantages (Bancel and Mittoo, 2009). What in one geography is considered a benefit of going public, could be considered a liability in another (Bancel and Mittoo, 2009). For example, US firms consider external monitoring as a major cost, which is opposite to European firms that consider it as a major benefit (Bancel and Mittoo, 2009).

2.1.1 Why it matters for the CEO

CEOs are important for firms for numerous of reasons; e.g. to show leadership and to build legitimacy to attract investors when going public (Bamford, Bruton, and Hinson 2006. Malmendier and Tate (2009) further argue that CEOs are in many cases the front figure of the company, as they are attributable for many of the companies' milestones and other significant events. Yang's (2011) line of argument is similar, implying that the CEO's experience and social capital play a vital part in helping the firm to succeed. E.g. certain characteristics of a CEO could give signals to investors, which impact the firm's value (Zimmerman 2008). Furthermore, Yang (2011), argues that certain characteristics such as past executive experience could influence when the CEO decides to take his or her firm public.

2.1.2 The CEO's role and influence during the roadshow

The CEO also plays a vital role during the IPO process. To reduce the information asymmetry between the issuer and the investors, companies file a SEC registration statement to present information about the company (Leone, Rock, and Willenborg, 2007, Loughran and McDonald 2013). After those filings, the CEO and the management team meet with investors during a series of roadshows.

Even though much of the CEO's presentation is information already filed, investors that attend the roadshows "find value in to see [management] on their feet" (Sherman, 2012). The advisory committee of NYSE that examined the IPO process confirmed this: "[...] *the opportunity to see and hear senior management may provide significant information for an investment decision*" (Blankespoor et al., 2017). That subsequently affects investors' perception of the CEOs, which affects the IPO price range, listing price and closing price after first day of trading (Blankespoor et al., 2017). Evidently, the perception of the CEO's competence influences multiple outcomes in the IPO (such as funding and initial returns). But on what factors are the *IPO Performance* evaluated?

2.2 What determines the performance of an IPO?

There is no established notion of how IPO performance is measured and evaluated in the research community. IPO performance can be established through discussion and evaluation of previous research on adjacent topics (e.g. post IPO stock performance) and individual scholars' definitions of how to assess IPO performance. Certo et al. (2009) discuss a broad set of topics regarding prior research on IPO. Mainly, the authors evaluate how previous literature addresses various determinants of IPO performance. The article identifies that previous studies use two broad measures of how to assess IPO performance: long-term and short-term measurements. In the next section, we will examine long and short-term measurements of IPO performance to evaluate what methods best could be used as a proxy for IPO performance.

2.2.1 Long-term IPO Performance

Researchers studying determinants of long-term IPO performance are quite consistent in their methods and evaluation metrics (Certo et al., 2009). The most common methods of evaluating IPO performance are (i) through various accounting-based measurements (such as operating margin, return on assets and other earnings measurements), (ii) through stock price development,

benchmarked to market, industry or other similar companies (Certo et al., 2009). For instance, Jain and Kini (1994) and Mikkelson, Partch and Shah (1997) measure the operating performance (calculated as operating profit to total assets) in the five first years of trading. Whereas Ritter (1991), likewise other research (e.g. Levis, 1993), studies three years of stock performance of IPO firms. Most studies find that accounting and stock performance deteriorate the years subsequent to the IPO (Loughran and Ritter 1995, and Carter et al., 1998, Khurshed, Paleari and Vismara, 2003).

Using long-term IPO performance (i.e. accounting performance and/or stock performance) as a proxy for IPO performance has drawbacks. These measures are impacted by other events not related to the IPO itself, e.g. performance of the sales department or random corporate scandals (Kim et al., 2011). Therefore, using 'long-term IPO performance' as a proxy for IPO performance makes it difficult to distinguish whether the performance variable is affected by noise; e.g. an event that occurs subsequent to the IPO that potentially impacts the *IPO performance* variable.

Further, most studies identify a negative relationship between stock price performance and CEO turnover (e.g. Coughlan and Schmidt 1985, Warner et al., 1988, Wiersema 2011). E.g. Warner et al. (1988) conclude that turnover of top management, including CEO, president and chairman, increases subsequent to declining stock performance. Similarly, Weisbach (1987) and Brickley (2003) find a negative relationship between accounting measurements and CEO resignations. Hence, determining CEO turnover with abovementioned explanatory factors (long-term financials and accounting performance) is nothing new, and does not contribute to the current literature. Previous studies already have confirmed and established that long-term declining stock and accounting performances result in increased CEO turnover. Using what in Certo et al. (2009) is labeled as 'long-term IPO performance' as a proxy for *IPO performance*, would be looking at the same area as previous studies (although perhaps not years following being listed), and therefore there are strong reasons to believe that the findings will be similar. Therefore, a more suitable assessment of *IPO performance* used in this paper ought to be determined by attributes unique to the IPO event itself, being the actual *IPO performance* of the firm, rather than long-term performance of IPO firms.

2.2.2 Short-term IPO performance

Short-term determinants of IPO performance are more unique to the IPO event. Certo et al. (2009) claim that frequently used short-term determinants are usually underpricing, proceeds, market-to-book (price premium) and valuation. The authors argue that there are multiple short-term IPO performance indicators that are evaluated differently and thus there is no consistent or general way of measuring short-term IPO performance. However, a common thread among these studies (measuring short-run IPO performance) is to incorporate the listing price or the number of shares sold to determine IPO performance (proceeds).

Underpricing is the first day returns of the IPO stock, i.e. the difference between the listing and the closing price (Loughran and Ritter, 2004). This parameter is predominant in measuring the short-term IPO performance (Daily, Certo & Dalton, 2003). Research finds that the average discount of IPO stocks is approximately in the mid-15% (eg. Smith, 1986, Loughran and Ritter, 2004). It is however unclear whether one day of trading individually can constitute a basis of measuring *IPO performance*: First, the listing day could be regarded as a normal trading day, influenced by the underwriter and market communication, and therefore not sufficient to independently determining the IPO performance.

Second, it is suggested by Ljungqvist (2007) that the event of underpricing is mainly because of information asymmetry between the firm and the market, and agency problems between the firm and the underwriting investment bank. Investment banks (underwriters), for instance, find it cheaper to market underpriced IPOs, and simultaneously retain/foster good relationships with buy-clients (Ljungqvist, 2007). On the one hand, it is suggested that managers, together with owners, tend to be somewhat indifferent to underpricing as they can obtain capital appreciations on their and the shareholders' wealth (Loughran and Ritter, 2002). Therefore, it could be argued that the level of underpricing, from the perspective of pre-IPO shareholders and also from other market participants, could be considered as good IPO performance. However, the pre-IPO shareholders are also concerned about the listing price as it constitutes the base of total funds raised, which is essential for continued growth of the firm (Daily, Certo & Dalton, 2003). Thus, considering the negative relationship between underpricing and amount of funds raised, one could argue that *proceeds* could be a better proxy for success. Whereas raising low funds (e.g. weak listing price) could be perceived as an inferior IPO by owners. Contrarily, one could also argue that proceeds

are a bad proxy as well, since it similar to underpricing, is affected by the IPO strategy of the investment bank.

Despite being used in previous studies, simply looking at the *market value* of the initial listing is not very informative unless it is benchmarked to some other measure, and therefore a non-explanatory measure by itself. It is argued that measuring *IPO performance* by the listing price or valuation in isolation can be deceptive as it is not evaluated relative to the book value of the firm's assets (Certo et al., 2009). A better proxy for success could therefore be the *IPO price premium* measured by the *market- to book-value* (Rasheed, Datta & Chinta, 1997). The advantage of this measure is that it combines a static measure of the asset value that is evaluated to the relative market price. The level of this relative measure is also an initial signal of how outside investors perceive future prospects of the IPO firm, and to what premium investors are willing to buy the share (Certo et al., 2009). But measuring *IPO performance* using that ratio can be difficult to assess and compare across industries.

As discussed above most measures contain pros and cons when evaluated individually. To measure *IPO performance*, it could be more suitable to evaluate several parameters together. Gulati and Higgins (2003) measure 'IPO success' with short-term measurements to determine the effects on interorganizational partnerships on IPO success. Gulati and Higgins (2003) calculate 'IPO success' based on four financial measurements; (i) on firms' net proceeds, which is measured as cash that is received from the public offering, net of costs associated to the IPO procedure; (ii) by the pre-money market valuation, which the authors calculate as total shares outstanding less the new shares issued at IPO multiplied by the IPO subscription price (as implied in IPO prospectus). I.e. this measures the market valuation of the firm the day before trading; iii) and iv) 90 days and 180 days return respectively, subsequent to the listing date. The formula is thus akin to the formula in (ii), but the stock price is now 90 days (180 days) post IPO, in order to measure the early performance of the IPO. The authors establish one financial indicator for 'IPO success' by standardizing and consolidating (using equally weighted average) the parameters.

2.3 CEO dismissal from a theoretical perspective

The relationship between the board of a company, which ultimately decides the fate of the CEO, and the CEO can be explained as an agency relationship, where the principal, the board, has challenges verifying the actual performance of the CEO due to information asymmetry. The board simply cannot know precisely what the CEO does. It is established in the corporate governance literature that non-performing CEOs are more likely to be replaced by the board of directors (Goyal and Park, 2002). Proxies are used to determine the CEO's performance (Arrow, 1985). One common proxy that is well-established is the financial performance of firms. Research indicate that there is a negative relationship between financial performance and of the probability of action from the board to dismiss the CEO (eg. Boeker 1992, Leker and Salomo 2000). Research also finds that the negative relationship of financial/stock performance and CEO turnover is less likely in certain contexts. E.g. Goyal and Park (2002) find that CEO turnover is much less sensitive to performance when the CEO is also the chairman. Similarly, greater overall board independence from the CEO is correlated with higher turnover rates (Laux 2008). This is not limited to chairman/board members CEOs; similar findings are also found for founder-CEOs (Gao et al., 2017).

Observing CEO dismissal from the *Upper Echelons theory* it is argued that CEOs' characteristics influence and predict organizational outcomes (Hambrick & Mason, 1984). The theory suggests that managers to a great extent influence the organization and its performance (based on their characteristics). This is evident in the IPO process as CEO has direct influence on the IPO pricings, as suggested by Blankespoor et al. (2017). Thus, it is probable that CEO, being the front figure in IPO process, is blamed and punished thereafter (i.e. in the event of a low performing IPO). This is an example of *Scapegoating*, when the front figure, the CEO, is held accountable in the event of a failure (e.g. Gamson & Scotch 1964, Boeker 1992).

Hence, according to aforementioned theories, the forced CEO turnover can be explained by the direct effect of the *IPO performance*, the *first turnover effect*; being that the CEO is dismissed as a direct effect of the IPO failure. However, the forced CEO turnover could also be explained by an indirect effect, the *second turnover effect*. This effect implies that the *IPO performance* constitutes a proxy for the CEO's managerial abilities and his or her capabilities to perform in the future. This is supported by the *Upper Echelons theory,* suggesting the CEO's characteristics,

which influence the IPO, partly predict future performance. We also find support for the *second turnover effect* in the *Hot/Cold-hand fallacy theory* (Droms, 2006). The theory suggests that past performance is a predictor of future performance ('Hot' being good performance and 'Cold' being weak performance). Droms (2006) tests, and partly confirms, this theory on mutual funds. He concludes:

"Poor past performance counts more than good past performance. Persistence of the "cold hand" phenomenon is the strongest and most consistent conclusion found in all of the major studies: poor past performance is a strong predictor of future poor performance."

Similar to how CEOs strive to maximize owners' wealth (governance issues aside), fund managers, working as agents for the investors, seek to maximize returns (thus investors' wealth). *Hot/Cold-hand fallacy* could therefore be applied to both events, and thus it suggests that if the CEO performs badly in the IPO, (s)he is more likely to perform badly in future situations. The reason is that the qualities the CEO needs to contribute to a good performing IPO are generic skills, and not exclusive to the IPO event. These qualities will be needed again. The incremental underperformance could therefore be what induces the board's decision to dismiss the CEO, rather than the *IPO performance* in isolation.

2.4 Formulating the hypothesis

Prior literature does not address whether the probability of action from the board to dismiss the CEO increases from a low performing IPO, nor what those proxies (of IPO performance) could be. The CEO, as aforementioned, is the front figure of the company, and thus attributable for the company's milestones, such as the performance of an IPO. But does (s)he bear responsibility for a bad performing IPO to the extent of being terminated? I.e., would a low performing IPO, just as financial underperformance, increase the probability of getting fired, which would be aligned with the *Agency theory* (and Boeker 1992), that boards punish the CEOs for low performance through removals? Could a weak *IPO performance* constitute a proxy for future weak CEO performance which could subsequently drive the termination decision? Despite reasons for termination, no previous research links the *IPO performance* to *forced CEO turnover*.

It could be, though, that the measurements of *IPO performance*, as determined by short-term factors, does not explain CEO turnover better than the well-established factors, such as stock

performance prior to a CEO being fired. This would not be too surprising, since these factors already are proven to explain CEO dismissal (however not linked specifically to the IPO event). Also, it could be that even if the CEO is to blame, the punishment is not dismissal, but rather other disciplinary actions, such as salary decreases[4].

We formulate the following hypothesis:

Hypothesis (1): *Forced CEO turnover is higher for firms with low IPO performance.*

[4] *"We try various disciplinary actions [for the CEO] before deciding on dismissal."* – Erik Lautmann, Chairman

3 METHOD

In this section we develop the composite IPO performance metric. We elaborate on the underlying parameters used for the composite measure and determine what statistical tools are used to analyze the event.

3.1. Factors assessing IPO performance

The *IPO performance* is measured by using the same underlying method as Gulati and Higgins (2003), i.e. by combining several parameters which are unique and closely linked to the IPO event. The parameters are selected to capture different pricing dimensions of the IPO and are later consolidated into an *IPO performance* metric. These variables capture the potential stock price or actual stock price of the company in different periods between the S-1 filings[5] and the initial period after the IPO.

Based on the discussion in the literature review we chose the following parameters to constitute the *IPO performance* metric:

(i) Expected versus actual listing price[6]

As emphasized in the literature review, the listing price (as a proxy for proceeds) is a common measure of short-term IPO performance. It is important for several reasons. Erik Lautmann highlights its importance:

"*Owners put a lot of focus on the listing price as it is the base for funds raised and the potential selling price [for investors who seek to decrease their equity holdings].*"

Simply looking at listing price as a proxy for proceeds (or as an opportunity to divest) is not comparable between firms due to size and that companies seek to raise different amounts of capital. *Expected versus actual listing price*, constitutes, as the name implies, the amount of funds expected to be raised to what is actually raised. A lower listing price means lower investor appetite than initially expected and vice versa. This change in pricing is affected by the CEO (Blankespoor et

[5] S-1 is a required type of filing requested by the SEC for firms that intend to go public. Among other things, it includes business and financial information and a price range for the soon-to-be traded stocks.

[6] *Expected versus actual listing price* is calculated as a percentage, using the listing price over the over the mid-range of target (what is expected to be) listing price.

Formula (1): $\frac{Listing\ Price}{Average\ Listing\ Price\ range}$

al., 2017). We incorporate this as a component in the *IPO performance* metric due to the advantages it has over the 'absolute proceeds' measure.

(ii) Market-to-Book at listing[7]

Market-to-book at listing (M/B) is included as a component in the *IPO performance* metric. Compared to solely valuation, as used by Gulati and Higgins, M/B captures the relative valuation at listing. The parameter reflects market expectations of the firm's prospects at the listing date. As the valuation is anchored to the book value, it is comparable among different firm sizes.

(iii) Underpricing[8]

Underpricing captures, as previously discussed, market interest for the IPO firm at its first trading date. This parameter is somewhat ambiguous to interpret (i.e. what is good/bad performance). Appreciation in owners' wealth on the one hand is perceived as good, but simultaneously it reveals the potential price the stock could have been listed at. Loughran and Ritter (2002) state that *underpricing* is no problem for owners if there is a sudden increase in wealth (i.e. first day returns). We therefore suggest that high *Underpricing* is a good IPO performance proxy and therefore it is included in the composite *IPO performance measure.*

[7] M/B is calculated post-issue (i.e. after proceeds are raised). As M/B varies across industries, the parameter is normalized by discounting it by the industry average for the specific period.

Formula (2): $$\frac{\frac{Numbber\ of\ shares\ postissue * Listing\ Price}{Book\ Value\ postissue}}{Industry\ average\ Book\ Value}$$

[8] Underpricing is calculated using the closing price of the first trading day over the listing price:

Formula (3): $$\frac{Closing\ Price\ (first\ trading\ day) - Listing\ Price}{Listing\ Price}$$

(iv) & (v) 3- and 6-months return[9]

Return is calculated for 3- and 6-months respectively as two separate parameters of the composite *IPO performance* measure. These factors are not unique to the IPO event (see literature review) but are used in previous research on IPO performance (Gulati and Higgins, 2003). They capture the initial market sentiment for the firm and the lock-in effect which affects the owners who seek to decrease their investments in the firm.

"[…] *the return during the first months is of importance [to determine whether the IPO is successful] due to the lock-in effect, prohibiting investors from selling all shares at the IPO date."* - Jan Ohlsson, Accent Equity

But even after the lock-up period, the stock development is important even for the owners with shorter investments horizon such as private equity funds, since their reputation is at stake.

"Even private equity funds want to be reliable partners since they know that they will take more firms public in the future. A stock decline even shortly after they have exited the firm looks very bad on them, and therefore they still care about the stock performance even after exit. - Erik Lautmann

Hence, the initial stock return is crucial to capture the continued factors (i.e. that extends beyond the IPO date) which also are important to owners' evaluation of the IPO.

3.2 Standardizing values

The aforementioned parameters are measured in different units and scales (e.g. 3-month return and M/B). These values are therefore standardized to enable an integration for the composite IPO performance measure. Standardization is done by converting the parameters into standard scores (so called Z-scores).

[9] Because the data sample (IPO firms) is scattered over various periods, returns are adjusted to make them comparable over time. Market-adjusting stock return is done using the same methodology as for previous IPO studies (e.g. Levis 1993, Loughran et. al. 1995, and Carter et. al. 1998), in which matched/benchmarked index returns are deducted from the stock returns to calculate the abnormal returns. This method is used because 'ordinary' event studies cannot be conducted as no stock data prior to the event date (IPO date) exists.

Formula (4): $ARi = Ri - Mi$

Abnormal returns ARi are calculated from the first day closing price (to disregard any underpricing returns). In the formula (see above) *i* is the specific time period, *Ri* the stock return for the specific period, and *Mi* the benchmarked index returns for that same period. The S&P 500 index is used as the benchmarking index the returns (i.e. *Mi*).

Z-score standardization is used to make variables with different scales and distributions comparable (Salkind, 2007). This standardization score translates the sample mean to 0 and the standard deviation to 1 (absolute value), making the different values from the parameters proportionate. It is calculated using three components; (i) the specific observation, (ii) the sample average, and (iii) the sample standard deviation.

$$\textbf{Formula } (\mathbf{5}): \frac{Y - M}{S}$$

Illustrated above, Y is the value of the observation, M the sample mean and S the sample standard deviation. The intuition of the formula is that the mean is deducted from the observation (Y), converting the numerator into the discrepancy/distance from its mean. As the deviation from the mean is divided by the sample standard deviation, the value is converted from its unique units into a standardized value. Subtracting the mean results in that the Z-score mean is 0, and dividing by the sample standard deviation, the Z-score standard deviation is 1. With the features of the Z-score, the individual parameters are combined to constitute a single measure, henceforth referred to as 'IPO performance'.

3.2.1 Average weighted Z-scores

The parameters are not assigned different weights but are, like Gulati and Higgins (2003), averaged (i.e. 20% each). The *IPO performance* for each observation is therefore the sum of Z-scores from each parameter, all of which are weighted 20%.

3.3 Binary logistic regression model

Forced CEO departure is the dependent variable. Because it is a dichotomous variable (either the CEO is dismissed, or (s)he is not), we use a binary logistic regression model. The sample representing fired CEOs are labeled 1, and otherwise 0. The *IPO performance* is used as the explanatory variable. Five additional independent variables are included as control variables (see discussion below). The model tests the relationship between *forced CEO turnover* and the *IPO performance*.

The model is also tested with the five individual variables composing the *IPO performance* measure. The *IPO performance* is de-composed to determine whether the individual components are explanatory by themselves. Each parameter therefore constitutes its own independent variable.

All underlying parameters of the composite IPO performance metrics are expected to obtain positive values (z-scores) in the event of good IPO performance. Thus, we expect that a 'good' IPO performance is associated with positive values. We expect there to be a negative relationship between *IPO performance* and *forced CEO turnover*. Since we test for the probability of a negative relationship, we run a one-tailed regression.

3.4 Define control variables

As discussed in the literature review, CEO turnover is a previously researched topic and there are several established factors that directly affect the likelihood of a *forced CEO turnover*. To evaluate the relationship between *forced CEO turnover* and *IPO performance*, multiple control variables that have been used as explanatory variables in previous research to explain forced CEO turnover, are included in the model. The control variables are proven (see literature review) to have mitigating (aggravating) effects for increased (decreased) likelihood of a *forced CEO turnover*.

(i) CEO is the founder/co-founder[10]

H. Gao et al. (2017) find that founder CEOs face lower turnover-performance sensitivity than other CEOs, meaning that the probability of getting fired due to performance (in their case based on return on assets) decreases if the CEO is also the founder. This is consistent with the notion that it is harder to fire a CEO that is the founder due to his or her cultural and political powers in the firm.

(ii) CEO is the chairman[11]

Like founder CEOs, chairman CEOs are also less likely to be removed. As the board of directors are usually the ones determining the fate of the CEO, (s)he has more mandate to influence his/her future as the chairman.

(iii) Return on equity prior to removal[12]

Companies' return on equity (ROE) is benchmarked to their industry to assess whether forced CEO turnovers are due to low accounting performance. Since there is prior literature that has

[10] The control variable is defined as a binominal measure in the regression (i.e. 1 if is the CEO is also a founder, or 0 otherwise).

[11] The control variable is defined as a binominal measure in the regression (i.e. 1 if is the CEO is also the chairman and 0 otherwise).

[12] The *ROE* for a company is calculated from the annual report prior to the dismissal and is benchmarked to the industry ROE for the same period by taking the percentage differences:

Formula (6): $\frac{ROE\ Company}{ROE\ Industry\ Average}$

shown a positive relationship between forced CEO turnover and low performing accounting numbers.

(iv) One-year stock return prior to removal[13]

One-year abnormal return prior to the CEO's removal is used as the fourth control variable. Based on previous CEO literature (see literature review), stock and financial performance are the most explanatory factors of executive turnover.

What should be noted is that there are some issues related to this measure. First, for some of the observations the removal of the CEO has been initiated within less than one-year post IPO, implying that there is no one-year stock performance prior to departure. However, as there are only seven observations (out of 116) to which this applies, the issue is disregarded, and abnormal return is calculated from the IPO date until the date of the CEO departure. Second, this measure is not applicable for the sample companies that have not removed their CEOs. Therefore, a hypothetical CEO departure date (for calculation purposes) is created, based on the average CEO tenure of the other sample firms. The average time period for the sample firms that have removed their CEOs is approximately two years (732 days). Thus, the one-year stock performance for the sample that have not removed their CEOs is calculated with the starting point of one year post the IPO.

(v) Firm size

Firm size is included as a control variable in the model. Weisbach (1988) argues that the board structure is influenced by the size of the firm and by the industry in which the firm operates. He further suggests that the boards' monitoring components and its capabilities are highly related to firm size. The firm size's influence on the corporate governance is therefore a crucial parameter to control for in the regression. Similarly, Erik Lautmann argues, from personal experience, that the quality of control mechanisms varies depending on the firm size, which can affect termination decisions of executive personnel.

[13] The same method and benchmark index are used to calculate the abnormal return as for three- and six-months return (see **Formula (4)** above

4 DATA

In this section we present the data used in our study. We also elaborate on the framework used to determine forced and voluntary turnovers. For full data review, see APPENDIX.

4.1. Data collection

IPO data is collected from the New York Stock Exchange[14] between the years 2010-2018. To get enough data points, the number of IPOs must be large, since the fraction of firms that newly have listed and fired their CEO (within the chosen time-span) is low. By using a sample of companies with more media coverage, it is easier to determine on what terms the CEOs leave. Smaller firms with less media coverage are opaquer. Going further back in years (e.g. 2010) makes it substantially more difficult to gather data regarding CEO departures from company press releases and/or the press.

The number of firms that listed on the NYSE between the years 2010-2018 amounts to 745. This data is divided into three categories of firms which constitute the total sample; (i) firms that had a forced CEO departure within four years of going public; (ii) firms that had a voluntary CEO departure within four years of going public; and (iii) firms that have not changed CEO within four years of going public.

We mostly use the framework developed by Denis and Denis (1995) to categorize whether any turnover is forced or voluntary (see section 4.2) with a few exceptions. The sample group of firms with no CEO departure, is matched by size to the other sample categories. I.e. not all IPO firms which have not experienced a turnover are included, but the number of observations is kept slightly higher. We aim to match the sample categories for industry and years. The sample firms are not matched with attributes such as profitability or size, these are instead controlled for the in the regression model (see section 3.2.3 on control variables above).

[14] The scope of this paper has been limited to examine the relationship between IPO performance and forced CEO turnover for companies that went public between 2010-2018 on the New York Stock Exchange (NYSE). The sample selection has a couple of benefits. Firstly, companies that list at the NYSE are larger firms. Larger firms are more in the public interest, and when the CEO is replaced, the media tend to write about the event. This makes it easier to determine whether the replacement was voluntary or not. Secondly, larger firms have easier accessible information about the IPO process and other financial information. Thirdly, the number of IPOs at the NYSE is much higher in comparison to e.g. the Nordic stock exchanges. This is very important since there otherwise would have not been enough data points of companies firing their CEOs following an IPO.

The data is further limited: Firstly, splits or spin-offs are not incorporated in the sample, as most of these events indicate that shares are distributed directly to existing shareholders. Thus, there is usually no actual listing price for these firms, and the IPO performance measure cannot be accurately calculated. Further, in the event of spin-offs, the link between the CEO and the IPO is unclear. E.g. in a 'normal firm IPO setting' the CEO has a clear leadership role in the IPO. Whereas it is unclear which CEO (the appointed one to the new spin-off company, and/or predecessor CEO for the 'old' company) has the leadership role in a spin-off IPO.

Secondly, we do not include firms that have re-emerged from bankruptcy if the firm has been traded over the counter (OTC) during the period it has been inactive from the exchange. Because the stock has been traded OTC, the IPO does not have the same features as in a 'normal' setting. Third, and similarly, re-listing or list-changes (i.e. from one exchange to another) are not included either, for the same reasons as for bankruptcy firms.

4.2 CEO Turnover data

CEO turnover is defined as being connected to the IPO if the CEO change is within four years of the firm going public. Since the four-year window is not based on prior research (since there are none), the tests will be conducted with two- and three-year windows to conclude the relevance of measuring CEO changes within four years.

Maximum one departure is calculated for every firm for the specific period. I.e. focus is only on the CEO that took the firm public, and subsequently departed from the firm (within four years post of the IPO). This, since only the CEO at the time of the firm going public can bear responsibilities of the IPO performance. Any other departures within this period, in addition to the CEO executing the IPO, are not included.

Focus is put on forced CEO turnovers (although voluntary departures are included in the total sample) as we intend to identify turnover events initiated by shareholders/board which are dissatisfied with the CEO, and therefore act to remove the CEO. In the event where the CEO is fired, boards are seldom transparent in their communication regarding reasons (eg. Warner, Watts and Wruck 1988, and Weisbach 1988). Although the departure is communicated through a company press release, underlying reasons for the departure are often not clear (Denis and Denis, 1995). Even though it is not explicitly stated that the CEO has departed involuntarily, it could in

many cases be a forced departure. Further, interviewee Jan Ohlsson (Accent Equity) claims that in many cases where the firm has performed poorly (financially), CEOs tend to voluntary depart before the board can act. To categorize CEO departures (forced/voluntary/other), a classification framework developed by Denis and Denis (1995) is used. The research identifies approximately 360 top executive removals (primarily the CEO, but in his/her absence, the chairman) in the U.S. between years 1985 to 1988. In the 'reasons' stated by the companies, the authors find that, in most cases, the departure is either due to retirement or no given/specific reason. In less than 20% of the observations, the firms imply that the resignation is forced, or due to conflict.

Denis and Denis (1995) claim that firms are not fully transparent with the underlying reasons of forced CEO turnovers, and therefore they develop a framework to identify forced and voluntary departures. The authors argue that in addition to when press releases explicitly stress the retirement as forced, one can include forced departures where the firms have experienced poor performance prior to the departure - as these in most cases are forced (although not communicated as such). To further expand their framework (characterizing executive departures), Denis and Denis (1995) compare executive changes that they are very confident of are forced to those that they are confident of are voluntary (e.g. explicitly stated 'kicked'). The authors explain that in most cases of forced departures; (i) the successor (new CEO) is usually an outsider/external, (ii) the departing executive does not stay in the firm (e.g. in the board or other position), (iii) these managers are usually not around their retirement age. The findings support these determinants argued above as, for instance in 52% of the observations where there is an outside manager appointed, it is explicitly stated as a forced removal (compared to 8% which is explicitly stated voluntary). Further, for departing CEOs around retirement age, only 3% are 'confirmed' forced departures, versus 43% 'confirmed' voluntary departures (Denis and Denis 1995).

Put together, Denis & Denis (1995) find significantly positive correlations between forced turnovers and (i) external successor appointments, and (ii) whether executive remains within the firm, and significant negative between forced turnovers where (iii) CEOs are at or around retirement age (63 to 67). This study follows a similar approach to determine reason for departure:

Turnovers are categorized as 'forced' in situations where it is explicitly stated. Cases which can be concluded are voluntary (e.g. CEO communicates by himself in the media, or he/she was interim CEO etc.), are categorized as such. However, as majority cases are ambiguous, Denis and Denis'

framework is applied, with a tweak, in the following way: In turnover situations where no explicit 'forced departure reasons' are revealed, the turnovers are classified as forced only if they comply to either of the following criteria: 1) successor is an outsider, and 2) departing executive does not remain in the firm, and 3) manager is not in the age range of 63 to 67 (retirement age). Unlike Denis and Denis, weak financial performance is not, by itself, a sufficient criterion to categorize a departure as forced, instead it is used as a control variable in the regression model (see section 3.2.3 on control variables).

By applying the framework, the distribution of observations becomes the following: 57 and 60, forced and voluntary departures respectively. However, after the sample is adjusted for spin-offs, splits, bankruptcies and list changes, the sample distribution of forced versus voluntary is 35 and 32 observations respectively.

This framework is aimed at identifying/distinguishing which executives are forced out of the company. Although this method might be statistically significant (Denis & Denis, 1995), there is an inherent risk that some forced departures might not be captured correctly. And on the contrary, there is a risk that some voluntary departures might wrongly be classified as forced.

4.3 Presentation of data

Table 1: DATA	FORCED	VOLUNTARY	NO DEPARTURE	**TOTAL**
IPO Sample	57	60	628	**745**
Spin offs	*13*	*19*		**32**
Splits	*2*	*3*		**5**
Bankruptcies	*3*	*2*		**5**
Re-listings / Other	*4*	*4*		**8**
Total Sample	**35**	**32**	**49**	**116**

The table illustrates the data sample for the three sample categories. The data is from the NYSE between years 2010-2018. It is adjusted for Spin-offs, Splits, Bankruptcies and Re-listings (and other).

As discussed in the previous section, the total sample consists of 745 IPOs on the NYSE between years 2018-2010. Screening for the total sample of forced and voluntary departures, we obtain the distribution of 57 and 60 respectively, and a remaining 628 non-departure firms. Adjusting the sample for spin-offs, splits, bankruptcies and re-listings, the final sample is 35 and 32, forced and voluntary respectively. This sample is, as discussed, aimed to be matched with non-departure firms with regards to industry and years.

Table 2: INDUSTRY DISTRIBUTION (GICS)

INDUSTRY	FORCED	NO DEPARTURE	VOLUNTARY	TOTAL
Consumer Discretionary	9	8	6	23
Information Technology	5	12	3	20
Industrials	4	8	5	17
Financials	4	0	0	4
Energy	5	6	7	18
Communications	4	3	1	8
Consumer Staples	1	3	0	4
Real Estate	2	6	3	11
Materials	1	0	3	4
Health Care	0	3	3	6
Utilities	0	0	1	1
TOTAL	**35**	**49**	**32**	**116**

The table illustrates the industry distribution in accordance to the *Global Industry Classification Standard (GICS)* for the three sample categories.

Companies are classified in accordance to the Global Industry Classification Standard (GICS). The most common industries are Consumer Discretionary, Information Technology and Energy. No industry is omitted from the total sample (although, all industries are not represented in each sub-sample).

Table 3: IPO YEARS DISTRIBUTION

YEARS	FORCED	NO DEPARTURE	VOLUNTARY	TOTAL
2018	1	1	0	2
2017	5	5	2	12
2016	2	5	2	9
2015	0	4	3	7
2014	7	7	10	24
2013	12	13	8	33
2012	4	5	4	13
2011	3	4	2	9
2010	1	5	1	7
TOTAL	**35**	**49**	**32**	**116**

The table illustrates the year-distribution of the three sample categories

The total sample set distribution centers around years 2013 and 2014. Non-departure firms have been weighted to both the forced and voluntary sample. Discrepancies are mainly due to a trade-off between the matching of both industries and years.

5 RESULTS

In the following section, we present results based on the method developed in the previous sections. Illustrated in the first section is a statistical summary of the variables used in the model. In subsequent sections, the hypothesis is tested in different settings.

5.1 Descriptive statistics

Table 4: DESCRIPTIVE STATISTICS

VARIABLE	N	MEAN	Std	MIN	5%	25%	MEDIAN	75%	95%	MAX
EXPECTED vs LISTING	115	99.0%	14.7%	53.3%	75.4%	89.0%	100.0%	109.1%	121.4%	140.0%
90 DAYS RETURN	116	3.9%	22.4%	-61.4%	-38.6%	-7.6%	3.7%	18.7%	36.0%	83.4%
180 DAYS RETURN	116	0.7%	32.1%	-72.5%	-48.0%	-18.7%	-1.5%	17.6%	51.7%	110.2%
PRICE to BOOK*	115	1.66x	2.53x	0.19x	0.37x	0.61x	1.01x	1.57x	4.80x	19.50x
UNDERPRICING	116	16.6%	24.6%	-15.8%	-6.3%	0.0%	7.8%	24.7%	74.0%	118.6%
IPO Performance	**116**	**-0.02**	**0.56**	**-1.47**	**-0.90**	**-0.37**	**-0.03**	**0.26**	**0.96**	**1.79**
ABNORMAL RETURN	116	-14.7%	38.8%	-91.6%	-69.0%	-40.3%	-16.7%	4.5%	48.8%	117.3%
FOUNDER	116	0.2	0.4	0.0	0.0	0.0	0.0	0.0	1.0	1.0
CHAIRMAN	116	0.4	0.5	0.0	0.0	0.0	0.0	1.0	1.0	1.0
SIZE (USDm)	116	2117.2	3930.4	14.5	106.4	335.6	769.1	1968.1	8751.7	24283.9
ROE*	116	89.6%	46.1%	-245.3%	39.9%	81.2%	94.1%	103.8%	139.3%	220.7%

The table illustrates descriptive statistics for the parameters composing the *IPO Performance* metric, the *IPO Performance*, and all control variables.
The statistics include the number of observations for each variable (N), MEAN, Standard deviation (Std), Minumum value (MIN), 5th, 25th, 75th and 95th percentile, MEDIAN, and maximum value (MAX).
* Implies that the variable is in relation to the industry average for the same period.

TABLE 4 illustrates the properties (including range, volatility, average, median and distributions) for all parameters used in the regression. *EXPECTED vs LISTING* is evenly distributed around its mean, with average and median obtaining about the same value. That implies that on average the listing price is set in the middle of the proposed listing range.

3 MONTHS RETURN and *6 MONTHS RETURN* indicate a similar distribution. *6 MONTHS RETURN* obtains, on average, lower values and a higher standard deviation than the *3 MONTHS RETURN*.

PRICE to BOOK obtains a median value of approximately 1.0x, implying that the sample firms are closely priced to the industry average. The average however is above the industry average (1.7x) which is most likely due to outliers in the sample (e.g max of 19.5x).

UNDERPRICING is positively skewed and obtains an average of 16.6%, which is aligned to previous research (e.g. Loughran et al., 1994).

The *IPO PERFORMANCE* is proportionately distributed around the median and the mean, both of which obtain values close to zero. The minimum and maximum values are approximately three

standard deviations in both directions. We obtain these values since the underlying properties of the *IPO PERFORMANCE* is the aggregated z-scores from various parameters. The sample mean of each parameter becomes zero when it is standardized into a z-score.

ABNORMAL RETURN (one-year performance prior CEO departure) indicates that most often, the sample firms underperform compared to the market, and approximately 30% of the firms outperform the market. The similar is observed of the *ROE,* which indicates that the sample firms in most cases underperform compared to the industry average *ROE.* These findings are aligned with previous research, which suggests that stock- and accounting-performance of IPO firms are inferior to the market (Loughran and Ritter 1995, and Carter et. al. 1998, Khurshed, Paleari and Vismara, 2003).

In about 40% of the observations, the CEO is the chairman, and in about 20% the CEO is the founder. *SIZE* has a couple of outliers (e.g. observations with valuations above 10 USDbn), resulting in a broad range and an extensive mean (compared to median).

5.1.1 Correlation between underlying variable of the composite IPO performance metric

Table 5: Correlation between underlying parameter (of the IPO performance measure)

	1	**2**	**3**	**4**	**5**
1) EXPECTED vs LISTING	1.000				
2) 3 MONTHS RETURN	0.124	1.000			
3) 6 MONTHS RETURN	0.026	0.767	1.000		
4) PRICE to BOOK	0.009	-0.012	0.044	1.000	
5) UNDERPRICING	0.453	0.217	-0.007	0.110	1.000

The table illustrates the correlation between all indepent variables in the regression.

TABLE 5 illustrates the correlation between the five parameters that make up the composite measure of *IPO performance*. Correlation among the variables do not constitute a methodological issue (unlike for the independent variables). However, high correlation would imply that the parameters explain similar dimensions of the IPO. This would make one or more variables redundant. As observed in **TABLE 5**, there is no significant correlation between the parameters.

EXPECTED vs LISTING appears to have no significant correlation to any other parameter except for a weak correlation with *UNDERPRICING*. Although weak, a correlation between these two parameters is not surprising as they both capture investor and market sentiment for the IPO firm. The two parameters are a proxy for how well the CEOs manage to sell their equity stories.

The *3 MONTHS RETURN* measure is semi-correlated with the 6 *MONTHS RETURN* measure. However, as the correlation is < 0.8, we decide to retain both parameters. Further, the two measures have a correlation close to 0 for all other parameters, meaning that there is no correlation whatsoever.

The *PRICE to BOOK* measure is the only measure whose correlation, with all other parameters, is close to zero. All-in-all, since the parameters capture various dimensions of the IPO event and are not excessively correlated, they are all used combined to compose a proxy for *IPO performance.*

5.1.2 Correlation between independent variables

TABLE 6 illustrates the correlation between the explanatory variable *IPO PERFORMANCE*, and the five control variables. The *IPO PERFORMANCE* does not indicate any signs of significant correlation to any of the control variables. It obtains a weak correlation to *ABNORMAL RETURN* and *ROE*. And no correlation with *FOUNDER CEO, CHAIRMAN CEO* or *FIRM SIZE.*

Table 6: Correlation between independent variables

	1	**2**	**3**	**4**	**5**	**6**
1) IPO PERFORMANCE	1.000					
2) ABNORMAL RETURN	0.150	1.000				
3) FOUNDER CEO	0.040	0.075	1.000			
4) CHAIRMAN CEO	-0.044	-0.025	0.577	1.000		
5) ROE	0.151	-0.027	-0.248	-0.322	1.000	
6) FIRM SIZE	0.102	0.051	-0.002	-0.088	0.008	1.000

The table illustrates the correlation between all indepent variables in the regression. No significant correlation is found between variables.

Apart from a moderate positive correlation between *FOUNDER CEO* and *CHAIRMAN CEO* (and a negative between *CHAIRMAN CEO* and *ROE*), the control variables do not significantly correlate with each other. The low correlation between *ROE* and *ABNORMAL RETURN* is a bit

unexpected, as high (low) ROE is benchmarked to the company's industry should be positively (negatively) correlated to the company's abnormal stock return, meaning that if you outperform your peers, your stock price should outperform your peers, too. One possible explanation could be that if a firm is expected to outperform, the stock market already has accounted for that and thus there are no abnormal returns. Even though this could potentially be isolated cases, it is unlikely to be the general explanation. Another more likely explanation is that the industry benchmarking that has been done to calculate the ROE excess of industry ROE does not reconcile with the industry benchmarking that the stock market did. Thus, one firm that in our study outperforms in ROE might for the stock market not have done the same since the stock market benchmarked the firm to another industry ROE. Overall, the correlation between any two independent variables raises no concern.

5.1.3 Multicollinearity

One independent variable can be predicted by others. If so, the regression is subjected to multicollinearity. Low or modest level of correlation is non-problematic, since correlation between the independent variables are common. Higher levels of correlation between the predicting variables, however, can pose problems when comprehending the results, since the variance distributed between the correlated variables potentially are randomly distributed (Farrar & Glauber, 1967). Multicollinearity can be tested for by examining the *Tolerance Levels* and *Variance Inflation Factors (VIF).* The *VIF* is the reciprocal of *Tolerance*. There are no formal cut-off rules for an acceptable value for *VIF*, but e.g. Yoo et al. (2015) say that values higher than 10 indicate that the independent variables are subjected to multicollinearity, whereas O'brien (2017) argues that the value should not be greater than 4.

Table 7: Multicollinearity Test

	VIF	**1/VIF**
IPO PERFORMANCE	1.06	0.94
ABNORMAL RETURN	1.04	0.96
FOUNDER CEO	1.54	0.65
CHAIRMAN CEO	1.61	0.62
ROE	1.15	0.87
FIRM SIZE	1.02	0.98

The table illustrates multicollinearity between variables. No multicollinearity is found.

As presented in the **TABLE 7**, all *VIF* values are far below 4. Thus, we can conclude that the model is not subjected to any multicollinearity issues.

5.2 Hypothesis testing

The hypothesis (*H1*) suggests that *IPO performance* is negatively correlated with *forced CEO turnover*. The dependent variable is *FORCED*, which is forced CEO turnovers four years subsequent to IPOs. The dependent variable is classified as either 1 (kicked) or 0 (not kicked). The explanatory variable is the *IPO PERFORMANCE*. The test is run with the control variables presented in the methodology section.

Tabel 8: Logistic regression FOUR YEAR departure window

	Z-value	**Odds ratio**
IPO PERFORMANCE	-2.31***	0.35
	(0.01)	
ABNORMAL RETURN	-1.67**	0.32
	(0.05)	
FOUNDER CEO	-0.56	0.66
	(0.29)	
CHAIRMAN CEO	-1.79**	0.35
	(0.04)	
FIRM SIZE	0.97	1.00
	(0.83)	
ROE	-0.71	0.71
	(0.24)	
Log Likelihood		-62.46
No. Of observation		116
Pseudo R^2		0.12

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.
Presented is the Z-value, the P-value (in brackets) and the Odds ratio.
***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

The *IPO PERFORMANCE* has an odds ratio of 0.35 and is negatively correlated with *FORCED* at a 1% significance level. The control variables *FOUNDER CEO*, *ROE* and *FIRM SIZE* show insignificant results. *FIRM SIZE* has an odds ratio (see **APPENDIX** for explanation) of approximately 1 and is the only independent variable with non-negative relationship with forced CEO turnover.

ABNORMAL RETURN has a p-value of less than 5% and a somewhat lower odds ratio than *IPO PERFORMANCE*, which implies (consistent with previous research) that bad stock performance increases the likelihood of being fired. *CHAIRMAN CEO* is also significant at a 5% significance level and its odds ratio of less than 1 indicates that CEOs that also are Chairmen are less likely being fired. All control variables are however rejected at a 99% confidence level. *IPO PERFORMANCE* is the sole independent variable significant at a 99% confidence level, and therefore the variable that best explains *FORCED TURNOVER*. Thus, the null hypothesis is rejected at a 1% significance.

5.2.1 Test for the underlying parameters of the IPO performance

The hypothesis is tested with the five individual parameters that compose the *IPO PERFORMANCE* metric. By decomposing the variables, we can determine if any of the parameters individually explain *FORCED*.

Tabel 9: Logistic regression based on FORCED t as the independent variable. (p-value)

	Z-value	**Odds ratio**
EXPECTED vs ACTUAL LISTING	-1.20	0.23
	(0.13)	
THREE MONTHS RETURN	-0.73	0.23
	(0.23)	
SIX MONTHS RETURN	-0.83	0.22
	(0.20)	
PRICE to BOOK	-1.01	0.13
	(0.16)	
UNDERPRICING	0.50	1.91
	(0.69)	
Log Likelihood		-66.34
No. Of observation		116
Pseudo R^2		0.07

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.

Presented is the Z-value, the P-value (in brackets) and the Odds ratio.

***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

The lowest p-value observed is for the *EXPECTED vs LISTED* at 12.5%. The remaining parameters obtain p-values between 16-69%. None of the individual parameters are therefore significant, implying that no parameter can solely explain *FORCED*. This indicates that the *IPO performance* cannot be explained by an individual parameter. This implies that the board's

evaluation of CEO is based on more than one parameter (linked to the IPO event), and/or that these individual parameters do not serve as proxies for the CEOs' managerial abilities by themselves.

5.3 Robustness testing

The following section we conduct robustness checks to test the sensitivity of our results.

5.3.1 Test for industry and years

Even though we aim to match the sample firm-weights with industry and years, it is not completely matched (see data presentation). Thus, there is a risk that discrepancies in years or industries affect the results.

Industry

Testing for various industries is necessary since the corporate governance and the board composition are influenced by industry (Weisbach, 1988). To test for various industries, we divide, for statistical purposes (because of the limited data sample size), the Global Industry Classification Standard (GICS) into four categories; (i) consumer staples, consumer discretionary, financials, health care; (ii) information technology, communications; (iii) industrial, real estate, and; (iv) utilities, energy, materials. The grouping is based on similar industry characteristics.

Tabel 10: Logistic regression controlling for INDUSTRY

	Z-value	Odds ratio
IPO PERFORMANCE	-2.69***	0.31
	(0.00)	
Consumer Staples, Consumer Discretionary, Financials, Health Care	1.22	2.10
	(0.89)	
Information Technology, Communications	0.85	1.73
	(0.80)	
Industrials, Real Estate	-0.40	0.76
	(0.34)	
Log Likelihood		-65.71
No. Of observation		116
Pseudo R^2		0.07

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.

Presented is the Z-value, the P-value (in brackets) and the Odds ratio.

***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

As illustrated in the **TABLE 10**, it appears to be no significant relationship between *FORCED*, and industry. The p-value observed for the *IPO PERFORMANCE* is 0.35%, which is lower than

previous regression (1.1%). Thus, when controlling solely for industry, the null hypothesis is rejected at a 1% significance level. However, the model has a pseudo R-squared of 0.07 which is lower than the previous pseudo R-squared (see **APPENDIX** for explanation). We thus conclude that this model is inferior at explaining the variance in *FORCED*.

Years

We test the regression controlling for years as the three sample categories are not fully matched in years either. For statistical purposes (as mentioned above), the years are grouped as following: (i) 2010/2011; (ii) 2012/2013; (iv) 2014/2015 and; (v) 2016/2017/2018.

Tabel 11: Logistic regression controlling for IPO YEARS

	Z-value	Odds ratio
IPO PERFORMANCE	-2.78***	0.29
	(0.00)	
2012, 2013	1.19	2.24
	(0.88)	
2014, 2015	-0.29	0.81
	(0.39)	
2016, 2017, 2018	0.43	1.37
	(0.67)	
Log Likelihood		-65.66
No. Of observation		116
Pseudo R^2		0.08

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.

Presented is the Z-value, the P-value (in brackets) and the Odds ratio.

***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

The results indicate that *FORCED* is not explained by a specific year interval. Similar to previous regression, we obtain a significance at 1%, whereas the explanatory power of the model remains low (pseudo R-squared of 0.08).

5.3.2 Test without voluntary departure control group

Even though we follow a framework to classify whether a departure is forced or voluntary, there might be, as described in the method section, classification errors due to the occasionally opaque communication from companies when a CEO leaves. One probable error is forced departures that might be communicated as voluntary departures. Therefore, we omit the voluntary turnover sample (32) in the regression to examine the effects of potential classification errors.

Presented in **TABLE 12** are the results of the regression model that excludes the sample group *voluntary turnovers*.

Tabel 12: Logistic regression without VOLUNTARY departure data

	Z-value	Odds ratio
IPO PERFORMANCE	-2.06**	0.33
	(0.02)	
ABNORMAL RETURN	-1.68**	0.26
	(0.05)	
FOUNDER CEO	-0.14	0.89
	(0.44)	
CHAIRMAN CEO	-1.65**	0.31
	(0.05)	
FIRM SIZE	0.17	1.00
	(0.57)	
ROE	-0.51	0.77
	(0.30)	
Log Likelihood		-49.29
No. Of observation		84
Pseudo R^2		0.14

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.

Presented is the Z-value, the P-value (in brackets) and the Odds ratio.

***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

The *IPO PERFORMANCE* is negatively correlated with *FORCED* at a 5% significance level. All control variables follow the same negative relationship with *FORCED* (with *FIRM SIZE* as an exception) as in previous regressions.

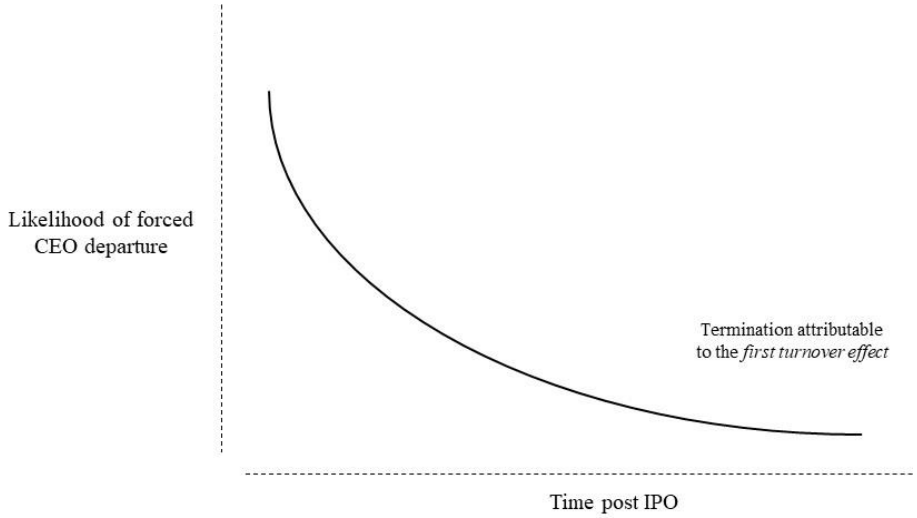
IPO PERFORMANCE, CHAIRMAN CEO and *ABNORMAL RETURN* are significant at a 5% level. *IPO PERFORMANCE* has a slightly higher p-value than in the previous regression (2.0% versus 1.1%). The null hypothesis is rejected at a 95% confidence level.

The model has a higher pseudo R-squared than previous models (0.14 versus 0.12). This implies that the model without the *voluntary turnover* sample is better at explaining the variance of the dependent variable. These findings could indicate errors in the classification of *forced* and *voluntary* turnovers. However, the p-value is higher, which could be a result of lower sample size. Overall, the findings are not significantly different from previous regression which implies that the classification of *forced* and *voluntary* turnovers is acceptable. The main conclusion remains.

5.3.3 Test with different time frames

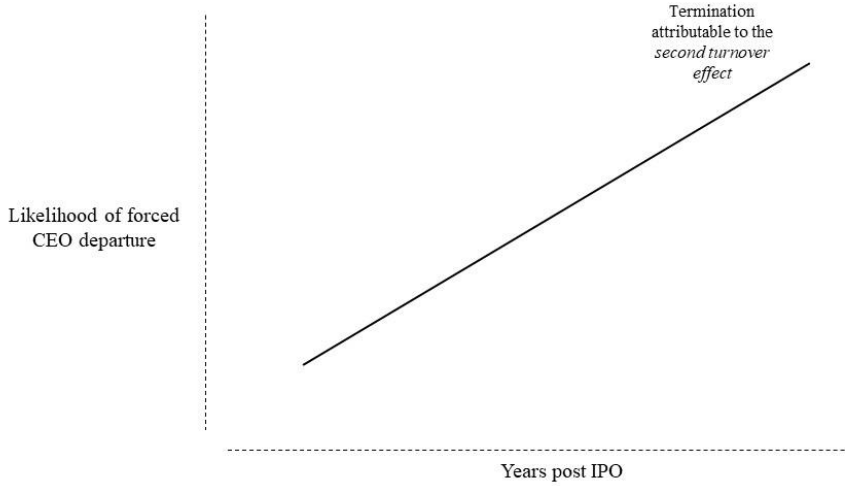
The CEO turnover window following an IPO is set to four years. Since there exists no prior literature on this subject that can be used as a reference point, alternative turnover windows will be tested for as well. By analyzing the results of different turnover windows, one can potentially shed some light into the underlying reasons for the dismissal and to see if the results are sensitive to the chosen turnover window.

Different CEO turnover windows potentially capture different proportions of turnover effect. The *first turnover effect*, as previously discussed, is a direct effect of a poor IPO performance. When the dismissals happen close to the IPO, it is relatively more likely to be a result of the *first turnover effect*. The idea that the CEO is fired closely after a low performing IPO corresponds to Ertugrul and Krishnan's (2011) findings of early dismissal subsequent to low CEO performance. Hence, one can expect that the proportion of dismissals attributable to the *first turnover effect* would increase as the turnover window is decreased. i.e. closer to the IPO date. This is illustrated in the following graph:



Graph 1 - Illustrates the effect of the *first turnover effect* over time

The probability that the CEO is dismissed due to the *second turnover effect* ought to increase with time. With the *IPO performance* as a proxy for the managerial abilities, one can expect that the incremental effect from the repeated underperformances will eventually reach a 'tipping point' where the board loses their trust and dismisses the CEO. This effect is illustrated in the next graph:



Graph 2 - Illustrates the effect of the *second turnover effect* over time

We consciously present the two graphs separately since we do not draw any conclusion about which *turnover effect* at what point in time explain the most forced turnovers. Instead, the two graphs illustrate their diminishing or amplifying *turnover effect* as time passes.

Three years turnover window

Tabel 13: Logistic regression with THREE YEAR turnover window

	Z-value	Odds ratio
IPO PERFORMANCE	-1.97**	0.31
	(0.02)	
ABNORMAL RETURN	-1.76**	0.25
	(0.04)	
FOUNDER CEO	0.06	1.06
	(0.53)	
CHAIRMAN CEO	-2.06**	0.22
	(0.02)	
FIRM SIZE	0.76	1.00
	(0.78)	
ROE	0.49	1.50
	(0.69)	
Log Likelihood		-48.33
No. Of observation		96
Pseudo R^2		0.15

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.

Presented is the Z-value, the P-value (in brackets) and the Odds ratio.

***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

A three-year turnover window decreases the sample size to 96. *IPO PERFORMANCE*, *ABNORMAL RETURN* and *CHAIRMAN CEO* are significant at 5%. The null hypothesis is thus rejected at a 5% significance level. The pseudo R-squared improves from 0.12 to 0.15, implying that the model better explains the variance of the dependent variable. The odds ratio is slightly weaker than before. The weaker p-value (2.4% versus 1.1%) could be explained by less observations (from 116 to 96).

All in all, the three-year turnover window does not yield any significantly different results compared to the four-year turnover window.

Two years turnover window

Tabel 14: Logistic regression with TWO YEAR turnover window

	Z-value	Odds ratio
IPO PERFORMANCE	-2.18***	0.20
	(0.01)	
ABNORMAL RETURN	-1.70**	0.18
	(0.04)	
FOUNDER CEO	1.10	4.18
	(0.86)	
CHAIRMAN CEO	-2.00**	0.09
	(0.02)	
FIRM SIZE	0.64	1.00
	(0.74)	
ROE	0.62	1.76
	(0.73)	
Log Likelihood		-35.35
No. Of observation		79
Pseudo R^2		0.21

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.

Presented is the Z-value, the P-value (in brackets) and the Odds ratio.

***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

A two-year turnover window decreases the sample size to 79. The null hypothesis is rejected at a 1% significance level, even though the number of observations further has decreased. Compared to the four-year turnover window results, the pseudo R-squared is significantly improved (0.21 versus 0.12) and the odds ratio reduced (0.20 versus 0.35). This shows a significant improvement in explaining the variance of *forced CEO turnover* from the both previous tests.

As discussed, the negative relationship between *IPO performance* and *forced CEO turnover* can be explained by two *turnover effects*. The relative amount of dismissal attributable to the *first turnover effect* increases as the turnover window decreases, and vice versa for the *second turnover effect*.

We find that when the turnover window decreases, so does the odds ratio (in total from 0.35 to 0.20). This suggests that *forced CEO turnover* is more sensitive to *IPO performance* for the shorter turnover windows. This provides evidence of the *first turnover effect* being more sensitive to the IPO performance.

5.3.4 Test without extreme observations

To analyze how sensitive the regression model is to the extreme values, we winsorize at the 10th and 90th percentile of the *IPO performance* score. 23 observations are omitted.

Tabel 15: Logistic regression without EXTREME observations

	Z-value	Odds ratio
IPO PERFORMANCE	-1.97**	0.17
	(0.02)	
ABNORMAL RETURN	-2.08**	0.16
	(0.02)	
FOUNDER CEO	0.66	1.86
	(0.75)	
CHAIRMAN CEO	-2.11**	0.21
	(0.02)	
FIRM SIZE	1.15	1.00
	(0.87)	
ROE	0.69	1.93
	(0.75)	
Log Likelihood		-47.42
No. Of observation		92
Pseudo R^2		0.15

The results are obtained using a binary logistic regression model. The dependent variable is forced CEO turnover. The table illustrates the relationship for all independent variables in the regression.

Presented is the Z-value, the P-value (in brackets) and the Odds ratio.

***, **, * indicate significance at 1%, 5% and 10% levels respectively (2-tailed)

Even with less observations, the *IPO PERFORMANCE* still correlates with *FORCED TURNOVER* at a 5% significance level. The model obtains a relatively high pseudo R-squared, compared to previous models and the odds ratio of *IPO PERFORMANCE* is notably reduced. This implies that the relationship between *IPO performance* and *forced CEO turnover* is even more negative when the extreme values are excluded. An explanation could be that when an IPO is very successful or unsuccessful, the underlying reasons are often outside of the CEO's responsibility. E.g. a sudden tariff war, sudden boom in the economy or a scandal in the industry the CEO has no influence over what so ever. Thus, the *IPO performance* is regarded to be disconnected to the CEO's performance and therefore he or she is not affected by it.

Further data analyses by grouping the observations based on their *IPO performance* to see if any group in particular explain the findings of *IPO performance* and *forced CEO turnover* cannot be done due to the low number of observations.

6 CONCLUSION

The scope of this paper has been to examine the relationship between IPO performance and forced CEO turnover for companies that went public between 2010-2018 on the New York Stock Exchange (NYSE).

Established research in corporate governance literature identifies and addresses factors (e.g. financial and stock performance) that influence executive turnover. No published research has identified any relationship between IPO performance and forced CEO turnover. By writing this paper, we aimed to address this gap in existing research. We built a composite *IPO performance* metric based on a combination of parameters that measure different pricing dimensions of the IPO event. We formulated the following hypothesis:

Hypothesis (1): *Forced CEO turnover is higher for firms with low IPO performance.*

We find strong evidence that firm's *IPO performance* negatively correlates with forced CEO turnover. Interestingly, neither of the five parameters making up the composite performance measure, are individually enough in explaining forced CEO turnovers. This indicates that boards' evaluations of CEOs are based on more than solely a few parameters, and/or that an individual parameter cannot constitute a proxy for CEOs' managerial abilities.

The conclusion (being the negative relationship) shows robustness to alternative measures and various sensitivity tests. The robustness checks include exclusion of the voluntary departure control group, time period changes in the turnover window and exclusion of extreme observations.

The findings could be explained by two *turnover effects*: (i) the *first turnover effect* being that the forced CEO turnover is a direct effect of a low performing IPO, and; (ii) the *second turnover effect* being that the *IPO performance* constitutes a proxy for the CEOs' managerial abilities and that the incremental effect from the repeated underperformances will eventually reach a 'tipping point' when the boards lose their trust and dismiss the CEOs.

The *first turnover effect* can be explained by the *Scapegoat theory*. It suggests that the front figure of the IPO, the CEO is responsible and punished for the performance of the IPO. As the turnover window is narrowed, the relative number of turnovers captured by the *first turnover effect* is expected to increase. This is reasonable, since it is hard to imagine that a turnover decision is based

on an event that happened years ago. We find that the negative relationship between *IPO performance* and *forced CEO turnover* is more sensitive as the turnover window is narrowed.

The *second turnover effect* finds support in the *Upper echelon theory* and the *Hot/cold-hand fallacy*, suggesting that managerial abilities and past performance predict future performance. It is therefore expected that as the turnover window is increased, the relative number of turnovers captured by the *second turnover effect* increases.

The findings of a negative relationship between *IPO performance* and *forced CEO turnover* is a result of both *turnover effects*. Although it is difficult to assess whether one *turnover effect* prevails the other, we argue that the *first turnover effect* is likely to explain relatively more forced turnovers as the turnover window decreases, and vice versa (i.e. that the *second turnover effect* explains relatively more forced turnovers as the turnover window increases). Regardless of *turnover effect*, our conclusion remains the same: CEO turnover is higher for firms with low IPO performance; a bad IPO performance can be the executive's executioner.

In conclusion, we contribute to previous literature in following ways; (i) by extending the IPO literature by creating a consolidated measure of IPO performance; (ii) by finding evidence that *IPO performance* negatively correlates with forced CEO turnover. This could imply that CEOs are evaluated based on the *IPO performance*, and/or that the *IPO performance* serves as a proxy for his/her managerial abilities; (iii) by finding that none of the underlying parameters of the composite performance measure can solely explain forced CEO turnover. This implies that the boards' evaluations of CEOs are based on more than one parameter (linked to the IPO event), and/or that these individual parameters do not serve as proxies for the CEOs' managerial abilities.

7 LIMITATION

Since the study is based on U.S. firms with different corporate governance and IPO sentiment, these findings and conclusion might be geographically limited.

Furthermore, this paper takes the perspective of pre-and post-IPO owners (hence, those with the power to dismiss the CEO). However not all owners have the same investment-horizon, thus their objectives or perceptions of IPO performance diverge. We have not aimed to analyze different owner perspectives and the possible divergence in IPO performance perceptions. Instead, we have kept a broad owner perspective.

The total sample size amounts to 116 observations. Although this exceeds the limit for statistical models by far, it is a relatively small sample that could increases the risk of statistical randomness.

8 FUTURE RESEARCH

We have several proposals for future research within the topic of IPO performance and forced CEO turnover that are beyond the scope of this thesis. Firstly, to generalize our findings, the study could be conducted on data outside of the United States to confirm that this relationship holds with other corporate governance rules and IPO sentiments. Secondly, future research could address potential differences among owners: for instance, are some type of owners more likely to fire their CEO? There are indications that private equity firms have less patience[15]. Thirdly, are there other disciplinary actions the board could enforce on the CEO if the IPO performance is bad, e.g. by remuneration. Fourth, this paper aims to study the CEO's role. But what about other managers, e.g. the CFO? Could the same relationship between IPO performance the forced CEO turnover be found for CFOs? Fifth, the relationship of IPO performance to forced CEO turnovers could be studied using a broader turnover window to draw more conclusions about the two *CEO turnover effects.*

[15] *"I would have had more patience if the CEO underperformed if I had a longer ownership perspective"* – Johan Pålsson CapMan

9 REFERENCE LIST

Blankespoor, E., Hendricks, B.E. and Miller, G.S., 2017. Perceptions and price: Evidence from CEO presentations at IPO roadshows. Journal of Accounting Research, 55(2), pp.275-327.

Certo, S.T., Holcomb, T.R. and Holmes Jr, R.M., 2009. IPO research in management and entrepreneurship: Moving the agenda forward. Journal of management, 35(6), pp.1340-1378.

Daily, C.M., Trevis Certo, S., Dalton, D.R. and Roengpitya, R., 2003. IPO Underpricing: A Meta–Analysis and Research Synthesis. Entrepreneurship Theory and Practice, 27(3), pp.271-295.

Pagano, M., Panetta, F. and Zingales, L., 1998. Why do companies go public? An empirical analysis. The journal of finance, 53(1), pp.27-64.

Bancel, F. and Mittoo, U.R., 2009. Why do European firms go public?. European Financial Management, 15(4), pp.844-884.

Bamford, C.E., Bruton, G.D. and Hinson, Y.L., 2006. Founder/chief executive officer exit: a social capital perspective of new ventures. Journal of Small Business Management, 44(2), pp.207-220.

Malmendier, U. and Tate, G., 2009. Superstar ceos. The Quarterly Journal of Economics, 124(4), pp.1593-1638.

Yang, Q., Zimmerman, M. and Jiang, C., 2011. An empirical study of the impact of CEO characteristics on new firms' time to IPO. Journal of Small Business Management, 49(2), pp.163-184.

Zimmerman, M.A., 2008. The influence of top management team heterogeneity on the capital raised through an initial public offering. Entrepreneurship Theory and Practice, 32(3), pp.391-414.

Leone, A.J., Rock, S. and Willenborg, M., 2007. Disclosure of intended use of proceeds and underpricing in initial public offerings. Journal of Accounting Research, 45(1), pp.111-153.

Loughran, T. and McDonald, B., 2013. IPO first-day returns, offer price revisions, volatility, and form S-1 language. Journal of Financial Economics, 109(2), pp.307-326.

Jain, B.A. and Kini, O., 1994. The post-issue operating performance of IPO firms. The journal of finance, 49(5), pp.1699-1726.

Mikkelson, W.H., Partch, M.M. and Shah, K., 1997. Ownership and operating performance of companies that go public. Journal of financial economics, 44(3), pp.281-307.

Ritter, J.R., 1991. The long-run performance of initial public offerings. The journal of finance, 46(1), pp.3-27.

Levis, M. (1993), "The long-run performance of initial public offerings: the UK experience 1980-88", Financial Management, 22, 28-41.

Loughran, T. and Ritter, J.R., 1995. The new issues puzzle. The Journal of finance, 50(1), pp.23-51.

Carter, R.B., Dark, F.H. and Singh, A.K., 1998. Underwriter reputation, initial returns, and the long-run performance of IPO stocks. *The Journal of Finance*, *53*(1), pp.285-311.

Khurshed, A., Paleari, S. and Vismara, S., 2005. The operating performance of initial public offerings: the UK experience.

Kim, J.B., Li, Y. and Zhang, L., 2011. Corporate tax avoidance and stock price crash risk: Firm-level analysis. *Journal of Financial Economics*, *100*(3), pp.639-662.

Coughlan, A.T. and Schmidt, R.M., 1985. Executive compensation, management turnover, and firm performance: An empirical investigation. Journal of accounting and economics, 7(1-3), pp.43-66.

Warner, J.B., Watts, R.L. and Wruck, K.H., 1988. Stock prices and top management changes. Journal of financial Economics, 20, pp.461-492.

Wiersema, M.F. and Zhang, Y., 2011. CEO dismissal: The role of investment analysts. *Strategic Management Journal*, *32*(11), pp.1161-1182.

Hermalin, B.E. and Weisbach, M.S., 1987. The effect of board composition on corporate performance. In Massachusetts Institute of Technology London, UK Working paper.

Brickley, J.A., 2003. Empirical research on CEO turnover and firm-performance: A discussion. Journal of Accounting and Economics, 36(1-3), pp.227-233.

Loughran, T. and Ritter, J., 2004. Why has IPO underpricing changed over time?. *Financial management*, pp.5-37.

SHERMAN, A. "Examining the IPO Process: Is It Working for Ordinary Investors?" Testimony before the Subcommittee on Securities, Insurance, and Investment of the United States Senate Committee on Banking, Housing and Urban Affairs, 2012

Dalton, D.R., Daily, C.M., Certo, S.T. and Roengpitya, R., 2003. Meta-analyses of financial performance and equity: fusion or confusion?. Academy of Management Journal, 46(1), pp.13-26.

Smith, Clifford. 1986. "Investment Banking and the Capital Acquisition Process." Journal of Financial Economics 15: 3-29.

Ljungqvist, A., 2007. IPO underpricing. In Handbook of Empirical Corporate Finance (pp. 375-422). Elsevier.

Loughran, T. and Ritter, J.R., 2002. Why don't issuers get upset about leaving money on the table in IPOs?. *The Review of Financial Studies*, *15*(2), pp.413-444.

Rasheed, A., Datta, D.K. and Chinta, R.R., 1997. Determinants Of Price Premiums: A Study of Initial Public Offerings in the Medical. *Diagnostics and Devices Industry, J. SMALL BUS. MGMT., Oct*, p.11.

Gulati, R. and Higgins, M.C., 2003. Which ties matter when? The contingent effects of interorganizational partnerships on IPO success. *Strategic Management Journal*, *24*(2), pp.127-144.

Goyal, V.K. and Park, C.W., 2002. Board leadership structure and CEO turnover. Journal of Corporate Finance, 8(1), pp.49-66.

Arrow, K.J., 1985. Informational structure of the firm. The American Economic Review, 75(2), pp.303-307.

Leker, J. and Salomo, S., 2000. CEO turnover and corporate performance. *Scandinavian Journal of Management*, *16*(3), pp.287-303.

Laux, V., 2008. Board independence and CEO turnover. *Journal of Accounting Research*, *46*(1), pp.137-171.

Gao, H., Harford, J. and Li, K., 2017. CEO turnover–performance sensitivity in private firms. Journal of financial and quantitative analysis, 52(2), pp.583-611.

Hambrick, D.C. and Mason, P.A., 1984. Upper echelons: The organization as a reflection of its top managers. Academy of management review, 9(2), pp.193-206.

Gamson, W.A. and Scotch, N.A., 1964. Scapegoating in baseball.

Boeker, W., 1992. Power and managerial dismissal: Scapegoating at the top. *Administrative Science Quarterly*, pp.400-421.

Droms, W.G., 2006. Hot hands, cold hands: Does past performance predict future returns. Journal of Financial Planning, 19(5), pp.60-69.

Weisbach, M.S., 1988. Outside directors and CEO turnover. *Journal of financial Economics*, *20*, pp.431-460.

Denis, D.J. and Denis, D.K., 1995. Performance changes following top management dismissals. The Journal of finance, 50(4), pp.1029-1057.

Warner, J.B., Watts, R.L. and Wruck, K.H., 1988. Stock prices and top management changes. *Journal of financial Economics*, *20*, pp.461-492.

Loughran, T., Ritter, J.R. and Rydqvist, K., 1994. Initial public offerings: International insights. *Pacific-Basin Finance Journal*, *2*(2-3), pp.165-199.

Farrar, D.E. and Glauber, R.R., 1967. Multicollinearity in regression analysis: the problem revisited. *The Review of Economic and Statistics*, pp.92-107.

O'brien, R.M., 2007. A caution regarding rules of thumb for variance inflation factors. *Quality & quantity*, *41*(5), pp.673-690.

Internet sources

MARKET to BOOK and RETURN ON EQUITY various industries, across different years, are found at Aswath Damodaran's website at NYU

10 APPENDICES

Odds ratio

In a binary logistic regression, the probability is shown as odds ratios. If the probability of being dismissed is 75%, (75/100), the odds are 3 to 1 and the ratio is 3. Odds ratios is the ratio transformed into the natural log of the odds, the log odds (logits). Odds ratios tells us the changes in odds for every unit increase of the independent variable. If the ratio is lower than 1, that implies that there is a negative relationship between the independent and dependent variable. In our case, since dismissal is labeled 1, that would imply a positive relationship between CEOs dismissal when the predictable (independent variable) decreases.

With reference to the discussion regarding the one-tailed regression, we expect the odds ratio of the *IPO performance* to be less than 1, as we expect that all underlying parameters to have a negative relationship to *IPO performance*.

Pseudo R-square

The R-squared is used to compare different statistical methods, whereas a higher value indicates that the model is better at explaining the variability of the dependent variable. For binary logistic regression, however, there is not R-square. Various substitutes have been created as a proxy for R-square when binary logistic regression models are used. These methods are called pseudo R-squares.

Like ordinary R-squared, a higher value implies a better explaining model. But unlike R-squared, pseudo R-squared cannot be used to compare different statistical methods since there are various R-squared methods that give divergent values. Therefore, there are no benchmark values similar to R-square of OLS and comparing pseudo R-square to regular r-square benchmark is incorrect since pseudo R-square in general give lower values and therefore might be misleading (Hosmer and Lemeshow, Applied Logistic Regression). Pseudo R-square is however helpful when comparing similar models to each other.

Interview list

Erik Lautmann: Board memberships and independent advisory work. Alma mater: The Stockholm School of Economics

Johan Pålsson: Co-managing Partner at CapMan Buyout. Alma mater: The Stockholm School of Economics

Jan Ohlsson: Chairman Accent Equity Partners. Alma mater: The Stockholm School of Economics

FORCED CEO TURNOVER						
COMPANY	**EXPECTEDvs LISTED**	**THREE MONTHS RETURN**	**SIX MONTHS RETURN**	**PRICEtoBOOK**	**UNDERPRICING**	**IPO PERFORMANCE**
Leaf Group Ltd	113%	-38%	-49%	0.54x	33%	**-0.41**
Inphi Corp	109%	28%	25%	0.65x	28%	**0.47**
GNC Holdings Inc	100%	28%	37%	0.70x	5%	**0.24**
Proto Labs Inc	114%	19%	9%	1.11x	81%	**0.84**
Regional Management Corp	83%	4%	2%	0.81x	10%	**-0.33**
Tillys Inc	119%	-4%	-3%	1.54x	8%	**0.09**
Midstates Petroleum Company Inc	76%	-35%	-63%	1.06x	15%	**-1.08**
Manchester United PLC	78%	-7%	25%	1.85x	0%	**-0.35**
Norwegian Cruise Line Holdings Ltd	112%	12%	13%	0.49x	30%	**0.32**
SeaWorld Entertainment Inc	104%	4%	-24%	1.23x	24%	**-0.07**
Coty Inc	100%	-13%	-22%	0.99x	-1%	**-0.47**
Telaria Inc	83%	1%	-52%	0.60x	-15%	**-0.91**
Knot Offshore Partners LP	100%	-2%	3%	0.60x	4%	**-0.22**
Brixmor Property Group Inc	100%	3%	2%	0.37x	2%	**-0.23**
Marcus & Millichap Inc	80%	15%	8%	2.23x	16%	**-0.10**
Blue Capital Reinsurance Holdings Ltd	100%	-13%	-10%	1.01x	-6%	**-0.43**
Twitter Inc	96%	17%	-40%	0.94x	73%	**0.20**
Vince Holding Corp	105%	-12%	-16%	4.95x	43%	**0.31**
Evertec Inc	105%	11%	-3%	1.93x	2%	**0.00**
Autohome Inc	113%	35%	6%	1.04x	77%	**0.89**
EP Energy Corp	80%	-1%	8%	0.63x	-10%	**-0.56**
Santander Consumer USA Holdings Inc	104%	-11%	-29%	1.57x	5%	**-0.34**
Enable Midstream Partners LP	100%	5%	-1%	0.43x	11%	**-0.15**
Servicemaster Global Holdings Inc	87%	32%	45%	1.41x	6%	**0.21**
Vivint Solar Inc	94%	-47%	-31%	0.48x	0%	**-0.90**
LendingClub Corp	100%	-18%	-29%	3.13x	56%	**0.08**
Workiva Inc	100%	-6%	-9%	2.17x	-2%	**-0.25**
Atkore International Group Inc	76%	10%	31%	0.94x	0%	**-0.28**
Charah Solutions, Inc	71%	-53%	-39%	0.82x	0%	**-1.29**
Blue Apron Holdings	95%	-50%	-71%	0.37x	0%	**-1.17**
Emerald Expositions Events, Inc	89%	14%	12%	0.19x	15%	**-0.13**
Ardagh Group S.A.	100%	-4%	-14%		21%	**-0.13**
J.Jill, Inc	87%	4%	-27%	1.21x	-3%	**-0.54**
Jagged Peak Energy Inc		-25%	-8%	2.54x	-4%	**-0.40**
MagnaChip Semiconductor Corp	88%	-14%	-30%	1.91x	0%	**-0.61**

CONTROL GROUP 1: NO DEPARTURE CEO						
COMPANY	**EXPECTEDvs LISTED**	**THREE MONTHS RETURN**	**SIX MONTHS RETURN**	**PRICEtoBOOK**	**UNDERPRICING**	**IPO PERFORMANCE**
Spotify	100%	9%	7%	3.09x	13%	**0.16**
Yext Inc	122%	-11%	-16%	1.92x	22%	**0.14**
Gardner Denver Holdings Inc	83%	6%	32%	0.72x	6%	**-0.19**
REV Group Inc	110%	11%	0%	1.12x	14%	**0.12**
Bluegreen Vacations Corp	82%	42%	48%	0.55x	-7%	**0.07**
Oasis Midstream Partners LP	85%	-2%	-5%	0.58x	-1%	**-0.51**
Turning Point Brands Inc	71%	-3%	46%	5.02x	1%	**-0.02**
Paramount Group Inc	103%	-3%	-5%	0.43x	4%	**-0.25**
Zayo Group Holdings Inc	86%	27%	12%	3.19x	16%	**0.19**
HubSpot Inc	109%	6%	22%	2.59x	20%	**0.37**
Smart & Final Stores Inc	92%	19%	41%	0.45x	4%	**0.06**
Catalent Inc	100%	30%	36%	1.25x	-2%	**0.23**
Aspen Aerogels Inc	73%	-2%	-43%	1.50x	-2%	**-0.84**
Q2 Holdings	108%	0%	-2%	2.16x	21%	**0.14**
Aramark	95%	21%	5%	0.36x	14%	**-0.03**
Scorpio Bulkers Inc	100%	-1%	-14%	0.66x	-3%	**-0.36**
Allegion PLC	100%	-7%	32%	0.31x	-1%	**-0.15**
Noble Midstream Partners	113%	33%	75%	1.45x	16%	**0.84**
Sprague Resources LP	90%	2%	13%	6.04x	-1%	**0.12**
RingCentral Inc	108%	-7%	-13%	2.50x	40%	**0.20**
Franks International NV	110%	16%	-19%	1.39x	20%	**0.11**
Zoetis Inc	111%	1%	-15%	17.42x	19%	**1.29**
TRI Pointe Group Inc	113%	-2%	-27%	4.41x	12%	**0.14**
Bright Horizons Family Solutions Inc	110%	11%	15%	0.89x	29%	**0.31**
Ardmore Shipping Corp	93%	-8%	4%	0.57x	-4%	**-0.41**
Rexford Industrial Realty Inc	100%	-5%	-16%	0.27x	0%	**-0.42**
Armada Hoffler Properties Inc	77%	-14%	-25%	0.52x	1%	**-0.83**
Shutterstock Inc	121%	19%	81%	1.41x	27%	**0.95**
Realogy Holdings Corp	108%	19%	28%	1.56x	27%	**0.46**
Palo Alto Networks Inc	125%	7%	-5%	3.10x	27%	**0.53**
WageWorks Inc	82%	26%	36%	0.87x	40%	**0.27**
Globus Medical Inc	71%	4%	-13%	1.48x	13%	**-0.53**
Air Lease Corp	102%	-13%	-19%	0.45x	5%	**-0.41**
Tower International Inc	81%	34%	4%	0.67x	0%	**-0.21**
Douglas Dynamics Inc	75%	3%	24%	0.42x	0%	**-0.43**
Calix Inc	108%	-16%	-12%	1.22x	16%	**-0.17**
MaxLinear Inc	117%	-8%	-38%	1.75x	34%	**0.03**
Fabrinet	77%	39%	79%	0.65x	8%	**0.29**
InterXion Holding NV	108%	0%	7%	0.51x	6%	**-0.06**
NeoPhotonics Corp	110%	-19%	-39%	0.83x	20%	**-0.33**
Kinder Morgan Inc	109%	-9%	-1%	1.43x	4%	**-0.12**
Shake Shack Inc	140%	44%	27%	0.67x	119%	**1.76**
Box Inc	117%	-24%	-32%	1.54x	66%	**0.19**
GoDaddy Inc	111%	7%	2%	1.12x	31%	**0.25**
e.l.f. Beauty Inc	113%	7%	-11%	1.11x	56%	**0.40**
MGM Growth Properties LLC	111%	18%	16%	0.61x	5%	**0.16**
Ooma Inc	76%	-21%	-28%	3.19x	-16%	**-0.83**
Twilio Inc	115%	38%	-9%	1.00x	92%	**0.97**
GMS Inc	95%	6%	10%	0.58x	4%	**-0.17**

CONTROL GROUP 2: DEPARTURE CEO						
COMPANY	**EXPECTEDvs LISTED**	**THREE MONTHS RETURN**	**SIX MONTHS RETURN**	**PRICEtoBOOK**	**UNDERPRICING**	**IPO PERFORMANCE**
AquaVenture Holdings Ltd	95%	-13%	-26%	0.48x	28%	**-0.37**
Univar Inc	105%	-12%	-31%	1.33x	5%	**-0.38**
Global Net Lease Inc	100%	0%	-5%	0.68x	81%	**0.38**
Jernigan Capital Inc	92%	-1%	-6%	0.49x	10%	**-0.33**
Axalta Coating Systems Ltd	100%	22%	54%	1.01x	8%	**0.35**
Shell Midstream Partners LP	115%	19%	16%	2.41x	15%	**0.46**
Diplomat Pharmacy Inc	87%	47%	110%	1.40x	0%	**0.68**
Advanced Drainage Systems Inc	89%	31%	51%	1.43x	30%	**0.46**
Nordic American Offshore Ltd	94%	4%	-26%	0.67x	24%	**-0.26**
Castlight Health Inc	114%	-61%	-72%	1.56x	-1%	**-0.93**
Quotient Technology Inc (coupcons)	53%	-13%	-56%	0.29x	-15%	**-1.47**
Continental Building Products Inc	82%	3%	-15%	0.69x	4%	**-0.52**
Rubicon Project Inc	94%	-40%	-48%	1.12x	2%	**-0.90**
Cypress Energy Partners LP	100%	12%	4%	1.00x	16%	**0.02**
AMC Entertainment Holdings Inc	95%	26%	21%	0.38x	-6%	**-0.05**
Container Store Group Inc	106%	5%	-25%	1.44x	73%	**0.37**
Re/Max Holdings Inc	100%	10%	-3%	4.74x	54%	**0.57**
Constellium NV	83%	21%	42%	19.50x	43%	**1.79**
ChannelAdvisor Corp	108%	83%	79%	0.63x	2%	**1.01**
Tableau Software Inc	127%	32%	21%	1.73x	77%	**1.19**
William Lyon Homes	109%	-17%	-18%	1.22x	-10%	**-0.42**
Boise Cascade Co	124%	4%	-17%	0.69x	5%	**0.04**
Crossamerica Partners LP	100%	-7%	5%	5.82x	11%	**0.22**
Seadrill Partners LLC	105%	8%	7%	0.52x	6%	**-0.04**
Vocera Communications Inc	123%	33%	45%	1.14x	0%	**0.63**
RH	104%	9%	11%	0.93x	56%	**0.43**
Aptiv PLC (Delphi)	96%	35%	22%	1.60x	-2%	**0.16**
Wesco Aircraft Holdings Inc	91%	-23%	-5%	0.74x	0%	**-0.58**
Targa Resources Corp	110%	29%	26%	0.40x	0%	**0.26**
JELD-WEN Holding	105%	24%	16%	0.71x	0%	**0.10**
Keane Group	106%	-39%	-34%	3.56x	15%	**-0.34**