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Bachelor's Thesis

Management Dividend Forecasts in the Nordics

An empirical study of post IPO management dividend forecast accuracy

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Abstract

This paper aims to investigate management dividend forecasts in the Nordics. With a sample of 105 IPO observations, covering the time span 2000 to 2015, we examine whether there exist a forecast error between the stated dividend rate policy and the first annual dividend rate performed after the IPO. We apply a multivariate regression model in order to examine the management dividend forecast accuracy. Findings suggests there exist a forecast bias, i.e. that management over perform on their set forecast rate with 1.3%, although the result is not significant. However, we observe a significant absolute deviation between the management dividend forecast and the performed dividend rate, indicating that Nordic companies seem to file inaccurate management dividend forecasts in their IPO prospectus.

Keywords: Management dividend forecast, IPO prospectus content, Forecast error

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1. Introduction

Companies approaching their IPO are subject to scrutiny. Several parameters are taken into consideration in order to manage a successful offering. This paper aims to investigate one of these parameters, the management dividend forecast.

The dividend is a means way for management to distribute company wealth to the shareholders. Attaining an adequate forecast for dividends can prove to be crucial when valuing a company, and following up on that forecast is essential for investors. Brown et al. (2002) suggest that the management dividend forecast has cash-flow implications and that it conveys signaling effects about future company growth to investors. Dimson et al. (2008) found that the dividend yield made up for 90% of the total global equity shareholder return, using a dataset from 1900-2005, concluding that dividends have played a crucial role in explaining total shareholder value historically. The dividend undeniably represents an important parameter for investors and shareholders of a company. The accuracy of the dividend forecast is therefore essential.

With this paper, we aim to extend previous research on post IPO performance and shed light on the management dividend forecast in connection to the IPO. We investigate an original sample of 156 prospectuses, from IPOs in the Nordics through year 2000-2015, and seek to investigate the accuracy and bias of the management dividend forecast.

Earlier research has broadly investigated initial public offerings. IPO underpricing (Ritter, 1991; Ritter and Welch, 2002;), post-IPO performance (Stoll and Curley, 1970; Ibbotson, 1975; Jelic, 2007), market timing and cyclicality (Choe et al., 1993; Ritter and Welch, 2002; Lowry and Schwert, 2002) and the accuracy of management earnings forecasts (Jelic et al., 1998; Chen and Firth, 1999; Cheng and Firth, 2000; Jog and McConomy, 2003) have all been popular areas of interest. Only a few studies have looked at the management dividend forecast, Brown et al. (2000) being the most significant, and we have not found any previous research on the Nordic market. Thus, this paper is an extension to previous literature on management dividend forecasts.

Due to scarcity of studies on management dividend forecasts, we use similar research on the earnings forecast in order to answer our research question. There is an evident connection between earnings and the dividend payout; a negative result seldom yields a dividend payout. Many times one can draw parallels between the outcomes of the two measures, but in certain cases this is not a possibility. Norms constrain companies in different markets to include the earnings forecast in the IPO prospectus; this is the case in the Nordics. However, a large amount of the companies in the Nordics present a dividend forecast to be undertaken within the coming years. Thus, the management dividend forecast takes on a certain duty on the Nordic markets except being an important factor itself. It also works as a possible proxy for the management earnings forecast. This provides incentives for further research on the management dividend forecast in the Nordics.

We have collected an original sample of data consisting of 105 IPO observations through year 2000-2015 in the Nordics. Data was gathered manually throughout the different Nordic Financial Supervisory Authority (FSA) institutions providing IPO prospectuses, underwriters included in the specific IPO process, and by directly contacting certain companies since some databases missed certain prospectuses. In order to investigate the management dividend forecast error, each IPO prospectus was surveyed for the stated dividend policy and other explanatory data. This was benchmarked towards the first actual one-year dividend payout after the IPO, where data was found in the subsequent annual report.

Using Nordic data, we are forced to make an important assumption about the dividend. Since the dividend policy is used as a proxy for the management dividend forecast, we have to look at dividends in relative terms. This is contrary to Brown et al. (2000), where the forecasted dividend is denoted as an absolute value. This delimitation has to be done as Nordic companies seldom provide a management dividend forecast in absolute numbers (Dividend per Share, DPS), but instead provide the stated dividend policy as a relative number, a rate (e.g. 50% of earnings).

Another important delimitation we make is that we only use explanatory variables gathered from the IPO prospectus, implying the analysis occurs from one point in time. The IPO prospectus content has an important role of distributing information to the market before going public. Ström (2006) found that profit forecast information was important in the IPO prospectus to investors and that those firms experienced a lower underpricing during their IPOs. Hanley and Hoberg (2010) found evidence that increased disclosure of informative, firm-specific, content served as an alternative to expensive book building, in asserting investors that the IPO were more accurately priced. Ding (2015) investigated risk factor content disclosure in connection with underpricing and concludes, in harmony with the findings of Hanley and Hoberg, that greater informative content could be associated with reduced *ex ante* uncertainty during IPOs, and yielded lower underpricing. Taking into concern the previous research on prospectus content disclosure, we find interesting support in isolating explanatory variables from the prospectus. We question ourselves how well the IPO prospectus content explains the accuracy of the management dividend forecasts. We arrive at our research question:

Is there a forecast error in the Nordics and can we explain it in terms of bias and accuracy?

The rest of this paper is organized in the following fashion. The next chapter provides an overview of previous literature on the subject of management forecasts and the role of the IPO prospectus in explaining the accuracy of these earnings, aligned according to our hypothesis development. In chapter 3 we present how we collected our data, and follow with stating the method used for treating the data and arriving at our results, in chapter 4. In chapter 5, we present these results and compare them with previous research in order to answer our hypotheses. To summarize, we provide a conclusion in chapter 6.

2. Previous literature and Hypothesis development

The main areas of interest in the field of previous literature are examined in this chapter. We will investigate management forecasts broadly, and look into explanatory variables in the IPO prospectus through investigating firm characteristics and board composition.

2.1 Investigation of management forecasts

Due to the nature of the measure, it is obvious that earnings forecasts differ from dividend forecasts. It is not our intention to validate our research on management dividend forecasts with earnings forecast, but rather provide an indicating measurement. Previous literature on both dividend and earnings as a measure, indicate that management forecasting often entails errors. Thus it is interesting to survey both fields of research.

2.1.1 Management Earnings Forecasts

The research field on management earnings forecasts error is fairly exploited globally. In certain markets, e.g. Malaysia, disclosure of earnings forecasts is mandatory in the IPO prospectus. In contrary, forecasts are voluntary in Canada, Australia, Hong Kong and in the UK. It is possible to disclose earnings forecasts through prospectuses in the Nordics, but it is seldom done. Previous research has mainly treated forecasts in connection to underpricing and post-IPO performance.

Jelic (2007) made a study in the United Kingdom based on 1600 listings on the London Stock Exchange from 1981 to 2004. He finds evidence that overly optimistic forecasts penalize long-term performance compared to more pessimistic forecasts. His results suggest that the level of underpricing is affected by whether the company publishes a forecast or not, although the specific characteristics of the forecast does not impact significantly. By disclosing an earnings forecast in the IPO prospectus, firms provide the market with more information which mitigates information asymmetry, leading to raising relatively more money from the share subscription. Thus, there are incentives to disclose earnings forecasts in the prospectuses in the short-run, due to lower underpricing but optimistic forecasts leads to poor stock price performance in the long run. Therefore, it is of essence to provide the market with accurate and not to optimistic forecasts.

A couple of years earlier a similar study was made by Jog et al. (2003) in Canada where management earnings forecasts are published voluntarily in the IPO prospectus. The main purpose was to investigate if voluntary disclosure of earnings forecasts adds value in comparison of neglecting to disclose a forecast. By investigating 258 IPOs on the Toronto Stock Exchange from 1983 to 1994 his findings are in harmony with Jelic (2007) that too optimistic earnings forecasts are penalized in the long-run and that firms disclosing a forecast face a lower level of underpricing.

Clarkson (2000) has published research in the vicinity of above-mentioned studies, by looking at the accuracy of management earnings forecasts in connection to auditor quality. The study was made on the Toronto Stock Exchange, looking at a total of 177 IPOs from an initial period of 1984 to 1987 and an additional period of 1992 to 1995. It was concluded that increased auditor quality lowered the absolute forecast error. Thereby Clarkson (2000) suggests that Big-6 auditors contribute to increased forecast accuracy, and should be preferred in the process of an IPO.

A couple of studies has been carried out on the Chinese market. Cheng and Firth (2000) investigates 154 IPOs on the Hong Kong Stock Exchange from 1992 to 1995, where disclosing an earnings forecast is voluntary. However it is done by virtually all firms going public. By suggesting earnings forecasts are below actual performance, the findings are in harmony with above-mentioned studies, although a much smaller forecast bias is demonstrated (9,89%). In addition, one study made on the Chinese market looked at the period of 1991 to 1996 on the Shanghai Securities Exchange and Shenzhen Stock Exchange (Chen and Firth, 1999).Contrary to the above, no statistically significant forecast error was found in terms of a bias. The actual and the forecasted earnings figure did not diverge significantly.

Jelic et al. (1998) made a study on the Malaysian stock exchange where it is mandatory to publish earnings forecasts in the IPO prospectus. Numbers of IPOs observed amounted to 173, from year 1984 to1995. Both the explanatory variables age and industry classification were found to have significant impact on the forecast error. A positive forecast bias was found. The forecasted value was on average 33.37% lower than the actual earnings figure, adding to the highly present literature of optimistically biased forecasts. Hence, it would seem there are no indications that voluntary and mandatory forecasts would differ significantly due to regulations regarding disclosure. This enables us to carry out analysis on both entities.

2.1.2 Management Dividend Forecasts

The management earnings forecast and the management dividend forecast should in this context be seen as two different approaches and measurements of post IPO performance, despite their close relationship. Surveying earlier research, we conclude management dividend forecasts is a subject fairly neglected in empirical finance.

Outstanding in the void of earlier research, is a study made by Brown et al. (2000) on Australian data. By investigating a sample of 172 IPOs in Australia from 1984 to 1997, two main research questions are put forth; (1) If management earnings forecasts are more accurate than management dividend forecasts, and (2) Why some management dividend forecasts are more accurate than others. Measurements include dividend per share (DPS) and earnings per share (EPS), both absolute values. The findings of Brown et al. (2000) include both the earnings and dividend forecast having a bias, and suggest that management forecasts in general are more optimistic than actual performance. Furthermore, dividend forecasts were on average more accurate than earnings forecasts (bias of 1.57% for dividend forecasts and bias of 5.07% for earnings forecasts).

2.2 IPO Prospectus Content

As highlighted by the majority of previous research, management forecasts often include a bias between the forecasted and the performed dividend. However, different markets have exhibited different magnitudes of forecast errors. The Nordic market is subject to different norms, and virtually no firms publish management earnings forecasts in their IPO prospectuses. However, dividend forecasts in terms of stated dividend policies are highly present. In order to investigate forecast accuracy of the dividend and post-performance, this study will focus on the stated dividend rate policy compared to the actual first annual performed dividend rate after the IPO. With previous research on both earnings and dividend forecasts in mind, we formulate our main hypothesis as below:

Hypothesis H1: There exists a bias between the stated dividend policy rate in the IPO prospectus and the first actual performed annual dividend rate after the IPO

2.2.1 Firm Characteristics

2.2.1.1 Firm maturity

The question will further be to explain and try to understand the accuracy of the management dividend forecast. Firm Characteristics is further defined by four independent variables Firm Size, Age, Risk and Auditor used in the IPO. We hypothesize around each variable in the presented order.

With support from earlier research we have chosen to use firm size and firm age as two measurements of matureness. Firm size is defined as the last audited total assets filed in the IPO prospectus, denominated in million Swedish kronor, and aims to be the latest available measurement of asset size, according to Clarkson (2000). Moreover, Chen and Firth (2001) suggests that bigger firms have more control over their profits since they are more likely to be price-setters.

Thus, it is not unreasonable to believe that bigger firms generally have larger impact on the market. This in turn leads to more predictable profits, which would imply better grounds for performing accurate forecasts. Hence, as firms increase in size and control over their own profits, the management dividend forecast should increase in predictability and increase forecast accuracy. Due to firm size often being a severely skewed variable, Clarkson (2000) suggests using a logarithmic measure in order to produce a normal distribution of observations. Furthermore, Clarkson found that firm size was significantly correlated to the forecast error.

However, firm age did not prove to have significant effect, which was confirmed by Chen and Firth (2001). However, Jelic et al. (1998) believes that firms with a longer operating history previous to IPOs are easier to forecast, as a larger material on firm-specific historical figures leads to more accurate forecasts. Findings indicates age being significantly correlated at the 10% level in improving the accuracy of the forecast, concluding that companies with longer operating history previous to the IPO are easier to forecast. In accordance with Jelic et al. (1998), we will use a logarithmic measure of the variable age due to it being skewed.

In accordance with above mentioned authors, we believe a more mature company faces lower deviations in financial performance and experience a generally more stable performance than less mature firms. Accordingly, firm size should mitigate the forecast error. Regarding firm age, due to not using historical figures to augment our forecast analysis, the argument presented by Jelic et al. (1998) do not apply for our dataset. However, we would like to test the hypothesis that older firms generally forecast more accurate, and experience lower forecast errors.

Hypothesis H2: Older firms have a higher accuracy in their management dividend forecasts than younger firms

Hypothesis H3: Bigger firms have a higher accuracy in their management dividend forecasts than smaller firms

2.2.1.2 Firm risk

Dividends of a company exposed to higher risk should be harder to forecast. We use the amount of risk factors as a proxy of company risk in accordance with Clarkson (2000). Risk factors are defined as the number of risk factors filed in the IPO prospectus. Forecasting should be harder for firms related with larger amount of risk factors and thereby have a lower forecast accuracy.

Clarkson (2000) finds significant evidence supporting an increased amount of risk factors being positively related to the absolute forecast error, indicating decreased forecast accuracy. Similarly Abrokwa and Nkansah (2014) make the use of a risk factor defined as number of risk factors stated in the IPO prospectus. They find no significant results suggesting that a positive coefficient exists. Cheng and Firth (2000) includes the same definition of their risk variable and suggest that risk factors has no significant coefficient. Ding (2015) presents a different approach and result to Clarkson (2000) by suggesting that the quantity of risk factor disclosures itself does not have any significant impact on initial underpricing. Despite the difference between absolute forecast error and underpricing it is still interesting due to the fact that the signaling effects are included in both errors. Whether the number of risk factors in the IPO prospectus impact the forecast error could thus be debated. Hence, we hypothesize that the number of risk factors listed in the IPO prospectus decrease management dividend forecast accuracy since more risk related to a company should increase variations in profit and therefore make forecasting less predictable.

Hypothesis H4: Number of risk factors in the IPO prospectus should decrease the management dividend forecast accuracy

2.2.1.3 Auditor

Clarkson (2000) suggested that Big-4 audit firms decrease the forecast error for firms going public since higher quality of the auditor equals better and more accurate forecasts. The main argument is that a better auditor, in terms of quality, is related to a more accurate forecast and lower forecast error. The findings of Davidson and Neu (1993) constitute the base for the investigation of audit quality by Clarkson (2000). Both articles finds clear evidence that higher audit quality increase management forecast accuracy. With support from previous literature on the matter we hypothesize that higher audit quality through more renowned auditors (Big-4 auditors), leads to more accurate management dividend forecasts.

Hypothesis H5: Firms using a Big-4 audit company have a higher management dividend forecast accuracy

2.2.2 Board Composition

Agency problems are more or less evident throughout companies facing their IPO. Entrance on the stock exchange is an important and distressing event, leading to either more aligned action between the board and management, or possibly larger friction and opposed views. Earlier research in the intersection between quality of corporate governance and dividend policy have mostly treated agency costs (Fama and Jensen, 1983; Jensen 1986). The relationship between corporate governance quality and increased dividend size has been debated, with representatives of a negative relationship (Jiraporn and Ning, 2006; Jo and Pan, 2009) and a positive relationship (La Porta et al., 2000; Michely and Roberts, 2006; Jiraporn et al., 2011).

Corporate governance mitigates agency conflict, and should thus impact dividend policies and the size of the payout (Jiraporn et. al., 2011). However, we have found no research on whether corporate governance works as a means of controlling the alignment of the dividend payout in relation to the stated dividend policy. Investigating board structure in connection to management dividend forecasts, we aim to shed light on this issue within the Nordic markets.

2.2.2.1 Board size

Raheja (2005), together with Adams and Ferreira (2007), argue that the board has two main functions in advising and monitoring firm management. The advisory function includes offering advice, information and provide resources to management and the CEO. This in able to reach the goals set up for the company by the board Fama and Jensen (1983. An important part of the actual performed dividend rate is the fact that it is the board that takes the final decisions of the level of dividend to be paid out, but management is responsible to provide the possibility for the board to fulfil their targets. Friction between the board and management can thus be a destructive force and ultimately distract the board's decision making. Guest (2009) looks at a large sample of UK firms from year 1981-2002, and concludes that large board size encumbers on the advisory role of the board by complicating communication and decision-making. This in turn, undermines the effectiveness of the board. This result is affirmed by earlier research, where it has been argued too large boards face communication and coordination issues (Lipton and Lorsch, 1992; Jensen, 1993), which could impede on the monitoring effectiveness. Contrary to this, Lehn et al. (2004) argues that a larger board size with a higher fraction of non-executive members, results in better monitoring due to a larger collective knowledge base.

In the light of earlier research, we seek to investigate whether board size could have effects on the management dividend forecast error. Both the monitoring and advisory function needs to be effective in order to help management fulfil the goals set by the board. According to the majority of previous research, board performance in terms of effectiveness should increase as the board depreciates in size. This should in turn help increase the ability for management to reach targets, e.g. more likely to achieve the stated dividend rate.

Hypothesis H6: A larger board size leads to a decrease in forecast accuracy

2.2.2.2 Independence of the board

According to agency theory, independent board members should be able to perform the monitoring role of disciplining senior management and the CEO more objectively (Fama and Jensen, 1983). This should in turn result in a more effective approach of mitigating agency conflicts and thus lowering the absolute forecast bias. However, it is debated to what extent independence of the board is achieved by conventional measures. Hwang and Kim (2009) argue independence should not be measured only in terms of financial and familial ties but in social terms as well. In this paper we will restrict ourselves to investigating financial ties between the board and the company, where an independent director is defined as a non-shareholder both directly though shares, and indirectly through options or warrants. Brown et al. (2000) argues that dividend forecasts made by firms with a larger fraction of managerial shareholding tend to be more accurate; this stands in contradiction to above-mentioned research.

We hypothesize that a larger fraction of independent board members should help establish more effective monitoring and advisory functions of the board. Thus, a more effective board should be able to assist management in reaching their targets, and ultimately lower the forecast error.

Hypothesis H7: A larger fraction of independent board members increase the management dividend forecast accuracy

2.2.2.3 Gender equality of the board

According to Brammer et al. (2007) there are both ethical and economic arguments for a more diverse board. In order to maintain focus on the effects a more diverse board has on corporate governance, we chose to focus on the economic arguments as well as the effects on board composition. Burke (1997) argues that there are economic benefits foregone, when systematically preventing equal selection to the board, namely missing out on the most able director candidates. Westphal and Milton (2000) and Burke (2000) problematizes around if different demographic groups possess different abilities valuable for the company. If these abilities are not evenly distributed throughout the whole demographic population, the firm should miss out on possible value by excluding certain demographic groups from the board. Thus, there is a risk of excluding better candidates if there exist a systematic exclusion.

For an optimal board composition, carrying out the best decision-making, the election to the board cannot systematically exclude certain candidates. However it is hard to hypothesize around whether an equal board is an optimal board, and we have not found any research that supports this argument. Given the fact that boards are predominantly seated by men, we would like to investigate whether a larger fraction of female board members will increase board efficiency and affect the forecast error.

Hypothesis H8: A more gender diverse board should increase the management dividend forecast accuracy

3. Data

This paper aims to investigate the bias and accuracy of management dividend forecasts from companies doing an IPO on the Nordic market from year 2000-2015. The following section gives an overview of our primary sources of data, sample selection and descriptive statistics. The descriptive statistics are divided into sample composition, where we present information on frequencies, and sample statistics where we provide information on measures of the forecast error, firm characteristics and board structure.

3.1 Data Collection

The data selected in our sample, in combination with controlling measures, were gathered manually from 156 separate Nordic IPO prospectuses and corresponding annual reports from 2000 to 2015. The sample covers the whole population, during the stated time period. A majority of the IPO prospectuses could be found either on company websites or through the prospectus register of respective country's financial supervisory authority (FSA). In the cases where data was missing, we manually completed the dataset with secondary sources of data (websites, quarterly reports, year-end reports, direct contact with the companies and underwriters). IPO prospectuses date back only a couple of years on the Norwegian and Danish stock markets with regards to the FSA, while some prospectuses did not exist at all in these databases. In order to complete our data sample we looked manually on company websites, contacting the companies directly and foremost contacting investment banks that have been contribution with a lot of the prospectuses on the Norwegian and Danish markets. Currency exchange rates have been used to convert all monetary amounts into Swedish kronor, by using the average exchange rate for the disclosed date of the annual report, year-end report or IPO prospectus. The exchange rates were extracted from the website Oanda.

Our sample covers the time-period of year 2000 to 2015 in order to control for cyclicality. Since we are not examining explicitly for time-variations in our sample, it is important to cover many IPO-cycles throughout recessions and booms. We cover a couple of cycles when having a time frame of 15 years. Foremost the financial crisis in 2008, the end of the IT bubble in 2000 and the two respective recovering and growing phases after these cold markets.

During this time frame 156 IPOs took place in the Nordics. However, 51 observations defaulted in terms of available data (prospectuses, annual reports etc.). Some companies has been acquired, delisted or even gone into bankruptcy, which has created problems of finding these missing observations (e.g. OW Bunker went bankrupt same year as their IPO in 2014, leading to unavailable data of the first year dividend payout rate). Additionally, the few observations made on the stock market of Iceland have been excluded due to a small market size.

This leaves us with a final sample of 105 IPO observations from the year 2000-2015. Information extracted from each IPO prospectus included respective industry, country, firm size, firm age, number of risk factors, total amount of board members, fraction of independent board members and fraction of female board members, all measures valid for the date of the filed IPO prospectus.

3.2 Dataset used for hypothesis and robustness testing

In order to provide grounds for robustness testing of our different hypotheses, the dataset was divided into three samples based on information on stated dividend policy rate and actual dividend payout rate. The first sample contains the whole population of 105 observations, while the second sample of 70 observations, Subsample 1, takes a more conservative approach and excludes stated dividend forecasts equal to zero. Due to many companies within the Healthcare, Technology and Natural Resources sector forecasting a payout of zero due to growth and reinvestment reasons, subsample 1 focuses on firms which dividend payout actually is positive. In order to control for the fact that some firms forecast a zero value and exceed expectations by actually paying out a dividend the subsequent year, a third sample, Subsample 2, was constructed. It includes all observations that have a deviation between the forecasted dividend rate and the actual dividend payout rate. The third sample amounts to 74 observations and should provide a more accurate ground for analysis.

3.3 Descriptive statistics

In this part we will introduce the dataset and further describe its characteristics. First, in table 1 Panel A, we show IPO frequency to capture an overview of the IPO cyclicality throughout the three samples. Secondly, we show and describe the IPO concentration over the different geographies (table 1 Panel B) and industries (table 1 Panel C). Summary statistics are shown for the independent variables across the three different samples. The whole sample is displayed in table 2 Panel A, whilst the two subsamples are shown in the appendix (table 2 Panel B and table 2 Panel C respectively). Descriptive statistics for the two forecasts errors FE and ln(AFE) are also presented and categorized by country and industry, which contributes with a small overview of the tendencies of mean and standard deviation between countries and industries. These tables are attached in the appendix as table 3 Panel A and 3 Panel B respectively. Furthermore, we attach a scatter graph plotting the spread of the forecast error as determined by observation number. This is shown in table 4 in the appendix. Lastly we include a cross-correlation table (table 5 Panel A) in order to test our independent variables for collinearity.

3.3.1 Sample Composition

Table 1 Summary Statistics

Panel A: IPO frequency by issue year

	Whole sample		Subsample 1		Subsample 2	
Year	No. of IPOs	Percent	No. of IPOs	Percent	No. of IPOs	Percent
2000	7	7%	4	6%	4	5%
2001	2	2%	2	3%	2	3%
2002	3	3%	3	4%	3	4%
2003	0	0%	0	0%	0	0%
2004	1	1%	1	1%	1	1%
2005	7	7%	5	7%	5	7%
2006	10	10%	6	9%	7	9%
2007	6	6%	4	6%	4	5%
2008	0	0%	0	0%	0	0%
2009	0	0%	0	0%	0	0%
2010	6	6%	5	7%	5	7%
2011	7	7%	3	4%	3	4%
2012	2	2%	2	3%	2	3%
2013	8	8%	6	9%	7	9%
2014	19	18%	13	19%	13	18%
2015	27	26%	16	23%	18	24%
Total	105	100%	70	100%	74	100%

Table 1 Panel A shows the IPO frequency by year over the three different samples. The observations display fluctuations throughout the different IPO cycles. We can generally see two bigger IPO cycles, with the first taking place around year 2005 to 2007 before the financial crisis. This hot market is followed by a cold market in 2008 to 2009. The second big IPO cycle take place in recent years, from 2013 until 2015. These years have been rather active compared to the historical observations.

Table 1 Summary Statistics

Panel B: IPO frequency by country

	Whole sample		Subsample 1		Subsample 2	
Country	No. of IPOs	Percent	No. of IPOs	Percent	No. of IPOs	Percent
Sweden	75	71%	49	70%	50	68%
Denmark	7	7%	4	6%	4	5%
Norway	14	13%	10	14%	11	15%
Finland	9	9%	7	10%	9	12%
Total	105	100%	70	100%	74	100%

Table 1 Panel B shows the frequency and concentration of IPOs categorized by country. Sweden stands for a substantial part of IPOs from 2000 to 2015 (71% of the whole sample). The relatively small percentage of the sample

that is constituted by Denmark, Norway and Finland could raise questions about the representative value of doing a study on the Nordic market, as the sample is fairly weighted towards Sweden. However, the sample covers the whole Nordic population from the year 2000 to 2015.

Table 1 Summary Statistics

Panel C: IPO frequency by industry

	Whole sample		Subsample 1		Subsample 2	
Industry	No. of IPOs	Percent	No. of IPOs	Percent	No. of IPOs	Percent
Industrials	25	24%	21	30%	22	30%
Consumer goods	18	17%	16	23%	16	22%
Consumer services	6	6%	5	7%	5	7%
Natural Resources	12	11%	5	7%	6	8%
Healthcare	18	17%	6	9%	6	8%
Technology	11	10%	6	9%	6	8%
Financials	7	7%	4	6%	6	8%
Real Estate	8	8%	7	10%	7	9%
Total	105	100%	70	100%	74	100%

Table 1 Panel C shows the IPO frequency by industry across the three different samples. Industrials is generally the most represented industry across the four stock exchanges in Sweden, Denmark, Norway and Finland. Otherwise it is generally a well-distributed representation across the four markets.

3.3.2 Sample Statistics

Table 2 Summary Statistics

Panel A: Whole sample

Variables	Mean	StDev	Min	P50	Max
FE	0.013	0.157	-0.500	0.000	0.450
AFE	0.093	0.146	0.000	0.020	0.700
ln(AFE)	0.081	0.119	0.000	0.020	0.531
ln(Firm Size)	7.564	1.782	3.564	7.637	11.246
ln(Age)	2.961	1.155	-0.248	2.995	5.775
Risk	21.800	8.264	6.000	20.000	48.000
Auditor	0.933	0.251	0.000	1.000	1.000
Total BM	7.038	1.531	3.000	7.000	10.000
Frac. Indep. BM	0.446	0.307	0.000	0.430	1.000
Frac. Female BM	0.187	0.152	0.000	0.140	0.570

Table 2 Panel A shows the summary statistics for the independent variables included in the multivariate regression conducted on the whole sample, with exception to AFE. The descriptive statistics of ln(Firm Size) give us little insight since we have chosen to log the Firm Size due to skewness. We have a well distributed variation of Age, other variables have a higher tendency to variate closer to its mean, i.e. Risk with a mean of 21.8 listed risk factors in the IPO prospectus and a standard deviation of 8.264. The mean of the Auditor dummy indicates a very high fraction of firms has a Big-4 auditor during their IPO. Total Board Members deviate little from its mean of 7.038 with for instance the lowest observation of 3 Board Members.

Table 5 Test for collinearity

Panel A: Whole sample

	ln (Firm Size)	ln (Age)	Risk	Auditor	Total BM	Fraction Indep. BM	Fraction Female BM
ln(Firm Size)	1.000						
ln(Age)	0.368	1.000					
Risk	0.285	0.129	1.000				
Auditor	0.171	0.048	0.082	1.000			
Total BM	0.277	0.102	0.007	0.157	1.000		
Frac. Indep. BM	0.340	0.252	0.135	0.035	0.141	1.000	
Frac. Female BM	0.230	0.171	0.137	0.040	0.200	0.426	1.000

Table 5 Panel A displays a cross-correlation scheme of the independent variables used in the multivariate regression model. Multicollinearity is indicated between ln(Firm Size) and ln(age), as well as Frac. Indep. BM towards ln(Firm Size), ln(Age) and Frac. Female BM. This leads us to exclude Frac. Indep. BM and in accordance with Brown et al. (2000), ln(Age), from our multivariate regression model. This should leave us with a better result, and higher significance of the remaining variables. Excluding these two variables leaves us with a more acceptable range of correlating variable with the lowest (0.007) between Risk and Total BM and highest (0.285) between Risk and ln(Firm Size).

4. Methodology and Theory

In this section we will examine the methodology and theory on which we base our study. First, we will briefly go through the methodology of measuring the Forecast Error. Secondly, we will move forward with explaining our multivariate regression that is constructed in order to try to explain variations in forecast accuracy through our explanatory variables.

4.1 Theory behind the forecast error measure

The Forecast Error (FE) is calculated as the difference between the actual performed dividend rate and the forecasted dividend rate, where we use the stated dividend rate in the IPO prospectus as a proxy for the forecasted dividend rate. Since the forecast error is defined as a difference between two rates it will take on a signed value, indicating if the forecast error is biased. This should be interpreted, if negative, as the company underperforming on their dividend rate, and if positive as the company is overachieving their dividend. As Jelic et al. (1998) point out; "If the forecasts are unbiased, […], the mean of the forecast errors should not be significantly different from zero". We make an important distinction by looking at a relative measure, a percentage rate, in contrary to Brown et al. (2000) who looks at an absolute measure (dividend per share). It is important to acknowledge the inherent difference between a stated dividend policy in absolute terms, compared to a stated dividend policy denoted as a rate. This is because a relative dividend can always be achieved as long as the net result exceeds zero, whereas an absolute dividend payout policy always demand a high enough result for it to be paid out, the performance hurdle to reach dividend goals is therefore higher for the absolute measure compared to the relative. With the exception of looking at a rate instead of an absolute number, we define the forecast error as McConomy (1998) and Clarkson (2000):

$$FE\ (\%) = (Actual\ Performed\ Dividend\ Rate - Forecasted\ Dividend\ Rate)$$

By using two different measures of FE, we hope to further investigate the forecast error. In order to measure the accuracy of the dividend forecast we create an absolute metric, where a value closer to zero indicates a more accurate forecast. As suggested by Davidson and Neu (1993) we log our absolute forecast error since absolute measures often are severely skewed. Thus, we arrive at our measure for dividend forecast accuracy:

$$Absolute\ Forecast\ Error = |Forecast\ Error|$$

$$ln(AFE) = ln(Absolute\ Forecast\ Error)$$

The two variables FE and ln(AFE) were tested through t-tests to be able to analyze significance and the magnitude of the two measurements. The test will further able us to answer our questions regarding forecast bias and forecast accuracy.

4.2 Multivariate regression model

We use an ordinary least squared regression model in order to investigate the accuracy of the management dividend forecast. The dependent variable ln(AFE) aims to be explained by our independent variables. Each explanatory variable corresponds to a hypothesis, which will be answered in the results section. We end up with the multivariate regression model:

$$ln\ (AFE) = \beta_0 + \beta_1 ln(Size) + \beta_2 ln(Age) + \beta_3 Risk + \beta_4 Auditor + \beta_5 Total\ BM + \beta_6 Frac._{IN\ BM} + \beta_7 Frac_{FM\ BM}$$

Below is a summary of the independent variables included in the model:

ln(Firm Size) = Latest audited measure of total assets in million Swedish kronor, as disclosed in the IPO prospectus

Age = Number of years from incorporation until IPO date, denoted as a continuous variable (including the effect of months and days)

Risk = Number of risk factors disclosed in the IPO Prospectus, excluding risks related to the offer and share (i.e. not firm-specific factors)

Auditor = Dummy variable indicating quality of auditor (1=Big-4 audit firm, 0=if not)

Total BM = Total number of board members seated, after effecting the IPO

Frac. Indep. BM = Fraction of independent board members, after effecting the IPO

Frac. Female BM = Fraction of female board members, after effecting the IPO

We use size and age as a proxy of firm matureness. Risk is used as a proxy for company risk and should reflect the risk-level of the company's operations and specific IPO. Furthermore, three variables are used to capture the composition and effect of the board on forecast accuracy.

We add the adjusted R-squared measure to our regressions in order prevent mechanical enhancing of our R-squared value by adding independent variables. Using adjusted R-squared should help us receive a more accurate explanatory value for the model.

4.3 Robustness tests

We mainly test robustness by applying our multivariate models for the two subsamples. This enables us to control too certain dividend policies aimed solely at retaining earnings for reinvestment. The inherent differences of our three samples, explained further in section 3.2, lets us check the robustness of our multivariate regression model. Regressions are made on all three samples in order to observe the incremental effects on explanatory value and effects on the independent variables. Furthermore, as indicated by table 4 in the appendix, there are indications of outliers in our forecast error data. We use the winsorizing function in order to adjust for outliers on the variables FE, ln(AFE, and also on the independent variable ln(Firm Size).

To provide further robustness, we use the Cook's D method (Cook, 1977) as a last step of our regression model. The reason for using Cook's D method is to further identify outliers of the independent variables. Observations with a Cook's distance larger than one will be identified as an outlier and therefore excluded. This will increase our robustness even further, since the largest outliers with the biggest impact will be dropped, and also put a lower weight on large absolute residuals. For this regression model we unwinsorized ln(Firm Size), in order to not distort the weighting in the Cook's D model.

5. Empirical results

5.1 Investigating the Forecast Error

Our first hypothesis is that there exist a bias between the stated dividend policy rate in the IPO prospectus and the first actual performed annual dividend rate after the IPO. The Forecast Error is measured, in percentage terms, as the stated dividend policy rate and the first actual performed annual dividend rate after the IPO. In order to test if there is a forecast bias, which will materialize as a signed value, we use a t-test on FE. We also include the Absolute Forecast Error in the t-test, which will emerge as an absolute value and indicate the accuracy of the forecast error.

Table 6 Panel A presents the performed t-test on FE and ln(AFE). Although not statistically significant, the results indicate in line with Jelic et al. (1998) together with Cheng and Firth (2000) a positive, i.e. pessimistic, forecast error of 1.3%. Suggesting that our sample of companies underestimates their dividend rate. This suggests that companies in the Nordic markets during year 2000-2015, forecasted on average too low payout rates and consequently over performed on their management dividend forecast. The result stands in contradiction to Brown et al. (2000), who observed an optimistic bias. However, we should be careful with support from earlier literature as on the one hand, Brown looked at absolute measures which should exclude too low payouts that do not exceed the performance hurdle rate, and on the other hand, Jelic et al. (1998) with Cheng and Firth (2000) looked at earnings forecasts. Our first hypothesis, H1, remains unanswered as we cannot find statistically significant support for our result of a positive bias.

Regarding the accuracy of the forecast error, Table 6 Panel A indicates a statistically significant measurement at the 99% level. However, it is hard to interpret the percentage rate of the logarithmic value of AFE. Thus we use the mean of AFE (table 2 Panel A) and conclude that in the Nordic markets, from the year 2000-2015, the first annual dividend payout rate deviated on average 9.29% from the management forecast dividend rate, not putting any emphasis on the sign of the value. Thus, this only indicate accuracy the management dividend forecast. The next part seek to understand this deviation further, through explanatory variables found in the IPO prospectus.

Table 6 T-test of FE and ln(AFE)

Panel A: Whole sample		
Variable	FE	ln(AFE)
Mean	0.0130	0.0813***
	(0.0153)	(0.0116)
Observations	105	105
R-squared	0.000	0.000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 provides an overview of the t-test made on FE and ln(AFE). The test is made in order to investigate the forecast error through bias and accuracy respectively. The test was made on the whole sample of 105 observations. FE was biased at 1.3% although not significant and ln(AFE), however hard to interpret due to the logarithmic measure, proved significant indicating that management dividend forecasts in the Nordics deviate from the actual payout.

5.2 Examining forecast accuracy

In this part, we seek to gauge the ability of our independent variables in explaining the forecast accuracy. Hypotheses, H2-H8, will be answered through an OLS regression with the dependent variable ln(AFE). Due to multicollinearity, we exclude the variables ln(Age) and Frac. Indep. BM from our regressions. Hence, we will leave hypothesis H2 and H7 unanswered. We will analyze the whole sample of 105 observations and look at the incremental effect of the independent variables, in the order of our hypotheses, on the explanatory power of our model (adjusted R-squared value). We also include a Cook's D regression of our multivariate model, which will increase robustness by mitigating the effect of outliers in our data.

Hypotheses H3-H5 concerns firm characteristics. Table 7 Panel A provides an overview of the OLS regression made on the multivariate regression model. The incremental effect on the adjusted R-square value, when adding independent variables seems to decrease. However, Frac. Female BM seems to contribute to the explanatory power of the model.

Larger firms tend to produce less accurate management dividend forecasts, which leads us to neglect H3, as ln(Firm Size) has a positive coefficient and is significant at 10%. The result is maintained in the Cook's D regression, indicating a robust result. This stands in contradiction to both Clarkson (2000) as well as Cheng and Firth (2000), who suggests an opposite relationship. Our hypothesis H4 states, in accordance with Clarkson (2000), that a larger amount of risk factors in the IPO prospectus should work as a proxy in signaling increased risk to investors, and consequently make it harder to forecast accurately. In line with the above, the Risk coefficient was positive suggesting a larger amount of risk factors tend to lower forecast accuracy. This result is in line with Abrokwa and Nkansah (2014), as the result was positive, but not statistically significant on any level. Thus, H4 has to be left unanswered in line with Abrokwa and Nkansah (2014), Cheng and Firth (2000) affirming the conclusion made by Ding (2015). H5 proposes that firms using a Big-4 auditor will increase the management dividend forecast accuracy. Our results indicate otherwise, although we cannot prove any statistical significance. This stands opposite to Davidson and Neu (1993) and Clarkson (2000), who found strong results in reputable auditors increasing forecast accuracy. Our result is debatable as a large majority of firms doing their IPO have a Big-4 auditor in the Nordic market (in table 2 Panel A, Auditor dummy mean equals 93.33%), which leads to a low variation for the Auditor variable. The incremental effect on adjusted R-square of adding the Auditor variable, is further negative which confirms the variable is poor in adding value to explaining the variation of the management dividend forecast accuracy.

Hypothesis 6 and 8 concerns the composition of the board. H6 predicts that larger board should decrease forecast accuracy. Our results indicate a larger board contributes to better forecast accuracy, which would strengthen the argument made by Lehn et al. (2004), that a larger board may excel in the monitoring management and thus mitigate agency conflict, leading to a lower forecast error. The findings however, stands in contradiction to Lipton and Lorsch (1992), Jensen (1983) and Guest (2009) who collectively argue that larger boards face communication issues. It should be added that our results are not statistically significant, leaving H6 unanswered. Conflicting H8, a more gender diverse board seems to decrease the forecast accuracy (FRAC_FM_BM is significant at the 5% level with a positive coefficient). This does not hold for the same multivariate regression made with the Cook's D method and therefore it is hard to draw any conclusions whether it is a robust and powerful result. It is hard to elaborate any further as to what might cause the positive result. According to theory, the decrease in forecast accuracy should be due to increased board size that face coordination issues (Lipton and Lorsch, 1992; Jensen, 1993). However, this is contradictory as the coefficient for TOT_BM indicates a negative relationship implying larger boards are more effective in forecasting the dividend rate. This yields a mixed interpretation and theory does not seem to support our results. H8 is thus deemed inconclusive, as we do not find any support from earlier research.

Concluding our regression on the whole sample, it should be noted that our model fails to explain about 95% of the variations in forecast accuracy variable. The adjusted R-square values, 3.2% in the original model versus 4.36% in the Cook's D model, can be compared to the adjusted R-square findings of Brown et al. (2000) which amounted to 27% for the accuracy of the dividend forecast. The explanatory value of our multivariate models is thus deemed low in comparison to Brown et al. (2000). This may be a reason why our significant results of certain independent variables contradict earlier research.

Table 7 Absolute Forecast Error

Panel A: Whole sample

Variables	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE) †
ln(Firm Size)	0.0109**	0.0100**	0.00972*	0.0103**	0.00782*	0.00620*
	(0.00449)	(0.00492)	(0.00499)	(0.00502)	(0.00462)	(0.00332)
Risk		0.000643	0.000629	0.000590	0.000289	0.000211
		(0.00118)	(0.00118)	(0.00117)	(0.00110)	(0.000685)
Auditor			0.0127	0.0146	0.0167	0.00804
			(0.0411)	(0.0417)	(0.0366)	(0.0220)
Total BM				-0.00256	-0.00536	0.000788
				(0.00764)	(0.00770)	(0.00375)
Frac. Female BM					0.180**	0.0554
					(0.0742)	(0.0372)
Constant	-0.000743	-0.00835	-0.0178	-0.00524	0.00436	-0.0401
	(0.0346)	(0.0364)	(0.0498)	(0.0646)	(0.0624)	(0.0348)
Adjusted R-squared	0.0170	0.00927	0.000179	-0.00879	0.0320	0.0436
R-squared	0.026	0.028	0.029	0.030	0.079	0.090
Observations	105	105	105	105	105	105

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

† Regressed by using Cook's D

Table 7 Panel A, show our multivariate regression by using the whole sample. The dependent variable, ln(AFE), stands towards all independent variables except ln(Age) and Frac. Indep. BM which were excluded due to multicollinearity. An adjusted R-square measure is included in order to adjust for mechanical boosting of the R-square value by adding independent variables. The adjusted R-square value should be interpreted as the main parameter for explanatory indication of the model. The furthermost right column contains the Cook's D regression.

5.3 Testing our model on different samples

This part examines the explanatory power of our model and incremental effects on our independent variables by applying the multivariate model on different samples. Subsample 1 excludes all observations without a forecast, i.e. a stated dividend policy of zero. This sample amounts to 70 observations. Subsample 2 originates from the latter subsample but includes observations that forecast a zero value, but actually ends up paying out a dividend during the first annual payout date. Four additional observations is added and Subsample 2 thus has 74 observations. Looking at Table 7 Panel B and applying the model to Subsample 1, the adjusted R-square value is lowered to a negative value compared to with using the whole sample. Interpreted as a zero value, this leaves us with a regression with a zero explanatory value. All variables lose significance which confirms our model fails to remain robust in this setting.

Table 7 Absolute Forecast Error

Panel B: Subsample 1

Variables	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE) †
ln(Firm Size)	-0.00541	-0.00874	-0.00852	-0.00773	-0.0104	0.00165
	(0.00833)	(0.00978)	(0.00988)	(0.00960)	(0.00923)	(0.00774)
Risk		0.00222	0.00220	0.00214	0.00190	0.000387
		(0.00190)	(0.00193)	(0.00192)	(0.00194)	(0.00152)
Auditor			-0.0180	-0.0159	0.00216	-0.0230
			(0.0699)	(0.0712)	(0.0676)	(0.0508)
Total BM				-0.00256	-0.00504	-0.000222
				(0.00987)	(0.0104)	(0.00690)
Frac. Female BM					0.165	0.0566
					(0.108)	(0.0731)
Constant	0.154**	0.135*	0.151	0.162	0.156	0.0568
	(0.0717)	(0.0696)	(0.0952)	(0.111)	(0.108)	(0.0792)
Adjusted R-squared	-0.0109	-0.0121	-0.0266	-0.0414	-0.0234	-0.0576
R-squared	0.004	0.017	0.018	0.019	0.051	0.019
Observations	70	70	70	70	70	70

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

† Regressed by using Cook's D

Table 7 Panel B, show our multivariate regression by using Subsample 1. The dependent variable, ln(AFE), stands towards all independent variables except ln(Age) and Frac. Indep. BM which were excluded due to multicollinearity. An adjusted R-square measure is included in order to adjust for mechanical boosting of the R-square value by adding independent variables. The adjusted R-square value should be interpreted as the main parameter for explanatory indication of the model. The furthermost right column contains the Cook's D regression.

Table 7 Panel C provides an overview of applying our multivariate models on Subsample 2. The explanatory power for the original multivariate model is positive but very close to zero (0.266%). For the original multivariate model, Frac. Female BM converge with the result provided in Table 7 Panel A at a 10% significance level. This indicates a more robust result and affirm the conclusion on H6 that increased gender diversity decreases forecast accuracy when we exclude non-deviating observations. There is a relatively large incremental effect on adjusted R-square, of adding the variable Frac. Indep. BM. This indicates the variable has a large effect on explaining the variations in forecast accuracy. However, contradicting the robust result is the Cook's D model that indicates a non-significant relationship for Frac. Indep. BM. This leaves us with an inconclusive result and low explanatory power for our model.

Table 7 Absolute Forecast Error

Panel C: Subsample 2

Variables	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE)	ln(AFE) †
ln(Firm Size)	-0.00386	-0.00978	-0.00960	-0.00848	-0.0115	-0.000581
	(0.00820)	(0.00976)	(0.00984)	(0.00965)	(0.00923)	(0.00881)
Risk		0.00296**	0.00295*	0.00281*	0.00226	0.00185
		(0.00148)	(0.00150)	(0.00151)	(0.00153)	(0.00153)
Auditor			-0.0147	-0.0120	0.00584	-0.0110
			(0.0697)	(0.0705)	(0.0663)	(0.0578)
Total BM				-0.00356	-0.00582	-0.00327
				(0.00962)	(0.00991)	(0.00775)
Frac. Female BM					0.170*	0.102
					(0.0977)	(0.0801)
Constant	0.146**	0.131*	0.143	0.160	0.160	0.0552
	(0.0710)	(0.0696)	(0.0944)	(0.111)	(0.108)	(0.0891)
Adjusted R-squared	-0.0120	0.00613	-0.00751	-0.0203	0.00266	-0.00531
R-squared	0.002	0.033	0.034	0.036	0.071	0.064
Observations	74	74	74	74	74	74

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

† Regressed by using Cook's D

Table 7 Panel C, show our multivariate regression by using Subsample 2. The dependent variable, ln(AFE), stands towards all independent variables except ln(Age) and Frac. Indep. BM which were excluded due to multicollinearity. An adjusted R-square measure is included in order to adjust for mechanical boosting of the R-square value by adding independent variables. The adjusted R-square value should be interpreted as the main parameter for explanatory indication of the model. The furthermost right column contains the Cook’s D regression.

6. Conclusion

The main purpose of this paper is to investigate the existence and accuracy of management dividend forecasts published in prospectuses of companies doing their IPO on the Nordic market. To our knowledge, we perform the first study examining management dividend forecasts in this setting. The lack of previous research forces us to further seek support from earlier research made in the more exploited, although closely related, field of management earnings forecasts. Disclosure of management forecasts is regulated throughout different markets and is either voluntary (Canada, Australia, Hong Kong and the UK) or mandatory (e.g. Malaysia). For the Nordic market, we use the stated dividend policy as a proxy for the management dividend forecast. Virtually all companies provide a stated dividend policy.

We use a sample of 105 observations on Nordic data from year 2000 to 2015 that covers the whole population. With this dataset we aim to gauge the management dividend forecast error by examining bias and accuracy. Although not statistically significant, our results indicate tendencies of a pessimistic forecast error bias, i.e. that firms on average over-perform on their dividend payout with 1.3%. This stands in contradiction with studies made on Australian data, where an optimistically biased forecast error was observed. However, the inherent difference of observing dividend rates instead of absolute dividend payouts, should lead us to carefully interpret the results. However, we conclude that management on average deviate with 9.29% between the forecasted dividend rate and the first annual dividend payout rate, implying an imperfect forecast accuracy with statistical significance.

Several independent variables (asset size, number of risk factors filed in the IPO prospectus, auditor used in the IPO, total board size and fraction of female board members) are tested in order to explain the variations of forecast accuracy. The two variables concerning age and fraction of independent board members are excluded due to multicollinearity. Out of the independent variables, only ln(Firm Size) proved having a positive significant relationship towards forecast accuracy when controlling for robustness through using Cook's D regression model. This stands in contradiction to previous results from Canada and Hong Kong. No independent variable stood robust when applying the multivariate regression model on Subsample 1 and 2.

It should be added that our analysis is established on a relatively small sample compared to previously mentioned studies although covering the whole population. It is also performed with relative measures compared to absolute measures of the dividend. Thus, we obtain a wider range of acceptable observations as a too low dividend in relation to too low earnings might result in an achieved dividend rate. Hence, our results, although representing the population of the Nordic market, should be interpreted carefully.

7. Limitations and suggestions for future research

In this part we will examine the limitations in this thesis and suggestions for future research in nearby areas. Throughout our investigation of the management dividend forecast error in the Nordics, we have come across multiple limitations and concerns that could help align future research. The following part is arranged into two sections: data and methodology.

7.1 Limitations and suggestions - Data

Compared to nearby literature, we obtain a relatively smaller sample of IPO observations, which may contribute to the lower explanatory power of our results. Even though the dataset observes the whole population of main market IPOs in the Nordics from 2000 to 2015, a larger number of observations would maybe create better statistical results in terms of robustness and significance. This could be achieved by increasing the timespan, and include more IPOs from before year 2000. However, finding data further back in time has shown to be complicated and very time-consuming as the FSA institutions of the different Nordic countries do not collect IPO prospectuses dated that long back in time. Thus, there is a risk of the dataset becoming diluted in terms of observations per year as we extend the time-frame back in time. We have not chosen to isolate the year's 2000 to 2015 due to these factors and believe the quality of the data would not increase considerably by extending the dataset.

By using a variable gauging the time variation effect of each specific observation, you could control for cyclicality and time variation. However, since we look at the whole sample through a longer period in time (years 2000 to 2015), we aim to capture this cyclicality indirectly. Thus we do not use a time effect variable. Another aspect of time variation is the argument that the IPO prospectus content only captures measurements at a point in time, which by definition is correct, but we argue that companies going public has to reach a certain level of maturity to be able to go public in the first place. Therefore, we question ourselves if the IPO prospectus content could capture some of this time-effect intrinsically, though matureness. However, we do not elaborate further into this field of research.

Our study is further limited to the combined Nordic data due to few observations in some countries. In the case of Iceland the number of IPOs done during the period of 2000 to 2015 only sum up to 5 observations. Thus, we have chosen to neglect this data in combination with market differences and Iceland suffering a bigger impact of the financial crisis during 2008. The data is not comparable in the same way as across the other Nordic countries.

Regarding the forecasts in the prospectuses, the stated dividend rates were occasionally presented as a range (e.g. aiming to pay out 30 to 50% of net earnings). These observations were simplified and interpreted with an average rate (e.g. 40%). This simplification can be argued, but excluding these observations would decrease the already small sample. Thus these observations were simplified and included in our data.

Regarding future research, we have captured tendencies of cross-sectional differences both for countries and industries in the Nordics (table 1 Panel B, C). Briefly surveying literature in the area of cross-sectional differences of management forecasts, it can be concluded that cross-sectional differences exist between markets and have been debated. This also indicated by Table 3 (Panel A, B) in the appendix, where we can observe cross-sectional differences in means. However, we do not elaborate further due to ending up with too small samples for the analysis. This an area that could be further investigated through future research on Nordic data.

The independent variables have been chosen with regards to prior research, with the exception of Frac. Female BM, and the decision to exclude historical figures (e.g. earnings trends etc.) could be argued. However, as we look at the isolated effect of the prospectus we believe historical figures might distort the explanatory value. This is another interesting area for future research, especially in combination with the fact that historical levels of dividend rates could be benchmarked against post IPO dividend rates with the aim to investigate if firms tend to change their dividend policies when going public and if they reach their dividend goals.

7.2 Limitations and suggestions – Methodology

One limitation of our methodology is looking at the dividend rate instead of the absolute value. This could be argued to distort our values since there is no performance hurdle, as when looking at absolute dividend payouts. However, Nordic data does not provide dividend forecasts other than through stated dividend policies, which we use as a proxy. In order for us to carry out an analysis on Nordic data, this assumption has to be made.

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Appendix

Table 2 Summary Statistics

Panel B: Subsample 1

Variables	Mean	StDev	Min	P50	Max
FE	0.007	0.185	-0.500	0.010	0.450
ln(AFE)	0.111	0.128	0.000	0.068	0.531
ln(Firm Size)	8.003	1.442	3.623	8.031	11.246
ln(Age)	3.216	1.186	-0.248	3.300	5.775
Risk	20.543	7.056	7.000	20.000	37.000
Auditor	0.957	0.204	0.000	1.000	1.000
Total BM	7.271	1.560	3.000	7.000	10.000
Frac. Indep. BM	0.496	0.314	0.000	0.470	1.000
Frac. Female BM	0.204	0.145	0.000	0.170	0.560

Table 2 Panel B shows the summary statistics for the independent variables included in the multivariate regression conducted on subsample 1. Differences from Table 2 Panel A is low, we can see changes on min for Risk and ln(Firm Size).

Table 2 Summary Statistics

Panel C: Subsample 2

Variables	Mean	StDev	Min	P50	Max
FE	0.019	0.187	-0.500	0.010	0.450
ln(AFE)	0.115	0.127	0.000	0.072	0.531
ln(Firm Size)	8.051	1.437	3.623	8.081	11.246
ln(Age)	3.226	1.156	-0.248	3.324	5.775
Risk	21.514	8.150	7.000	20.000	48.000
Auditor	0.959	0.199	0.000	1.000	1.000
Total BM	7.216	1.546	3.000	7.000	10.000
Frac. Indep. BM	0.496	0.309	0.000	0.500	1.000
Frac. Female BM	0.211	0.150	0.000	0.170	0.570

Table 2 Panel C shows the summary statistics for the independent variables included in the multivariate regression conducted on subsample 2. No major changes compared to subsample 1.

Table 3 Cross-sectional specifics

Panel A: Whole sample by Country

Country	Mean FE	StDev FE	Mean ln(AFE)	StDev ln(AFE)
Sweden	0.015	0.123	0.060	0.099
Denmark	0.009	0.038	0.022	0.029
Norway	0.007	0.222	0.133	0.130
Finland	0.007	0.318	0.223	0.173
Total	0.013	0.157	0.081	0.119

Table 3 Panel A shows the log of Absolute Forecast Error its standard deviation and Forecast Error and its Standard Deviation, both by country. As we can see ln(AFE) has the highest observed mean in Finland and lowest in Denmark, worth noting is the small size of each country sample that will impact the significance of the observed mean. Finland has the lowest FE mean in combination with Norway, their respective standard deviation of FE is 0.318 for Finland and 0.222 for Norway suggesting that Norway and Finland should deviated more from their respective mean than i.e. Sweden.

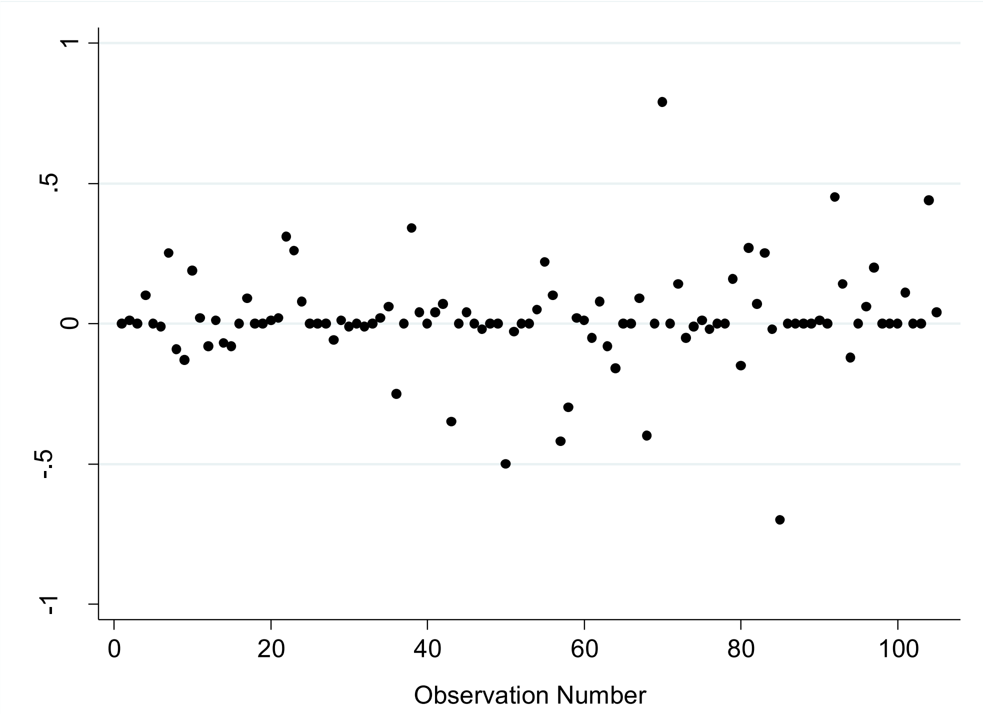
Table 3 Cross-sectional specifics

Panel B: Whole sample by Industry

Country	Mean FE	StDev FE	Mean ln(AFE)	StDev ln(AFE)
Industrials	0.059	0.159	0.091	0.113
Consumer Goods	0.009	0.213	0.123	0.159
Consumer Services	0.015	0.021	0.018	0.017
Natural Resources	0.028	0.095	0.057	0.070
Healthcare	-0.019	0.100	0.031	0.081
Technology	0.020	0.093	0.051	0.069
Financials	0.001	0.253	0.174	0.173
Real Estate	-0.071	0.214	0.116	0.144
Total	0.013	0.157	0.081	0.119

Table 3 Panel B shows the log of Absolute Forecast Error its standard deviation and Forecast Error and its Standard Deviation, both by industry. Interesting is the FE mean of Healthcare and Real Estate that seems to both have a negative tendency despite further knowledge about its level of significance. Financials stand for the highest ln(AFE) of 0.174 and Healthcare for the lowest of 0.031. Regarding the cross sectional differences we have high variation across all industries, both in terms of mean and standard deviation. Further tests has to be conducted to be able to understand these differences better. We can briefly comment the tendencies of cross sectional differences but not draw any further conclusions regarding level of significance.

Table 4 Scatter plot of FE towards Observation number



The scatter plot shows the separate forecast error per observation.. This graph indicates that there are outliers in the data, which implies we should adjust these observations.