RESEARCH PAPERS

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Do Analysts Overweight Earnings Information?

ABSTRACT

This study contributes to the financial analysts earnings forecasts literature by investigating how analysts utilize financial statement information to generate forecasts of firm earnings. Empirical evidence indicates that analysts overweight past earnings information when forming their forecasts. This paper sheds further evidence on the research regarding analysts' overreaction and underreaction to past earnings. I determine a relation between the analysts' consensus forecast error and the short-term trend in earnings. I.e. depending on the changes in past earnings and earnings growth the analysts overreact or underreact when forming their estimates, due to the overweighing of past earnings information.

JEL classification: G14, G24
Keywords: *Analysts' forecasts; Accuracy of estimation; Financial statement information*

1. INTRODUCTION

Prior studies on financial analysts' forecasts have documented both analysts' overreaction and underreaction to past earnings. In contrast to previous studies, I try to establish a pattern in the financial analysts' overreaction and underreaction based on how past reported earnings and earnings growth have developed, i.e. how the earnings path is shaped.

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One large part of a financial analyst's duties, is to forecast future earnings of the firm under coverage. As a benchmark for her forecasts the analyst uses past earnings and prior earnings development[1]. Another common source of forecasts is the corporate management. Like the financial analysts, the management relate their forecasts to past reported figures[2]. It is therefore quite evident that an important input in the analysts' forecasting process is the historical earnings data. Hence, the topic 'prediction power' of financial analysts has attracted a vast amount of research where time-series models have been developed to test the accuracy of financial analysts' earnings forecasts. The emerging consensus of the research is that analysts are superior to time-series models in estimating future corporate earnings and it is usually explained by the larger number of information sources used by analysts. However, looking from another angle, studies made by Abarbanell and Bernard (1992), Mendenhall (1991) and Ali, Klein and Rosenfeld (1992), find that analysts do not utilise all available information efficiently when setting forecasts. Brown and Rozeff (1978) present results that analysts use last period's forecast error to formulate the present period's forecast. Elgers and Lo (1994) develop a strategy to improve analysts' forecasts by using information in prior earnings and security returns. Furthermore, Ettredge et al. (1996) test if the change in annual earnings has some bearing on the analysts' precision. They argue that analysts overestimate earnings for firms that have reported losses in the prior year, because analysts and the market expect better earnings performance than the rebounding firms are able to provide. It raises the question if the analysts' forecasting difficulties are due to the rebound or due to the change in reported earnings trend. Espahbodi, Dugar and Tehranian (2001) present slight evidence of analyst overreaction to prior earnings changes, studying forecasts for bankruptcy firms and firms in financial distress. Espahbodi et al. (2001) apply the same model as Abarbanell and Bernard (1992), who find some evidence of analysts underreacting to recent earnings. This study examines further the changes in reported earnings and the analysts' forecast errors, i.e. not the recent changes in reported earnings but the recent changes in reported earnings paths. A hypothesis is put forward to determine, if analysts expect past earnings paths, in some degree, to persist and therefore overweight past earnings information.[3]

1 Prior studies though argue that the market underestimates the implications of previous period earnings for future earnings, see Bernard and Thomas (1990) and Freeman and Tse (1989).

2 Most companies give forecasts in terms of growth in sales and earnings related to the past corresponding period. E.g. Motorola in their Q2 2001 conference call only indicated how sales and earnings would develop in the following quarter compared to the corresponding quarter a year ago. Another way to provide guidance is like e.g. Nokia that tends to provide EPS estimate ranges but only for the forthcoming quarter and guide the market in the right direction for the full year.

3 Analyst characteristics also have an impact on the accuracy of estimation, e.g. Lim (2001) shows that the experience of the analyst impacts the forecast error. However, this study is conducted using consensus forecasts and therefore analyst specific factors are not accounted for.

I present evidence that the second derivative of the covered firm's reported earnings per share is negatively related to the consensus forecast error. This supports the hypothesis that analysts overweight earnings information. The negative relation is in line with the expectation, as a change in earnings path occurs the analysts underestimate the change, and hence under-react to past earnings in case of a positive change in the earnings path and vice versa, overre-act to a negative change in the earnings path. Implying that the consensus forecast is least reliable at times when investors need it the most, i.e. in cases of changes in reported earnings paths.

The rest of the paper is organised as follows. Section II presents the dataset. Section III describes the used methodology. Section IV discusses the empirical results. Finally, Section V provides the summary and conclusions.

2. DATA

Financial analysts' earnings forecasts for the four Nordic countries[4] are extracted from the I/B/E/S Detail files. Each observation in the data file represents an individual forecast and also includes the necessary information needed for firm and brokerage identification. The extract-ed data from the I/B/E/S Detail file consist of individual analyst forecasts ranging from the year 1990 to 2000, which provides eleven consecutive years of data. Analysts at more than 100 brokerages issued forecasts on over 900 Nordic firms.

The study is conducted using annual earnings forecasts, issued during the year prior to the date when the actual earnings number is reported. In other words, I have only used FY1[5] forecasts. Earlier research has shown that forecast recency affects the precision of the forecast, e.g. Brown (1991) showed that earnings forecast accuracy can be improved by discarding old earnings forecasts. This is no surprise as firms publish information throughout the quarter. On an annual basis this is even more intuitive since firms issue interim reports throughout the year. Hence, I have decided to group the annual forecasts according to the quarter when they were issued. This results in five separate clusters, e.g. forecasts given for full-year 2000 earn-ings are grouped as Q1/00, Q2/00, Q3/00, Q4/00 and Q1/01. The intuition behind the group-ing is that the first one includes forecasts formed using the information of prior year's reported numbers. The forecasts in the consecutive groups then accumulate information through inter-im reports and other information issued by the firm[6]. Accordingly, in the last cluster due to

4 Denmark, Finland, Norway and Sweden.
5 I/B/E/S labels analyst forecasts for the current year as FY1 forecasts and FY2, FY3 for the consecutive years.
6 To enable the grouping I have used forecasts for firms that have a fiscal year that equal the calendar year.

publication lags, we can be sure that the analysts base their forecasts on the nine-month interim report and all other public information available at that time. Note though that firms have not been compelled to submit interim reports during the entire studied period. But, the amount of accumulated information still increases as we move closer to the date when the actual numbers are reported.

My preliminary analysis addresses the effects of observations where the actual reported number equals zero. Due to the methodology used to calculate the estimation error I have to drop these observations. Further, almost all firms in the I/B/E/S Detail file are categorised by I/B/E/S' Sector-Industry-Group Codes. However, some observations are uncategorized and were therefore dropped from the sample as industry classification is used in the study (industry specific return). Furthermore, there are some structural problems with the I/B/E/S data, as pointed out by e.g. Lim (2001). Problems of non-consistency arise in the case of "special items". I/B/E/S provides no instructions to the analysts regarding the treatment of noncontinuing items. To diminish the plausible special items effect, I exclude all observations in the tail 2.5 percent of my dependent variable (consensus forecasts error). The method is similar to the one used by Lim (2001).

2.1. Descriptive statistics

In this section I present descriptive statistics on the I/B/E/S earnings forecast data. Table 1 displays the number of consensus forecasts per year for each country studied. As expected the number of consensus forecasts increases towards the end of the investigated period. Consensus forecasts issued on Swedish companies represent the largest part of the sample, 5,591 consensus forecasts.

TABLE 1. Number of Consensus Forecasts per Year.
This table reports the number of consensus forecasts grouped by year and country. The consensus forecast is calculated as the median of the forecasts for a firm given in the specified time period, i.e. within one of the five clusters. The total number of observations in the dataset is 14.794 consensus forecasts for 944 Nordic companies. The total number of individual analyst forecasts used to calculate the consensus forecasts amount to 91.089 observations. The forecasts in the table are divided by the nationality of the covered firm and the analysts' nationality is not restricted.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
Denmark	302	286	407	219	274	316	307	334	308	305	199	3257
Finland	144	113	150	145	242	323	285	289	331	423	402	2847
Norway	99	93	141	121	209	328	340	380	484	508	396	3099
Sweden	274	268	286	255	403	521	595	712	802	809	666	5591

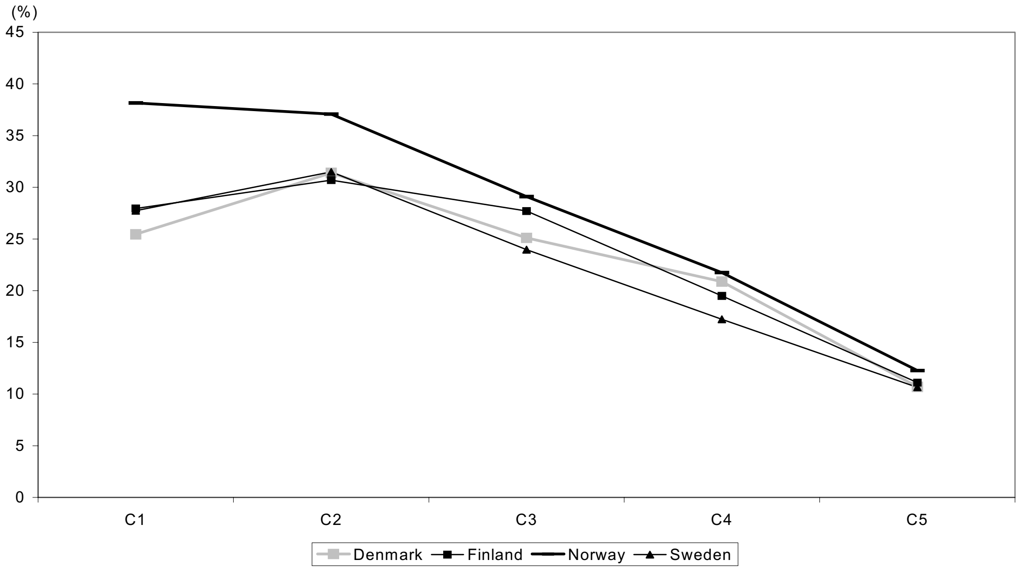

FIGURE 1. Consensus Forecast Errors per Cluster.
The figure above illustrates how the increase in available information affects the median consensus forecast error. Moving towards the reporting date the median estimation error decreases. For the Nordic countries as a whole, the median consensus forecast error decreases from 33% (cluster 1) to 12% (cluster 5). Consensus forecasts in Cluster 1 are given one year ahead of the reported number, whilst forecasts in Cluster 5 are given in the same quarter as the actual numbers are reported. The consensus estimation error is reported on the Y-axis.

Figure 1 displays the median consensus forecast error for the five different time clusters used in the study. Consensus forecasts in Cluster 1 are given one year ahead of the reported actual number, whilst forecasts in Cluster 5 are given during the same quarter as the actual numbers are reported. The decreasing relation is expected, as companies issue interim reports and other information throughout the year.

Figure 2 displays the difference between median consensus forecast errors when firms report losses versus when firms report profits. The consensus forecast is grouped as a reported loss if the firm reported a loss per share for the period the forecast was issued and if the firm reported a profit per share the consensus forecast error is grouped as a reported profit. Prior research has shown that analysts are less accurate in their earnings forecasts for loss firms relative to non-loss firms, e.g. Das (1998).

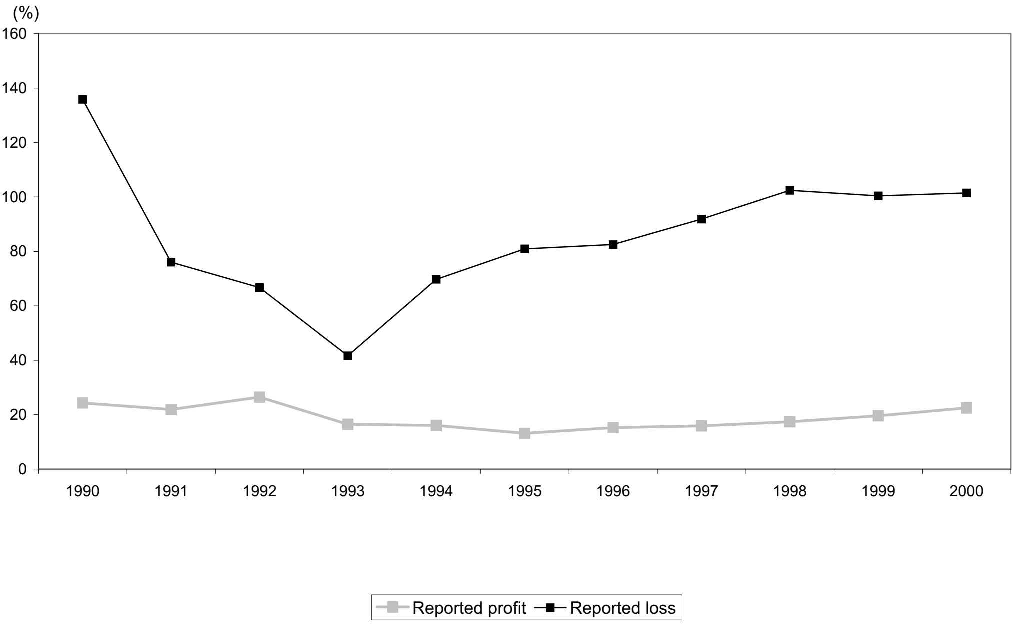

FIGURE 2. Reported profit versus reported loss.
This figure presents the difference in analysts' accuracy of estimation when we consider loss and non-loss firms. A median consensus forecast error is categorised as a reported loss, if the firm reported a loss per share for the period the forecast was issued and if the firm reported a profit per share the consensus forecast error is categorised as a reported profit.

Each observation in the I/B/E/S file has a Sector-Industry-Group (SIG) code. Using these I/B/E/S identified SIG codes, I group the Nordic companies in eleven industries. The median forecast error for the eleven different industries, for the whole investigated period, is exhibited in figure 3. The industry with the largest median consensus error is Transportation followed by Technology. Looking more closely on Transportation, the analyst forecasts issued on Norwegian Transportation firms, account for half of the forecasts in the sector. The median consensus error on Norwegian Transportation firms is 40%, whilst e.g. the median consensus error on Finnish Transportation firms is 24%. Health Care and Public Utilities have the smallest median consensus forecast errors of the eleven industries in the whole sample.

3. METHODOLOGY

3.1. Estimation error

The estimation error is expressed as the median consensus forecast minus the actual reported number scaled with the reported number in absolute terms:

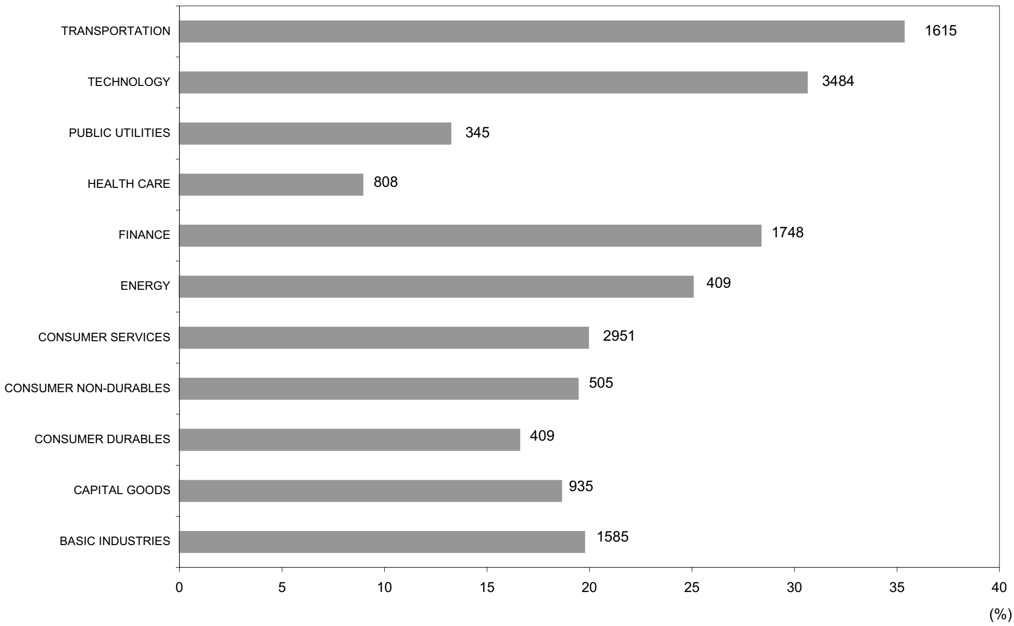

FIGURE 3. Consensus Forecast Errors per Industry.
I/B/E/S recognises eleven industry categories. Every observation in the dataset is assigned to one Sector-Industry-Group category. A median consensus forecast error is calculated for each industry and presented in the figure. The number of observations is shown for each industry at the tip of the bar.

$$EE_{it} = \frac{(E_{it} - A_{it})}{|A_{it}|}$$

An absolute number in the denominator is used to allow for negative earnings. EE_{it} equals the consensus forecast error for firm *i* at time *t,* while E_{it} equals the median consensus forecast for firm *i* at time *t* and A_{it} equals the reported number for firm *i* at time *t*. In the literature, there are contradicting views of what should be used as the denominator. A commonly used denominator is the stock price, e.g. Lim (2001). However, I argue that scaling the estimation error with the share price forms a bias in the data, as the denominator is then larger for high Price-to-Earnings shares and relatively lower for low P/E shares. Rephrased this implies relatively lower estimation errors for high P/E stocks and relatively higher estimation errors for low P/E stocks, ceteris paribus.

The P/E effect on the forecast error scaled by its stock price is demonstrated using a numeric example. Consider the two companies Nokia and Outokumpu. The firms' P/E ratios at

TABLE 2. Calculation of Consensus Forecast Errors.
This table shows an example of how the forecast error differs depending on which denominator is used.

	Nokia	Outokumpu
Consensus forecast - 2000	0.76	2.14
Reported EPS - 2000	0.84	2.38
Stock price - 1999 year-end	45	14.05
Stock price - 2000 year-end	47.5	8.05
P/E-ratio - 2000 year-end	56.5	3.4
As denominator	Forecast error	
Reported number	-10 %	-10 %
Stock price	-0.2 %	-1.7 %

year-end 2000 were 56.5 and 3.4 respectively. Hypothetically, consider that if both firms reported annual earnings of 10% above the consensus forecast. How does the scaled forecast error differ depending on which factor we scale it with, actual earnings or last period's share price? Table 2 exhibit large differences between the two forecast errors, if we scale the forecast error by last period's share price.

Another argument for using the actual EPS in the denominator is that although the forecast error increases as the denominator moves towards zero the estimate itself should also move towards zero simultaneously (given that the analysts know their trade). Rephrased, the EPS is only a scaled measure of the Net result and therefore it should not create outliers although the reported EPS is near zero. One drawback though exists, 156 observations where reported EPS is zero were dropped, as the estimation error equations could not be solved. Furthermore, the methodology used to calculate the consensus forecast error could create outliers, however as already stated before I have excluded all observations in the tail 2.5 percent of my dependent variable.

3.2. Earnings paths

It is quite intuitive that the relative change in earnings per share impacts the accuracy of estimation, as it does for the most simple time-series models, where the estimate of earnings at time *t+1* equal to the earnings at time *t*. If analysts utilize the first derivative, or the annual change of the earnings per share, it implies that the analysts expect no change in next year's earnings. Rephrased, the analysts' expected growth in earnings is zero.

Abarbanell and Bernard (1992) and Espahbodi et al. (2001) have measured analysts' reaction to changes in earnings in terms of the first derivative of the reported earnings. Espahbodi et al. examined the relationship between analysts' forecast errors and past changes in earnings per share to determine if analysts overreact to the information in earnings. The model is presented below,

$$ERR_t = \gamma + \delta_1 CEPS_{t-1} + \delta_2 RET_{t-1} + \varepsilon,$$

where ERR_t is the forecast error and calculated as follows: $ERR_t = (A_t - F_t) / P_t$, where A_t is the reported earnings per share and F_t is the forecast corresponding to the reported number. The forecast error is scaled with the stock price at beginning of year t, P_t. $CEPS_t$ correspond to an one-year lagged annual change in the reported earnings per share or the first derivative and calculated as $CEPS_t = (A_t - A_{t-1}) / P_t$. RET_{t-1} is the compounded 12-month stock return at the end of the previous year.

Espahbodi et al. (2001) found slight evidence of overreaction to earnings information for bankruptcy firms, i.e. the estimated δ_1 was significantly negative in some cases. This is contradicting to the findings of Abarbanell and Bernard (1992) who determined an underreaction to recent earnings information. This study continues in the same tracks by testing a slightly modified Espahbodi et al. (2001) model on the Nordic dataset. What Espahbodi et al. (2001) tested was a lagged first derivative of reported earnings per share against the analysts' accuracy of estimation. The hypothesised analysts' overreaction to earnings information is derived from the results presented by Espahbodi et al. (2001). The modified first derivative of reported earnings per share model is presented below.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 1stD_{it-1} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

$1stD_{it-1}$ is the first derivative of the earnings per share for firm i at time t, calculated as $1stD_{it} = (EPS_{it} - EPS_{it-1}) / |EPS_{it-1}|$. Which corresponds to the $CEPS_{t-1}$ variable in the Espahbodi et al. (2001) model. LPS_{it} is a dummy variable that gets the value 1 if the firm reported a loss per share and to capture a possible time trend in the dataset, variable $YEAR$ is included. $DIND$ is the industry dummy for firm i and RET_{it} is the industry prior half-year return for firm i at time t.

In this study I further investigate the change in past reported earnings per share and the analysts' forecast error by investigating the firm's reported earnings paths. Let us assume that the analysts base their forecasts on last year's earnings and earnings growth. I.e. the current period's growth forecast is formed in the light of last year's growth. Therefore, I put forward a hypothesis that the trend in reported earnings, or earnings path, impacts the accuracy of estimation. Mathematically the change in earnings trend can be expressed as the second derivative, also capturing the direction of the change in trends.

$$2ndD_{it} = \frac{1stD_{it} - 1stD_{it-1}}{1stD_{it-1}}$$ [7]

The absolute value is used in the denominators to allow for negative values. The hypothesised relation between the second derivative of reported earnings per share and the estimation error is illustrated in figure 4. The rationale is that analysts overweight the information in past earnings and earnings growth and therefore underestimate the change in earnings. If there is a downward shift in the reported earnings per share trend, i.e. the second derivative is negative, the consensus forecast error is likely to be positive. The same logic applies if there is an upward shift in the trend of reported earnings, i.e. the second derivative is positive, the consensus forecast error is likely to be negative. The relation of the consensus forecast error and the second derivative should therefore be negative.

3.3. The analysts' earnings path model

I conduct a cross-sectional regression of median consensus forecast errors on changes in firm's earnings paths. The sample consists of earnings for Nordic companies during 1990 to 2000. The hypothesis is that in the case of a null second derivative, i.e. the trend in earnings is unchanged, the estimation error is smaller than when there is a change in the earnings path. I also hypothesise that the direction in the change in earnings trend, impact the direction of the

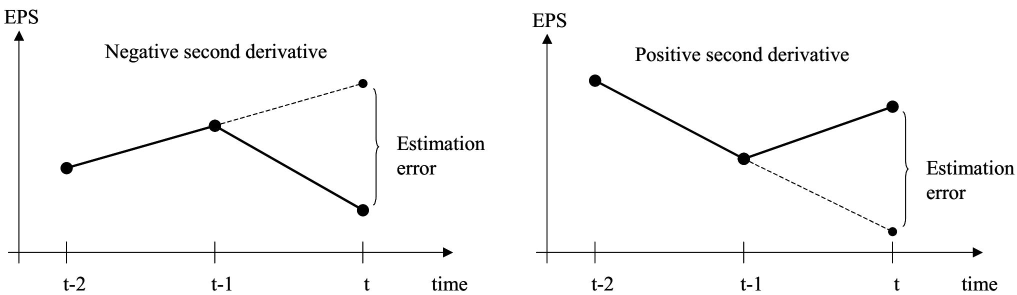

FIGURE 4. Second Derivative and the Consensus Forecast.
These two figures show the hypothesised relationship between the second derivative of earnings per share and the consensus forecast error. In the first figure the second derivative is negative and we can expect that the estimation error will be positive. The second figure shows the case of a positive second derivative. The same logic applies and hence, we expect a negative estimation error.

7 More formally $2ndD_{it} = \frac{((EPS_{it} - EPS_{it-1}) / |EPS_{it-1}|) - ((EPS_{it-1} - EPS_{it-2}) / |EPS_{it-2}|)}{|(EPS_{it-1} - EPS_{it-2}) / EPS_{it-2}|}$

consensus forecast error. Therefore I relate the second derivative (2ndD) to the consensus estimation error. Further a dummy variable (LPS) is included for companies that report loss per share to capture the perceived uncertainty around loss-making firms, see e.g. Das (1998). The model put forward for the analysis is hence as follows:

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 2ndD_{it} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

$2ndD_{it}$ is the second derivative of the earnings per share for firm i at time t. LPS_{it} is a dummy variable that gets the value 1 if the firm reported a loss per share. *YEAR* is a variable that captures a plausible time trend in the dataset and *DIND* is the industry dummy for firm i. RET_{it} is the industry's past half-year return for firm i at time t. Chopra (1998) showed that the state of the economy has an impact on analysts' accuracy of estimation. To take into account the state of the industry the covered firm acts in, an industry specific return variable is included as a proxy. The variable is calculated on a past six-month basis[8].

4. EMPIRICAL RESULTS

The empirical results are divided into two separate sections. First, results for regressions made on the Nordic data are presented. Anecdotal evidence suggests that international investors and especially US based investors tend to bunch the four Nordic countries together and treat it as a single market in their investment decisions. The next section presents the results derived for the Swedish market. Sweden is presented in more detail, as it is the largest Nordic stock market. The Stockholm Stock Exchange can be considered as the most international, from an equity research perspective, of the Nordic exchanges. The rationale is that most of the non-domestic brokerage firms with a Nordic presence have their Nordic head quarters in Stockholm or follow all four Nordic markets out of Stockholm.

4.1. Nordic market

The number of consensus forecasts for Nordic companies amounted to 14,794 observations, during 1990 to 2000. In the beginning of the time period the Nordic region experienced a quite severe downturn in the economy, whilst it turned in the mid 90's and then experienced surging share prices across the exchanges until the peak in 2000.

8 Jegadeesh and Titman (1993) present a profitable momentum strategy that buys past six-month winners (stocks in the top decile) and short the loser stocks (stock in the bottom decile). In other words they show that a momentum exists over a six-month period. If momentum in stock return impact investors, it would be natural to assume that the same time pattern applies as for financial analysts.

Table 3. First derivative regressions on the Nordic Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus estimation errors on firm's first derivative of earnings per share, between 1990 and 2000 for Nordic firms. (EE) is the consensus forecast error. (1stD) is the one-year lagged first derivative variable, or annual change in the forecasted firm's reported earnings per share. The following variables are control variables and not reported in the table. (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. (YEAR) is included in the regression to capture a plausible time trend. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 1stD_{it-1} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
1stD	0.000	0.000	0.001	0.001	-0.000
	(0.063)	(0.296)	(3.235)***	(3.935)***	(-0.528)

***significant at 1% level ** 5%, * 10%

As Espahbodi et al. (2001) I regress the annual change in past earnings or the one-year lagged first derivative of the reported earnings per share. When interpreting the results in table 3 it is important to remember the methodology used in this study to calculate the forecast error. A positive (negative) estimate for β_1 indicates overreaction (underreaction) to the prior year's earnings change. There is slight evidence of overreaction for consensus forecasts issued in Q3 and Q4 during the reported year. Espahbodi et al. (2001) also presented indications of analysts' overreaction to recent changes in earnings per share.

The main focus of this study is however to determine if changes in reported earnings paths impact the consensus forecast error. As prior research has determined the past changes in reported earnings per share impact the forecast error in terms of over- or underreaction. To test this hypothesis I have regressed the second derivative of past earnings per share against the consensus forecast error.

As hypothesised, the results displayed in table 4 confirm that the second derivative of the annual earnings per share impacts the analysts' accuracy of estimation. The evidence suggests that financial analysts tend to overweight past earnings information. The coefficient for the second derivative (2ndD) is negative and statistically significant. Thus, it appears that analysts tend to be caught off-guard when there is a change in the firm's reported earnings path and the direction of the change in earnings path impacts the direction of the consensus forecast error.

Table 4. Second derivative regressions on the Nordic Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's earnings paths, between 1990 and 2000 for Nordic firms. (EE) is the consensus estimation error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. (YEAR) is included in the regression to capture a plausible time trend. (YEAR) and (DIND) are not presented in the table. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 2ndD_{it} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j{}_{it} + \hat{\varepsilon}_t$$

	CONSTANT	2ndD	LPS	RET
Cluster 5	0.035	-0.002	0.393	0.096
(n=3119)	(-0.620)	(-5.184)***	(10.85)***	(1.204)
Cluster 4	0.378	-0.001	0.597	-0.211
(n=3490)	(4.439)***	(-2.879)***	(12.65)***	(-1.763)*
Cluster 3	0.557	-0.002	0.919	-0.363
(n=3453)	(4.737)***	(-2.524)**	(14.67)***	(-1.994)**
Cluster 2	0.480	-0.005	1.336	-0.041
(n=3106)	(3.071)***	(-4.833)***	(14.17)***	(-0.168)
Cluster 1	0.493	-0.004	1.648	-0.591
(n=1626)	(1.897)*	(-2.829)***	(10.03)***	(-1.900)*

***significant at 1% level, ** 5%, * 10% - n= number of observations

I also include a dummy variable (LPS) that captures a loss firm effect. The results are consistent with the hypothesised positive relation between the forecast error and the loss per share dummy. This is also consistent with prior research that documents a higher uncertainty for loss making firms than non-loss making firms, see e.g. Das (1998).

Chopra (1998) documented a relation between the analysts' accuracy of estimation and the state of the economy. He found that the forecast error increases in times of a downturn in the macro economic environment. Hence, as a proxy for the state of the industry, I have included the historical stock return of the industry in which the firm operates. The industry return (RET) variable is not statistically significant through the different clusters, although clusters 1, 3 and 4 show a negative and a weak significant relation with the consensus forecast error. This is in line with the hypothesised relation that bull markets are associated with greater accuracy in analysts' estimates.

There is little multicollinearity between the variables in the regression model. One case of high multicollinearity though occurs. The year variable and the return variable show a correlation of 0.61. Other correlations between variables are less than 0.15.

In order to make my results comparable with earlier research I have examined the Nordic sample again while using the same methodology as e.g. Lim (2001), i.e. scaling the consensus forecast error by the last period's share price. There are though problems with the methodology, which were pointed out in section 3.1. The results are presented in Appendix A. The results are similar to the original results, although statistically weaker. The original sample was reduced, as I had to drop those consensus forecasts on firms that do not show in the Datastream file.

4.2. Swedish market

The number of consensus forecasts in the Swedish dataset amount to 5,591 observations, provided by some 70 brokerage firms for over 350 companies. I analyse the Swedish market in a separate regression, as it is the largest in the Nordic region. Results on the Danish, Finnish and Norwegian markets are presented in Appendix B. The results are for the most part in line with the regression on the Swedish market.

TABLE 5. First derivative regressions on the Swedish Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus estimation errors on firm's first derivative of earnings per share, between 1990 and 2000 for Swedish firms. (EE) is the consensus forecast error. (1stD) is the one-year lagged first derivative variable, or annual change in the forecasted firm's reported earnings per share. The following variables are control variables and not reported in the table. (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. (YEAR) is included in the regression to capture a plausible time trend. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 1stD_{it-1} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
1stD	-0.001	0.000	0.009	0.000	0.004
	(-0.264)	(0.135)	(2.391)**	(0.080)	(1.974)**

**significant at 1% level, * 5%, * 10%

TABLE 6. Second derivative regressions on the Swedish Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus estimation errors on firm's earnings paths, between 1990 and 2000 for Swedish firms. (EE) is the consensus forecast error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. (YEAR) is included in the regression to capture a plausible time trend. (YEAR) and (DIND) are not presented in the table. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 2ndD_{it} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	CONSTANT	2ndD	LPS	RET
Cluster 5	-0.194	-0.002	0.400	0.189
(n=1106)	(-1.832)*	(-3.813)***	(6.328)***	(1.354)
Cluster 4	0.314	-0.003	0.542	-0.131
(n=1289)	(2.481)**	(-3.197)***	(8.568)***	(-0.778)
Cluster 3	0.405	-0.003	0.959	-0.273
(n=1307)	(2.178)**	(-2.955)***	(11.66)***	(-1.011)
Cluster 2	0.608	-0.003	1.469	-0.162
(n=1200)	(2.450)**	(-3.108)***	(12.57)***	(-0.438)
Cluster 1	-0.415	-0.003	1.607	0.462
(n=689)	(-0.921)	(-2.216)**	(8.329)***	(0.892)

***significant at 1% level, ** 5%, * 10% - n= number of observations

As for the Nordic market I regress the annual change in past earnings or the one-year lagged first derivative of the reported earnings per share. A positive (negative) estimate for β_1 indicates overreaction (underreaction) to the prior year's earnings change. There is slight evidence of overreaction to prior reported earnings for consensus forecasts issued in Q3 during the reported year and in Q1 the next year when the annual report is presented.

The results for the Swedish market are as robust as the results for the Nordic market. The second derivative of the firm's earnings per share confirms a strong negative relation to the consensus forecast error, as hypothesised. In other words, analysts tend to form their forecasts in the context of past earnings trends. Therefore analysts misinterpret future possible changes that affect the trend when forming their forecasts. To further test the robustness of the results, the sample on the Swedish market was divided into two subgroups. The first group consisting of forecasts issued between 1990 and 1995 and the second group including forecasts from 1996 to 2000. The results from the two sub groups support the results from the whole Swedish sample. The sub group results are presented in Appendix C.

The loss-effect dummy variable gave the same results as in the regression on the Nordic market. I.e. there is a strong positive relation between (LPS) and the consensus forecast error. The stock return variable in the regression (RET) revealed no significant relation with the consensus forecast error on the Swedish market. I.e. there appears not to be a relation between the industry performance and the analysts' accuracy of estimation on the Swedish market. This is in contrast to the finding of Chopra (1998), who determined that analysts are caught off-guard by a downturn in the macro economic environment.

5. SUMMARY AND CONCLUSIONS

This study investigates how changes in reported earnings influence the financial analysts' accuracy of estimation. In other words, how analysts utilize past financial statement information to form their future expectations for the firms they cover. Prior research has investigated how the change in past earnings, or the first derivative of the reported earnings per share, impacts the forecast error. The results are somewhat contradictory and support both overreaction and underreaction to the prior year's earnings change. Using data for the Nordic markets (1990–2000) I present evidence of analysts overreacting to past change in earnings, consistent with the results reported by Espahbodi et al. (2001). Further, Chopra (1998) found that the macro economic environment affects the accuracy of estimation. However, in this study the industry stock return is used as a proxy for the state of the industry, which does not appear to have an effect on the forecast error.

The key hypothesis in this paper is that the financial analysts' accuracy of estimation is affected by changes in reported earnings paths. As prior research has shown that the analysts overreact or underreact to recent changes in earnings, this study establish a link between the direction of earnings paths and the financial analysts' overreaction / underreaction. Results from the tests show that the sign of the second derivative impacts the direction of the consensus forecast error. Implying that analysts overweight past earnings information as they overreact or underreact to recent earnings information depending on the direction of the shift in earnings paths. Rephrased, financial analysts are likely to fall behind the curve in case of a shift in earnings paths. As financial analysts tend to overweight past earnings information it implies that when the true estimation model require more weight on other information than past earnings, analysts are likely to estimate with less accuracy. ■

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APPENDIX A

TABLE 7. First derivative regressions on the Nordic Market 1990–2000.

This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus estimation errors on firm's first derivative of earnings per share, between 1990 and 2000 for Nordic firms. (EE) is the consensus forecast error. (1stD) is the one-year lagged first derivative variable, or annual change in the forecasted firm's reported earnings per share. The following variables are control variables and not reported in the table. (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. (YEAR) is included in the regression to capture a plausible time trend. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 1stD_{it-1} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
1stD	0.000	0.003	-0.057	-0.014	0.004
	(0.260)	(0.178)	(-1.502)	(-1.223)	(0.702)

**significant at 1% level, * 5%, * 10%

TABLE 8. Second derivative regressions on the Nordic Market 1990–2000.

This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's earnings paths, between 1990 and 2000 for Nordic firms. (EE) is the consensus estimation error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. (YEAR) is included in the regression to capture a plausible time trend. (YEAR) and (DIND) are not presented in the table. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 2ndD_{it} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	CONSTANT	2ndD	LPS	RET
Cluster 5	-0.013	-0.001	0.035	0.002
(n=1248)	(-1.206)	(-1.833)*	(6.306)***	(0.117)
Cluster 4	-0.004	-0.001	0.069	-0.014
(n=1365)	(-0.358)	(-1.664)*	(8.842)***	(-1.076)
Cluster 3	0.013	-0.000	0.123	-0.043
(n=1418)	(0.744)	(-1.705)*	(9.754)***	(-1.702)*
Cluster 2	0.018	-0.000	0.131	-0.045
(n=1349)	(0.992)	(-1.860)*	(10.45)***	(-1.808)*
Cluster 1	0.049	-0.001	0.159	-0.086
(n=1055)	(1.668)*	(-2.881)***	(7.284)***	(-3.406)**

***significant at 1% level, ** 5%, * 10% - n= number of observations

APPENDIX B

TABLE 9. First derivative regressions on the Danish Market 1990–2000.

This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's first derivative of earnings per share, between 1990 and 2000 for Danish firms. (EE) is the consensus forecast error. (1stD) is the one-year lagged first derivative variable, or annual change in the forecasted firm's reported earnings per share. The following variables are control variables and not reported in the table. (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. (YEAR) is included in the regression to capture a plausible time trend. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 1stD_{it-1} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
1stD	0.030	0.004	0.025	0.004	-0.003
	(2.099)**	(0.396)	(3.006)***	(0.810)	(-0.974)

***significant at 1% level, ** 5%, * 10%

TABLE 10. Second derivative regressions on the Danish Market 1990–2000.

This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's earnings paths, between 1990 and 2000 for Danish firms. (EE) is the consensus forecast error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. (YEAR) is included in the regression to capture a plausible time trend. (YEAR) and (DIND) are not presented in the table. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 2ndD_{it} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	CONSTANT	2ndD	LPS	RET
Cluster 5	0.092	-0.003	0.310	0.003
(n=703)	(0.780)	(-2.218)**	(4.375)***	(0.017)
Cluster 4	0.362	-0.001	0.571	-0.323
(n=793)	(2.328)**	(-2.024)**	(6.391)***	(-1.376)
Cluster 3	0.954	-0.001	0.686	-0.590
(n=816)	(4.116)***	(-1.109)	(6.051)***	(-1.468)
Cluster 2	0.559	-0.001	1.273	0.083
(n=691)	(1.820)*	(-1.335)	(7.970)***	(0.163)
Cluster 1	1.057	-0.001	1.129	-1.672
(n=254)	(2.364)**	(-0.874)	(5.118)***	(-2.604)***

***significant at 1% level, ** 5%, * 10% - n= number of observations

TABLE 11. First derivative regressions on the Finnish Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's first derivative of earnings per share, between 1990 and 2000 for Finnish firms. (EE) is the consensus forecast error. (1stD) is the one-year lagged first derivative variable, or annual change in the forecasted firm's reported earnings per share. The following variables are control variables and not reported in the table. (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. (YEAR) is included in the regression to capture a plausible time trend. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 1stD_{it-1} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
1stD	0.001	0.001	0.000	0.000	0.002
	(0.339)	(0.393)	(0.996)	(8.523)***	(1.275)

***significant at 1% level, ** 5%, * 10%

TABLE 12. Second derivative regressions on the Finnish Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's earnings paths, between 1990 and 2000 for Finnish firms. (EE) is the consensus forecast error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. (YEAR) is included in the regression to capture a plausible time trend. (YEAR) and (DIND) are not presented in the table. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 2ndD_{it} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j_{it} + \hat{\varepsilon}_t$$

	CONSTANT	2ndD	LPS	RET
Cluster 5	-0.093	-0.000	0.285	-0.010
(n=599)	(-1.163)	(-2.357)**	(7.233)***	(-0.087)
Cluster 4	-0.028	-0.001	0.438	-0.133
(n=677)	(-0.280)	(-2.211)**	(6.412)***	(-1.001)
Cluster 3	-0.034	-0.003	0.704	-0.024
(n=644)	(-0.198)	(-3.903)***	(8.925)***	(-0.098)
Cluster 2	0.218	-0.000	1.007	-0.238
(n=597)	(0.887)	(-0.945)	(7.842)***	(-0.637)
Cluster 1	0.630	-0.001	1.120	-1.890
(n=330)	(1.536)	(-0.793)	(5.186)***	(-3.136)***

***significant at 1% level, ** 5%, * 10% - n= number of observations

TABLE 13. First derivative regressions on the Norwegian Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's first derivative of earnings per share, between 1990 and 2000 for Norwegian firms. (EE) is the consensus forecast error. (1stD) is the one-year lagged first derivative variable, or annual change in the forecasted firm's reported earnings per share. The following variables are control variables and not reported in the table. (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. (YEAR) is included in the regression to capture a plausible time trend. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 1stD_{it-1} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j{}_{it} + \hat{\varepsilon}_t$$

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
1stD	-0.002	-0.001	0.000	0.000	-0.000
	(-0.714)	(-0.578)	(0.162)	(0.177)	(-0.356)

**significant at 1% level, * 5%, * 10%

TABLE 14. Second derivative regressions on the Norwegian Market 1990–2000.
This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's earnings paths, between 1990 and 2000 for Norwegian firms. (EE) is the consensus forecast error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in case the firm reports a loss per share, at time t. (DIND) represent a dummy for the industry in which the forecasted firm operates, it is included in order to take into account differences across industries. (YEAR) is included in the regression to capture a plausible time trend. (YEAR) and (DIND) are not presented in the table. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport.

$$EE_{it} = \hat{\beta}_0 + \hat{\beta}_1 2ndD_{it} + \hat{\beta}_2 LPS_{it} + \hat{\beta}_3 RET_{it} + \hat{\beta}_4 YEAR_t + \sum_{j=1}^{k} \hat{\beta}_j DIND^j{}_{it} + \hat{\varepsilon}_t$$

	CONSTANT	2ndD	LPS	RET
Cluster 5	-0.203	-0.003	0.529	0.251
(n=711)	(-1.789)*	(-3.269)***	(8.006)***	(1.456)
Cluster 4	0.484	-0.001	0.808	-0.191
(n=731)	(2.592)***	(-1.756)*	(7.910)***	(-0.687)
Cluster 3	0.467	-0.004	1.334	-0.219
(n=686)	(1.832)*	(-2.996)***	(7.612)***	(-0.489)
Cluster 2	0.367	-0.005	1.535	0.236
(n=618)	(0.876)	(-3.235)***	(6.612)***	(0.376)
Cluster 1	0.757	-0.006	2.096	-0.520
(n=353)	(1.577)	(-2.343)**	(5.541)***	(-0.685)

***significant at 1% level, ** 5%, * 10% - n= number of observations

APPENDIX C

TABLE 15. Second derivative regressions on the Swedish Market 1990–1995.

This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's earnings paths, between 1990 and 1995 for Swedish firms. (EE) is the consensus forecast error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in the case the firm a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

	CONSTANT	2ndD	LPS	RET
Cluster 5	-0.011	-0.003	0.351	0.019
(n=491)	(-0.074)	(-2.298)**	(4.356)***	(0.091)
Cluster 4	0.477	-0.009	0.459	-0.266
(n=506)	(2.297)**	(-2.562)**	(4.769)***	(-0.712)
Cluster 3	1.402	-0.011	0.752	-1.662
(n=511)	(3.588)***	(-2.863)***	(6.050)***	(-2.304)**
Cluster 2	1.634	-0.007	1.110	-1.198
(n=401)	(3.070)***	(-2.225)**	(5.959)***	(-1.108)
Cluster 1	1.390	-0.010	0.757	0.191
(n=98)	(1.788)*	(-1.838)*	(2.697)***	(0.303)

***significant at 1% level, ** 5%, * 10% - n= number of observations

TABLE 16. Second derivative regressions on the Swedish Market 1996–2000.

This table reports the estimated coefficients (t-statistics in parentheses) from yearly cross-sectional regressions on median consensus forecast errors on firm's earnings paths, between 1996 and 2000 for Swedish firms. (EE) is the consensus forecast error. (2ndD) is the second derivative variable, which is calculated as the second derivative on the forecasted firm's reported earnings per share in three consecutive years, (t–2, t–1 and t). (LPS) is a dummy variable in the case the firm a loss per share, at time t. (RET) is the prior half-year industry return of the forecasted firm's industry. The constant equals an industry dummy, Transport. The consensus forecasts are divided in clusters according to when the forecasts were issued. Cluster 1 consist of the oldest forecasts and hence, cluster 5 consist of forecasts issued just ahead of the reporting date.

	CONSTANT	2ndD	LPS	RET
Cluster 5	-0.524	-0.002	0.424	0.179
(n=615)	(-2.631)***	(-3.745)***	(4.158)***	(0.795)
Cluster 4	-0.009	-0.002	0.535	0.096
(n=783)	(-0.035)	(-2.738)***	(5.988)***	(0.347)
Cluster 3	-0.235	-0.002	1.045	0.193
(n=796)	(-0.584)	(-2.121)**	(9.203)***	(0.382)
Cluster 2	-0.008	-0.003	1.628	0.348
(n=799)	(-0.017)	(-2.249)**	(10.64)***	(0.636)
Cluster 1	-0.265	-0.003	1.702	0.168
(n=591)	(-0.413)	(-1.932)*	(7.757)***	(0.246)

***significant at 1% level, ** 5%, * 10% - n= number of observations