

Can Analysts Forecast Profit Warnings?

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Abstract

This paper examines if analysts can forecast profit warnings. Continuously processing the vast amount of new information, analysts should have a fair chance to detect that a firm's earnings drivers are moving away from expectations. To investigate the issue, a sample of 367 profit warnings from firms listed on the exchanges of Nasdaq OMX Nordic was collected. The profit warnings are from years 2005–2011 and include 98 positive warnings (upgrades to expectations) and 269 negative warnings (downgrades to expectations). Based on the analysis, analyst recommendations start to drift in the direction of the warning about 29 weeks before its publication. The results suggest that analysts have (at least some) forecasting ability – a quality which has been questioned by several recent papers.

Keywords: Analysts, disclosure, forecasting, profit warnings

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Introduction

This paper provides new evidence on the controversial question whether analysts have forecasting ability. The large market responses to profit warnings show that profit warnings tend to be surprises to the market and the question is if they are surprises also to the analysts.¹ As the financial industry employs an army of analysts to continuously process information and make fundamental analysis of firms, one would assume that analysts would have some success in forecasting profit warnings. The topic is interesting because analysts' forecasting ability has been questioned by several recent studies (Barniv et al., 2009 and 2010, Drake et al., 2011, and Bradshaw et al., 2012). Barniv et al. (2010), for example, find that in a time frame of 12 months, analysts' recommendations are negatively related to market adjusted stock returns in high investor participation countries.

On the other hand, previous research examining short time intervals (weeks) usually show that analysts' recommendations are useful in predicting stock returns. Especially studies capturing the abnormal returns following changes in recommendations provide convincing evidence that it is worthwhile to listen to the analysts (e.g. Stickel, 1995, Womack, 1996, and Barber et al., 2001). These studies, however, capture mainly the market reaction to the publication of the analyst's new view and thus do not necessarily tell much about the analysts' forecasting skills. Apart from the literature focusing on analysts' recommendations, evidence regarding analysts' forecasting ability can be sought from the studies examining analysts' earnings forecasts. Many studies find evidence that some analysts are better forecasters than others. Among other things, the analyst's employer (Clement, 1999, and Jacob et al., 2008), industry knowledge (Jacob et al., 1999, and Ramnath, 2002) physical closeness to the followed firm (Malloy, 2005) have been found to

affect the forecast accuracy positively. Although the forecast accuracy literature is interesting, and provides evidence that some analysts have an edge compared to other analysts, it usually measures the forecasting ability within the group of analysts. The forecasting ability is not benchmarked against the market or some other knowledge. Considering this, Bradshaw et al. (2012) provide interesting results testing analysts' forecasting ability against simple time-series models. As with the recent studies examining recommendations and stock returns during longer time intervals, the findings of Bradshaw et al. are not comforting for the analysts as their study concludes that simple time-series models often beat analysts' forecasts in accuracy.

To investigate if the analysts are able to forecast profit warnings, a sample of 367 profit warnings issued by firms listed on the markets of Nasdaq OMX Nordic was collected. The profit warnings were published in 2005-2011. Of the warnings, 98 were positive (upgrades of expectations) and 269 were negative (downgrades of expectations). The development of consensus recommendations was then examined for 32 weeks before and 20 weeks after the publication date of the warning. The results show that the recommendations for the two groups of firms start to drift apart about 29 weeks before the warning is published. Before the warning, the trends in the recommendations are in the direction of the warning, i.e. the recommendations decrease for firms with upcoming negative warnings and increase for firms with upcoming positive warnings. More specifically, one day before the warning, the mean recommendation for the positive warning firms exceeds the mean recommendation for the negative warning firms by 13%. The finding suggests that the analysts have some success in detecting that the firm's performance starts to deviate from its guidance before this fact is communicated to the market by the firm itself. This result persists when controlling for other factors possibly affecting analysts' recommendation levels. As expected, before the warning also the abnormal stock returns drifts in the direction of the analysts' recommendations.

¹ On a U.S. sample, for example, Bulkley and Herrerias (2005) report an abnormal return of -8.5% on the day of the (negative) profit warning which increases in magnitude to a minus of 21.7% during a 11-day window surrounding the profit warning. Alves et al. (2009) document a three-day window mean abnormal returns of -13.4% for a sample of 1357 (negative) profit warnings issued by European firms in 1997-2007.

This paper is organized as follows. In the next section evidence of analysts' forecasting ability is sought from previous research, where after the research question of this study is presented in section three. The data and method are presented in section four and the analysis and results are in section five. Section six concludes.

2. Recent Research Questions Analysts' Forecasting Ability

The search for investment value in analysts' recommendations has a history dating back to the 1930s (Womack, 1996). Even the most recent studies on the value of analysts' recommendations often include references to research from the beginning of the 1980s. Using an event study framework e.g. Stickel (1995), Womack (1996) and Ryan and Taffler (2006) have showed that the market adjusted abnormal returns is significantly positive for analysts' upgrades and significantly negative for their downgrades. In these studies, the magnitude of the abnormal returns is the biggest in the days just surrounding the recommendation change. For example, Womack (1996) reports abnormal returns of 3.0% and -4.7% for upgrades to buys and downgrades to sells in a three day event period around the recommendation change. After this period Womack documents additional abnormal returns for the next month (+2.4%) for upgrades and up to six months for downgrades (-9.1%). The evidence in these studies clearly show that analysts' recommendations are value relevant but it remains an open question whether this is due to the forecasting propensity of the recommendation. The narrow time frame between the recommendation change and the observed returns makes it likely that it is the recommendation change itself (and the brokerage's marketing of it to its clients) which drives the returns and not the forecasting ability of the analyst.

Adopting a portfolio approach, Barber et al. (2001) and Jegadeesh et al. (2004) find that the portfolios with the most recommended stocks outperform the portfolios with the least recom-

mended stocks.² In Barber et al. (2001) the abnormal returns only materialize with frequent (at least monthly) portfolio rebalancing. Again, due to the required frequent portfolio rebalancing, the returns are likely to be influenced by the news on the recommendation change and are maybe less due to the right predictions of the analyst. Jegadeesh et al. (2004) obtain significant market adjusted returns even when the portfolios are rebalanced every six months but they state that this is due to other reasons than analysts adding value. They suggest that recommendations are connected to returns because analysts happen to like stocks with characteristics known to generate positive abnormal returns such as high momentum stocks and value stocks. More recently, even bigger doubt has been raised regarding the forecasting ability of analysts as their recommendations have been found to correlate negatively with future stock returns (Barniv et al. 2009 and 2010, and Drake et al., 2011). While Barniv et al. (2009) find that the SEC enacted Regulation Fair Disclosure decreased the association between the recommendation level and future stock returns, the relation was still negative even after the new regulation. Barniv et al. (2010) find that in high investor participation countries, such as U.K, Sweden and Canada, the connection between the analyst recommendation level and future stock returns are negative in a time frame of one-year. The results of Drake et al. (2011) confirm the relationship found in the Barniv et al. papers; the present analyst recommendation level is negatively connected to the coming six-month abnormal returns. As stated in the papers (e.g. Barniv et al., 2010) the counterintuitive results between analysts' recommendations and future returns may be driven by analysts' incentives. Analysts working at large institutions arguably face incentives to help increase investment banking commissions (Lin and McNichols, 1998, and Michaely and Womack, 1999). It is generally also assumed that analysts are keen to keep good relations to the management of the

² In the case of Barber et al. (2001) the portfolio with the most recommended stocks earns an average annual abnormal gross return of 4.1% whereas the comparable figure of the sell portfolio is -4.9% (assuming daily rebalancing).

followed firms (Francis and Philbrick, 1993, Ke and Yu, 2006, and Libby et al., 2008) which may distort both recommendations and forecasts. To keep the management of the followed firm happy, Ke and Yu (2006), for example, observed that analysts tend to have an optimistic bias in the estimates in the beginning of the period and a pessimistic bias in the end of the period. Analysts constantly also face incentives to boost trading commissions which may make analyst estimates less accurate or lead to otherwise questionable practices from the investors' point of view (Hayes, 1998, and Baik et al., 2009).

While incentives may raise an opportunistic bias in the forecasts and recommendations, analysts may also get it wrong due to lacking skills. Although being professionals, analysts appear to neglect the known accrual anomaly in their earnings forecasts (Bradshaw et al., 2001). More peculiarly, analysts do not appear to base their recommendations on known and functioning valuation models but on inferior valuation heuristics such as the long term earnings growth and the price-to-earnings-to-growth ratio (Bradshaw, 2004, and Barniv et al., 2009). Bradshaw et al. (2012) provide new and interesting results testing analysts forecasting ability against random walk time-series models. As with the recent studies focusing on recommendations, the findings in Bradshaw et al. (2012) are not comforting for the analysts. According to their findings, analyst forecasts do not seem to consistently beat a random walk model EPS estimate in accuracy when the forecast horizon is two or three years. Only in the shorter forecasting periods (months) when there generally is management guidance available, analysts' forecasts beat the time-series forecasts in accuracy (Bradshaw et al., 2012).

Assuming that some analysts have showed forecasting ability, one would think this ability to extend over multiple periods. In line with this, Sinha et al. (1997) showed that forecast accuracy persisted over periods of time. Also Mikhail et al. (2004) find at least some degree of persistence in above average performing analysts. On the other hand, Hall and Tacon (2010) rank analysts based

on their forecast accuracy in three groups and do not find any statistically significant difference in the forecast accuracy between the most accurate and least accurate group in the year following the ranking. When examining the recommendations, Emery and Li (2009) noticed that the recommendations of the analysts being ranked as "Best on the Street" by the Wall Street Journal, performed significantly worse in the following year than the recommendations of non-stars. To sum it up, based on the previous literature the evidence supporting the claim that analyst have forecasting ability appear to be rather thin.

3. Research Question

Analysts' forecast ability has often been tested by comparing their earnings forecasts to the subsequently reported earnings by the firms to calculate forecast errors (e.g. Stickel, 1992, Lin and McNichols, 1998, Cowen et al., 2006, and Bradshaw et al., 2012). These studies usually test for how some characteristic affects the forecasting ability of analysts, such as reputation (Stickel, 1992) or employer (Lin and McNichols, 1998, and Cowen et al., 2006). Bradshaw et al. (2012) provide an exception comparing analysts' forecasts to simple time-series models and conclude that for longer forecasting horizons (years) the firms' past reported earnings predicts future earnings better than the analysts' forecasts. Analysts' forecasts materially beat time-series models only in periods (months) for which there usually is management guidance available. Convincing evidence in favor of analysts forecasting ability would be to detect that analysts see through too optimistic or too pessimistic management guidance and thus see the need that a profit warning should be issued by the analysed firm. However, the way management guidance is given varies considerably across firms regarding the time period it concerns as well as the levels of detail and exactness. It is impossible to use management guidance to create benchmarks to which analysts' forecasts could be compared. Therefore, this study builds on analyst recommendations,

which have been found to be based on analyst forecasts (e.g. Lustgarten and Tang, 2008). The focus on recommendations (and not the forecasts) is motivated also by several relatively recent studies questioning the value of these recommendations (e.g. Jegadeesh et al., 2004, and Barniv et al., 2010).

³ Profit warnings have been found to trigger large share price reactions (e.g. Bulkley and Hererías, 2005, and Alves et al., 2009), which means that they tend to be surprises to the market. Many firms operate in markets where information about the demand is published monthly or weekly and/or where the price development of major raw materials is fairly well known. Valuable information about the demand can also be collected from the analysed firm's clients, suppliers and competitors. When the analyst sums up the publicly available information, the dedicated analyst should have a fair chance to estimate the probability of having a profit warning waiting around the corner.

Can analysts forecast an upcoming profit warning before it is disclosed by the firm, is the research question of this study. It is assumed that an analyst noticing that the firm's fundamentals start to deviate from expectations will let this be reflected in the analyst's recommendation. At exactly what time point the analyst's conviction will show in the recommendation, is an open question. The fact that a high proportion of the profit warnings (especially the negative ones) tend to be published after the start of the fourth quarter of the financial year may be a sign that the managers of the firms are unwilling to change their guidance before they are absolute certain that it is necessary. In this case it is plausible that the analyst starts betting on the too negative (or positive) outlook already well before the quarterly report directly preceding the profit warning. It is even possible that the analyst

³ It would also have been somewhat difficult to draw conclusions based on earnings forecasts in the setting of this study as the sample is relatively small and the profit warnings occur in different time periods, i.e. some firms issue profit warnings early in the year whereas especially negative warnings tend to be published relatively close to the earnings announcement. Another problem potentially affecting the comparability of the two groups of firms issuing the warnings is the difference in the given management guidance which come in different forms -point, range, open-ended, or qualitative (e.g. Han and Tan, 2010).

is sceptical about the firm's yearly outlook already when it is stated for the first time. Evidence supporting the analyst forecasting power would be to detect a drift in recommendations in the direction of the warning well in advance of the profit warning date and finding that the firms upgrading their guidance have better recommendations than firms issuing downgrades.

4. Data and Methodology

The data on profit warnings is retrieved from Nasdaq OMX Nordic.⁴ The announcements of firms listed on the exchanges of Copenhagen, Helsinki, Iceland and Stockholm are reviewed on a daily basis to find the profit warnings. The Nasdaq OMX Nordic's rules⁵ states that a profit warnings should be issued when the "company reasonably expects that its financial result or financial position will deviate significantly from a forecast disclosed by the company and such deviation is price sensitive". The rules also require a profit warning to be issued when no management guidance has been given if the firm "detects significant upward or downward variations in the company's profit trends between reports which deviate from the impression of the company's position created by previously disclosed information". The search for the profit warnings to be used in this study extended from the start of 2005 to the end of 2011 and the sample formation is showed in table 1.

As analysts may have limited possibilities and low motivation to predict non-recurring items, profit warnings which on first glance appeared to be issued only due to this reason were neglected from start.⁶ The search ended up with a total of 836 profit warnings. The sample was down to 765 profit warnings when omitting warnings with conflicting or unclear news, for example a downgrade of the sales outlook but an upgrade of the profit

⁴ Nasdaq OMX Nordic is a part of the world's largest stock exchange company Nasdaq OMX Group Inc.

⁵ Nasdaq OMX Stockholm Rulebook for issuers 1 January, 2011, pp. 32–34.

⁶ Non-recurring items generally have low value-relevance thus making them less interesting for the analyst.

TABLE 1. Sample formation
The table reports the grounds on which profit warnings were dismissed from the sample.

INITIAL AMOUNT OF WARNINGS FOUND		836
Warnings that could not be classified or were due to non-recurring items	-71	765
Warnings from financial institutions	-82	683
Warnings from companies that had been delisted/could not be found	-136	547
Warnings from companies that lacked financial or price data	-55	492
Warnings for which the analyst consensus could not be calculated	- 125	367
AMOUNT OF USABLE WARNINGS		367

outlook, and warnings which on closer examination revealed to be due to only non-recurring items. Profit warnings from banks and financial institutions were neglected, leaving 683 warnings. After warnings from firms that had been delisted⁷ and warnings for firms with lacking data were left out, the sample was down to 492 profit warnings. From this an additional 125 warnings were omitted because of lacking analyst recommendation data prior to the warning, and the final sample of warnings was then down to 367.

Panel A in table 2 shows, not surprisingly, that the frequency of negative warnings was highest in the financial crisis years 2008 and 2009. The expectations were pushed through the floor during the crisis which in turn led to a high number of positive warnings in 2010 when the economic recovery took ground. The geographical distribution of the profit warnings is clearly skewed to Finland which is a pattern observed also in previous research.⁸ With a substantially bigger amount of companies listed in Sweden (289 companies) compared to Denmark (168) and Finland (123), Sweden is clearly underrepresented in the sample. As both the rules and economic circumstances in these countries are reasonably similar, there is no apparent explanation for the observed geographical distribution of the profit warnings. Based on

⁷ 82% of the profit warnings that were left out because of a delisting of the warning firm had been issued in the years 2005–2008. Many of these warnings had been issued by small firms and a merger to a bigger firm appeared to be the most common reason for the delisting.

⁸ When using a sample of profit warnings from 29 European countries, also Alves et al. (2009) reported a considerably higher number of warnings from Finland (46) compared to Sweden (15) and Denmark (16) although there were clearly less Finnish firms in their sample than firms from the two other Nordic countries.

a review of earnings announcements, it appears that the outlooks of the Finnish firms tend to be both more highlighted and more specific compared to their Swedish or Danish peers. A more quantitative and detailed guidance may lower the threshold for issuing a profit warning.⁹

Panel B in table 2 shows that the most profit warnings have been published by industrial and information technology firms. Also firms related to the consumer sector are well represented in the sample. Among the sectors that are responsible for the highest number of warnings, the negative and positive warnings are fairly consistently distributed. Only the sectors with relatively few warnings show distributions of positive and negative warnings which clearly deviate from the sample mean.

The analysis starts by checking if the upcoming profit warning is reflected on the analyst recommendation in the time period before the profit warning. Firms may revise or specify their outlook in the quarterly reports issued during the financial year. Based on the sample, profit warnings are issued about one month before the next earnings release and about two months after the preceding earnings release.¹⁰ Based on the issue months, it seems that firms delay the issuance of profit warnings towards the end of the year. A total of 179 warnings (49% of the sample) have publication dates after the end of the third quarter of the

⁹ In fact, many Swedish firms don't even include a clear outlook paragraph in their earnings reports which is almost always a part of the earnings release of a Finnish firm.

¹⁰ More exactly, the profit warning is published on average (median) 35 (30) days before the next and 62 (62) days after the previous quarterly or yearly financial report publication date. These publication times are almost exactly the same for both negative and positive profit warnings.

TABLE 2. The distribution of the profit warnings

The table reports the distributions of the profit warnings according to year and country (panel A.) as well as sector (panel B.) Profit warnings in which the outlook (or expectations) is upgraded are “positive” and profit warnings in which the outlook is downgraded are “negative”. The sectors are based on 2-digit GICS codes.

PANEL A. PROFIT WARNINGS ACCORDING TO YEAR AND COUNTRY								
Year	2005	2006	2007	2008	2009	2010	2011	Total
Finland	39	23	39	46	41	33	48	269
Sweden	4	3	9	11	6	7	13	53
Denmark	5	5	8	6	8	8	5	45
Total	48	31	56	63	55	48	66	367
Positive	35 %	32 %	27 %	10 %	18 %	52 %	23 %	27 %
Negative	65 %	68 %	73 %	90 %	82 %	48 %	77 %	73 %

PANEL B. PROFIT WARNINGS ACCORDING TO SECTOR							
Sector	All	of tot.	Positive	of sec.	Negative	of sec.	
Industrials	130	35 %	40	31 %	90	69 %	
Information Technology	69	19 %	17	25 %	52	75 %	
Materials	61	17 %	11	18 %	50	82 %	
Consumer Discretionary	53	14 %	13	25 %	40	75 %	
Consumer Staples	27	7 %	10	37 %	17	63 %	
Health Care	17	5 %	6	35 %	11	65 %	
Energy	6	2 %	0	0 %	6	100 %	
Utilities	2	1 %	0	0 %	2	100 %	
Telecom Services	2	1 %	1	50 %	1	50 %	
Total	367	100 %	98	27 %	269	73 %	

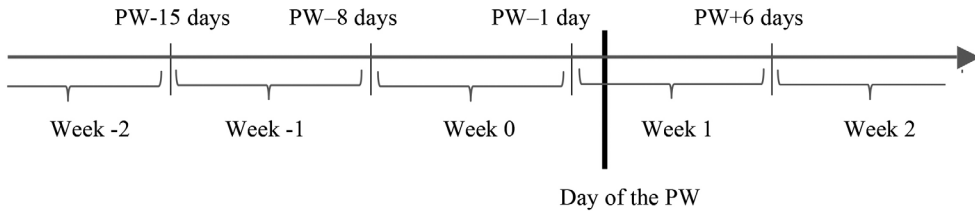
financial year and before the publication of the fourth quarter earnings. Skilful analysts should be able to detect the firms that are hoping for a miracle (or are overly conservative) well in advance. The increasing gap between the guidance and firm fundamentals may result in analyst up- and downgrades much before the profit warning actually materializes. In this study recommendations are therefore examined up to four quarters before the day of the profit warning.

The analyst recommendations are collected from the I/B/E/S detail database. Only recommendations with dates attached to them are used. In line with previous research, the I/B/E/S coding is reversed so that 5 is the best recommendation (strong buy) and 1 is the worst (strong sell). The

consensus recommendation for one firm is calculated on a weekly basis starting 32 weeks before and 20 weeks after the issuance of the profit warning. The weekly consensus is the average of the valid recommendations which are at most 26 weeks old at the calculation date. The weekly consensus observation closest before the profit warning is for one day preceding the profit warning and this time point is denoted as week 0. As the consensus recommendations are observed on a weekly basis, the consensus recommendation for the first week (week 1) after the profit warning is 6 days after the warning date. The timeline for the recommendations and the profit warning is illustrated in figure 1.

Evidence of analysts’ forecasting ability is

FIGURE 1. Timeline for the weekly consensus recommendations



sought first by analysing the change in the consensus recommendations 32 weeks before the profit warning day and secondly by comparing the consensus recommendations for the two groups of profit warnings at the time when the warning is published. Evidence of analysts' forecasting power is to observe a drift in the recommendations in the direction of the warning resulting in a difference in the two groups of recommendations just before the warning (i.e. for week 0). The positive warning firms should have a higher recommendation one day before the warning compared to the negative warning firms when other things affecting the recommendation level are controlled for. Based on the data used in this study, one should be able to generalise the findings of this study to other developed securities markets with high investor participation. The Nasdaq OMX Nordic is part of the world's biggest exchange company Nasdaq Group Inc. and the rules on when to issue profit warnings are comparable to other developed markets. The firms in the sample are mostly international firms having analysts following them in both international and domestic financial institutions.

Analyst recommendations have been found to be affected by several things which this study aims to control for. Jegadeesh et al. (2004) found that analysts like firms with good price and earnings momentum as well as firms with low book-to-market multiples. To control for these, cumulative abnormal stock return, return-on-assets and the book-to-market multiple are included in the regression explaining the recommendation level. Jegadeesh et al. also found that analysts are attracted to firms with high trading volume and this

is controlled for by firm size which may be positively connected to the recommendation level also due to other reasons.¹¹ Bradshaw (2004) showed that growth expectations attract analysts and thus a variable measuring growth is also included in the regression. Consequently, the regression used in this study to determine if the two groups of warnings are reflected on analyst recommendations, looks like follows:

$$REC_j = \beta_0 + \beta_1 DNEGPW_j + \beta_2 SIZE_j + \beta_3 CAR_j + \beta_4 ROA_j + \beta_5 BTM_j + \beta_6 GROWTH_j + \epsilon_j \quad (1)$$

Where for firm j , REC is the consensus recommendation a day before the profit warning date, $DNEGPW$ is a dummy valued 1 for negative profit warnings, $SIZE$ is the natural logarithm of the market value a day before the warning, CAR is the cumulative abnormal stock return for the time period starting 32 weeks before the warning and ending one day before the warning.¹² ROA is the return on assets in the four quarters closest to the warning, BTM is the book-to-market ratio a day before the warning and $GROWTH$ is the change in sales in the four quarters before the warning as compared to a year earlier and ϵ is the error term.

¹¹ The assumption is that analysts are more favorable towards bigger firms because it is more difficult for them to get attention from these firms' management and trading in liquid stocks generate better brokerage fees.

¹² For each firm, the market adjusted abnormal returns are calculated as the actual return minus the expected return. The expected return for each stock is based on 100-trading day computed betas for each observation. The beta estimation period ends 33 weeks before the profit warning. The abnormal returns are calculated using country specific value weighted indexes. The price data is retrieved from Datastream.

5. Empirical Findings

For the positive warning firms, the individual analyst recommendations range from 441 to 529 per week and on average the consensus recommendation for one firm and week is based on 4.8 analyst recommendations. For the negative warning firms the individual analyst recommendations range from 1196 to 1395 per week and the average weekly consensus is based on 4.5 individual recommendations.¹³ Panel A in table 3, shows that besides having a lower analyst recommendation, the negative warning firms are smaller, have higher sales growth but are lower valued based on book-to-market variable compared to the positive warning firms. In the 32 weeks before the warning the average cumulative abnormal return for the negative warning firms has been -13.3% whereas it has been 20.0% for the positive warning firms. The warning triggers a bigger reaction if it is negative which may indicate that the market places bigger trust in negative news than in positive ones. In the weeks 0 to 1 the average abnormal return for the firms issuing a negative warning is -9.3% and the comparable number for the positive warning firms is 5.5%. Based on the Pearson correlations reported in panel B in table 3, analysts appear to prefer bigger firms, lower book-to-market firms and firms with a higher return on assets which is in line with previous research. Somewhat surprisingly, the recommendation levels in the financial crisis years of 2008 and 2009 were not significantly different from the other years in the sample. Also the correlation between the recommendation level and the most important sectors in the sample was practically non-existent.

Figure 2 shows the development of the consensus recommendation around the profit warning. The data was analysed also prior to 32 weeks before the profit warning date, but during this

period no apparent difference in the consensus recommendations for the two groups was found. About 29 weeks before the profit warning date, the consensus recommendations for the two groups start to pull apart and shortly after this the cumulative abnormal stock returns for the two groups start to move in opposite directions.¹⁴ The development in the returns is in line with expectations and previous research showing that changes in analyst recommendations affect stock returns.¹⁵ In the 32 weeks preceding the profit warning the amount of negative and hold recommendations has grown by 90 recommendations (+50%) and the positive recommendations has decreased by 118 (-37%) for the firms issuing a negative warning.¹⁶ In the same time period, the amount of positive recommendations has increased by 47 recommendations (+49%) and the hold and negative recommendations have decreased by 17 or (-32%) for the positive profit warning firms.

The question now is if the noted difference in the recommendations for the positive- and negative warning firms is due to analysts realizing that the business starts to deviate from expectations. Regression (1) aims to control for other factors possibly explaining the difference between the two groups of warning firms. Somewhat counter-intuitively, CAR is used as an independent variable in the regression (and not as the dependent variable as in most research). The reason for this is the finding in Jegadeesh et al. (2004) showing that stock price momentum affects analysts' recommendations. In the regression all available sample observations through the years (2005-2011) are used to explain the consensus recommendation

¹⁴ The difference in the recommendation level between the two groups turns statistically significant 21 weeks before the profit warning both for the means ($p=0.036$, two-tailed t-test) and medians ($p=0.047$, two-tailed Wilcoxon Mann Whitney-test).

¹⁵ For example, on US data Womack's (1996) results indicate abnormal returns of up to 5.4% for the period including the three day event period and a month after it for upgrades to buys and negative return of 13.7% for the event period and a half a year after it. However, in this study it is impossible to say which comes first, the drift in stock returns for the two groups or the changes in recommendations.

¹⁶ In this study hold recommendations are treated in the same group as sell recommendations as it has been showed that market participants generally react to a hold through selling the stock (e.g. Barber et al., 2001, and Melmandier and Shanthikumar, 2007).

¹³ This is lower than the analyst following reported in studies of US data. For example, Bradshaw et al. (2012) report a mean of 7.6 analysts following on their big sample of US firms which was positively affected by their use of the I/B/E/S consensus file instead of the I/B/E/S detail file which was used in this study. If the I/B/E/S consensus file would have been used in this study the consensus recommendation would on average have been based on 8.1 recommendations (but would then also have included recommendations older than 26 weeks).

TABLE 3. Descriptive statistics and correlations
 The table reports descriptive statistics for the profit warning firms and Pearson correlations for selected variables. REC is the consensus recommendation at week 0. Recommendations give the number of individual recommendations. Mcap is the market capitalization one day before the PW. GROWTH (in sales) and return on assets (ROA) are calculated from the four quarters closest to the PW. BTM is the book-to-market ratio where the equity is taken from the quarter closest to the PW and the market price is from the day before the PW. CAR is the cumulative abnormal return for the periods (weeks) in the bracket. DNEGPW is a dummy valued 1 for the negative PWs and 0 for the positive PWs. SIZE is the natural logarithm of the Mcap. DCRISIS is a dummy variable valued 1 for the financial crisis years of 2008 and 2009. DIND and DIT are dummy variables valued 1 for the Industrials and Information Technology sectors, which are the two sectors representing most (54%) observations of the sample. The last column of panel A shows the difference in means and its statistical significance (t-test) in for the two groups of PWs (the statistical significance for the medians were also tested and their (Wilcoxon Mann-Whitney) significance levels were similar to the ones for the means (not reported)).

PANEL A. DESCRIPTIVE STATISTICS												
	ALL		SD	MIN	MAX	POSITIVE PW			NEGATIVE PW			DIFFERENCE IN MEANS
	Mean	Median				Mean	Median	Mean	Median	Mean	Median	
REC	3.192	3.308	0.776	1.000	5.000	3.491	3.500	3.083	3.000	0.408***		
Recommendations	4.539	4.000	3.540	1.000	25.000	4.790	4.000	4.451	4.000	0.339*		
Mcap (million USD)	2.259	517	8.891	7.246	85.837	2.904	978	2.022	408	882***		
GROWTH	0.117	0.106	0.242	-0.530	1.238	0.051	0.076	0.139	0.111	-0.088***		
ROA	0.055	0.049	0.103	-0.402	0.631	0.068	0.060	0.051	0.044	0.017		
BTM	0.825	0.581	1.112	0.037	16.022	0.541	0.404	0.926	0.696	-0.385***		
CAR [-32,0]	-0.049	-0.042	0.315	-1.570	0.830	0.200	0.194	-0.133	-0.131	0.333***		
CAR [0,1]	-0.053	-0.049	0.123	-0.772	0.747	0.055	0.057	-0.093	-0.077	0.148***		

PANEL B. PEARSON CORRELATIONS												
	REC	DNEGPW	SIZE	BTM	ROA	GROWTH	CAR[-32,0]	DCRISIS	DIND	DIT	DMAT	
DNEGPW	-0.233**	1.000										
SIZE	0.202**	-0.202**	1.000									
BTM	-0.196**	0.151**	-0.173**	1.000								
ROA	0.209**	-0.071	0.255**	-0.276**	1.000							
GROWTH	0.019	0.147***	-0.071	0.039	0.212***	1.000						
CAR[-32,0]	0.257**	-0.468**	0.241**	-0.317**	0.108*	-0.146***	1.000					
DCRISIS	-0.099	0.205**	0.024	0.172**	0.007	-0.137**	-0.120*	1.000				
DIND	0.102*	-0.068	-0.047	-0.090	-0.033	0.083	-0.007	-0.059	1.000			
DIT	-0.060	0.022	-0.188**	-0.085	0.107*	-0.090	0.014	-0.107*	-0.356**	1.000		
DMAT	-0.038	0.088	0.232**	0.276**	-0.190**	0.024	0.050	0.178**	-0.331**	-0.215**	1.000	

***, ** and * denotes two-tailed statistical significance at the 1%, 5% and 10% level, respectively.

just before the profit warning. The interest is on the dummy variable distinguishing between the two different warning types (DNEGPW).

Based on the regression results reported in table 4, the coefficient for the dummy for the negative profit warnings is negative and statistically significant ($p=0.018$). The negative warnings thus

seem to be preceded by lower analysts' recommendations. This evidence suggests that the difference in recommendations between the two groups pictured in figure 2 is the result of analysts' forecasting ability and not the result of other factors that may explain the recommendation level. All control variables get signs in line of expectations

FIGURE 2. Recommendations and returns for the two groups of profit warnings (PW)

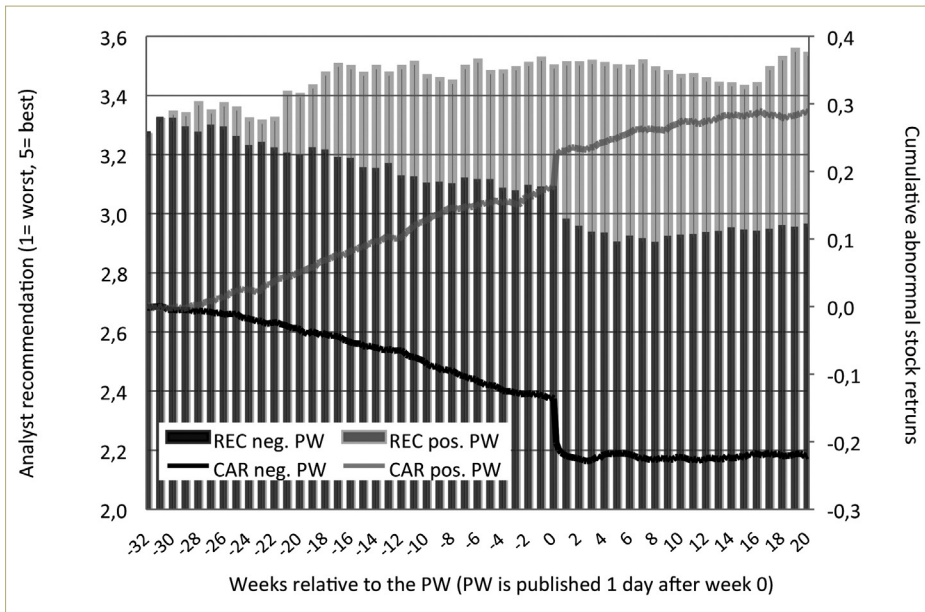


TABLE 4. Regression results

Table 4 reports the regression results of model (1). The dependent variable is the consensus recommendation for each observation (warning). DNEGPW is a dummy valued 1 for the negative profit warnings, SIZE is the natural logarithm of the market capitalization a day before the warning, CAR is the cumulative abnormal return for the 32 weeks before the warning, ROA is return on assets from the four quarters closest to the warning, BTM is the book-to-market variable calculated with the market price one day before the warning and the equity from the quarter closest to the warning, GROWTH is sales growth in the four quarters closest to the warning. Compared to the previous analysis the observations are down to 334 (from 367 in the analysis based on only REC and CAR) due to unavailable quarterly accounting information for 33 firms. The regression was also estimated without ROA and GROWTH allowing the use of all 367 observations which resulted in an increase in the magnitude (-0.309) and significance level ($p<0.01$) of DNEGPW.

VARIABLES	PREDICTED SIGN	COEFFICIENT	SE	T-VALUE	P-VALUE
Constant	?	2.739	0.342	8.003	0.000
DNEGPW	-	-0.253	0.106	-2.387	0.018
SIZE	+	0.048	0.025	1.899	0.058
CAR	+	0.327	0.158	2.073	0.039
ROA	+	1.006	0.449	2.241	0.026
BTM	-	-0.055	0.106	-1.428	0.154
GROWTH	+	0.089	0.185	0.484	0.629

$N=334, R^2= 0.127, F=7.952$

and stock return, ROA and size show at least some statistical significance. As expected, analysts like bigger firms, firms with higher ROA and firms with good share price momentum.¹⁷

The market reaction to profit warnings where the analysts got it wrong should be bigger than in the cases where they were right. This issue was investigated by regressing the cumulative return for the two weeks around the profit warning (0 to 1) on the consensus recommendation and the controlling variables size and the book-to-market ratio for the two samples. For the positive warning firms, the regression results (not reported) show no statistically significant connection to return around the warning.¹⁸ For the negative warning firms, the coefficient for the recommendation variable is -0.021 and is statistically significant ($p=0.025$), whereas the other variables are insignificant. According to this and as expected, the biggest disappointments result in the lowest returns surrounding the profit warning.

5.1. Robustness tests

The regression (1) was estimated also by including dummy variables to control for the sectors representing the most warnings (industrials, information technology, materials and consumer discretionary) as well as a dummy controlling for the financial crisis years of 2008 and 2009. Of these variables only consumer discretionary sector appeared to have a connection (negative) to the recommendation level. The dummy for the negative profit warnings remained statistically significant ($p=0.048$). An additional robustness test was performed by using the consensus estimates available from the I/B/E/S consensus file.¹⁹ In line with the main analysis, a day before the war-

ning, the consensus recommendation was lower for the negative profit warning firms (mean 3.103, median 3.143) compared to the positive warning firms (mean 3.498, median 3.600). When running regression (1) on this consensus data, the coefficient for the profit warning dummy again received a negative (-0.259) coefficient and showed high statistical significance ($p=0.005$).

6. Conclusion

Many previous studies have found that analysts' recommendations are value relevant in short time horizons. Recent research suggests that over longer periods (exceeding 6 months) analysts' recommendations are negatively associated with stock returns. The study of Bradshaw et al. (2012) also suggests that analysts' earnings forecasts have limited success in beating a simple time-series prediction model in accuracy. Studies making direct tests on analysts' forecasting ability relative to a specific value relevant event are scarce.

This study examined analysts' ability to forecast the occurrence of profit warnings. It was assumed that if an analyst thinks that a firm's business development does not correspond to the expectations, it will be reflected in the recommendation. The empirical analysis showed that analysts' recommendations start to move in the direction of the profit warning about 29 weeks before the warning is published. A day before the warning, the recommendations for the positive warning firms is on average 13% ($p<0.01$) higher than the recommendation for the negative warning firms. Thus, the results present evidence in line with analysts having (at least some) ability to forecast profit warnings. Regression analysis suggests that this conclusion persists also when controlling for other factors possibly affecting the recommendation levels.

¹⁷ When it comes to share price momentum it is difficult to say which comes first, the analyst liking or the stock returns because stock returns are influenced by changes in recommendations.

¹⁸ In addition to the coefficient only the size variable was significant at the 5%-level showing a negative connection to the return i.e. good news from smaller firms results in bigger share price reactions.

¹⁹ For the sample, the consensus recommendation a day before the profit warning is based on an average of 8.1 recommendations and thus almost double the amount (4.5) of timely recommendations obtained from the I/B/E/S detail database.

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