STOCKHOLM SCHOOL OF ECONOMICS
DEPARTMENT OF ECONOMICS
MASTER'S THESIS 2007

Hubris in the Stock Market?

- A Study of Financial Experts' Accuracy and Calibration -

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ABSTRACT
Financial experts issue buy and sell recommendations on stocks according to what they deem to be their fair value. The aim of this thesis is to examine the accuracy and calibration of financial experts. This is done by gathering and analysing data on the performance of financial experts and their level of confidence. We find evidence of overconfidence and (weak) evidence for the financial experts' performance being better than chance. We also find evidence for our hypothesis that financial experts issue relatively more buy than sell recommendations. Our findings also suggest that constructing a successful investment strategy based on these financial experts' recommendations can be difficult as their level of confidence is not really important for the outcome of their forecasts.

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ACKNOWLEDGEMENTS
We would like to thank our tutor, Magnus Johannesson, and our co-tutor, Patric Andersson, for devoting their time and effort to help us with our thesis. We are also grateful towards Per-Olov Edlund for advising us on our econometric analysis.

TABLE OF CONTENT

1 Introduction 2
1.1 Purpose 2
1.2 What we wish to accomplish 3
1.3 Outline 3
2 A review of previous studies 5
2.1 What constitutes an expert? 5
2.2 Performance, calibration and confidence among experts 5
2.3 Overconfidence 7
2.4 Economic implications and relevance 9
3 Hypotheses 11
4 Method 13
4.1 Sample companies 13
4.2 Sample financial experts 14
4.3 Sample limits 14
4.4 Sample time periods 14
4.5 Surveys 15
4.6 How accuracy was measured 16
4.7 Measures for the financial experts' confidence 16
5 Data 18
5.1 Historical data and recommendations 18
5.2 Respondents 18
5.3 Respondents' agreement 20
6 Empirical findings 22
6.1 Accuracy of the financial experts 22
6.2 Confidence adjusted precision in the analyst's forecasts 24
6.3 Calibration and overconfidence 25
6.4 Relatively more buy recommendations 27
6.5 Determinants of the financial experts performance 28
7 Discussion 30
8 Conclusions and final remarks 34
References 35
Appendix 1 38
Appendix 2 39
Appendix 3 40

1 Introduction

"I think that God in creating Man somewhat overestimated his ability."

Oscar Wilde

In an efficient market with rational investors and complete information, the valuation of a stock will reflect its fundamental value. The concept of fully efficient markets includes that all information is available to everyone and is handled rationally by the investors. It also implies that it typically does not matter which securities an investor chooses to invest in as they are all fairly priced in the sense that the price reflects the security's fundamental value given the market knowledge of the stock (Fama, 1970 & 1991). This would indicate that success in stock picking is more rationally attributed to luck than excellent skills in price setting of securities. However, there are empirical findings that suggest that the value of securities can deviate both substantially and repeatedly from the underlying fundamental value (Summers, 1986). Support for this can be given by the presence of bubbles, crashes and overreactions to positive and negative news.

It is on these markets, characterized by investors that are not fully rational and securities that do not reflect their fundamental value at all times, that experts are trying to give advice to investors regarding where they should place their investments. Financial experts try to give recommendations regarding which of the available securities that are undervalued or overvalued compared to what they deem to be the fundamental value of a company. In the light of the reasoning developed above we raise the question whether financial experts, in our case represented by investment banks, are able to make accurate recommendations on companies listed on the Stockholm Stock Exchange.

1.1 Purpose

By looking at the Stockholm Stock Exchange we will try to find out if financial experts are better than chance at predicting future stock prices. We will also study how confident financial experts are in their recommendations and whether or not they are

well calibrated in these forecasts. We will estimate the calibration by comparing the financial experts' level of confidence with the accuracy of their recommendations. Furthermore, we will investigate our suspicion that financial experts tend to issue relatively more buy than sell recommendations. In order to see if there are any potential differences over time we will look at two periods. Finally, we will analyse if there are any differences in forecasting ability among financial experts based in Sweden and those who have a foreign base.

1.2 What we wish to accomplish

The recommendations of financial experts, like the ones we have in our study, could on an aggregate level have an influence on financial markets, and could also affect the global economy. Therefore, the investigation of their recommendations, and also partially their decision making, is of interest from an economics perspective. Our thesis also relates to the growing academic field of behavioural finance and we hope to shed light on some issues discussed in that particular section of academic literature, with a focus on the concept of overconfidence[1]. It is also interesting from an individual investor's perspective as we will test whether or not it is good to listen to investment experts. Our paper will also contain elements that can be of interest from a financial economics perspective as potential evidence of overconfidence implies that economic agents might not be fully rational.

1.3 Outline

We have structured our thesis as follows. Chapter 2 will provide an analysis of previous studies on the subject at hand with a focus on financial experts' accuracy in predicting future stock prices and their level of calibration. In section 3 we will present our hypotheses that are based on the previous research. Moving on to our topic, we will discuss the methods employed in our thesis in chapter 4. In this section we will discuss

[1] Overconfidence can be defined as "the tendency to overestimate the precision of one's information" (Biais et al., 2005, p. 287).

the questionnaires used in our study, how we have chosen to measure confidence and how we measure the success ratio of the recommendations. Following the method section we will give a brief presentation of the data and its characteristics in chapter 5. The general results from our tests will be provided in chapter 6. To sum up we will discuss our results and finish off with some concluding remarks, implications of our findings and suggestions for further studies.

2 A review of previous studies

The research area concerned with overconfidence and calibration has received much attention as the field of behavioural finance has gained interest among researchers. Provided here is a summary of some of the research that we find interesting and have used as a base for our study. We will begin with a discussion about expertise, as the concept of experts is important for this area of research.

2.1 What constitutes an expert?

Expert performances are defined as performances that give a consistent superior result at a given task. Expertise has two major sources; talent that one is usually born with and deliberate practice. (Andersson, 2004)

The concept of deliberate practice has been a subject of interest in research (e.g. Ericsson et al. 1993). Therefore, a discussion about what distinguishes deliberate practice from "ordinary" practice can be useful. Deliberate practice is practicing with a focused goal in order to become better at a task. As support for the importance of deliberate practice it has been noted that 20 year old musicians that are considered to be experts have about 10 000 hours of practice while corresponding amateurs have about 2 000 hours of practice (Ericsson et al. 1993). Ericsson found further proof for the importance of deliberate practice when he practiced his own memory in a deliberate way. The conclusion that he drew from this was that the process of memorising is not intuitive but rather cognitive (Levitt and Dubner, 2006).

2.2 Performance, calibration and confidence among experts

Several research studies have pointed to similar conclusions: people are poorly calibrated when it comes to assigning probabilities to the occurrences of given events. People have a strong tendency to overestimate their own abilities (Lichtenstein et al. 1982). For

instance, people tend to be correct to a far lesser extent than predicted when they assigned a 100 percent probability of a correct forecast or estimate. The study by Lichtenstein et al. (1982) also found evidence for calibration being related to the difficulty of the task at hand. Two other studies conducted by Murphy (1983) and Keren and Varey (1984) concludes that calibration is dependent on the task at hand. Another study concluded that one of the few areas where superior calibration can be obtained is weather forecasting (Keren, 1985). The reason for this could be that determining the probability of the forecast's accuracy is part of the forecaster's job. Another study by Keren (1987) compared expert and laymen bridge players. The study examined how the two groups dealt with elements of uncertainty regarding the outcomes of the bridge games, and how well calibrated the two groups were at estimating the probabilities of these uncertain outcomes. The paper found strong support in favour of the hypothesis that the experts were much better calibrated than the laymen.

In a study by Törngren and Montgomery (2004) the authors asked a group of professional investors and a group of amateurs to predict the future stock prices of a number of stocks. Moreover, the two groups were asked to estimate the accuracy of both their own estimates and that of the other group. The results were not too encouraging for the experts. The group of amateurs was actually better at predicting the future stock prices than the group of experts. But not only that, the group of experts was actually worse than chance in their predictions. Both groups had predicted that the group of experts would have the higher accuracy but this was not the outcome of the study. One of the reasons for this, suggested by the authors, was that the experts processed too much information and therefore assigned too much value to information that was not particularly relevant. Both groups assigned a confidence level to their own predictions that they could not meet. Thus, they were both overconfident. In a study by Cowles (1933) financial experts made recommendations for stocks. However, the recommended stocks were actually outperformed by average stock performance, concluding that the experts did not have any superior forecasting abilities. De Bondt (1991) examined the performance of some 5400 stock index forecasts by economists. The forecast horizon was either seven or thirteen months and forecasts were conducted between 1952 and 1986. The outcome of the study was that the experts had little predictive power and the forecasts were therefore not useful for investment strategies. Lidén (2005) found that buy

and sell recommendations issued by Swedish news papers and business magazines during the years 1996 and 2000 yielded returns in line with the market return.

In a study conducted by Ericsson et al. (2005) the skills in the field of stock picking was tested on financial experts. The outcome of this study was that there in fact was evidence of stock picking skills. However, this was limited to given sectors and for a small number of companies. The rationale behind this finding, according to the authors, was that the financial experts had acquired skills in their respective fields and sectors through deliberate practice. Önkal et al. (2003) concluded that experts were usually better than amateurs at predicting foreign exchange fluctuations over one-day and one-week periods, even though many of the amateurs performed better than many of the experts.

It is also interesting to look at how financial experts perform relative to pure chance. This has been tested, using the "dartboard column" provided by Wall Street Journal, in which the stocks were selected by throwing darts at a stock list and selecting the stocks that the darts hit. These stocks' performance was tested against the performance of portfolio managers in Atkins and Sundali (1997) with the result that the experts outperformed the darts by a wide margin. The experts also outperformed five different market indices, but these results indicated weak statistical significance.

The studies discussed above give mixed results regarding the predictive power of experts, but the tendency seems to be that stock market experts have some difficulties in correctly forecasting stock price movements.

2.3 Overconfidence

When people estimate their own ability they are usually subject to wishful thinking, thus displaying overconfidence. This concept can be divided into two areas. The first area can be described by the example provided by Svenson (1981) on the respondents driving skills. The participants in the study were asked to asses their driving skills compared to the other participants. The outcome was that a majority of the participants considered themselves to be more skilled than the average participant. This "above average" version

of overconfidence in driving skills has been subject to criticism as the number of driving accidents is highly skewed. Support for this can be found in the fact that 80 percent of all drivers actually are involved in fewer accidents than the average driver. This indicates that a few car drivers are involved in many accidents (Gigerenzer, 2004). However, we will not examine this definition of overconfidence any further as we will focus on the area of miscalibration.

Overconfidence as a bias in calibration is well documented in academic literature (see Fischhoff, 1982; Ayton, 1998; Griffin and Brenner, 2004) and deserves some attention as this will be of importance for our study. Earlier studies tend to show that the calibration between predicted accuracy and realised accuracy is poor (Törngren and Montgomery, 1994). The tendency is for people to overestimate their own abilities, i.e. they tend to be overconfident. The level of calibration and overconfidence, however, seems to be somewhat dependent on the task. For instance, overconfidence can be found in business management settings (Aukutsionek and Belianin, 2001) but the experts in the bridge study discussed earlier (Keren, 1987) showed no signs of overconfidence and were very well calibrated. A possible explanation for the differences in experts' skills could be the simplicity versus complexity of the tasks at hand. Whereas bridge is a relatively simple task without too much random noise, stock markets are complex and subject to external factors that create disturbances and therefore affect the prognoses (Andersson, 2007).

The amount of information has been shown to be one source of overconfidence. The person making a forecast becomes more confident the more information he or she receives, even though the information might be irrelevant. An interesting note is that, according to Grove and Mehl (1996), professionals generally have a hard time outperforming laymen who use simple techniques and strategies. This could also indicate that professionals tend to use too much information and therefore miss out on information that really is essential. Even cultural differences and gender has been shown to contribute to the effect of overconfidence (Törngren and Montgomery, 1994). Bhandari and Deaves (2006) conclude in their article that highly educated males are most prone to display overconfidence in their own abilities.

The concept of overconfidence is important from an economics and finance perspective as it provides one possible explanation for why economic agents fail to act rationally

(Glaser et al., 2004). One important note to conclude the discussion about overconfidence in academic literature is that the way to measure overconfidence has been criticised. For instance, interval estimates, a rather common way to test for calibration and overconfidence, suffers from several shortcomings (Cesarini et al., 2006). The authors find that overconfidence is reduced by 60 percent when frequencies, rather than intervals, are used to test for overconfidence. Monetary incentives also help to mitigate the problem, but not significantly so. In the following section we will look at research on the importance of these concepts from an economics perspective.

2.4 Economic implications and relevance

One of the most striking impacts of overconfidence on the global economy is the influence it has on creating bubbles. The phenomenon of overconfidence has been argued to be a source of excessive trading, which certainly can affect individuals' financial health (Barber and Odean, 2000).

In a study by Dittrich et al. (2005) the authors test a number of investments strategies. The participants are given the task of coming up with an investment strategy of their own. Afterwards they were presented with alternative strategies, including an optimal strategy. A very interesting finding from the experiment was that the participants were actually more confident the further away their strategy was from the optimal strategy. Dittrich et al. (2005) give valuable indications for decision making. Investors place a high value on their own investments and are very reluctant to change their strategy. From a macroeconomic perspective, the authors draw the conclusion that house and car owners are often required to be insured, whereas no such demand is placed on investors for hedging their financial bets. This argument is interesting from an economic policy perspective and might explain one source of financial bubbles. This reasoning is extended in Scheinkman and Xiong (2003), where the authors present a model in which economic agents disagree upon the fundamental values of assets. In turn this leads to discrepancies in the asset prices assigned by the agents, resulting in bubbles in the asset market. The authors find evidence that overconfidence is the driving source behind these results indicating that overconfidence makes the agents behave in ways that are not

rational. In a recent study by Jaimovich and Rebelo (2006), the authors find evidence to support their theory that overconfidence actually can increase the volatility of the entire business cycle.

Even economists themselves tend to be overconfident. Anger (2006) concludes that economists fall victim to the same biases as everyone else and that these economics experts also are subject to overconfidence. This tendency is strengthened as economists working on public policy issues receive limited feedback from their suggestions. The conclusion that the author draws is not to stop listening to economists, but rather to be aware that they too are subject to overconfidence. Thus, simply following economists' advices without carefully evaluating them can have serious consequences.

However, not all research points to the possibly negative effects of overconfidence. Berg and Lein (2003) construct a model where beliefs diverge and the prices in the model are monotonic in beliefs. The outcome of the model, which is not based on rational beliefs, is that overconfidence among relatively uninformed traders actually leads to a Pareto-superior outcome. In their conclusion, Berg and Lein (2003) state that excessive trust in the ability of experts creates increased trading that improves liquidity at the same time as it lowers transaction costs. The article provides some evidence that overconfidence is not necessarily negative for society as a whole. However, overconfidence should probably best be seen as a double-edged sword and it seems to us that the academic literature tends to focus on its downsides.[2]

[2] Hammond et al. (1998) and Thaler (2000) have interesting points about overconfidence and similar biases, and their impact on human and managerial behaviour. Although not entirely relevant for our study, the interested reader is encouraged to refer to these articles for more insights.

3 Hypotheses

The previous studies on the accuracy of stock analysts' abilities to foresee future price movements seem to deliver rather negative results for the financial experts. However, one interesting issue with this is the time aspects used in these studies. For instance, Törngren and Montgomery (1994) use a horizon of only 30 days in their study of stock market experts and amateurs. 30 days is a rather short period of time, during which random noise can distort prices. Thus, we have chosen to set the horizon to whichever horizon the financial experts have set in their reports. This horizon varies from bank to bank with a minimum of 3 months and a maximum of 12 months. With this in mind, we believe that the financial experts actually could perform better than chance. Thus we formulate our first hypothesis as follows:

Hypothesis 1: Financial experts are better than chance at predicting movements on the stock markets.

Studies on overconfidence seem to find evidence of overconfidence among most experts that face random elements in their field of expertise. In contrast to the bridge players discussed in Keren (1987), our financial experts face different situations and random elements at all times and good calibration can be difficult to achieve. Furthermore, we expect that the financial experts tend to be overconfident rather than underconfident. Thus, we present our second hypothesis:

Hypothesis 2: Financial experts are overconfident in their forecasting abilities.

Finally, these financial experts could have hidden agendas to sell stock. The banks will probably sell more stock in a market with increasing prices of securities as this will make the public more positive towards the stock market. This might also affect the financial experts' level of confidence, or at least their perceived level of confidence. This will be discussed later on in our thesis, but for now, we formulate our final hypothesis as follows:

Hypothesis 3: Financial experts tend to issue relatively more buy recommendations.

These three hypotheses are the main interest of our thesis. We will also investigate related matters. For instance, we will investigate potential differences between the two chosen time periods. We will also look for potential differences between Swedish and foreign investment banks and their recommendations.

4 Method

In our study we used stock recommendations for a number of Swedish companies issued by Swedish as well as foreign investment banks. Furthermore, the recommendations were taken from two different time periods. When measuring the level of confidence in our sample of financial experts we have been inspired by Cowles study from 1933 on the forecasting ability of financial services companies. In his study he let three independent raters determine the level of confidence for each forecast instead of using the forecasters' own estimation.

The selection of investment banks and sample companies will be discussed below as well as the two time periods that we have chosen for our study. We will also present how the survey was conducted as well as a short description of how accuracy and confidence have been measured.

4.1 Sample companies

The 27 companies used in our study are a sample of some of the largest companies traded on the Stockholm Stock Exchange and a complete list of these companies can be found in appendix 1. There are a few reasons for our choice of companies. Firstly, these companies constitute a large portion of the total value of companies traded on the Stockholm Stock Exchange. Thus, the average company should move in line with the index. Another reason is that recommendations are available for the largest companies from both foreign and Swedish banks for both time periods. This has the advantage that individual recommendations should not affect the stock price that much, as recommendations are issued quite frequently. Lidén (2005) also found that positive effects on stocks after buy recommendations were almost fully reversed after 20 days. The positive effects were also larger if the recommendations were issued by journalists rather than financial analysts. Thus, we expect that these potential effects will not distort our findings.

4.2 Sample financial experts

A complete list of the financial experts used in our study can be found in appendix 2. The sample was to a large extent driven by supply. Particularly, a large portion of the Swedish recommendations were from the same banks. In our sample of Swedish banks, we chose to focus on "strictly" Swedish banks. For instance, ABN Amro, who acquired Alfred Berg in 1995, was considered to be a foreign bank even though they have a strong history and presence in Sweden.

4.3 Sample limits

We have limited our sample of recommendations to 100, which were used in our questionnaire to collect data on the financial experts' confidence. In order to gain further statistical significance we decided to expand the data set with another 100 recommendations for the tests where confidence was not used. The overall limit of 200 recommendations was due to the availability of reports from the earlier period, in particular from financial experts working for companies based outside of Sweden. Furthermore, only the largest corporations listed on the Stockholm Stock Exchange had sufficient coverage among the foreign financial experts and we therefore excluded the possibility to examine mid and small cap companies in Sweden. Thus, we used 100 recommendations when examining the calibration and overconfidence among the financial experts and 200 recommendations when performing the rest of the analysis.

4.4 Sample time periods

We chose to focus on two different time periods, where the period 2000-2001 represents a bear-market scenario, and the period 2005-2006 represents a bull-market scenario. Therefore, we will briefly present the market conditions during these periods.

Throughout the years prior to the new millennium the global economy experienced a boom, which was mainly related to the new dot-com companies. The stock investors at

the time had exaggerated views of these companies' development in growth and profitability which led to the overvaluation of the stock markets (Josefsson, 2001). In spring 2000, the Dow Jones Industrial Average, the technology-heavy NASDAQ index and OMXS30 peaked and during the following two years investors saw a sharp downturn in stock markets all over the world.

After the slow-down of the stock markets in the beginning of the new millennium they found new strength after hitting the bottom in early 2003 and by 2005 equity investors globally had experienced two very good years. In 2005 the Swedish stock market experienced its best year since 1999 when OMXS All Share increased by almost 33 percent. Some of the explanations for this might have been the entry of foreign investors on the Swedish stock market as well as an increasing interest and development of derivatives markets (Dyberg, 2005).

4.5 Surveys

Using the reports from the investment banks, we constructed ten questionnaires with ten reports in each questionnaire (see appendix 3). This gives us a total sample of 100 reports. Out of these reports, 50 were issued by foreign banks and 50 were issued by Swedish banks. The recommendations were also evenly distributed between the two time periods with 50 recommendations in each category.

In the questionnaire, the respondent is faced with two questions for each report. The first question is whether the report is a buy or a sell recommendation. The focus of this question is to check if the respondent has understood the report and actually read it. The second question asks the respondent to estimate how confident the financial expert is in his or her recommendation. The purpose of this question will be discussed below.

We have chosen to focus only on buy/outperform or sell/underperform recommendations in our questionnaires. The reason for this is that with a hold recommendation, the financial expert is uncertain about the future development of the stock. A general idea could be that the stock will perform in line with the index.

However, this complicates matters as it is hard to determine an interval around the index in which the stock must perform for the hold recommendation to have been correct. This interval should probably be set to reflect the transaction costs of selling the stocks. Therefore, we have chosen to exclude hold recommendations from our sample.

4.6 How accuracy was measured

To test the accuracy of the forecasts issued by the financial experts we have chosen to benchmark the stocks' performance to the OMXS30 index. The OMXS30 is a market value weighted index consisting of the 30 most traded stocks on the Stockholm Stock Exchange (OMXGroup, 2007). The price of the stocks that we have used is the price on the date of the issue of the recommendation. The end date is 3, 6 or 12 months from the date of the issue, depending on the length of the recommendation stated by the issuing financial expert. For the recommendations where no such date was supplied, we used a 12 month horizon as this was the most frequently used horizon. The development of the stock was measured against our benchmarks performance for the same period. Thus, if a financial expert issued a buy recommendation and the stock outperformed the OMXS30 index for the given time-period, the financial expert has issued a correct recommendation. We believe that this is a relevant benchmark as an investor can invest in a corresponding index fund with lower risks than a single or a few stocks.

4.7 Measures for the financial experts' confidence

In our questionnaire the respondents were asked to estimate the level of confidence of the financial experts. The respondent could chose between intervals of 10 percent ranging between 50 and 100 percent. If the respondent felt that the financial expert was basically guessing, the "correct" answer to the question would be 50 percent. So, with an 80 percent confidence, the financial expert should correctly estimate the future developments of 8 out of 10 stocks. Furthermore, each questionnaire was handed out to 5 respondents so that each recommendation would have five estimates. This was done in

order to get a better estimate of the level of confidence. From these responses we can calculate the average, or median, to assess the confidence of the financial expert. There might be a “regression towards the mean” effect, meaning that the level of confidence tends to cluster towards the middle of the scale.

Thus, in our study we chose to let the respondents work as raters for the financial experts’ confidence. In addition to the inspiration from Cowles (1933) study we found it practical to use raters since it would prove difficult and time consuming to contact the analysts to get their estimation of their confidence. And even if it would have been possible to contact them the answers would probably not be too helpful as the outcome of the report already has been realised. Therefore, if the financial experts know that the recommendation turned out to be wrong, they could simply state that they were very uncertain about that particular report. Thus, we found it logical to use this method to estimate the confidence of the financial experts. We should emphasize that it is not the respondent’s confidence in the reports that is important, but rather how confident the financial expert appears to the reader. We should also point out that all of our respondents are business student or have business knowledge. This was an advantage, if not a necessity, as the reports could contain language that might be difficult to interpret for someone who does not have knowledge about stocks and financial markets.

5 Data

Our data is made up of two sets, where the first consists of 100 reports which were used in our questionnaires. These reports are used both for estimating the confidence of the analysts and to assess the accuracy of the reports. However, we have chosen to expand the dataset for the latter tests in order to get better statistical properties. Therefore, we have extended our initial dataset with an additional 100 reports for the purpose of testing the analysts' accuracy.

5.1 Historical data and recommendations

When determining whether the analysts are making correct forecasts or not we have used data from our two time periods, which has been collected from Datastream[3]. We have used total return of the index and stocks in order to incorporate dividends and the data also accounts for financial adjustments such as stock splits and equity issues. This was done in order to get a fair comparison between the developments of the different securities and to indicate what profit or loss an investor actually would have experienced by following the analyst's advice. The recommendations have been collected from the database Infotrac[4],

5.2 Respondents

Even though the characteristics of our respondents preferably should not affect the outcome of the confidence data, we still find a brief presentation of the respondents necessary. The summary of these characteristics is provided in table 1. below. This data is gathered from the final page of our questionnaires (see appendix 3).

[3] Datastream is a financial service that is part of the Thomson Corporation.
[4] Infotrac is a database of company and industry research supplied by the Thomson Corporation.

All of our respondents seem to have a fairly good knowledge of financial markets and average experience of reading financial reports. The respondents also seem to be fairly interested in working for a financially related company in the future. As indicated in table 1., the respondents seem to have understood the questions, or at least think that they have understood them, and the majority seems to be somewhat familiar to the concept of overconfidence.

Table 1. Characteristics of respondents

Characteristics	Average	Median	St. Dev.
Age	26.1	24.5	2.6
Market Knowledge (1-5)	3.6	4	0.8
Familiarity with financial reports (1-5)	3.0	3	1.0
Consider working in finance (1-5)	4.0	4	1.0
Clear/understandable questions (1-5)	4.1	4	0.7
Familiarity with overconfidence (1-5)	3.9	4	1.1

Time spent	Original	Adjusted
Average	14.5	12.9
Median	10	10
Max	90	30
Min	5	5
St. Dev.	12.5	6.1

Males	45 out of 50
Member of Stock Exchange Committee at SSE	11 out of 50

The time spent on each questionnaire ranges from 5 to 90 minutes. However, we expect that 90 minutes probably was not an honest answer so we adjusted the numbers by excluding this observation. The result was an average time of 12.9 minutes and a median of 10 minutes. This seems fairly reasonable given the scope of the questionnaires.

Finally, there was a strong domination of male respondents in our group of respondents. 11 of the 50 respondents were also members of the Stock Exchange Committee at SSE. When examining differences among the respondents and the level of confidence they assign to the recommendations we found no significant variation when controlling for gender or membership in the Stock Exchange Committee.

5.3 Respondents' agreement

To test for the agreement between the raters, we computed the correlations between their answers. This gives us a rough indication of whether or not the respondents assess the confidence in a similar manner. In table 2. we have depicted the averages and medians of the correlations for all of the questionnaires. These averages depict the average for each correlation obtained in the correlation matrix for each questionnaire.

Table 2. Correlations between the respondents' confidence estimations

	Correlation	
Questionnaire	Average	Median
1	0.464	0.464
2	0.327	0.383
3	-0.095	-0.183
4	0.071	0.055
5	0.189	0.230
6	0.396	0.433
7	0.517	0.559
8	0.408	0.463
9	-0.038	-0.030
10	0.350	0.423

The averages range from -0.095 to 0.517 and most of them are positive. The average of the correlation for the whole set of questionnaires is 0.259. The numbers might seem disappointingly low for some of the questionnaires and on the aggregate level, but this is probably due to the relatively small sample of 5 respondents per questionnaire. This might also affect the statistical significance of the correlations, which is rather low for some of the correlations. To further investigate the agreement we have also calculated Kendall's W, which is a coefficient of concordance[5]. Thus, similarly to the correlations test, this coefficient measures the agreement between the raters (Kerlinger, 1986). The results of this test, and the levels of significance, are depicted in table 3.

The results from this test support the findings from our earlier test for correlation and one can also see that questionnaire 3 and 9 again have the most disappointing values. Other than that there seems to be rather good agreement between the raters, despite the relatively small number of raters.

[5] Kendall's W can range from 0 to 1, where a value close to 0 indicates virtually no agreement and a value close to 1 indicates virtually perfect agreement among the raters.

Table 3. Kendall's W and levels of significance

Questionnaire	Kendall's W	Asymp. Sig.
1	0.496	0.008
2	0.470	0.012
3	0.119	0.801
4	0.265	0.216
5	0.371	0.054
6	0.481	0.010
7	0.652	0.001
8	0.492	0.008
9	0.194	0.462
10	0.429	0.023

6 Empirical findings

In this section we will present the results which is structured in accordance to the structure laid out in the hypotheses section.

6.1 Accuracy of the financial experts

Out of the 200 forecasts, a majority of the recommendations tell the reader to acquire the analysed stock. Illustrated in table 4. we observe that 146 (73 percent) forecasts are buy recommendations and 54 (27 percent) forecasts are sell recommendations. From the same table we can also observe that 114 of the total amount of 200 forecasts are correct, which implies an accuracy of 57 percent.

Table 4. Distribution of recommendations and forecasting ability

	Distribution of recommendations		Forecasting ability	
	Buy	Sell	Correct	Incorrect
Number of observations	146	54	114	86
Percent of total	73%	27%	57%	43%

In order to confirm the relevance of the observed accuracy we have to see if the result is statistically significant and we have therefore conducted a binomial test (for a discussion on binomial tests see Körner and Wahlgren, 2006). As one might argue, this is a case of beating a 50-50 chance of guessing, and thus, a binomial test seems to be an appropriate test to evaluate the financial experts' performance. The result of this test is that the financial experts are better than chance with a p-value of 0.056 (two-tailed). Furthermore, we found it interesting to present the forecasters' accuracy based on whether they promote a buy or sell recommendation. The accuracy for the buy recommendations was 69 percent, while the equivalent accuracy for the sell recommendations was 24 percent. The results were tested for significance using binomial tests and the outcome is displayed in table 5.

Table 5. Binomial tests for buy and sell recommendations

	Correct	St. Dev.	P-value
Sell	24%	0.432	<0.001
Buy	69%	0.463	<0.001

The outcome of these tests indicate that the analysts are actually better at predicting stock price movements when they issue buy recommendations than when they issue sell recommendations. In the case of buy recommendations, they perform better than chance and in the case of sell recommendations, they perform worse.

When assessing the relationship between the financial experts' accuracy and their estimated confidence we first divide the observations into different intervals based on each recommendation's level of confidence. The distribution of the observations, correct forecasts and confidence level accuracy is illustrated in table 6. The confidence level accuracy is calculated as the number of correct forecasts per confidence level divided by the total number of observations for the same confidence level. With the exception of the 61-70 percent interval we can observe that the forecasting accuracy increases with the level of confidence.

Table 6. Distribution of observations and accuracy among confidence levels

	Confidence level					
	51-60%	61-70%	71-80%	81-90%	91-100%	Aggregate
Observations	4	35	46	11	4	100
Correct	2	17	26	7	3	55
Accuracy	50%	49%	57%	64%	75%	55%

We continue our analysis by breaking up the recommendations into the time period in which they were issued, as well as the geographical location of the financial experts. The results are illustrated in figure 1., where the forecasting ability of all four categories indicates a level of accuracy above 50 percent. However, the highest accuracy of 66 percent is achieved by the foreign financial experts and concerns recommendations issued in 2000. All in all the forecasting ability of the foreign financial experts was higher than for the Swedish financial experts, with accuracies of 60 percent and 54 percent respectively. Also, the recommendations were slightly more accurate in 2000 than in 2005 (60 percent and 54 percent respectively). To test the potential differences for accuracy between the time periods and the geographical origin of the financial experts,

we conducted chi-square tests. We found no significant differences for either of the two tests.

When breaking up the buy recommendations in the same way as in the previous paragraph we can observe in figure 1. that the buy recommendations are quite evenly distributed among the four categories. With the exception of the foreign forecasters in 2005, who promoted 60 percent buy recommendations, the share of buy recommendation issued by the three remaining categories is all between 70 and 80 percent.

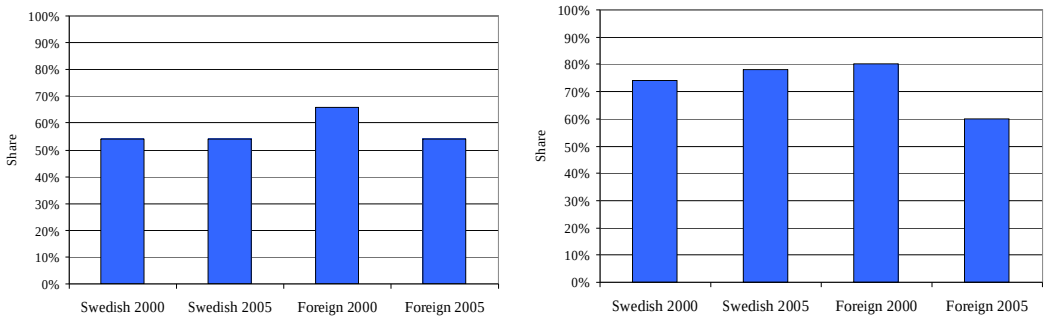

Figure 1. Distribution of correct forecasts (left) and buy recommendations (right)

6.2 Confidence adjusted precision in the analyst's forecasts

A conventional way of testing the precision in an analysis is by computing the Brier score (Andersson, 2007). The Brier score measures the accuracy in probability assessments by using the following formula:

$$\text{Brier Score} = \frac{1}{n} \cdot \sum (F - O)^2 \qquad (1)$$

where F is the forecast and O is the outcome of the forecast. If the forecast turns out to be correct, O takes a value of one, and if the forecast is incorrect the value of O equals zero. In our case, F is the average confidence for each report. Thus, this measure incorporates the assigned confidence of the analysts when determining the precision in the analysis.

The Brier score can range between 0 and 1 where a score closer to 0 points to better precision in the forecast (Andersson, 2007). The brier score for our entire set of reports

is 0.28. We also divided our set into the confidence levels depicted in table 6. above. The resulting scores ranged from 0.22 to 0.28, with the lowest score for the 91-100 percent interval. We have failed to find any guidelines for which level of Brier score that is regarded as good precision. As a comparison, Andersson (2007) found Brier scores that are slightly lower than ours when investigating the precision of odds setters. These values are regarded as indicators of fairly good precision and these findings support our previous findings that our financial experts show some skills in forecasting stock movements.

6.3 Calibration and overconfidence

To get an overview of the calibration of the financial experts we begin by plotting the confidence level versus the actual accuracy. In figure 2. we have plotted the median confidence against the accuracy of the reports. We have also inserted a reference that represents perfect calibration as a benchmark for the analysts' performance. In the graph we can see that the financial experts' calibration is below the perfect calibration for all levels except the 100 percent level. However, the 100 percent level consists of only three observations.

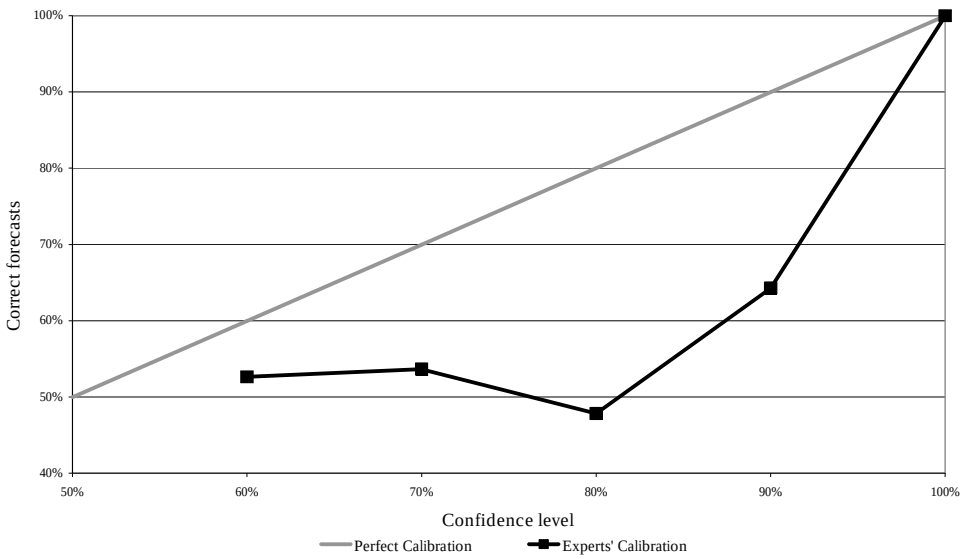

Figure 2. Financial experts' calibration plotted against perfect calibration using the median confidence

To test whether or not there are any important differences between using the median and mean, we constructed figure 3. where the financial experts' confidence levels have been grouped in intervals ranging from 51-60 percent, 61-70 percent and so on. Thus, each assigned probability that is in the 51-60 percent range is represented in that group in the graph. The numbers in the graph are the average confidence levels within that group, so for instance, the 60 percent group which had four observations has a mean of 60 percent as all of the four observations had an estimated confidence level of 60 percent. This graph is perhaps more informative than the previous one and we can see that the financial experts calibration again is below that of perfect calibration for all levels. Thus, the analysts were overconfident in their abilities.

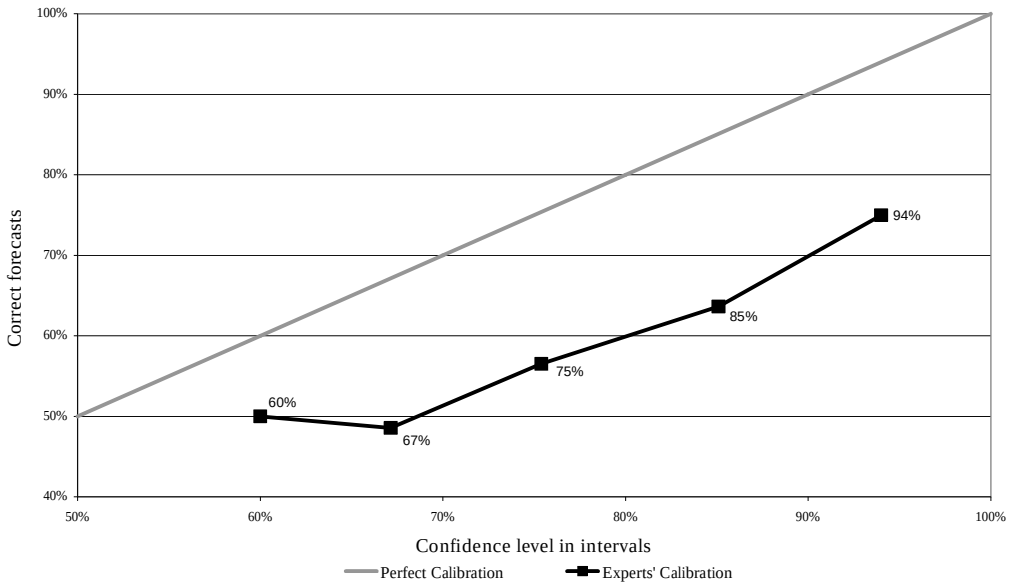

Figure 3. Financial experts' calibration plotted against perfect calibration using the average confidence grouped in intervals

To test these findings we conducted a binomial test to compare the mean of their confidence (73.7 percent) to the actual performance of their predictions (55 percent). The test showed a significant difference even at the one percent level. However, this test is somewhat blunt and we have chosen to conduct further tests to the sub-groups of our sample presented in table 6. above. However, we will first present the calibration of the financial experts in a more general discussion.

In order to test the significance of these differences, we conducted binomial tests for the average of each interval of confidence. The results of these tests are depicted in table 7. The 61-70 and the 71-80 percent levels are significant at the five percent level. The other

levels have lower statistical significance. However, these levels have significantly fewer observations which make these levels difficult to interpret in terms of statistical significance.

Table 7. Binomial tests for differences and overconfidence

Range	N	Confidence	Correct	St.Dev.	Asymp. Sig.*
51-60%	4	0.600	0.500	0.577	0.525
61-70%	35	0.671	0.486	0.507	0.018
71-80%	46	0.754	0.565	0.501	0.004
81-90%	11	0.851	0.640	0.505	0.068
91-100%	4	0.940	0.750	0.500	0.219

* One-tailed

6.4 Relatively more buy recommendations

In hypothesis 3, we proposed that financial experts tend to issue relatively more buy than sell recommendations. But relative to what? If the theories about the markets being efficient are true, then it really does not matter which stock you chose. They are all equally good picks as all relevant information is already incorporated in the stock prices. Future stock price movements are due to information that no market participant was aware of before and an investor is therefore better off by investing in a broad index and receive the same expected return with a low risk in the portfolio. Based on these arguments, we feel that a relevant benchmark is 50 percent buy and 50 percent sell recommendations. This can be argued as indexes generally are value-weighted and the exact number of recommendations does not necessarily have to be a 50/50 split.

Thus, our test will determine if the recommendations are significantly different from a 50/50 split. To do this, we conducted a binomial test to determine if the mean of the sample is different from 50 percent. There are 73 percent buy recommendations in our sample of 200. The outcome of the test indicates that our sample mean is significantly different from 50 percent at a high level of statistical significance[6]. Thus, we find support for our hypothesis that the financial experts in fact do tend to issue relatively more buy recommendations.

[6] Asymp. Sig. (two-tailed) < 0.001.

6.5 *Determinants of the financial experts performance*

In our hypotheses section, we suggested that the location of the financial experts and the market conditions during the time of the recommendation might affect the outcome of the forecast. In order to test this we ran the following regression:

$$P_i = E(Y = 1 | X_i) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 CONF + \beta_3 GEO + \beta_4 YEAR + \beta_5 GEOYEAR)}} \quad (2)$$

The model is a binary logistic regression which is recommended when running a regression with a binary dependent variable (e.g. Frölich, 2002). In our regression we use the results dummy, where a correct forecast is represented by 1 and an incorrect forecast is represented by 0, as dependent variable. For explanatory variables, we have included the average level of confidence for each report (CONF). This is the variable that we believe has the highest level of explanatory power concerning the accuracy of the financial experts' predictions. Furthermore, we have decided to include the geographical dummy variable (GEO), where the variable is 0 if the financial experts work at a Swedish bank and 1 if the financial experts work at a foreign bank. This is done in order to test if foreign analysts are better at predicting Swedish stock movements, as indicated in figure 1. above. A year dummy (YEAR) is included where the year 2000 is represented by 1 and the year 2005 by 0. This test is done to detect potential differences between the two time periods. 2005 can be described as a bull market, and 2000 can be described as a bear market. Thus, we test if the analysts are better at predicting the movements when the general market conditions are favourable. Finally, an interaction-variable (GEOYEAR) for the geographical dummy and the year dummy variable is included. The interaction variable is 1 if the analysis is conducted by a foreign analyst in the year 2000. This interaction effect variable was chosen based on the results presented in figure 1. where foreign analysts in the year 2000 had the highest accuracy in the sample.

Our regression indicates that our variables have little explanatory power and the output shows that none of the explanatory variables are statistically significant at any reasonable level (see table 8). The R Square values that were derived from the test were also very low, with a Cox and Snell R Square of 0.028 and a Nagelkerke R Square of 0.037. The formulas for calculating these values and the properties of these measures are discussed in Nagelkerke (1991). In general, one can interpret these measures in a similar way as an

ordinary R Square value. Thus, we feel that this model really does not explain much of the financial experts' performance.

Table 8. Results from binary logistic regression with results as dependent variable

Variable	Coefficient	St. Dev.	Sig.
CONSTANT	-1.777	2.065	0.389
CONF	3.194	2.761	0.247
GEO	0.199	0.570	0.762
YEAR	-0.007	0.586	0.991
GEOYEAR	-0.619	0.824	0.452
Cox and Snell R Square	0.028		
Nagelkerke R Square	0.037		

To further test our model, we decided to divide our set into two sub-sets, one with only buy recommendations and one with only sell recommendations. The outcome of these regressions was that the model could not improve the prediction probability, and none of the variables were statistically significant.

As a last attempt to see if there was any explanatory power in our variables, we decided to exclude all variables except the average confidence level. This was, after all, the variable that had the highest statistical significance (a p-value of 0.247 in our first model) and thus, we find it interesting to investigate if this variable alone can help to predict the accuracy of the analysts. With the additional information provided by the level of confidence, the model was slightly better at predicting the outcome of a report (58 percent chance compared to 55 percent). This was a slight improvement of the base case, however, the confidence variable still did not have an impressive statistical significance, with a p-value of 0.218 for the confidence variable.

7 Discussion

Our thesis set out to examine the forecasting ability and calibration of financial experts. The results of our tests are presented in the previous section and it is now time to discuss some of our results and hopefully provide possible explanations for the outcomes.

Our first hypothesis was concerned with the financial experts' performance relative to chance. To assess this, we conducted a binomial test, which showed that the accuracy of the forecasts (57 percent) was statistically different from 50 percent with a p-value of 0.056. The test was not too far off from the conventional limit of 0.05 and given the somewhat limited sample in our study, we will argue that we have found some support for the financial experts in our study being better than chance at foreseeing future stock price movements. The findings from our calculations of the Brier score also indicates that the financial experts have a fairly high precision when forecasting stock movements. This goes against the findings of some of the previous studies, e.g. Törngren and Montgomery (1994), something that possibly could be explained by the different time horizons used in their study and ours. In our study, we apply the horizons that the analysts themselves suggest in their reports and we think that this might be of importance. The horizon used in Törngren and Montgomery (1994) is only 30 days and random noise in the financial markets may have a substantial effect that distorts the stock prices in this relatively short period of time. This does not really give the analysts a fair chance to test their abilities. Furthermore, there are previous studies (e.g. Önkal et al., 2003) that have also shown that experts can perform better than pure chance. Another reason for our finding might be that the financial experts in our study have chosen which stock to examine themselves, whereas in Törngren and Montgomery's study (1994) they are being told which stock to analyse. One might argue that financial experts are highly specialised and that if they possess superior skills in stock picking these skills are specifically assigned to certain industry and not attributable to general stock picking expertise.

When testing for differences between the two types of recommendations, we found that the financial experts were far more accurate when issuing buy than sell recommendations. The accuracies were 69 and 24 percent respectively. Based on the fact

that the buy recommendations constitute 73 percent of the total amount of recommendations and that theory suggests there to be equally many buy and sell recommendations one might anticipate a lower level of accuracy among the buy recommendations. In some sense the actual outcome of the forecasts motivates the larger amount of buy recommendations that is observed in the sample. However, one possible reason for this might be that we have used an equal weight for all stocks, while the OMXS30 index is weighted using the market capitalisation of the companies. We reason as follows. If one of the larger companies is performing poorly it affects the index relatively more than the equivalent scenario for a smaller company, thus making it easier for the smaller companies to outperform the index. Another problem might be the relatively small size of our sample and that another outcome could have been attained by including more observations. To summarise the results from our first hypothesis, we argue that we find some support for the financial experts showing skills above chance in stock picking, but given the nature of our results, we leave the final verdict to the reader.

In our second hypothesis, we claimed that the analysts would be overconfident in their forecasts. In section 6.3 we plot the calibration of the analysts against a benchmark which represents perfect calibration. These plots show that the analysts in our sample are rather poorly calibrated and the fact that they are consistently below the benchmark indicates that they are overconfident. These intervals, in which we have grouped the observations according to the assessed level of confidence, have an unevenly distributed amount of observations. Thus, we cannot conclude that the analysts are overconfident in all intervals. However, in the intervals that do contain a sufficient amount of observations, we find support for our hypothesis. For the 51-60, 81-90 and 91-100 intervals, the relatively small number of observations makes it difficult to draw any definitive conclusions. The fact that there are fewer observations in these intervals also makes sense as there really is no point in issuing reports with a confidence of around 50 percent as the analyst essentially would be guessing. Also, a confidence level of 100 percent is slightly unrealistic as even the best analysts can fail to predict stock movements. Our findings are supported by most previous research on related issues, i.e. that financial experts are overconfident. The cases where financial experts are found to be well calibrated are not subject to the random elements that characterise financial markets. Also, as one aspect of their job is to sell stock the financial experts might appear more confident than they are. The more confident they appear, the more stock will they sell

(or, at least, so they hope) and thus make more money. We believe that the aspect of selling a product to customers (investors) can constitute a large part of the source of this overconfidence. Therefore, the question is whether or not these financial experts really are as confident as they appear. However, this is not within the scope of this thesis.

Our final hypothesis suggested that the analysts tend to issue relatively more buy than sell recommendations. The approach we have chosen to examine this proposition is to some extent founded on the efficient market theories (Fama, 1970 & 1991). These theories are by no means undisputed in the academic world. Indeed, we criticise the theories in the introduction ourselves. But one can still argue that about 50 percent of the stocks should outperform the benchmark index and about 50 percent should underperform the benchmark index. Thus, the results support our hypothesis and the results are also statistically significant. As argued above, we have chosen to benchmark the distribution of recommendations according to a 50/50 split. However, in our sample the actual share of stocks that outperformed the benchmark index was 71 percent, which might imply that the financial experts have not issued too many buy recommendations. By stating this, we simply suggest that there might be more than one way to define how to test if the financial experts issue relatively more buy recommendations. The fact that 71 percent of the analysed stocks outperformed the index in our sample might also be sample specific.

The finding that relatively more buy recommendations are being issued might be due to a hidden agenda among the financial experts. It may lie in their interest to promote more acquisitions of stock as they can earn higher commissions (which are usually derived from the transaction value) if stock values increase. The optimistic view of the market that an excessive amount of buy recommendation might bring could also reward the financial experts as people tend to be more interested in equity investments during periods of economic booms. A question that arises is whether the financial experts assist in prolonging economic upturns and thereby help creating asset bubbles?

Regression (2) had rather disappointing results. The outcome was that none of our explanatory variables was significant. Thus, we cannot conclude that any of these can help to predict the outcome of a forecast. Not even the level of confidence of the analyst indicated whether or not they would issue a correct forecast. The same goes for the

geographical origin of the forecaster and the time period during which the report was issued.

As all studies, ours has some shortcomings. The most important one could be the rather limited data set, which might decrease the validity of our findings somewhat. We have estimated the confidence for 100 recommendations, by letting five raters assign the level of confidence for each recommendation. We have also chosen to disregard the aspect of risk in our analysis. Less risky investments can be expected to have a lower return than risky investments as investors wants to be compensated for extra risk. Thus, our determination of a correct forecast might not be perfect. But one can also expect that companies of these sizes have risk levels that are not too far from that of a broader index. Thus, we believe that this simplification does not distort our findings too much.

8 Conclusions and final remarks

In sum, we find support for all three of our hypothesis. The financial experts indicated some skill in being able to predict future outcomes of stock price developments, even though the statistical significance might be somewhat weak. As earlier research suggests, the fact that people tend to be overconfident in their own abilities has also been found in our study on financial experts. They consistently overestimate their own ability to foresee future stock price movements and perform worse than their estimated level of confidence. We also examined if financial experts tend to issue more buy than sell recommendations and found statistically significant support for the existence of such a phenomenon.

As a suggestion for future research, our study could be improved by an extended data set, which would give the study more validity. It could also be interesting to let the financial experts assign their level of confidence themselves. This should preferably be done when they issue the reports as later estimations may be biased by events in the markets our events that are specific to the evaluated company. Another extension could be to investigate if relatively more buy recommendations affect financial markets. It could be interesting to see if this in fact does increase volatility and inflate financial securities prices. The extent of these potential effects are not researched in our thesis, rather, we have tried to point to the existence of these phenomena. The actual impacts could be an interesting area for future research.

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Appendix 1

Reports for the 2000-2001 period used in the study

Company	Number of reports used
ABB	4
Assa Abloy	4
AstraZeneca	4
Atlas Copco	4
Autoliv	6
Boliden	4
Electrolux	4
Ericsson	6
Getinge	2
H&M	4
Nokia	5
Ratos	1
SAAB	4
SCA	5
Scania	3
SEB	6
SHB	5
Skandia	4
SKF	4
SSAB	4
Swedbank	4
Swedish Match	5
TietoEnator	4
Volvo	4

Reports for the 2005-2006 period used in the study

Company	Number of reports used
ABB	4
Alfa Laval	4
Assa Abloy	4
AstraZeneca	4
Atlas Copco	4
Autoliv	4
Boliden	4
Electrolux	4
Ericsson	4
Getinge	4
H&M	4
Investor	4
Nokia	4
Nordea	4
Ratos	1
SAAB	3
SCA	4
Scania	4
SEB	4
SHB	4
SKF	4
SSAB	4
Swedbank	4
Swedish Match	4
TietoEnator	4
Volvo	4

Appendix 2

Swedish Banks used in the study

Bank	Number of reports used
ABG	1
Aragon	3
Carnegie	35
Erik Penser	5
Öhman	8
SHB	48

Foreign Banks used in the study

Bank	Number of reports used
ABN Amro	6
Bear Sterns	2
BNP Paribas	6
Cheuvreux	2
Citigroup	9
Commerzbank	2
Credit Suisse	15
Danske Bank	17
Deutsche Bank	11
HSBC	5
Josephthal	1
Kaupthing	13
RBC	1
SG	5
UBS	5

Appendix 3

Extracts from one of the questionnaires used in our study. Only two out of the ten reports has been included as we feel that this is sufficient for the reader to understand the structure of the questionnaires.

Denna enkät skall användas som underlag i en studie där vi utvärderar analytikers prognosförmåga för några av de största bolagen på Stockholmsbörsen. Efter att ha läst förstasidan för ett antal av dessa prognoser vill vi att Du ska ta ställning till hur säker Du anser att analytikern verkar vara i sin åsikt om de olika aktiernas framtida utveckling. Varje enskild rapport följs av två frågor som Du ombes besvara. Den första frågan handlar om ifall analytikern ger en köp- eller säljrekommendation. På den andra frågan vill vi att Du bedömer hur säker analytikern verkar i sin analys. Skalan går från 50%, där analytikern är väldigt osäker, till 100% där analytikern är väldigt säker i sin prognos. Du får gärna ta del av all tillgänglig information på sidan, men fokus bör ligga på rapporternas sammanfattande text. De två frågorna finner Du i en ruta längst ner på varje rapport. Detta illustreras i följande exempel:

Vad rekommenderar analytikern?

X Köp/Öka **☐ Sälj/Minska**

Hur säker anser Du att analytikern är i sin rekommendation?

☐ 50% **☐ 60%** **☐ 70%** **☐ 80%** **X 90%** **☐ 100%**

Väldigt osäker **Väldigt säker**

I det här fallet anser respondenten att rapporten uppmanar till köp/öka, samt att analytikern i detta fall är väldigt säker på sin analys. Svaret 90% innebär att analytikern ska ha rätt i 9 fall av 10 i analyser där detta alternativ kryssats i. Siffrorna som används i det här exemplet är endast ett förslag på hur man KAN fylla i formuläret och ger inga hänvisningar till hur man BÖR fylla i formuläret.

FLASH FLASH FLASH FLASH FLASH FL

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Equity Research Europe

COMPANY UPDATE

Ericsson

ERICb.ST

Four-way IPR impact

- *Raising estimates and FV to SKr 30, reiterate outperform.* Based on extensive study of WCDMA economics (see our sector report launched today) we conclude that Ericsson is likely to see a four- way beneficial impact from a strong WCDMA IPR portfolio. Combining this with a more optimistic view on the wireless infrastructure market leads us to raise our EPS estimates for 2005/2006 by 5% and 8% to SKr 1.48/SKr 1.75.
- *1) IPR drives a competitive margin in networks.* Driven by strong IPR portfolio we believe that Ericsson will see a relative cost advantage versus smaller rivals such as Huawei, ZTE and Alcatel. This we believe will sustain market share for Ericsson in WCDMA infrastructure at around 26.8% in the long term.
- *2) Direct handset royalties to accelerate.* With a 20-22% share of essential IPR's for WCDMA, we believe that Ericsson is likely to see a material increase in royalty revenues associated with 3G handset shipments over the medium term.
- *3) EMP a –hidden GEM.* Based upon proprietary teardown analysis, we believe that WCDMA devices based on EMP's reference design continue to be the only chipset solution that can rival Nokia's chipset. EMP's BOM that is around 11% lower than the average of its peers and 19% cheaper than Qualcomm. In turn we believe EMP will achieve a meaningful share of the WCDMA handset market of 18%, versus 7% in the 2.5G market.
- *4) SEMC well positioned.* Helped by the powerful IPR portfolio of its parents, as well using a highly integrated chipset, we believe that the roll out of WCDMA could drive the company's market share higher to 6.6% in 2008 from 6% in 2005.
- *Raising wireless infrastructure estimates.* We now believe that wireless infrastructure market will grow 10.9% in 2005, and re-accelerate to 15% in 2006 and still grow at a respectable 7% in 2007. Our confidence in growth rests upon an acceleration of WCDMA in North America and China.

Ericsson is the world's leading supplier of mobile telecommunications equipment.

research team

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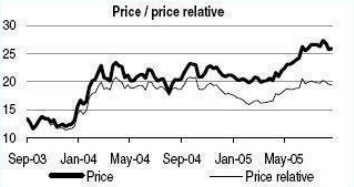
Rating	OUTPERFORM*
Price (06 Sep 05)	26.10 (SKr)
Target price (12 months)	30.00 (SKr)
Market cap. (SKr m)	432,817.54
Enterprise value (SKr m)	385,289.39
Region/country	Europe/Sweden
Sector	Telecommunications Equipment
Analyst's Coverage Universe	Telecommunications Equipment
Weighting (vs. broad market)	MARKET WEIGHT
Date	07 September 2005

** Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.*



The price relative chart measures performance against the eur_djeu index
On 06/09/05 the eur_djeu index closed at 306.95
On 06/09/05 the spot exchange rate was SKr9.30/Eu 1. - Eu 0.80/US$1

Performance over	1mth	3mths	12mths
Absolute (%)	-0.8	11.1	29.2
Relative (%)	-2.6	2.6	4.1

Year	12/03A	12/04A	12/05E	12/06E
Revenues (SKr m)	117,738.0	131,972.0	150,939.2	173,303.1
EBITDA (SKr m)	-4,906.76	33,624.83	39,161.53	44,178.87
Net income (SKr m)	-10,843.8	17,538.8	23,483.0	27,986.4
CSFB adj. EPS (SKr)	-0.58	1.10	1.48	1.75
ROIC (%)	-7.9	8.4	10.8	8.8
P/E (x)	NM	23.7	17.7	14.9
P/E rel (%)	NM	158.7	141.0	133.0
EV/EBITDA (x)	-82.7	11.7	9.8	8.4

Dividend 2004 (SKr)	0.25	Book value/share (12/04, SKr)	4.9
Dividend yield (%)	1.0	Free float (%)	93.0
IC (12/05E, SKr m)	206,060.41	Number of shares (m)	15,919.29
Net debt (12/05E, SKr m)	-47,528.1	EV/IC (12/05E, x)	1.9
Net debt/equity (12/05E, %)	-49.2	Current WACC (12/05E, %)	8.0

Source: FTI, Company data, Datastream, CSFB (EUROPE) LTD. Estimates

Vad rekommenderar analytikern?

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Väldigt osäker — Väldigt säker

PPENDIX. U.S. Disclosure: CSFB does and
vare that the Firm may have a conflict of interest
in making their investment decision. Customers
es covered in this report, at no cost to them,
or call 1 877 291 2683 or email

European Morning Meeting Notes

5 October 2000

General Retail

Hennes & Mauritz

Sweden

Remains a

Sell

Too great expectations

Current price	**SEK192**
Target price	**SEK135**

- **Weak nine month numbers drive further downgrades**
- **Concerns over growth in core business and cost management**
- **Fundamentally over-valued, but some support remains**

Nine month results

H&M reported nine month results well below our expectations. Pre-tax profit fell by 18.6% to SEK2613m, equivalent to a fall in Q3 pre-tax of 31%. A high level of discounting in an effort to clear stock resulted in price reductions of SEK375m more than the previous year. Start-up costs for the nine months continued to weigh on returns, although the Q3 figure was fairly modest.

Outlook

We have downgraded our estimates for the group for the full year by 5%, based on a much weaker Q3 than expected. However, we have modestly upgraded our estimates for the US business, based on higher densities achieved so far. In the medium term though, we still expect densities in the US to be no higher than in Europe. We are still concerned that complacent management has let top line growth slow and costs spiral in the core European business. We do not believe that measures put in place to combat costs will be sufficient to regain the confidence of the market.

Valuation & recommendation

Despite having halved in value, H&M remains the most highly rated stock in the sector. Since 1996 H&M has traded on an average premium to Gap of 90% in PE terms. We believe a premium may still be warranted, but should be much narrower. Even on growth-based measures H&M trades on a significant premium to its peers. Using REP analysis detailed in this note also suggests that there is further downside to the share price. We set fair value at SEK135, 30% lower than today's price and reiterate our Sell recommendation.

This is a summary of a Company Report published 3 October 2000.

Weightings

Stock rel to its European sector

Under	Neutral	Over

European sector rel to DJ STOXX

Under	Neutral	Over

Codes

Reuters RIC	HMb.ST
Reuters REDD	40804
Bloomberg	HMB SS

Key data

Mkt cap (SEKm)	158,888
Mkt cap (EURm)	18055
No of shares (m)	827.54
EV (SEKm)	150018
Net cash/equity (%)	54
Next event	Jan 01 FY results

Price rel to DJ STOXX

1m	3m	12m
18.48%	3.07%	-27.19%

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*HSBC legal entities are listed on the back page

Year to 30 Nov	Sales EURm	Sales SEKm	Reported net profit EURm	Reported net profit SEKm	HSBC adjusted net profit EURm	HSBC adjusted net profit SEKm	HSBC EPS EUR	HSBC EPS SEK	PE (x)	PE rel	Gross dividend EUR	Gross dividend SEK	Yield (%)	EV/ EBITDA* (x)	ROIC (%)
99	**3330**	27888	**367**	3075	**367**	3075	**0.44**	3.72	51.6	178	**0.15**	1.25	0.65	32.3	22.5
00e	**3693**	30931	**318**	2663	**318**	2663	**0.38**	3.22	59.6	259	**0.18**	1.50	0.78	35.9	17.7
01e	**4346**	36394	**410**	3437	**410**	3437	**0.49**	4.15	46.3	219	**0.19**	1.60	0.83	28.1	18.7
02e	**5003**	41900	**484**	4054	**484**	4054	**0.59**	4.90	39.2	190	**0.20**	1.70	0.88	23.8	19.6

* adjusted for NPV of capitalised leases

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Väldigt osäker **Väldigt säker**

9

Övriga frågor

Ålder? _____

Kön? ☐ Man ☐ Kvinna

Hur bra är Dina kunskaper om finansiella marknader?

☐ Har inga/mycket begränsade ☐ Begränsade ☐ Medel ☐ Goda ☐ Mycket goda

Hur mycket erfarenhet har Du av att läsa prognoser?

☐ Har inga/mycket begränsade ☐ Begränsade ☐ Medel ☐ Goda ☐ Mycket goda

Kan Du tänka dig att jobba inom finansbranschen i framtiden?

☐ Nej, absolut inte ☐ Nej, i stort sett inte ☐ Tveksamt ☐ Ja, i stort sett ☐ Ja, absolut

Var frågorna klart formulerade?

☐ Nej, absolut inte ☐ Nej, i stort sett inte ☐ Tveksamt ☐ Ja, i stort sett ☐ Ja, absolut

Har Du några kunskaper om begreppet överkonfidens?

☐ Nej, absolut inte ☐ Nej, i stort sett inte ☐ Tveksamt ☐ Ja, i stort sett ☐ Ja, absolut

Är Du medlem i börsrummet vid HHS?

☐ Ja ☐ Nej

Ungefär hur lång tid tog det för Dig att fylla i enkäten? _____

1