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PERFORMANCE OF ANALYSTS' EARNINGS FORECASTING – EVIDENCE FROM FINNISH EMERGING MARKETS 1987-2005

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ABSTRACT: Financial analysts comprise one important group of information intermediaries between firms and investors (Healy & Palepu, 2001). They have great potential to decrease information asymmetry between firms and investors, resulting in better allocation of capital. Analysts' work is influenced by, among other things, the quality and quantity of information available from the target firms. Furthermore, analysts' incentives could be influenced by the employer's other affairs with the client. Our paper has three purposes: 1) to review the main research literature on analysts' activity and performance, 2) to describe the development of analysts' activity in the period 1987-2005 in a Finnish emerging market, and 3) to analyse the impact of market regulation and market cycles on analysts' performance. Performance is studied in three dimensions: forecasting accuracy, forecast bias, and forecasting efficiency. Analysts' data are based on I/B/E/S. Our analysis shows the rapid development of analysts' activity, both in terms of the number of forecasts and longer forecasting horizons. Overall, the result support**s** the conclusion that analysts tend to be somewhat pessimistic in their Earnings per share (EPS) forecasts. Furthermore, the corrective actions taken have been somewhat sluggish (delays in EPS revisions). However, the forecasts improved significantly in the close before the actual EPS releases (0-1 month sample). Finally, analysts were not fully taking into account prior EPS development. This further supports the view that analysts underestimate the value of prior earnings change in their current earnings forecasting.

Keywords: analysts' earnings forecasting; emerging markets

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TIIVISTELMÄ: Analyytikot ovat tärkeä tiedonvälittäjäryhmä yritysten ja sijoittajien välillä (Healy & Palepu, 2001). Heillä on toiminnallaan mahdollisuus vähentää informaation epäsymmetriaa yritysten ja sijoittajien välillä, minkä pitäisi johtaa tehokkaampaan pääoman kohdentumiseen. Analyytikon työhön vaikuttaa muun muassa analyysin kohteena olevasta yrityksestä saatavan informaation laatu ja määrä. Analyytikon insentiiveihin saattaa kuitenkin vaikuttaa myös hänen työnantajansa muut liikesuhteet asiakkaan eli analyysin kohteen kanssa. Tutkimuksellamme on kolme tavoitetta: 1) tehdä kirjallisuuskatsaus analyytikoiden toiminnasta ja menestyksestä, 2) kuvata analyytikkotoiminnan aktiviteettia Suomen kehittyvillä markkinoilla vuosina 1987–2005 ja 3) analysoida markkinasääntelyn ja markkinasyklien vaikutusta analyytikoiden suoriutumiseen. Suoriutumista mitataan kolmella ulottuvuudella, jotka ovat ennusteiden tarkkuus, ennusteiden vinous ja ennusteiden tehokkuus. Analyysin data pohjautuu I/B/E/S:iin. Havainnollistamme, että analyytikkotoiminta on kasvanut nopeasti mitattuna sekä ennusteitten määränä että pidempinä ennusteperiodeina. Analyysimme tulokset tukevat johtopäätöstä, että analyytikkojen EPS-estimaatit ovat pääosin pessimistisiä. Lisäksi korjaavat toimenpiteet ovat olleet hitaita eli EPS-ennusteita on korjattu verkkaisesti. Lähellä tulosjulkaisuja (0-1 kuukauden periodilla) EPS-ennusteet kuitenkin paranivat huomattavasti. Lisäksi tutkimus osoitti, että analyytikot eivät riittävästi ottaneet huomioon aikaisempaa EPS-kehitystä, mikä tukee näkemystä, että analyytikot aliarvioivat aikaisempien tulosmuutosten vaikutukset ennusteita tehdessään.

Avainsanat: analyytikoiden tulosennusteet; kehittyvät markkinat

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1. Introduction

There has been a lively discussion about the role of stock market analysts. At best, the function of unbiased analysts adds value for investors. At worst, biased analysts can cause much harm for investors' decision-making, when investors' resources are misallocated. Many studies have reported bias in analysts' forecasts and recommendations (Brown, 1997; Capstaff, Paudyal, & Rees, 1995; Chopra, 1998; Clement, 1999). Typically, forecasts are documented as overly optimistic and analysts' ties to an investment bank could cause bias.

We are interested in how analysts perform in emerging Finnish stock markets. The development of stock markets in Finland has been rapid since the 1980s. The finance base of larger firms has been transferred from bank-driven loan capital towards market-driven equity capital finance. Also, the increase in the number of listed firms and financial instruments is occurring internationally as well as in Finland.

The rapid development of stock markets in Finland has stressed the role of information intermediaries between firms and investors, especially financial analysts. Financial analysts collect information from public and private sources, evaluate the current performance of firms, make forecasts about their future prospects, and make recommendations for investors to buy, hold or sell the stock (Healy & Palepu, 2001). They detail some of the known facts about information intermediaries as well as open questions calling for further research (Healy & Palepu, 2001, pp. 416-418). The following is a summary of current knowledge about the activity of financial analysts.

Overall, academic evidence indicates that financial analysts add value in the capital market (Healy & Palepu, 2001). Earnings forecasts by analysts are in general more precise compared to time-series forecasting of earnings. Also analyst forecasts themselves affect stock prices. Prior research also shows some systematic bias in analyst forecasts. First, earnings forecasts are found to be somewhat optimistic. Secondly, sell/hold/buy recommendations are in strong imbalance, as they mainly consist of buys (Sedor, 2002).

Analysts are said to improve market efficiency. As an example, stock prices for more closely monitored firms digest accrual and cash flow information more rapidly compared to those that are less closely monitored (Barth & Hutton, 2000). According to Healy & Palepu (2001),

recent cross-sectional research has found variation in analysts' incentives and expertise, which in turn causes variation in their forecasts. More specifically, analysts are rewarded for providing information that generates trading volume and investment banking fees for their employer. Regarding the professional level of analysts, it has been found that analysts specialised in industry issues perform better than non-specialist analysts. Regarding corporate disclosures, the evidence shows that more informative disclosures also attract the attention of analysts. The quality and quantity of financial disclosures for Finnish listed firms have improved in parallel with the development of stock market activity (Schadewitz, 1997). It is interesting to see whether analysts activity has increased in line with that development (will be discussed later in this section).

The functioning of markets impacts on analysts' work. A few examples of the restrictions (market imperfections) that existed during the 1980s and early 1990s in Finland are next described. Historically, debt financing together with high bank ownership of equity played a key role in corporations' finance in Finland (Kinnunen, Niskanen, & Kasanen, 2000). In the past, manufacturing firms in Finland were grouped around banks. Because of this, banks and other financial institutions had great influence on the managers of companies. Also, until 1992, the ownership of foreign investors in Finnish firms was limited to a maximum of 20%. This limitation prevented the involvement of foreign investors in Finnish capital markets. Moreover, the ownership of Finnish investors investing abroad was limited until 1990 (for more details, see Kinnunen et al., 2000).

The study at hand aims to give intertemporal insight about the development of analyst activity towards Finnish listed firms over the period 1987-2005. This period is longer than that applied in related research, especially in Finland. During the long time span covered, there are periods of economic boom and recession. This gives the possibility to study whether forecasting activity and accuracy varies through time and especially during high/low seasons.

In addition to the general reasons detailed above, when studying analyst activity there are also specific reasons to focus on the Finnish emerging market. First, the information published by firms has increased substantially during the research period. Among the most noticeable improvements in the availability of information is the beginning of systematic interim reporting practice since 1986. Before that time, firms published interim reports very seldom. In order to better characterise the security market situation during the 1980s, it should be

mentioned that mutual funds in Finland were first launched in 1987 (Kinnunen, Niskanen, & Kasanen, 2000). Overall, the culture of using financial statements in depth as an information source for security market operations is somewhat new in Finland. Overall too, the culture of active security trading has increased very dramatically in Finland since the 1980s. Prior research has shown that national culture has an impact on financial systems (Kwok & Tadesse, 2006). In Anglo-Saxon countries (US and UK), financial systems are dominated by stock markets. Conversely, bank-based systems dominate in Continental Europe and Japan (Kwok & Tadesse, 2006). Based on historical data from the period 1967-1971, Finland belongs to the category of bank-based financial systems. Since that time, there has been a drastic change towards a market-based financial system.

In addition, the financial reporting of Finnish firms is strongly influenced by International Accounting Standards (IAS-standards). Compared to Finnish Accounting standards, IAS-standards are better known amongst international users of financial information. This fact could well impact on analysts' possibilities to monitor firms. Kinnunen, Niskanen & Kasanen (2000) show that IAS earnings assist foreign investors, but do not give incremental information to domestic investors. Their research period was 1984-1992.

In principle, the present paper adds to the current knowledge about analysts' activity for specific emerging markets in two ways. First, the anatomy of the development of analyst activity will be described covering the emerging phase of the market. There exists very limited knowledge about how Finnish firms are globally monitored by analysts. Related to this, there is also limited knowledge about analyst activity towards emerging markets. The results show how the amount and accuracy of the forecasts have been developed over the years showing the performance of analysts' earnings forecasting.

This paper will proceed as follows: section two will review the prior related literature on analyst forecasting. Section three will describe the applied data in more detail. Focus will particularly be targeted at the development of analyst activity and the development of the applied forecasting horizon. The aim of analysts should be to release unbiased (objective) earnings estimates and other forecast information about a firm and its development. Section four will study how analysts have succeeded in earnings forecasting in the period 1988-2005. The final section five concludes the paper.

2. Prior research on analyst activity and its forecasting

In this section, we review the recent academic literature regarding analysts' contribution to capital markets. One of the key issues studied is the accuracy of analysts' earnings forecasts. Prior research strongly supports the view that such forecasts are optimistic (Clayman & Schwartz, 1994; Dreman & Berry, 1995; Olsen, 1996). Some explanations of that include investment banking relationships, behavioural bias towards familiar stocks, herding behaviour among forecasters, the 'big bath' phenomenon and managers' incentives to beat analyst forecasts. The review will proceed chronologically with a focus on the recent literature.

2.1. Analysts' accuracy

Brown (1997) reports evidence of analyst forecasting errors. Specifically he studied how such errors and bias have developed from 1985 through to 1996. His study is based on I/BE/S, and includes all US firms with relevant data (analysts' earnings forecasts). Brown shows that analysts' forecasting errors and bias have decreased over time. Overall, analysts' forecasting errors were smaller for S&P 500 firms than for other firms, for firms with comparatively large amounts of market capitalisation, and for firms in certain industries (food and similar products, holding companies and other investment offices).

Chopra (1998) studied the accuracy of analysts' earnings estimates for S&P 500 firms during the period 1985-1997. First, he studied forecast changes during a year and discovered that earnings forecasts were very optimistic at the start of the year and declined towards actual earnings during the year. On average, the overestimation of current year earnings was 6.1%. Although the year's overall level of earnings is estimated more accurately, the dispersion (standard deviation) in analysts' Earnings per share (EPS) estimates over years has not diminished. Analysts also release EPS growth estimates. With these too, Chopra (1998) reported optimism from analysts. One of the implications of the paper is that analysts seem to focus too much on firm-specific issues and not enough on the overall macroeconomic environment.

Clement (1999) studied analysts' forecast accuracy – and especially, whether ability, resources, and portfolio complexity matter. I/B/E/S was applied as a data source covering the period 1983-1994 with over 1 million forecasts for annual earnings. The findings show that forecast accuracy is positively associated with analysts' experience (a surrogate for analysts' ability and

skill) and employer size (a surrogate for resources available), and negatively associated with the number of firms and industries monitored by the analyst (measures of task complexity).

Lim (2001) investigates rationality in analyst forecast bias. Her focus was to study whether financial analysts trade off bias to improve management access and forecast accuracy. The results obtained show that positive and predictable bias was a rational property of optimal earnings forecasts.

Hodgkinson (2001) examined whether the accuracy and efficiency of analyst forecasts were affected by the type of relationship the analyst has with a firm. The previous literature provides evidence on three issues: forecasting accuracy (absolute proportional forecast error), forecast bias (actual vs. forecasted EPS), and forecast efficiency (no relationship between the forecast error and the previous change in earnings). Hodgkinson's results show that analyst forecasts are not more accurate for broker firms. Furthermore, analyst forecasts were not more biased for small firms, but their forecasts were less accurate.

Sedor (2002) searched an explanation for optimism in analysts' earnings forecasts. Sedor's study is experimental with 86 sell-side financial analysts. She found that analysts make more optimistic two-year-ahead earnings forecasts when provided with information about a manager's future plans framed as scenarios than framed as lists. Optimism was also greater for firms with prior losses compared to firms with prior profits. The important finding was that the form of information can lead analysts to issue unintentionally optimistic forecasts, particularly for loss-making firms.

Eames, Glover, & Kennedy (2002) studied the association between trading recommendations and broker-analysts' earnings forecasts. They predict positive forecast error (optimism) for buy recommendations and negative forecast error (pessimism). Two explanations for this are given: 1) the unconscious tendency to process information in a manner that supports one's goal (objectivity illusion hypothesis), and 2) the economic incentive to boost trade (trade boosting hypothesis). The data comprise individual analyst's recommendations and actual and forecast Earnings per share (EPS) values for the years 1988 to 1996 (Zacks Investment Research database). The findings show that broker-analysts earnings forecast errors were optimistic for buy recommendations and pessimistic for sell recommendations, consistent with the objectivity illusion and trade boosting hypothesis.

Mikhail, Walther, & Willis (2003) investigated what the effect of experience was on the under-reaction of security analysts. They measured analysts' firm-specific forecasting experience as the number of quarters for which the analyst had issued an earnings forecast for the firm. Earnings forecasts were from Zacks Investment Research. The basic finding was that analysts under-reacted to prior earnings less as their experience of monitoring a firm increased.

Clement & Tse (2005) attempted to assess the causes and consequences of herding by analysts and to provide evidence that could help market participants to evaluate the information in analysts' earnings forecasts. They studied whether analysts' characteristics other than experience were associated with forecast boldness (*bold* if they were above both the analyst's own prior forecast and the consensus forecast immediately prior to the analyst's forecast, or else below both). All other forecasts were classified as *herding* forecasts, which move away from the analyst's own prior forecast and toward the consensus. The analysis used I/BE/S forecasts on annual earnings from 1989 to 1998. The authors found that bold forecasts were more likely to be issued by: 1) historically accurate analysts, 2) analysts employed by large brokerages, 3) frequent forecasters, and 4) analysts with more general (as opposed to firm-specific) experience. Contrary to that, bold forecasts were less likely to be issued by analysts who monitored a large number of industries.

So far our review has shown that analysts' accuracy has improved through time. However, the accuracy is sensitive to, for example, the quality of firm's financial disclosure, firm's industry, analyst's relation to a firm, forecasting time, resources available for analyst, analyst's experience, and buy/sell recommendation. Next section will focus on various economic and institutional contents and how they potentially affect analysts' performance.

2.2. Analysts' performance in various economic and institutional contents

In addition to analyst- and firm-specific reasons, analysts' performance is also influenced by various economic and institutional factors. Research on those major factors are reviewed in this section. Higgins (1998) studied analysts' forecasting performance in seven countries (US, UK, Netherlands, France, Japan, Germany, and Switzerland). His I/B/E/S data comprise over 11,000 firms in the period 1991-1995. Findings showed that analyst forecast earnings were more accurate and less optimistically biased for firms in countries mandating more disclosure (US, UK) than in countries with less stringent mandates (Japan, Germany, Switzerland). In

this light analysts performance should have been improved through time due to increased legislation of financial disclosures in Finland.

Financial disclosures, and especially earnings, are highly important pieces of information for analysts. Booth, Brockman, Kallunki, & Martikainen (2000) compared financial analysts' earnings forecast accuracy for Finnish firms that smooth their earnings with those that do not smooth. The data were Finnish analysts' earnings forecast errors during the period 1990-1994. Their primary finding was that non-smoothing firms have higher forecasting errors compared to smoothing ones. This supports the view that earnings for non-smoothers are difficult to forecast. In other words, managers may smooth earnings partly in order to enhance earnings predictability.

The economic cycle can affect analysts' performance. Loh & Mian (2003) studied the quality of analysts' earnings forecasts during the Asian crisis, providing evidence from Singapore. They separated the forecasts made by analysts after the onset of the crisis (period July 1997-1999) from those made during the pre-crisis period of January 1990 to June 1997. Three aspects regarding forecasting efficiency were studied: optimism in forecasts, extremism in forecast change and optimal reaction to news. Results show that analysts displayed excessive optimism. In addition to that, analysts committed greater errors during the post-crisis period. The third aspect (optimal reaction to news) also shows that analysts performed well during the pre-crisis period, but under-reacted to bad news during the post-crisis period. Overall, the results support the view that analysts believe too strongly in their own private information and attach too little significance to public information. Data for the paper at hands will cover both bullish and bearish market phases.

The maturity of a certain market has an impact on analysts' performance. Rothovius (2003) studied whether there differences exist between analysts for a large stock market with a well-established analysing industry (the UK) and a small one with a newly developed analysing industry (Finland). The data were from I/B/E/S covering the years 1989-1995. A comparison of absolute proportionate forecast errors between these two countries was performed. The mean for the British (Finnish) firms' forecast errors was 25.8% (56.4%). Three dimensions of market differences were covered between these two markets: variability in past earnings (error in a random walk model), the number of analysts carrying out monitoring and the timeliness of the forecast. After these three dimensions (control variables) were accounted for,

there were no differences between the abilities of the analysts in Finland vs. UK. The reason for differences was assumed to be the more complicated forecasting environment (measured by these three control variables) in Finland. Additional results revealed optimism bias, but only for firms with a negative earnings change. Overall results show that problems with earnings forecasting were concentrated in firms with a negative earnings change.

Nordic markets form a fairly homogeneous economic and institutional regime to analyze. Von Nandelstadh (2003a, 2003b) studied analysts' accuracy in Nordic markets during the 1990s. He found that, first, analysts put more effort into analysing firms with a relatively higher trading volume (approximating commercial value for a brokerage). He also found that analysts, in line with the prior literature, under react or overreact to prior earnings, depending on the short-term pattern in reported earnings. In addition to that, analysts were found to place excessive emphasis on past earnings information in the forecasts. Furthermore, his findings show that consensus recommendations have investment value, especially when recommendations issued by banks are excluded. Finally, he studied investors' behaviour prior to financial analysts' earnings forecast revisions, in other words, whether analysts leak information, for example to some selected customers. No systematic existence of such leakage was found in the Finnish stock market.

In an international setting using data from 22 countries including Finland, Hope (2003) analysed what impact reporting practices and the implementation of accounting standards had on the accuracy of analyst forecasts. He found that strong enforcement was associated with higher forecast accuracy. In other words, enforcement encourages managers to follow prescribed accounting rules, reducing analysts' uncertainty about future earnings. Hope's work also included a comparison between Finland, Sweden, US and UK, and revealed that the accuracy of forecasts was clearly lowest in Finland, despite the fact that the disclosure level in Finland was clearly better than US and only slightly below the disclosure level in Sweden and UK The study covered the fiscal years 1991 and 1993 and therefore the results were only suggestive for intertemporal development and especially for more recent times. Our data will shed some new light on analysts' accuracy for more recent years. Based on Hope's study, it should be noticed that a high level of disclosure alone does not automatically bring about more accurate earnings forecasts.

Hope (2004) studied whether variations in the financial reporting environment had an impact on the accuracy of earnings forecasting. International I/B/E/S data covered 18 countries with 1242 firm-years during the first half of the 1990s. He investigated the relation between variations in accounting-related institutional factors (choice, accrual accounting and enforcement) and the accuracy of analysts' earnings forecasts. The results showed that the extent of choice among accounting methods was associated with lower forecast accuracy. In addition to that, the degree of prescribed accrual accounting positively correlated with forecast accuracy, supporting the view that accruals do provide useful information. Finally, enforcement of accounting standards correlates positively with forecast accuracy.

Bushman, Piotroski, & Smith (2005) studied whether insider trading restrictions had an impact on analysts' incentives to monitor firms. They analysed whether analyst monitoring in a country increased the monitoring of insider trading activities. Data used were from 100 countries during the period 1987-2000. They found that analyst monitoring increased after initial enforcement of insider trading laws. Specifically, both the intensity of analyst coverage (the average number of analysts covering monitored firms within a country) and the breadth of coverage (the proportion of domestic listed firms monitored by analysts) increased after initial enforcement of insider trading laws. According to these findings also in Finland the disclosure regulation should support analysts good performance.

O'Brien, McNichols, & Lin (2005) analysed how investment banking relationships affect analysts' impartiality. They examined analysts' recommendations for a sample of 3,731 companies making initial public offerings (IPOs) or seasoned equity offerings (SEOs) between 1994 and 2001. Affiliated analysts were slower to downgrade from Buy and Hold recommendations and significantly faster to upgrade from Hold recommendations. Affiliated analysts also issued recommendations sooner and more frequently after an offering than did unaffiliated analysts, and unaffiliated analysts were more likely than affiliated analysts to drop coverage of sample firms. The results supported the view that banking ties had an impact on analyst performance.

Frankel, Kothari, & Weber (2006) examined cross-sectional determinants of the informativeness of analyst research. Analysts' informativeness (AI) was measured by absolute abnormal stock price reaction on dates when analysts released forecast revisions for a firm covering period 1995-2002. They found that analysts' reports were more informative when

the potential brokerage profits were higher (e.g. high trading volume, high volatility and high institutional ownership) and lower when information processing costs (e.g. several business segments) were high.

The studies reviewed in this section have shown that economic cycle and institutional contents are important factors affecting analysts' performance. Implications of this literature review will be discussed in the section below.

2.3. Discussion on prior research and purpose of this research

To sum up, it can be seen that there exists a wide variety of research focusing on analyst forecasting. Overall, there is a consensus about forecasting optimism. Part of this could be due to close ties with the brokerage firm the analyst is working for. In addition to that, the number of analysts monitoring a firm increases the accuracy of the forecasts. Regarding the institutional environment, the results show that demanding accounting legislation with well-functioning enforcement improves the quality of analyst forecasts. Literature supports the view that earnings smoothing increases the accuracy of earnings forecasts. There is also evidence that macroeconomic crises increase forecasting errors. Overall, the results obtained support the view that analysts believe too strongly in their own private information and attach too little significance to public information.

International findings are mainly valid also in the Finnish emerging market context. There are also some uncovered themes in Finnish emerging markets regarding analyst activity that we are going to cover in this paper. First, this study reviews analyst activity from 1987 to 2005, which is a longer period than has been covered by related research. During this long period, there were periods of economic boom and recession. This fact gives us possibilities to study whether forecasting activity and accuracy varies through time and especially during high/low seasons. It should also be borne in mind that the reason for bullish markets were somewhat different in the 1980s (overall economic prosperity) vs. the 1990s (hi-tech bubble). This matter gives us potentially new possibilities to evaluate how analysts succeeded in their forecasting over various periods.

In emerging markets, regulation and legislation are also under development. Finnish emerging markets are not an exception to this. One of the major regulatory acts supporting business-to-non-business communication and transparency was interim reporting regulation (beginning of

interim reporting January 1, 1986). An additional major regulatory event that could have had an impact on analyst forecasting accuracy was the elimination of restrictions allowing foreign ownership in listed Finnish firms. The most recent regulatory change was the requirement that all listed firms adopt International Financial Reporting Standards (IFRS) in their consolidated financial statements from January 1, 2005. Besides increasing long-term (1987-2005) analyst activity in an emerging market, these variations in economic and legislative regimes should give additional evidence and insight about analysts' ability to take these matters into account in their forecasting. The next section will describe the data applied.

3. Data and descriptive statistics

3.1. Analyst activity over time

This section will display how analyst activity has developed over the period 1988-2005. Table 1 already displayed a number of analysts' consensus Earnings per share (EPS) forecasts. It should be mentioned here that descriptive statistics exist for the period 1987-2005. For statistical runs presented later, the estimate requires the year 1987 and leaves us with results covering the years 1988-2005. There were a lot of "consensus" forecasts based on only one or two forecasts in the database. In order to obtain representative and more reliable consensus forecast data, we limit our consensus sample to those consensus forecasts with at least four individual estimates. The number of analysts' consensus forecasts (22 590), reported in table 1, contains all forecasts for the future years (1-5) and in the longer term (beyond five years). Forecasts are a monthly consensus. In the Thomson database, a consensus forecast includes forecasts available on the Thursday before the third Friday of the month (the Thursday that falls between the 14^{th} and 20^{th} of each month). Values available regarding EPS forecasts are: mean, median, minimum, and maximum. All forecasts (i.e. domestic and foreign) made for Finnish listed firms are included in the sample. Tables 1, 2, 3 and 6 are based on the year when estimates are given. Tables 4, 5 and 7 are founded on the forecasting year. This separation is made due to a lack of actual EPSs in models 1, 2 and 3 (presented in section 4). Secondly, this division should provide an insightful picture of analysts' actions over time.

Table 1 shows that the development of the number of consensus forecasts is relatively systematic. The number of forecasts has increased in a fairly stable way from 10 in 1987 to 1966 in 2005. The exceptions for this annually increasing number of consensus forecasts are

the years 2000-2001 and 2003-2004, when there was a downturn in the number of forecasts compared to the previous year. According to the OMX Helsinki, general index markets were very bearish during the decline years 2000-2001 and relatively stable during the years 2003-2004 (see Figure 1). Also, the number of listed companies dropped from 155 to 137 during the period 2001-2004. In other words, being listed on the OMX Helsinki was not a very attractive alternative for certain firms during that period**.**

TABLE 1

Number of consensus forecasts

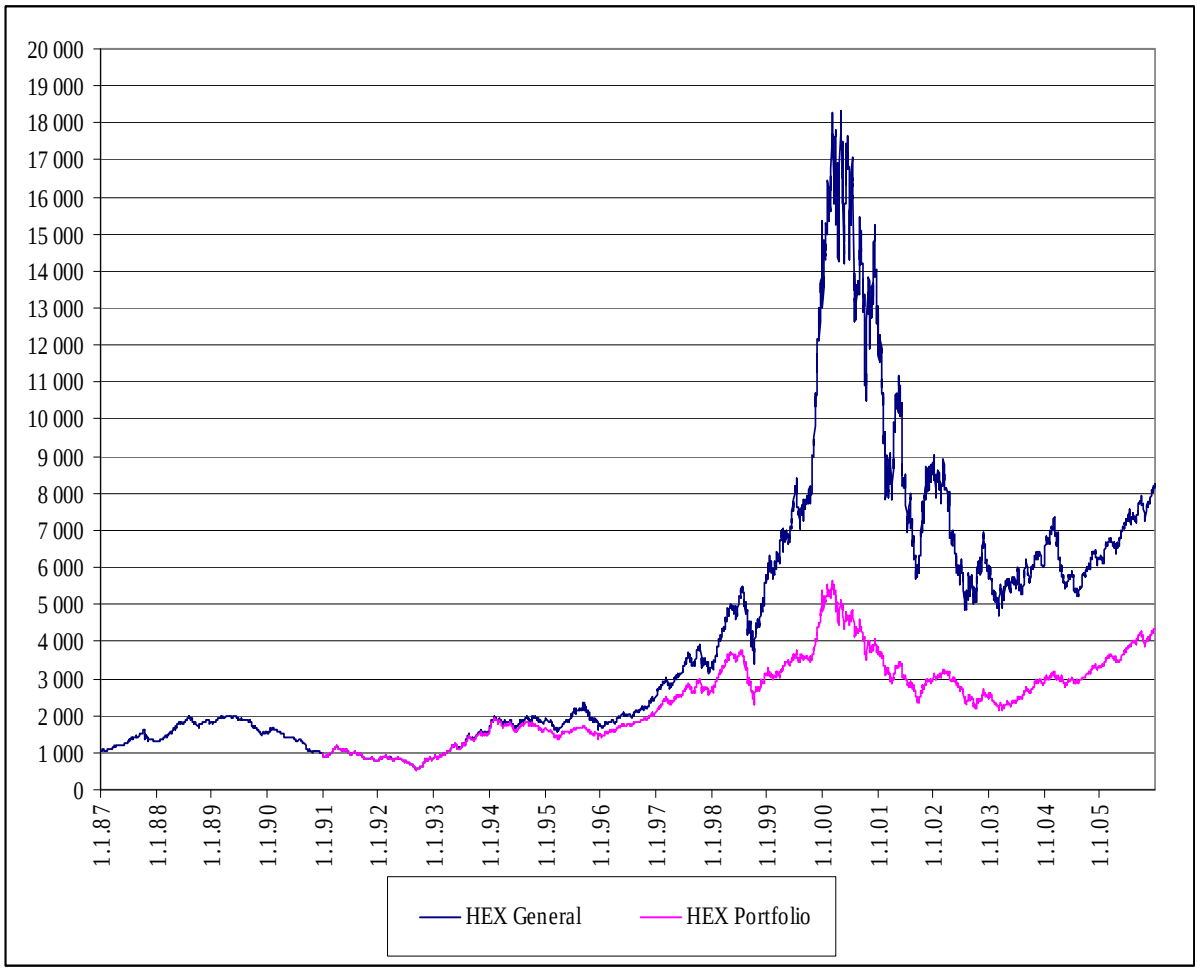
Year	Number of consensus forecasts (%)	% of Total	Yearly change (%)	Correlation HEX General-index vs. Consensus change (monthly basis)	Correlation HEXP-index vs. Consensus change (Monthly basis)
1987	10	0	-	0.96	-
1988	42	0.2	320.0	-0.13	-
1989	152	0.7	261.9	0.13	-
1990	241	1.1	58.6	0.46	-
1991	285	1.3	18.3	-0.35	-0.38
1992	361	1.6	26.7	0.27	0.27
1993	396	1.8	9.7	-0.14	-0.12
1994	724	3.2	82.8	0.66	0.72
1995	1 202	5.3	66.0	-0.09	-0.04
1996	1 454	6.4	21.0	-0.04	-0.06
1997	1 639	7.3	12.7	0.21	0.18
1998	1 912	8.5	16.7	-0.35	-0.38
1999	2 195	9.7	14.8	0.12	0.22
2000	2 136	9.5	-2.7	-0.53	-0.52
2001	2 043	9.0	-4.4	0.51	0.55
2002	2 207	9.8	8.0	-0.42	-0.61
2003	1 855	8.2	-15.9	0.55	0.66
2004	1 770	7.8	-4.6	-0.2	0.05
2005	1 966	8.7	11.1	0.36	0.41
Total	22 590	100	-	0.07	0.08

Year refers to the year when estimates were given.

A more detailed description of the intertemporal development of analyst activity can be observed focusing on the number of individual forecasts. These are presented in Table 2 below.

FIGURE 1

Development of HEX market indices during the period 1987-2005



The overall development in Table 2 (individual forecasts) resembles that in Table 1 (consensus forecasts). The total number of individual EPS forecasts is224 087. The pattern of the number of individual forecasts is as follows: during the period 1987 to 1999, the number of individual forecasts increased constantly. The emerging nature of the market was reflected in a very dramatic increase in individual forecasts during the late 1980s and early 1990s. Conversely, during the last five years (2001-2005), there was a decrease in the number of individual forecasts. In 1990, the number of forecasts for the first time exceeded 1 000 (1 348to be exact). In 1995, the number of forecasts for the first time exceeded 10 000 (12 427). Soon after that, during 1999, the number of forecasts for the first time exceeded 20 000 (23 211). Despite the decreasing trend in the number of analysts' forecasts during 2000-2001 and 2003-2005, the number stayed above 16 900 throughout those five years.

TABLE 2

Number of individual forecasts

Year	Number of Estimates	% of Total	Yearly change (%)	Estimates/ Consensus	Coverage of Firms (%)
1987	42	0	-	4,2	6,0
1988	190	0..1	352.4	4.5	18.2
1989	729	0.3	283.7	4.8	16.7
1990	1 348	0.6	84.9	5.6	18.8
1991	1 869	0.8	38.6	6.6	22.7
1992	2 924	1.3	56.4	8.1	23.0
1993	3 993	1.8	36.6	10.1	28.8
1994	7 394	3.3	85.2	10.2	46.2
1995	12 427	5.5	68.1	10.3	68.7
1996	15 097	6.7	21.5	10.4	78.9
1997	17 667	7.9	17	10.8	80.0
1998	19 536	8.7	10.6	10.2	77.9
1999	23 211	10.4	18.8	10.6	80.0
2000	21 190	9.5	-8.7	9.9	77.4
2001	19 550	8.7	-7.7	9.6	68.8
2002	22 752	10.2	16.4	10.3	67.0
2003	19 359	8.6	-14.9	10.4	63.3
2004	17 827	8.0	-7.9	10.1	63.5
2005	16 982	7.6	-4.7	8.6	76.0
Total	224 087	100	-	9.9	-

Year refers to the year when estimates were given.

3.2. Analyst forecasting horizon

In the emerging markets in particular, it is interesting to see how the applied forecasting horizon has developed. Table 3 below details this.

Overall, about four-fifths of the forecasts have a one- or two-year horizon. Through time, the forecasting horizon has been extended, especially for three year forecasts. During the most recent years, about one quarter of the forecasts had a three-year horizon. The first five-year forecasts were not registered until in year 1999. The general trend during our sample period was an increase in two- and three-year forecasts and a slight decrease in one-year forecasts. Based on these figures, it seems that analysts are taking a longer-term view in order to avoid short-termism.

TABLE 3

Development of analyst forecasting horizon

	Distance to Earnings per share (EPS)-report (years)						
Year	1	2	3	4	5	5+	Total/Year
1987	90.0 (%)	10.0	0.0	0.0	0.0	0.0	10
1988	59.5	40.5	0.0	0.0	0.0	0.0	42
1989	82.9	15.8	1.3	0.0	0.0	0.0	152
1990	58.5	41.1	0.4	0.0	0.0	0.0	241
1991	51.2	44.2	4.6	0.0	0.0	0.0	285
1992	44.6	49.6	5.8	0.0	0.0	0.0	361
1993	50.0	42.9	7.1	0.0	0.0	0.0	396
1994	47.4	42.1	10.5	0.0	0.0	0.0	724
1995	44.0	39.0	16.6	0.3	0.0	0.0	1 202
1996	44.6	37.8	17.5	0.0	0.0	0.0	1 454
1997	42.6	38.9	18.5	0.1	0.0	0.0	1 639
1998	42.9	38.6	17.7	0.8	0.0	0.0	1 912
1999	42.1	38.4	19.1	0.4	0.1	0.0	2 195
2000	39.0	37.4	21.4	2.1	0.1	0.0	2 136
2001	39.0	35.5	23.8	1.4	0.2	0.0	2 043
2002	37.0	37.7	24.3	0.9	0.0	0.0	2 207
2003	38.0	35.5	26.5	0.1	0.0	0.0	1 855
2004	33.9	36.9	28.2	1.0	0.0	0.0	1 770
2005	38.1	37.1	23.9	0.9	0.1	0.0	1 966
Total	9 268	8 557	4 598	156	11	0	22 590
% of Total	41.0	37.9	20.4	0.7	0.0	0.0	100.0

Year refers to the year when estimates were given.

4. Analyst forecasting performance

In line with Hodgkinson (2001), we study three aspects in order to discover how analysts performed during the years 1988-2005 in Finnish emerging markets. The three aspects are: (1) analyst forecast accuracy, (2) analyst forecast bias, and (3) analyst forecast efficiency. The sub-sections below explains the methodology applied in each case.

4.1. Analyst forecasting accuracy

One of the key criteria regarding the usefulness of analyst forecasts is their accuracy. Inaccurate Earnings forecasts have little use in informed decision-making. Besides the general

importance of forecasting accuracy as such, there are also two other main reasons to focus on forecasting accuracy. First, analyst activity has dramatically increased towards Finnish firms (see Table 1 and 2 earlier in the text). It is not self-evident that the accuracy has constantly improved through the years. The rapid development of Finnish stock markets, typical for an emerging market may also have caused inexperienced analysts to make forecasts for Finnish firms. Furthermore, even experienced analysts could have faced unanticipated, market-specific matters. These two things at least - increased analyst activity and an emerging market phase - may have caused unexpected variations in the level of forecast accuracy through the years. Furthermore, over the years, the forecasting horizon has changed. Basically, a stable rather than turbulent future should be linked with a longer forecasting horizon.

Forecasting error (FE) is a widely applied measure to capture analyst accuracy in their EPS forecasting and is also applied here. Eq. (1) displays our measure for forecasting error:

$$FE_{i,t} = |(FEPS_{i,t} - EPS_{i,t})/EPS_{i,t}| \quad (1)$$

where: $FE_{i,t}$ = absolute proportional consensus forecast error for firm *i* at time *t*,

$EPS_{i,t}$ = the actual Earnings per share (EPS) for firm *i* at time *t*,

$FEPS_{i,t}$ = the forecast Earnings per share (EPS) for firm *i* at time *t*.

Table 4 below summarises the development of forecasting accuracy during the period 1988-2005. Focusing first on the absolute EPS forecasting errors, we can conclude, as anticipated, that the development of forecasting accuracy has been somewhat unstable. During the first year (1988), forecasting error level was relatively low at 0.31. In 1989, 1990 and 1998, the absolute forecasting error was suspiciously high, and, because of this, we examined if there were some extreme observations. Examination uncovered that one firm (Cultor) caused the high value in 1989. In 1990, we found neither an individual firm nor a sector which could have had an extreme impact. In 1998, two sectors, consumer non-durables and basic industries, and two firms, Amer and Outokumpu, distorted the analysis. It should be pointed out that the high FEs during these years were not mistakes but were a result of highly unexpected occurrences faced by these firms, which surprised analysts.

A more detailed insight into forecasting accuracy can be gained by separately investigating the development of negative and positive EPS forecasting errors (for a similar approach, see Hodgkinson, 2001). A separate analysis for Table 4 contains both the number and percentage of negative and positive FEs. In the majority of years (10), the frequency of negative FEs

exceeds that of the positive. The data in this study provide evidence that analyst forecasts tend to be overly pessimistic (EPS consensus lower than EPS actual). The revisions of analysts are in line with the forecasting errors. Negative (positive) FEs are associated with upward (downward) revision (will be discussed later in the text with Table 6). Pessimism in analyst forecasts is a somewhat contrary result to the analyst optimism findings in the prior related literature (Kothari, 2001). Pearson's independency test for frequencies indicates that the frequencies of EPS forecasting errors are independent (see bottom of Table 4).

TABLE 4

Analysts' consensus EPS (Earnings per share) forecasting errors (FE)

Year	Absolute mean	Number of:		Percentage of:	
	FE in EPS	FE(-)	FE(+)	FE(-)	FE(+)
1988	0.31	16	48	25.0 %	**75.0 %**
1989	6.32	39	115	25.3	**74.7**
1990	2.94	54	118	31.4	**68.6**
1991	1.22	199	59	**77.1**	22.9
1992	0.61	265	30	**89.8**	10.2
1993	1.16	261	126	**67.4**	32.6
1994	0.45	410	179	**69.6**	30.4
1995	0.70	468	416	**52.9**	47.1
1996	1.46	516	689	42.8	**57.2**
1997	0.47	886	580	**60.4**	39.6
1998	3.57	607	1 034	37.0	**63.0**
1999	1.49	952	858	**52.6**	47.4
2000	0.59	1 048	841	**55.5**	44.5
2001	1.15	822	1 038	44.2	**55.8**
2002	1.75	826	1 037	44.3	**55.7**
2003	1.62	852	914	48.2	**51.8**
2004	0.60	1 101	655	**62.7**	37.3
2005	0.45	1 072	701	**60.5**	39.5
Total	1.28	10 394	9 438	**52.4**	47.6

See eq. (1) in the text. Year refers to the year to be forecast.
FE(+) frequency > FE(-) frequency: over 8 years (optimism)
FE(+) frequency < FE(-) frequency: over 10 years (pessimism)
In the percentage columns, the boldface indicates higher percentage.

Pearson's independency test for frequencies	
Significance	0.0000
χ^2	906.714
Degrees of Freedom	17

In order to gain more valid information about the accuracy of EPS forecasts, median FEs, rather than mean FEs, are also computed. The results are presented in Table 5 below.

TABLE 5

Analysts' consensus median EPS (Earnings per share) forecasting errors (FE)

Year	Median:		Number of		Percentage of	
	FE(-)	FE(+)	FE(-)	FE(+)	FE(-)	FE(+)
1988	-0.14	0.33	25	40	38.5 %	**61.5 %**
1989	-21.94	0.57	39	115	25.3	**74.7**
1990	-5.94	1.62	49	120	29.0	**71.0**
1991	-1.16	1.24	200	56	**78.1**	21.9
1992	-0.62	0.35	263	32	**89.2**	10.8
1993	-0.52	2.57	256	130	**66.3**	33.7
1994	-0.46	0.39	420	161	**72.3**	27.7
1995	-0.40	1.12	491	391	**55.7**	44.3
1996	-1.03	1.78	530	675	44.0	**56.0**
1997	-0.39	0.58	888	576	**60.7**	39.3
1998	-0.77	5.07	591	1 049	36.0	**64.0**
1999	-1.94	0.86	997	809	**55.2**	44.8
2000	-0.48	0.72	1 083	805	**57.4**	42.6
2001	-0.96	1.26	826	1 017	44.8	**55.2**
2002	-2.07	1.42	842	1 016	45.3	**54.7**
2003	-1.55	1.73	862	900	48.9	**51.1**
2004	-0.53	0.75	1 094	646	**62.9**	37.1
2005	-0.35	0.64	1 109	679	**62.0**	38.0
Total	-1.01	1.58	10 565	9 217	**53.4**	46.6

See eq. (1) in the text. Year refers to the year to be forecast.
FE(+) frequency > FE(-) frequency: over 8 years (optimism)
FE(+) frequency < FE(-) frequency: over 10 years (pessimism)
In the percentage columns, the boldface indicates higher percentage.

Pearson's independency test for frequencies

Significance	0.0000
χ^2	946.831
Degrees of Freedom	17

Overall, the results in Table 5 (based on median EPS figures) are largely the same as those reported in Table 4 (based on mean EPS figures). When comparing negative and positive median FEs, it is evident that in a vast majority of years (10 out of 18), the number of FE(-) is higher than the number of FE(+), further supporting the conclusion based on the mean FEs (see

Table 4 above). At least a partial reason for analyst pessimism might be the complicated forecasting environment in Finnish emerging markets. Pearson's independency test for frequencies indicates that the frequencies of EPS forecasting errors are independent (bottom of Table 5).

Additional insight into the accuracy of the EPS forecasts can be gained by studying analysts' EPS forecast revisions. The number of forecasting revisions up and down is reported in Table 6 below.

TABLE 6

Revisions in analysts' EPS (Earnings per share) forecasts

Year	No. of estimates in consensus	Revisions		Percentage of		Yearly Change of HEX Portfolio-index
		Upward	Downward	Upward	Downward	
1987	42	5	4	**55.60 %**	44.40 %	27.8 (%)
1988	190	9	11	45	**55**	38.8
1989	729	41	72	36.3	**63.7**	-16.2
1990	1 348	50	186	21.2	**78.8**	-34.8
1991	1 869	102	371	21.6	**78.4**	-21.9
1992	2 924	262	374	41.2	**58.8**	5.7
1993	3 993	511	356	**58.9**	41.1	87.4
1994	7 394	993	629	**61.2**	38.8	4.7
1995	12 427	1 344	1 328	**50.3**	49.7	-10.8
1996	15 097	1 075	2 428	30.7	**69.3**	43.8
1997	17 667	2 158	1 774	**54.9**	45.1	28.8
1998	19 536	1 758	2 511	41.2	**58.8**	15.0
1999	23 211	2 661	2 685	49.8	**50.2**	66.2
2000	21 190	2 562	2 294	**52.8**	47.2	-24.9
2001	19 550	2 065	4 047	33.8	**66.2**	-22.3
2002	22 752	2 828	5 249	35	**65**	-16.7
2003	19 359	2 773	4 218	39.7	**60.3**	16.2
2004	17 827	3 987	3 165	**55.7**	44.3	14.6
2005	16 982	4 034	3 172	**56**	44	30.1
Total	224 087	25 152	31 602	44.3	**55.7**	

In the percentage columns, the boldface indicates higher percentage.
Year refers to the year when estimates were given.

First, we observe that the number of estimates in consensuses increased dramatically during the research period from 42 per year to 16 982 per year (Table 6, second column from the left). Regarding the two first years (1987-1988), the number of upward and downward revisions was about the same. There were four main exceptions to this general trend: the years 1990-91 and 2001-02. In those four years, the percentage of downward revisions was at least 65%. In all of those four years, the downward trend of the markets lasted longer than anticipated. The highest percentage of upward revisions was in 1994 (61.2%). In most cases, the dominance of a negative/positive forecasts was also logically reflected in the dominance of upward/downward revisions in analysts' EPS forecasts. Overall, the descriptive results show that analysts were not very successful in their forecasting, especially as far as recognising trend changes in a timely fashion was concerned. In addition to that, the revision of a forecast was often not strong enough. Because of this, the corrections for pessimism/optimism bias have been somewhat sluggish.

4.2. Analyst forecast bias

In this section, we focus on analyst forecast bias. Potential bias will be studied by looking at the relationship between actual and forecast EPS changes. Abarbanell & Bernard (1992) regress actual earnings changes on forecast errors. Capstaff, Paudyal, & Rees (1995) and Hodgkinson (2001) applied previous earnings to deflate actual and forecast changes. Our forecast bias model is as follows:

$$DAEPS = a_0 + a_1(DFEPS) + e_{i,t} \quad (2)$$

where: $DAEPS = (EPS_{i,t}-EPS_{i,t-1})/|EPS_{i,t-1}|$ = scaled actual change in Earnings per share (EPS),
$DFEPS = (FEPS_{i,t}-EPS_{i,t-1})/|EPS_{i,t-1}|$ = scaled forecasted change in Earnings per share (EPS).

Unbiased forecasts would require $a_0 = 0$ and $a_1 = 1$.

Statistically our data were partly heteroscedastic, and we dealt with this by implementing the HAC covariance matrix correction. We also detected deviate observations and removed them from the regressions to make the data more consistent. It should be mentioned that the degree of heteroscedasticity and removed observations did not distort the results now reported. The analysis includes all consensus forecasts given after the annual Earnings per share (EPS) report in year t-1, and before the annual EPS report in year t. Due to this constraint, the

number of forecasts declined. In Table 7 columns titled as all data give results with the constraint specified above. Column 0-1 (11-12) months refers to a consensus forecast based on prior EPS announcement but before 0-1 (11-12) months to the next EPS announcement respectively. Overall, the applied model is statistically highly significant**.** Furthermore, DFEPS coefficients are statistically significant in all these models. For all data models, the coefficient is 1.236, which is above its theoretical value of one. Furthermore, the constant term is statistically significant, with the 11-12 months model indicating that there is other information beyond DFEPS that might impact on the actual difference in EPS.

TABLE 7

Analysts' consensus EPS (Earnings per share) forecast bias 1988-2005

Dependent variable:	**ALL DATA**			**0-1 MONTH**			**11-12 MONTHS**		
DAEPS	Coef.	t-test	Signif.	Coef.	t-test	Signif.	Coef.	t-test	Signif.
DFEPS (a_1=0)	1.236	28.637	0.000	1.108	40.058	0.000	1.395	14.544	0.000
DFEPS (a_1=1)	1.236	5.465	0.000	1.108	3.891	0.000	1.395	4.122	0.000
Constant	-0.184	-5.401	0.000	-0.028	-0.789	0.431	-0.375	-5.383	0.000
Adj. R^2	0.88			0.95			0.80		
n	8 251			854			1 358		

See eq. (2) in the text. Significance levels for 2-tailed test. HAC covariance matrix correction applied. Observations further than 3 std. deviations from the residuals of DAEPS were identified as outliers and removed from the regressions. 83, 8 and 16 outliers were detected for all data, 0-1 months and 11-12 months respectively.

It is expected that the closer the forecast is, the closer the coefficient for DFEPS is to its theoretical value. In this case, this is also true with the DFEPS coefficient less than one month before the reporting period, which in this case is closest to its theoretical value. This result is in line with the conclusion that the nearer to EPS announcement the forecast is made the less unbiased forecasting error is**.** A coefficient that exceeds one shows that forecasted change (DFEPS) is below actual change (DAEPS) indicating under-reaction in analysts' estimates. Furthermore, the constant term deviates from zero only with the entire data and the 11-12 months sample. The 0-1 month sample constant does not deviate statistically reliably from zero, which supports the theory.

4.3. Analyst forecasting efficiency

In line with Hodgkinson (2001), we test whether analysts overreact or under-react to previous changes in EPS. We divide the EPS data into two groups. One group contains data for observations where analyst forecasts exceed actual earnings. The other group contains the rest of the observations. The Abarbanell & Bernard (1992) model is applied for both these groups:

$$EPS_{it}\text{-}FEPS_{it}=b_0+b_1DPEPS+e_{i,t} \quad (3)$$

where: $DPEPS = EPS_{i,t1}\text{-}EPS_{i,\,t2}$ = previous change in Earnings per share (EPS) for firm *i* at time *t1*,

$FEPS_{i,t}$ = the forecast Earnings per share (EPS) for firm *i* at time *t*.

Without scaling, the model did not fit our data, therefore we divided both sides of the equation by $|EPS_{i,t-1}|$. Efficient forecasts should be unaffected by forecast error and previous change in earnings. In regression terms, coefficient b_1 should be zero to indicate the analysts' forecasts to be efficient. A coefficient greater (less) than zero indicates analysts' under-reaction (overreaction) to the permanence of previous changes in earnings. If b_0 deviates significantly from zero, then forecast errors are to a certain extent independent of prior forecasting errors. The results obtained are reported in Table 8 below.

TABLE 8

Analysts' consensus EPS (Earnings per share) forecasting efficiency

	EPS >FEPS			**EPS ≤ FEPS**		
Dependent variable: $(EPS_{i,t1} - FEPS_{i,t1})/ \|EPS_{i,t-1}\|$	Coef.	t-test	Signif.	Coef.	t-test	Signif.
$DPEPS / \|EPS_{i,t-1}\|$	0.479	3.760	0.000	0.965	11.872	0.000
Constant	0.944	6.150	0.000	-0.599	-7.741	0.000
Adj. R^2	0.39			0.66		
N	3 264			3 755		

See eq. (3) in the text. Significance levels for 2-tailed test. HAC covariance matrix correction applied.

Both, the dependent and the independent have been scaled by Earnings per share (EPS_{t1}) due to the low R^2 value of the model in the first instance. Scaling positively affected the level of explanation and did not change significance levels. Partial heteroscedasticity and auto-

correlation were corrected by making the HAC covariance matrix correction. The results show that, in both samples, the DPEPS coefficient is greater than zero, indicating that analysts do not fully take into account prior EPS development i.e. they appear to be under-reacting to information about earnings. When actual EPS is lower or equal (higher) than forecast, the effect of earlier EPS change is stronger (weaker). The constant is also significant in both samples. When actual EPS is greater (lower or equal) than forecast, the constant adjusts the forecast upwards (downwards). This further supports the view that analysts underestimate the value of prior earnings change in their current earnings forecasting.

5. Summary

In conclusion, this paper has reviewed the main body of academic research on analysts' activity and their performance. Furthermore, we have displayed the development of analysts' activity (frequency and forecasting horizon) in Finland from the practical beginning of such activity (1987) to the most recent information operationally available (2005). The development was as rapid as expected. Both the number of individual and consensus forecasts increased strongly, with a slight slow-down since the turn of the millennium.

The section focusing on analysts' forecasting performance deals with the topic in three dimensions: forecasting accuracy, forecast bias, and forecasting efficiency. Overall, the results support the conclusion that analysts tend to be somewhat pessimistic in their Earnings per share (EPS) forecasts. Furthermore, the corrective actions taken have been somewhat sluggish, causing delays to EPS revisions. However, the forecasts improved significantly in the close before the actual EPS releases (0-1 month sample). Finally, analysts did not fully take into account prior EPS development. This further supports the view that analysts underestimate the value of prior earnings change in their current earnings forecasting.

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