Aalto University
School of Business

Do Analysts Know It Better? Sell-Side Analyst Recommendations and Stock Returns in Finland

Casimir Kontio, 422497

Bachelor's Thesis

Finance

Fall 2016

Abstract

In this thesis I analyze the association of sell-side analysts' stock recommendations and stock returns in Finland between January 2006 and December 2015 on a daily basis. The focus is on profitability of an investment strategy utilizing these recommendations. I find that an investment strategy that buys the most favorable stocks and sells short the least favorable stocks on a daily basis yields an annual abnormal return of above 14 percent. Furthermore, I find that the abnormal returns are mostly pronounced on both small stocks and stocks that have small number of analysts covering the firm. In addition, I find that less-frequent portfolio rebalancing fades away the significance of abnormal returns, and that the abnormal returns turn into negative when the portfolio is rebalanced only on a monthly basis.

Keywords: Security analysts; Analyst recommendations; Stock markets; Efficient market hypothesis; Anomaly

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Department of Finance

Aalto University School of Business

Thesis instructor: Matthijs Lof

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1. Introduction

Investment banks, brokerage houses and pension funds, to mention some, spend large amounts of capital to hire young analysts to generate analyses and stock recommendations for their customers and public investors. In addition, the market seems to listen to this information; the post-revision price drift (PRD) is proven to exist, meaning that analyst recommendations signal stock price movements in the direction of analyst recommendations right after these recommendations are published, i.e. positive price reaction after buy recommendation and negative reaction after sell recommendation (see, for example, Narashim et al., 2003; Stickel, 1995 and Womack, 1996). However, there is controversial evidence of the long-term investment value on these analyst recommendations: according to McNichols et al. (1997), analyst recommendations do reflect companies' future performance and the direction of stock price in long-term whereas Altalinkiç et al. (2016) set new evidence that analyst recommendations do not seem to have long-term investment value anymore with newer data.

Although analyst recommendations and stock returns have been largely covered and studied in the field of finance, the studies have focused mainly on U.S. and international stock markets, with evidence that price reactions after analyst recommendations are largest in the U.S. (Jegadeesh, 2006). However, the European stock environment, especially the Nordics, has been widely neglected. In addition, at least to my knowledge, there are no studies in the field of long-term investment value of analyst recommendations covering Finland.

The purpose of this thesis is to fulfill the existing deficiency and to increase the knowledge about the longer term value of analyst recommendations, of which evidence is more or less mixed. The methodology I use is similar to Barber et. al (2001) who show that investors could gain an annual abnormal gross return of above four percent in U.S. by buying (selling short) most (least) favorable stocks with daily portfolio rebalancing. I examine the same anomaly in Finnish stock market environment and whether the possible abnormal returns are mostly driven by small stocks as Brown et al. (2015) show to be the case, making the anomaly less meaningful in real world since the daily portfolio rebalancing is hard to execute with small stocks that are rarely traded. In addition, to go even further with my analysis, I run an additional test to study if the abnormal returns are affected by the number of analysts covering the underlying stocks. I find that an investment strategy that buys the most favorable stocks and sells short the least favorable stocks on a daily basis yields an annual abnormal return of above 14 percent. Furthermore, the abnormal returns are pronounced on small stocks and stocks that have small analyst coverage.

This thesis is structured in the following way: in Section 2 I go through the existing literature on analyst recommendations and stock returns, both the short and long-term evidence, and state my hypotheses. In Section 3 I introduce my sample data and the methodology I use, which is quite similar to Barber et al. (2001). In Section 4 I summarize my results and findings from the regression analyzes and in Section 5 I run two additional robustness tests to check the reliability of my findings. In Section 6 I conclude my thesis and provide some recommendations to which direction the future studies should focus on.

2. Literature Review and Hypotheses

2.1. Stock Price Drift After Analyst Recommendation Revisions

The immediate stock price reactions after analyst recommendation announcements have been studied to a wide extent. Many studies show that stocks prices react significantly after analysts announce new recommendations (e.g. Asquith et al., 2005; Jegadeesh and Woojin, 2006 & 2010; Stickel, 1995 and Womack, 1996) and the price reaction is shown to be most significant for recommendation downgrades (Womack, 1996) and recommendations that move away from consensus (Jegadeesh and Woojin, 2010). In addition, the price drift is stated to be most significant for smaller companies (e.g. Barber et al., 2001; Stickel, 1995) and that recommendation revisions by larger brokerage houses generate larger price drifts (Stickel, 1995). The price drift is stated to last up to one month for upgraded recommendations and up to six months for downgraded recommendations, respectively (Womack, 1996). This post-recommendation price drift (PRD) is confronting the prevailing theory of semi-strong form of market efficiency by Malkiel and Fama (1970) which states that investors should not be able to profit from the publicly available information that include, for example, analyst recommendations. Furthermore, all investors in the market, in theory at least, have the same access for the public information that sell-side analysts use for their analyses and forecasts when providing buy and sell recommendations.

DeBondt and Thaler (1990) argue one possible explanation for the PRD, showing evidence that security analysts tend to overreact (underreact) to prior earnings forecasts, generating price drifts in the market after recommendation announcements. However, this analysts' overreaction (underreaction) is later on proven to explain only about half of the stock price movements after sell-side analysts' recommendations (Abarbanell and Bernard, 1992). In addition, newer evidence states that analysts' prior year performance drives the magnitude of the price drift after recommendation announcement, and the positive (negative) excess returns have shown to

be largest from analysts whose recommendations have earned most excess returns in the prior year (Mikhail et al., 2004). In addition, Brown et al. (2015) provide evidence that could partially explain the informational value of the analysts' recommendations, stating that analysts tend to rely more on private conversations with the management when revising recommendations, such as CEO meetings and calls, than general conversation in, for example, roadshows and companies' investor days. This is in line with Asquith et al. (2005) who argue that analysts do have a role in the markets as construing or bringing new information from other sources.

Despite the stock markets' reaction after analysts' recommendation revision has been studied to a wide extent and proved to exist, the literature still lacks robust evidence explaining the price drifts. On the other hand, there are some clear factors that have been widely shown to affect the PRD, such as analysts' underreaction (overreaction) to earnings forecasts, analysts' prior performance, small-stock effect and the significance of the brokerage house behind the analyst.

2.2. Long-term Performance and Investment Value of Analyst Recommendations

The existing literature on the performance of analyst recommendations has been more or less focused on the immediate and short-term price movements after the recommendation announcements while the longer term horizon has been more neglected. In addition, there are only few studies that take an investor-oriented approach, focusing on the real profitability of different investment strategies according to analyst recommendations. Barber et al. (2001) are one of the few to take this approach on the analyst recommendations, showing results that buying the most favorable stocks investors could gain an annualized abnormal gross return of above four percent in the U.S. However, when trading costs, one of the largest inefficiencies in the market, were taken into account, the net annual abnormal returns were negative. The study supports the findings of McNichols et al. (1997) who show that analysts' recommendations tend to forecast the long-term performance and stock price direction also, along with the yet discussed shorter term price drifts. However, Altınkılıç et al. (2016) show recent evidence that newer data does not support the evidence of the analysts' ability to forecast as accurately as McNichols et al. showed earlier on.

Similarly as in the PRD, the possible abnormal returns in long-term horizon are more pronounced on smaller firms as, for example, Barbet et al. (2001) show in their study. On the one hand, this phenomenon can be argued to be the result of the so-called small-firm effect. This exists because investors demand liquidation premium for smaller stocks which leads to

negative correlation between expected returns and the level of liquidity (e.g. Amihud and Mendelson, 1986; Chordia et al., 2001). On the other hand, smaller firms tend to have less analyst coverage, and as Doukas et al. (2005) show, lesser analyst coverage tend to lead to superior returns compared to largely covered stocks since stock markets overvalue largely covered stocks, mainly because the markets are more efficient with these stocks. Furthermore, Arber et al. (1983) state that investors will pay less for the neglected stocks since they lack accurate and trustworthy information and, on the other hand, the prices of these neglected stocks do not adjust as efficiently as largely covered stocks, as Doukas et al. state also to be the case. Hameed et al. (2015) go even deeper in their analysis of analyst coverage, stating that heavily covered stocks act as bellwether stocks of which recommendations reflect to the prices of other less covered stocks in the same industry whereas the recommendations of those neglected firms do not reflect to prices of largely covered firms. This results that stocks with large analyst coverage tend to comove more precisely with the industry and market index while the neglected stocks have the ability to yield superior returns.

As discussed above, the existing literature is more or less mixed and lacks robust evidence on the analysts' ability to both accurately forecast the long-term performance of companies and to generate buy and sell recommendations that could add investment value for individual players in the financial markets. On the one hand, there are clear factors that explain the possible abnormal returns, that are mainly similar to the factors of PRD, including small-stock and neglected firm effect. On the other hand, the real investment value of the strategies following analysts' recommendation is less covered field while the studies have focused mainly on the factors that possibly generate excessive returns. Furthermore, the studies on this field have nearly all focused on either U.S. or international stock markets and, at least to my knowledge, there are no similar studies made in Finland which leaves a unique space and opportunity for me to extend the existing literature of the analyst recommendations and stock returns to Finland's stock market. This motivates me to further analyze the longer term performance of these recommendations.

2.3. Hypotheses

Assuming that Finnish stock markets are efficient in its semi-strong form, analyst recommendations should not bring any added value for investors in the market, i.e. investors should not be able to profit from this publicly available information. This means that all the analyst recommendations contain all the publicly available information that investors are fully

aware of, which adjusts the stock prices to correct levels (fair values) immediately after new information is available. Since I am having more of an investment-oriented approach, focusing on the long-term performance and profitability of the analyst recommendations, I expect to observe that analyst recommendations do not generate abnormal returns in the markets:

***H1**: No abnormal returns are earned by following analysts' recommendations.*

Previous studies state that both the post-recommendation price drifts and longer-term returns are most significant for smaller companies, and that possible abnormal returns both in short-term and in long-run are affected mostly by smaller firms' performance (see, e.g., Barber et al., 2001 and Stickel, 1995). In addition, stocks with smaller analyst coverage are expected to outperform those with large coverage since the largely covered stocks are overvalued and the markets are relatively more efficient in the case of large stocks (e.g. Arber et al., 1983; Doukas et al., 2005). I expect to see that the possible abnormal returns are mostly generated by the performance of smaller and more neglected stocks that are not traded as much as big stocks with large analyst coverage:

***H2**: Abnormal returns are mostly pronounced on small and neglected firms.*

3. Data and Methodology

3.1. Data Sample

The data consists of daily analysts' recommendations consensuses, that are the averages of all analyst recommendations for the specific firm of that day, for publicly traded companies in the Nasdaq OMX Helsinki (previous Helsinki Stock Exchange) for the time period from the beginning of 2006 to the end of 2015. In addition, the data includes the daily stock returns (net dividends included) for the same time period. The data is from Bloomberg Terminal, and the recommendations ratings range from 1 to 5, rate 1 being the least favorable recommendation (strong sell) and rate 5 the most favorable recommendation (strong buy). The sample size consists of all in all 42,002 daily recommendation consensus observations. However, the data has daily gaps with no analyst recommendation consensuses since Bloomberg announces them on a daily basis only when there are changes in the recommendation and (or) if the number of

analysts covering the firm changes. Thus I have assumed that the recommendation consensus for the lacking days is the same as previous one, until the day that the recommendation has changed. Thus my final data consists of over 200,000 observations.

During the time period from the beginning of 2006 to the end of 2015, there have been 177 listed companies in the Nasdaq OMX Helsinki (OMXH), with an average of 138 public companies per year. However, there are some neglected companies, i.e. companies with no or little analyst coverage, decreasing the companies with analyst recommendations to total of 136, with an average of 111 a year. The company is described as neglected if it has less than one valid recommendation consensus a year. Table 1 presents more in-depth descriptive statistics of my data sample. Figure 1 instead provides statistics how the analyst recommendations have distributed into buy, hold and sell recommendations from day-to-day during the sample period in OMXH. Note that the shares of each recommendation type have been quite stable, with a small decrease in buy recommendations and increase in sell recommendations. Note also that there is a visible correlation between analyst recommendations and market cycles: for example, the portion of sell recommendations increased by 40 percentage points in the financial crisis that started in 2007 while the portion of buy recommendations decreased by the same number.

Table 1.
Descriptive Statistics on Analyst Recommendations from Bloomberg Terminal, 2006-2016.

This table provides descriptive statistics of the analyst recommendations of my data, divided into yearly basis. The number of listed firms includes all listed firms in the Helsinki Stock Exchange by a year. The number of covered firms include all firms that have at least one valid analyst recommendation consensus a year. The number of unique analyst recommendation consensuses is the amount of original analyst consensus rating a year Bloomberg Terminal provides for the covered firms, i.e. the number includes the observations only when the rating has possibly changed and, thus, the daily gaps with no consensus are not filled. The average rating consensus is a simple arithmetic average of the analyst recommendations consensuses for the year.

Year	No. of Listed Firms	No. of Covered Firms	Covered Firms % of All Firms	No. of Analysts per Covered Firm		No. of Unique Analyst Recommendation Consensuses	Average Analyst Rating Consensus
				Mean	Median		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2006	147	106	72.0	5.99	4.44	2,867	3.39
2007	149	111	74.6	7.07	5.21	2,866	3.37
2008	142	112	78.9	7.67	5.33	3,846	3.20
2009	138	112	81.3	8.60	5.79	4,794	2.81
2010	136	112	82.8	8.69	5.79	4,550	3.22
2011	133	111	84.0	8.85	6.21	5,092	3.28
2012	131	109	82.8	8.02	5.85	4,435	3.19
2013	132	109	82.1	8.39	5.67	4,379	3.05
2014	135	114	84.3	7.74	4.72	4,516	3.17
2015	134	113	84.3	7.21	4.00	4,657	3.34
Average All Years	138	111	80.7	7.82	5.30	4,200	3.20

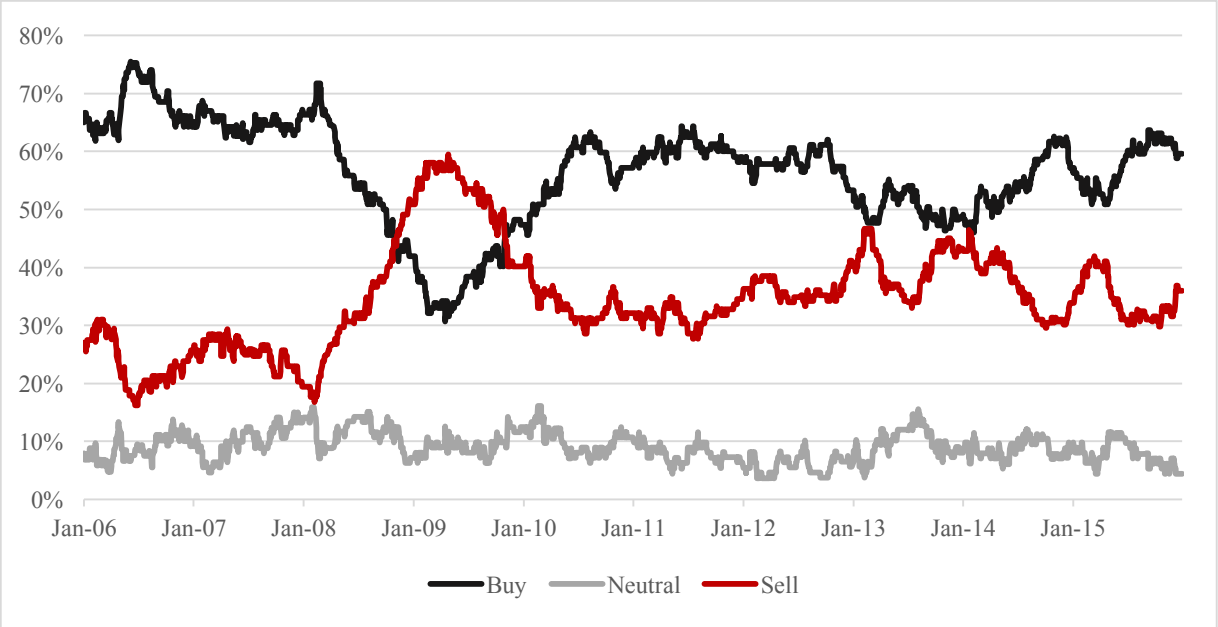

Figure 1. Distribution of Analysts' Recommendation Consensuses to Buy, Hold and Sell Recommendations on a Daily Basis, 2006-2015.

3.2. Methods

3.2.1. Portfolio Construction

To study if investors could profit from the analyst recommendations, I construct calendar-time portfolios based on the analyst recommendation consensuses similarly as Barbet et al. (2001) do in their study. Using the analyst recommendation consensuses, denoted as A_{rc}, each covered firm is put into one of the five portfolios I create. The first portfolio consists of the most favorable recommendations in the range of $5 \geq A_{rc} \geq 4.5$; the second portfolio with recommendations of $4.5 > A_{rc} \geq 4$; the third portfolio with recommendations of $4 > A_{rc} \geq 3.5$; the fourth portfolio with recommendations of $3.5 > A_{rc} \geq 3$ and the fifth portfolio with the least favorable recommendations of $A_{rc} < 3$. In addition to these five portfolios, I construct two other portfolios: one that holds all the covered firms and one that holds the neglected firms.

When each covered stock's portfolio p and weight w in that portfolio after each trading day's closing *t-1* is determined, the returns for the portfolios for the day t, denoted as R_{pt}, is calculated as following:

$$R_{pt} = \sum_{i=1}^{n_{pt-1}} w_{it-1} R_{it} \qquad (1)$$

where w_{it-1} is the value-weight of the stock *i,* calculated as the market capitalization of the stock *i* in the day *t-1* divided by the total market capitalization of the stocks in that day, R_{it} is the return for the stock in the day *t* and $n_{pt-1}$is the number of firms in the portfolio *p* at the close of the trading day *t-1*.

I use value-weighting because of three reasons: the equal-weighting of the daily stock returns (1) overweighs the small stocks in the long run overstating the portfolio returns, (2) assumes that small stocks are as liquid as big stocks and (3) implicitly assumes that the portfolio is daily rebalanced.[1] Thus value-weighting describes the significance of my results more appropriate as the large stocks are more heavily recognized and weighted in the real stock markets, also. However, I expect value-weighting result to less significant abnormal returns and, on the other hand, be slightly biased towards the large stocks because of neglecting the small stocks to some extent. Thus I also construct equal-weighted portfolios to compare the results with and to study whether the results are significantly different between value-weighting and equal-weighting. The daily returns for equal weighted portfolios *p* are calculated as simple arithmetic average of all stocks' returns in the day *t*.

For each month the daily returns are compounded by *n* trading days in each month to yield monthly returns that I use in the performance evaluation of these five portfolios. Formally:

$$R_{pt} = \prod_{t=1}^{n}\left(1 + R_{pt}\right) - 1 \qquad (2)$$

In addition to those five equally-weighted and value-weighted portfolios and the ones with all covered and neglected stocks, I examine whether smaller stocks yield higher abnormal returns than the larger companies as, for example, Barbet et. al (2001) and Stickel (1995) state to be the case with analyst recommendations and stock returns. I run this by dividing each of the five portfolios I have constructed into two portfolios, the first one holding small stocks and the second one holding big stocks. I make the separation to small and big stocks in a relation to other stocks in the portfolio so that both of the new two portfolios hold the same number of stocks but the market capitalizations of the first portfolio's stocks are smaller than the other

[1] Compounded returns of a daily rebalanced portfolio are upward biased due to bid-ask effect of individual small stocks. This problem would not be crucial if I would use buy-and-hold strategy, but with daily rebalancing the value-weighting describes the results more meaningfully (for further discussion see, e.g., Blume and Stambaugh, 1983; Canina et al., 1998)

ones, and vice versa. To go even further in the analysis than Barber et al., I do the same trick with the number of analysts covering the firms, dividing the five portfolios into two separate portfolios according to the number of analysts covering the underlying stock. I use value-weighting in these further analyses since it describes the results and real life investing more significantly, as discussed earlier.

3.2.2. Performance Calculations

To test if the portfolios yield abnormal returns, I start with simple market-adjusted return for all the portfolios I have constructed, that is calculated as $R_{pt} - R_{mt}$, where the market return for the month *t* is the return of OMXH total return index. For the equal-weighted portfolios the market return is calculated by taking the arithmetic average of the returns of the stocks in the index resulting to equal-weighted market return. These market-adjusted returns give a glance whether the portfolios have yielded larger (smaller) returns than the market. Next I calculate three measures of abnormal returns for each portfolio, using intercepts from the regression analyses. I start with Capital Asset Pricing Model (CAPM) and estimate the monthly abnormal returns. CAPM is formally stated as:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p\left(R_{mt} - R_{ft}\right) + \varepsilon_{pt} \quad (3)$$

where R_{ft} is the risk-free rate for the month *t*, estimated as one month Euribor rate [2], α_p is the estimated abnormal return and β_p is the portfolio's estimated market beta.

Second, I implement the three-factor model by Fama and French (1993) to my regression. The three-factor model is stated as:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p\left(R_{mt} - R_{ft}\right) + s_p SMB_t + h_p HML_t + \varepsilon_{pt} \quad (4)$$

where SMB_t is the equal-weight average of the returns on the three small stock portfolios for the region minus the average of the returns on the three big stock portfolio and HML_t is the

[2] I use monthly Euribor rates because they can be interpreted as risk-free and they match the one-month investment horizon I use in my performance calculations. The monthly Euribor rates are gathered from Bank of Finland's website (*http://www.suomenpankki.fi/fi/tilastot/korot/pages/tilastot_markkina_ja_hallinnolliset_korot_euribor_korot_short_fi.aspx)*.

equal-weight average of the returns for the two high book-to-market portfolios for a region minus the average of the returns for the two low book-to-market portfolios.[3]

Third, I add a fourth factor in the regression model, developed by Carhart (1997). This model is called the Carhart Four-Factor Model, and formally stated as:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + s_p SMB_t + h_p HML_t + w_p WML_t + \varepsilon_{pt} \quad (5)$$

where WML_t is the momentum factor, i.e. the equal-weight average of the returns for the two winner portfolios for a region minus the average of the returns for the two loser portfolios.

4. Results

4.1. Daily Portfolio Rebalancing

Table 2 provides descriptive statistics for the daily rebalanced portfolios that are constructed according to analysts' recommendation consensuses. Panel A provides statistics for value-weighted portfolios and Panel B for equal-weighted portfolios. First note that the number of stocks in the portfolio with the least favorable recommendations is on average about three times greater than those with the most favorable recommendations. This is relatively surprising since the existing literature in general states that analysts are reluctant to issue negative recommendations and to downgrade their recommendations (e.g. Barber et al., 2001; Conrad et al. 2006; Jegadeesh and Kim, 2010). However, it should be recognized that my sample period includes two large financial crises, the one in 2007 and the other in 2012, which is expected to affect the analysts' sentiment when announcing buy and sell recommendations. The variation in the number of the stocks within each portfolio is otherwise quite stable. The portfolio P1 with the most favorable recommendations, however, has the least stocks which is not surprising since Barber et al. (2006) state that the number of buy recommendations has subsequently decreased since mid-2006's.

Columns 4-7 present the estimated coefficients from the Carhart Four-Factor Model. The market coefficients are significant at the 1% level with high *t*-statistics for all the portfolios besides the long-short portfolios for both the value-weighted and equally-weighted. The

[3] The factors SMB and HML for the three-factor model and WML for the four-factor model regressions are monthly European factors and they are provided by Ken French (gathered from: *https://www.quandl.com/data/KFRENCH/FEU_M-Fama-French-European-Factors-Monthly*).

coefficient estimate SMB for the small-stock effect, on the other hand, is most significant for the most favorable recommendation portfolios and, in addition, for the value-weighted long-short portfolio. Overall the returns of the value-weighted portfolios seem to reflect more the small-value firms, which is surprising since I expected the equal-weighting to overstate the small-firm effect on the returns. However, the SMB coefficient is still significant for the equally-weighted portfolios, but only for the portfolios with buy recommendations. On the other hand, the SMB factor tend to decrease when the recommendation consensus decreases, for both the value and the equally-weighted portfolios. The estimated coefficient for the low book-to-market factor HML is not significant for the most favorable recommendations but it is significant at the 5% level for the value-weighted portfolio P3 and at 10% level for the equally-weighted portfolio P5 and P1-P5. The fourth factor which describes the momentum, i.e. buying past winners and selling past losers, denoted as WML, is significant in all the cases only for the least favorable recommendation stocks and for the long-short portfolio. This implies that analysts are tendentious to announce favorable recommendations for past winners and less favorable recommendations to past losers. Said that, one explanation for the possible abnormal returns from the strategy following analyst recommendations seems to be the momentum that is generated from the analysts' reluctance to favor past winners and spurn past losers For the least favorable recommendations this momentum coefficient is negative and significant at 1% level with relatively high *t*-statistics for both the value and equally-weighted portfolios, which is line that the stocks with the least favorable recommendations should yield lower returns than buying the past winners.

Column 8 provides the R^2 values of the portfolios that describe the explanatory power of the four-factor model to regress the portfolio returns in relation to the four factors. Note first that the R^2 values are overall higher for the equally-weighted portfolios which suggest that the four-factor model fits better to these equally-weighted returns. On the other hand, the R^2 values are concordant within the value-weighted and equally-weighted portfolios: the four-factor model seems to fit the best for the portfolio 'All Covered' which includes all the firms with analyst coverage and also for the five long-only portfolios. However, the portfolios with the most favorable recommendation stocks have the smallest R^2, which implies that the portfolios possibly result abnormal returns the model cannot fully explain. In addition, the long-short portfolios have the smallest R^2 compared to the other long-only portfolios, which is in line with the fact that the coefficient estimates for these long-short portfolios are not statistically significant, especially for the portfolio P1-P5 which only have the small-stock factor as statistically significant when value-weighting.

Table 2.
Descriptive Characteristics for the Portfolios Constructed According to Analysts Recommendation Consensuses.

This table presents descriptive characteristics for the constructed portfolios. Portfolios from P1 to P5 are constructed on the basis of analysts' recommendations consensuses in the following ranges; P1: (5-4.5), P2: [4.5, 4), P3: [4, 3.5), P4: [3.5, 3) and P5: less than 3. The portfolio P1-P5 is assumed to buy long-position on the portfolio P1 and sell short the portfolio P5. The portfolio 'All Covered' consists of all the stocks in the period from the beginning of 2006 to the end of 2015 that have at least one recommendation consensus a year, i.e. it includes all the stocks that are in the portfolios P1-P5. The portfolio 'Neglected' instead includes the stocks that have less than one valid recommendation a year, or no recommendations at all during the same period. The portfolio 'All covered - Neglected' in the last line describes a portfolio that buys a long-position on the covered firms and sells short the neglected firms. The daily average number of firms in the portfolio is the simple arithmetic average of the portfolio's holdings a day, including the minimum and maximum amount of stocks in that portfolio, also. Average rating is also the simple arithmetic mean of the portfolios' consensus recommendations. Coefficient estimates are the time-regression coefficients from the Carhart's Four-Factor Model. The *t*-statistics to test the statistical significance are based on the null hypothesis that all the coefficient are zero, except the R_m - R_f, which is expected to be one. *t*-statistics appear below coefficient estimates in parentheses ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A: Value-weighted Portfolios

Portfolio	Daily Average No. of Firms (min, max)	Average Rating	Coefficient Estimates for the Four-Factor Model				Adjusted R^2
			R_m - R_f	SMB	HML	WML	
(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)
P1 (most favorable)	12	4.84	0.993 ***	1.412 ***	0.090	-0.061	57.1
	(3, 28)		(9.703)	(4.894)	(0.307)	(-0.358)	
P2	20	4.10	0.888 ***	0.733 ***	0.242	0.009	72.1
	(3, 39)		(14.142)	(4.143)	(1.342)	(0.088)	
P3	18	3.68	1.043 ***	-0.166	-0.287 **	0.063	82.8
	(5, 31)		(21.906)	(-1.240)	(-2.097)	(0.789)	
P4	24	3.16	0.903 ***	-0.065	0.205	-0.032	79.8
	(13, 37)		(18.017)	(-0.460)	(1.426)	(-0.381)	
P5 (least favorable)	38	2.08	0.883 ***	-0.025	-0.014	-0.422 ***	75.1
	(17, 66)		(14.119)	(-0.144)	(-0.077)	(-4.032)	
P1-P5	50	N/A	0.109	1.437 ***	0.104	0.361 *	14.0
	(24, 70)		(0.947)	(4.410)	(0.314)	(1.685)	
All Covered	111	3.21	0.972 ***	-0.073	0.029	-0.140 ***	96.3
	(102, 118)		(45.808)	(-1.215)	(0.475)	(-3.945)	
Neglected	21	N/A	0.570 ***	0.006	0.280	0.322 ***	44.2
	(17, 32)		(8.992)	(0.033)	(1.534)	(3.033)	
All covered - Neglected	132	N/A	0.401 ***	-0.079	-0.251	-0.462 ***	43.1
	(124, 143)		(6.091)	(-0.423)	(-1.325)	(-4.193)	

Panel B: Equally-weighted Portfolios

Portfolio	Daily Average No. of Firms (min, max)	Average Rating		Coefficient Estimates for the Four-Factor Model			Adjusted R^2
			R_m - R_f	SMB	HML	WML	
(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)
P1 (most favorable)	12	4.84	1.075 ***	0.348 **	0.246	0.135	76.1
	(3, 28)		(15.549)	(2.003)	(1.460)	(1.390)	
P2	20	4.10	1.102 ***	0.284 **	0.110	0.103	87.0
	(3, 39)		(22.949)	(2.355)	(0.937)	(1.527)	
P3	18	3.68	1.131 ***	-0.295 ***	-0.051	0.025	90.6
	(5, 31)		(28.991)	(-3.008)	(-0.541)	(0.464)	
P4	24	3.16	1.045 ***	-0.197 **	0.035	-0.093 *	92.2
	(13, 37)		(30.266)	(-2.273)	(0.420)	(-1.925)	
P5 (least favorable)	38	2.08	0.924 ***	0.064	-0.158 *	-0.155 ***	90.3
	(17, 66)		(26.566)	(0.670)	(-1.691)	(-2.870)	
P1-P5	50	N/A	0.057	0.283	0.404 *	0.290 **	3.51
	(24, 70)		(0.629)	(1.252)	(1.839)	(2.287)	
All covered	111	3.21	1.069 ***	-0.004	-0.020	0.048	99.1
	(102, 118)		(93.523)	(-0.126)	(-0.715)	(-2.997)	
Neglected	21	N/A	0.706 ***	0.078	0.094	0.182 **	59.3
	(17, 32)		(11.384)	(0.499)	(0.622)	(2.087)	
All covered - Neglected	132	N/A	0.363 ***	-0.081	-0.114	-0.230 **	28.8
	(124, 143)		(4.979)	(-0.445)	(-0.642)	(-2.248)	

Figure 2 provides description of the annualized returns for the five daily rebalanced portfolios, both for the value-weighted and equally-weighted portfolios. Table 3 instead provides the return statistics for the same portfolios. Note first that the equally-weighted portfolios yield higher monthly returns than value-weighted portfolios, which is in line with the theory that equally-weighting overstates the returns. For the equally-weighted portfolios, the portfolio P1 with the most favorable recommendations yields a monthly return of 2.08 percent and market adjusted return of 1.039 percent. Annually this portfolio yields a return of 24.68 percent which exceeds the market return by 13.12 percent. The returns for value-weighted portfolios are smaller, and the most favorable portfolio yields a monthly gross return of 1.621 percent and an annualized return of 15.46 percent, exceeding the annualized market return by 10.68 percent. The returns for each portfolio, both value-weighted and equally-weighted, decrease monotonically when the recommendation consensus decreases, implying that analysts' recommendations firmly reveal the future performance of the underlying stock.

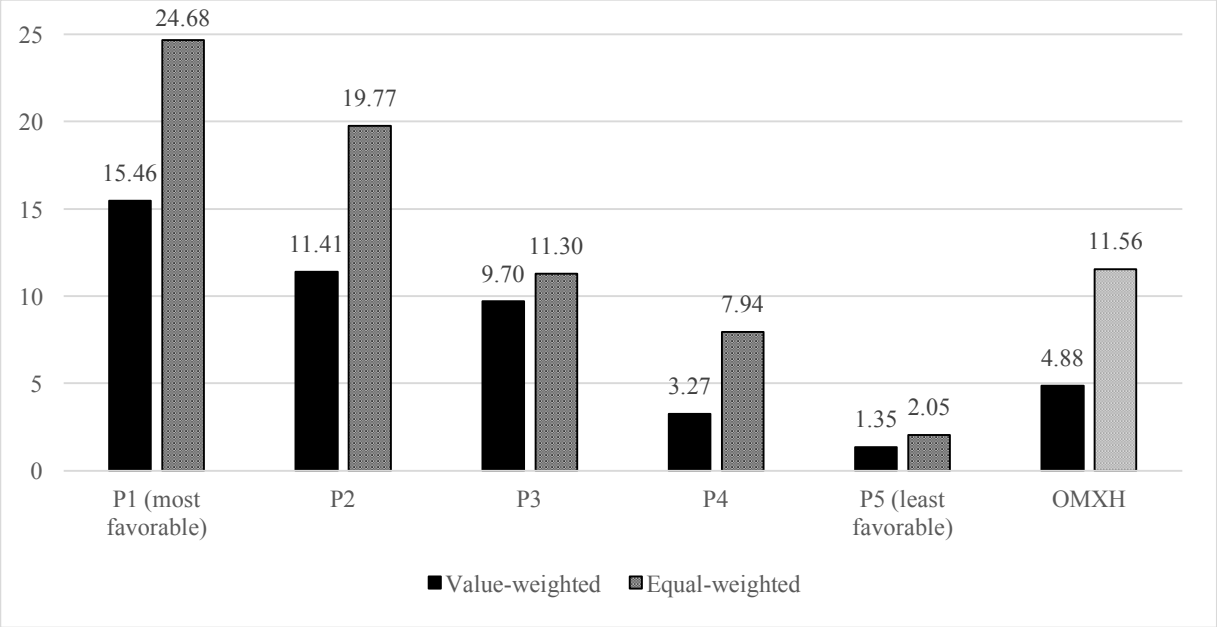

Figure 2. Annualized Geometric Mean Returns (%) for the Five Portfolios Constructed on the Basis of Analyst Consensus Recommendations, 2006-2015.

The abnormal returns documented in the columns 4-6 are, not surprisingly, more significant for the equally-weighted portfolios of which *t*-statistics are somewhat two times greater than value-weighted portfolios'. The equally-weighted portfolio with the most favorable stocks yields a monthly abnormal return of 0.972 percent from the four-factor model which is significant at the 1% level. The monthly abnormal returns from the CAPM and the three-factor model are also significant at 1% level, being 1.082 percent from CAPM and 1.052 percent from

the three-factor model. The abnormal returns for the equally-weighted portfolios P2 and P5, and the long-short portfolio P1-P5 are also significant from all the three models. However, for the value-weighted portfolios, only the most favorable portfolio P1 and the long-short portfolio P1-P5 yield significant abnormal returns. For the portfolio P1, the abnormal returns are significant at 10% level from CAPM, being 1.089 percent per month and from the four-factor model, being 0.967 percent a month. For the long-short portfolio the intercepts are significant only from the CAPM and Fama-French three-factor model at the 10%, being 1.310 percent a month from CAPM and 1.132 percent from Fama-French model. Although the value-weighted portfolios do not provide as significant abnormal returns as the equally-weighted ones, the intercept tests from all the three models indicate that the higher the recommendation is, the higher the possible abnormal return is.

To consider the portfolios with all covered stocks and neglected stocks, the neglected stocks yield greater returns than the all covered firms. This result is against the results of Barber et al. (2001) who show that the neglected stocks yield less, partially because analysts tend to drop out of the coverage the stocks that underperform the market. On the other hand, my results are more in line with the existing evidence that neglected stocks should yield higher returns since the markets are less efficient regarding these stocks (e.g. Doukas et al., 2005). However, as stated in Table 3, the strategy of buying all covered stocks or neglected stocks, or buying all covered and selling short the neglected stocks does not lead to significant abnormal returns. In fact, the long-short portfolio combined by these stocks yields slightly negative abnormal returns from the CAPM for value-weighted portfolios and from all the models for equally-weighted. Thus my results interpret that analysts' tend to have an ability of forecasting future stock performance, at least to a limited extent.

In conclusion, the abnormal returns are greater for more naïve assumption of equally-weighted portfolios but the results with the value-weighted portfolios still interpret that there are abnormal returns to be made by following analysts' recommendations. However, my analysis has so far has focused on the overall ability to generate abnormal returns by listening to analysts' recommendations with the assumption of daily portfolio rebalancing. These abnormal returns can be interpreted to fade away when the trading costs and bid-ask spreads were taken into account. In addition, the results can be lead by the smaller and more neglected firms and thus in the next section I study whether the abnormal returns are mostly pronounced on the small-firm effect and the stock that are neglected from the analysts.

Table 3.
Monthly Portfolio Returns Abnormal Returns on the Portfolios Constructed According to Analysts' Recommendation Consensuses, 2006-2015.'

This table shows the monthly returns on the constructed portfolios. Panel A shows the returns for value-weighted portfolios and Panel B for equally-weighted portfolios, respectively. The average monthly returns are the arithmetic mean of the gross monthly returns. The average monthly market-adjusted return is the arithmetic mean of the market-adjusted returns which are calculated as $R_p - R_m$. The intercepts are the monthly abnormal returns from the CAPM, Fama-French three-factor model and the Carhart's Four-Factor Model. *t*-statistics appear below intercepts in parentheses ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A: Value-weighted Portfolios

			Intercept From		
Portfolio (1)	Average Monthly Return (2)	Average Monthly Market Adjusted Return (3)	CAPM (4)	Fama-French (5)	Four-Factor Model (6)
P1 (most favorable)	1.621	1.054	1.089 * (1.759)	0.934 (1.641)	0.967 * (1.671)
P2	1.120	0.798	0.491 (1.321)	0.424 (1.215)	0.419 (1.181)
P3	0.978	-0.063	0.394 (1.449)	0.387 (1.458)	0.354 (1.314)
P4	0.462	-0.105	-0.156 (-0.559)	-0.131 (-0.469)	-0.114 (-0.402)
P5 (least favorable)	0.343	-0.224	-0.221 (-0.594)	-0.198 (-0.532)	0.026 (0.073)
P1-P5	1.278	1.278	1.310 * (1.879)	1.132 * (1.735)	0.941 (1.440)
All covered	0.718	0.150	0.164 (1.285)	0.182 (1.446)	0.256 (2.134)
Neglected	0.959	0.392	-0.031 (-0.086)	-0.026 (-0.070)	-0.196 (-0.547)
All covered - Neglected	-0.241	-0.241	-0.196 (0.501)	0.207 (0.527)	0.452 (1.214)

Panel B: Equally-weighted Portfolios

			Intercept From		
Portfolio (1)	Average Monthly Return (2)	Average Monthly Market Adjusted Return (3)	CAPM (4)	Fama-French (5)	Four-Factor Model (6)
P1 (most favorable)	2.080	1.039	1.082 *** (3.311)	1.052 *** (3.239)	0.972 *** (2.958)
P2	1.700	0.659	0.705 *** (3.083)	0.668 *** (2.956)	0.606 *** (2.659)
P3	1.068	0.027	0.062 (0.332)	0.095 (0.521)	0.080 (0.430)
P4	0.797	-0.243	-0.219 (-1.306)	-0.174 (-1.067)	-0.119 (-0.725)
P5 (least favorable)	0.324	-0.717	-0.697 *** (-3.810)	-0.712 *** (-3.852)	-0.620 *** (-3.406)
P1-P5	1.756	1.756	1.780 *** (4.518)	1.764 *** (4.110)	1.592 *** (3.718)
All covered	0.939	-0.102	-0.069 (-1.265)	-0.066 (-1.196)	-0.038 (-0.692)
Neglected	1.280	0.240	0.107 (0.367)	0.089 (0.301)	-0.019 (-0.065)
All covered - Neglected	-0.341	-0.341	-0.176 (-0.514)	-0.155 (-0.446)	-0.018 (-0.053)

4.2. The Effect of Small and Neglected Firms

To examine whether the possible abnormal returns are driven by smaller firms as, for example, Barber et al. (2001) and Stickel (1995) report to be the case with analyst recommendations and stocks returns, I divide each of the five portfolios constructed on the basis of analyst consensus recommendations into two separate portfolios according to the firm size, one holding small stocks and one big stocks. The portfolios are value-weighted since, as said, it describes the real-life investing more accurately and meaningfully. Figure 3 provides characteristics of the annualized geometric returns for these ten portfolios. Note that small-stocks tend to perform to the direction of analysts' recommendations with the most favorable stocks and the least favorable stocks, whereas the returns of big stocks that have moderate buy recommendations outperform small stocks.

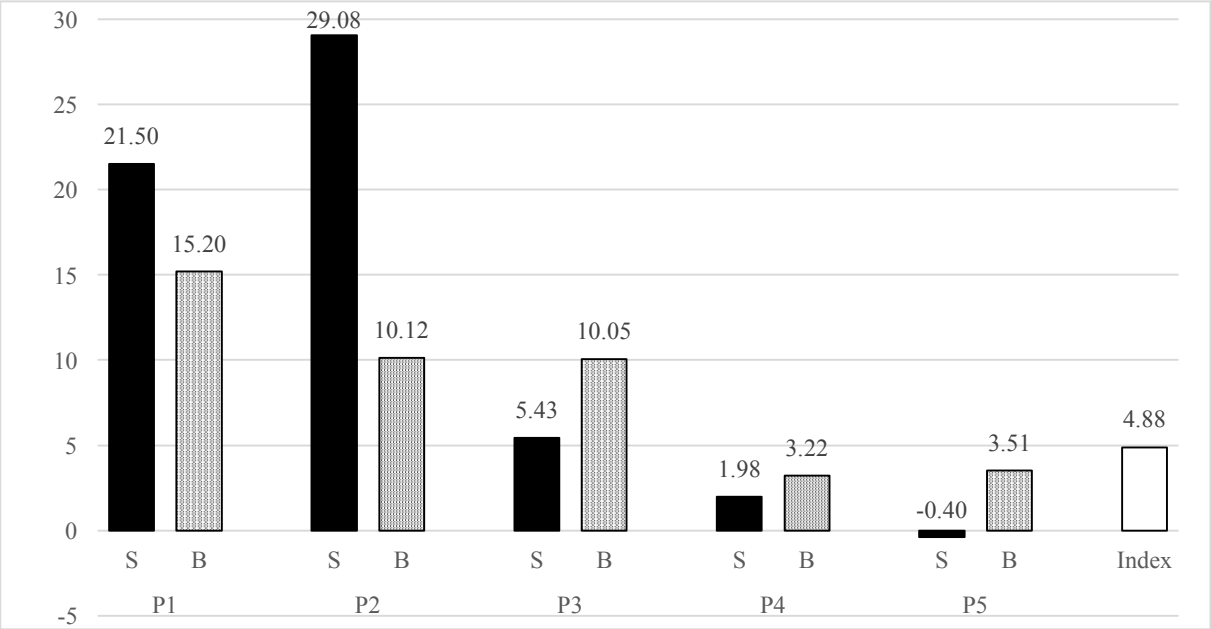

Figure 3. Annualized Geometric Mean Returns (%) for the Portfolios Constructed on the Basis of Analyst Consensus Recommendations and Firm-Size, 2006-2015.

Table 4 provides monthly return statistics for these ten portfolios. First note that the abnormal returns are clearly pronounced on small firms with the most favorable stock (portfolios P1 and P2) and the least favorable stocks (portfolio P5). The portfolio with the most favorable recommendation small stocks yield a monthly gross return of 1.864 percent and market adjusted return of 1.296 percent while the returns for similar recommendation big stocks are approximately 24 basis points smaller. In addition, only the small stocks in the portfolio P1 generate statistically significant abnormal returns (at 10% level) from the Fama-French model and the CAPM. Interestingly, the portfolio P4 with slightly less favorable recommendations,

yields significantly higher returns: a gross monthly return of nearly 2.4 percent and market adjusted of approximately 1.8 percent. In addition, the abnormal returns are significant derived from the all models, being as much as 1.51 percent a month from the four-factor model.

However, note that the returns for portfolios P3 and P4 are slightly more pronounced on the big stocks but none of these returns are statistically significant. What it comes to the least favorable portfolio P5, the analysts' tendency to provide valuable information is again significantly pronounced on smaller stocks and the gross returns, as well as abnormal returns, are negative which is in line that these stocks have announced sell recommendations. The intercept for these least favorable small stocks are significant derived from all three models, and the monthly abnormal returns from four-factor model is -0.899 percent and significant at 5% level. Furthermore, buying the small stocks with most favorable recommendation and selling short those with least favorable recommendation, yields abnormal returns that are significant at 1% level from all the three regressions, being 1.73 percent a month from the four-factor model. With the underlying results, I can state that the abnormal returns truly are pronounced towards small-stocks, as the first part of my second hypothesis states.

Table 4.
Monthly Returns on Portfolios Constructed on the Basis of Analyst Recommendations and Firm Size.

This table provides statistic for the five daily rebalanced portfolios that are constructed on the basis of analyst recommendations and the firm-size. Each of the original five portfolios and the long-short portfolio is divided into one portfolio with small-stocks and one with big-stocks. The small-stock portfolio holds half of the stocks in the original stocks, of which market capitalization is the smallest in relation to the other half, and vice versa for the big-stock portfolio. S denotes for small-stock portfolios and B for big-stock portfolios. *t*-statistics appear below intercepts in parentheses. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Portfolio	Average Monthly Return		Average Monthly Market Adjusted Return		Intercept From					
					CAPM		Fama-French		Four-Factor Model	
	S	B	S	B	S	B	S	B	S	B
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
P1 (most favorable)	1.864	1.622	1.296	1.054	1.030 *	1.102 *	0.935 *	0.943	0.832	0.984
					(1.938)	(1.720)	(1.862)	(1.594)	(1.640)	(1.636)
P2	2.376	1.028	1.808	0.461	1.661 ***	0.404	1.571 ***	0.339	1.510 ***	0.332
					(3.411)	(1.073)	(3.465)	(0.949)	(3.285)	(0.915)
P3	0.637	1.014	0.069	0.447	-0.114	0.433	-0.206	0.431	-0.150	0.384
					(-0.270)	(1.455)	(-0.531)	(1.485)	(-0.381)	(1.308)
P4	0.321	0.462	-0.246	-0.106	-0.438	-0.155	-0.497	-0.127	-0.481	-0.111
					(-1.317)	(-0.540)	(-1.645)	(-0.443)	(-1.566)	(-0.382)
P5 (least favorable)	-0.137	0.363	-0.704	-0.205	-0.934 **	-0.197	-1.050 ***	-0.171	-0.899 **	0.056
					(2.191)	(-0.517)	(-2.747)	(-0.449)	(-2.376)	(0.156)
P1-P5	2.001	1.259	2.001	1.259	1.964 ***	1.299 *	1.985 ***	1.111	1.730 ***	0.927
					(3.453)	(1.802)	(3.458)	(1.651)	(3.069)	(1.369)

Next, I divide the original portfolios into two separate portfolios as previously, but now on the basis of the number of analysts covering the firms. Figure 4 provides characteristics of the annualized geometric returns of these ten portfolios. Note that the results are in general very similar to, for example, the study of Doukas et al. (2005): more neglected stocks yield higher returns than those with large analyst coverage. Surprisingly still, the returns for the most favorable portfolio P1 are pronounced on the stocks with relatively large analyst coverage.

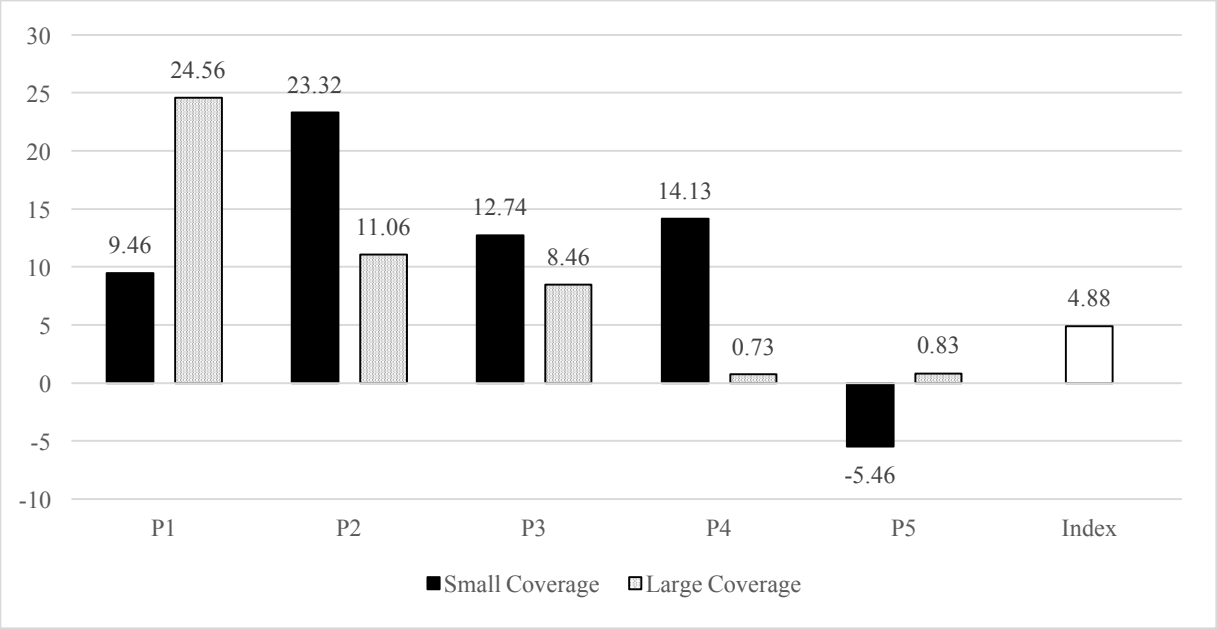

Figure 4. Annualized Geometric Mean Returns (%) for the Portfolios Constructed on the Basis of Analyst Consensus Recommendations and Number of Analysts Covering the Firm, 2006-2015.

Furthermore, Table 5 provides statistics of the monthly returns and abnormal returns for these portfolios. Note that the gross monthly returns as well as the abnormal returns of the large coverage firms in the portfolio P1 are over two times greater than the returns of small coverage firms. The large coverage firms with the most favorable recommendations yield a monthly abnormal return that are significant at 5% level from all the three regression, and that is 1.619 percent monthly from the four-factor model.

Nevertheless, the rest of the results presented in Table 5 are in line with the existing literature, implying that returns are pronounced on small-firms: firms with small analyst coverage yield higher monthly returns than the large coverage firms. For the second favorable portfolio P2, the abnormal returns are all significant at 5% level, being 1.332 percent a month from the four-factor model. Similarly, this portfolio would have yielded a monthly gross return of 2.051 percent and market-adjusted return of 1.484 percent. The large coverage firms in portfolio P2 on the other hand did not yield abnormal returns from any of the three regressions.

Furthermore, the returns for the least favorable recommendation stocks are significantly pronounced on small coverage firms and the abnormal returns are significant from all the three models, being -0.79 percent monthly from the four-factor model, that is significant at 10% level. The intercepts from the other two regressions are significant at 5% level, respectively. In the end, buying the most favorable small coverage stocks and selling short the least favorable small coverage stocks yields a monthly gross return of 1.381 percent and abnormal returns that are significant at 5% level from all regressions. The intercept from the four-factor model is 1.468 percent. On the other hand, the abnormal returns for the long-short portfolio are greater for the large coverage stocks, being 1.599 percent monthly from the four-factor model. This partially implies that the returns are pronounced more on the large coverage stocks but, however, the results are biased towards the most favorable portfolio P1 since the returns in that portfolio are mostly pronounced on the large coverage stocks. Besides this fact, I cannot fully reject the second part of my second hypothesis since the abnormal returns are significantly higher for all the other small coverage stock portfolios that are constructed according to analysts' recommendations. These results are in line with the existing theory and results that, for example, Amihud & Mendelson (1986), Barbet et al. (2001) and Doukas (2005) report.

Table 5.
Monthly Returns on Portfolios Constructed on the Basis of Analyst Recommendations and Number of Analyst Covering the Firm.

This table provides statistic of whether the gross returns and abnormal returns are pronounced either on firms with small analyst coverage or large analyst coverage. Each of the five portfolios constructed according to analyst consensus recommendations is divided into two portfolios with the same number of stocks, one holding the the stocks that have small number of analysts covering the firm and large number of analyst covering, in relation in relation to other stocks. *t*-statistics appear below intercepts in parentheses. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Portfolio	Average Monthly Return		Average Monthly Market Adjusted Return		Intercept From					
					CAPM		Fama-French		Four-Factor Model	
	Small Coverage	Large Coverage	Small Coverage	Large Coverage	Small Coverage	Large Coverage	Small Coverage	Large Coverage	Small Coverage	Large Coverage
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
P1 (most favorable)	1.129	2.355	0.562	1.787	0.591	1.843 **	0.532	1.693 **	0.676	1.619 **
					(0.992)	(2.559)	(0.906)	(2.489)	(1.145)	(2.346)
P2	2.051	1.101	1.484	0.533	1.400 **	0.473	1.351 **	0.403	1.332 **	0.410
					(2.560)	(1.245)	(2.587)	(1.125)	(2.508)	(1.124)
P3	1.201	0.884	0.633	0.317	0.430	0.300	0.370	0.301	0.327	0.271
					(0.939)	(1.149)	(0.814)	(1.165)	(0.709)	(1.033)
P4	1.312	0.251	0.745	-0.317	0.611	-0.375	0.564	-0.347	0.483	-0.318
					(1.464)	(-1.345)	(1.450)	(-1.244)	(1.230)	(-1.121)
P5 (least favorable)	-0.252	0.311	-0.819	-0.256	-0.995 **	-0.227	-0.986 **	-0.209	-0.791 *	0.019
					(-2.199)	(-0.602)	(-2.187)	(-0.554)	(-1.784)	(0.054)
P1-P5	1.381	2.043	1.381	2.043	1.585 **	2.069 **	1.517 **	1.901 **	1.468 **	1.599 **
					(2.185)	(2.580)	(2.087)	(2.472)	(1.987)	(2.101)

5. Robustness Checks

My analysis has so far based on both the specific sample period I chose and on the assumption of the daily portfolio rebalancing, resulting that there are abnormal gross returns to be made with a trading strategy that buys the stocks with most favorable analyst recommendations and sells short the stock with least favorable recommendation. In this section, I conduct two robustness tests to check whether these two factors drive my results. First, I run the regressions for a different time period. Second, I test whether the abnormal returns fade away with less-frequently portfolio rebalancing, as the results of Barber et al. (2001) indicate.

5.1. The Effect of a Change in Time Period

To make sure whether the abnormal returns are a result of the specific time period I chose, I run additional regressions for the similar data but with the time period of four years prior the original data sample, i.e. from the beginning of 2002 to the end of 2005. Table 6 provides return statistics for the most favorable portfolio P1, the least favorable portfolio P5 and the long-short portfolio constructed from these two. Note that the results are very similar to what I have previously found; the most favorable portfolio P1 yields an even higher gross monthly return of 3.469 percent and a market adjusted return of 3.038 percent. Abnormal returns are significant derived from all the three regression models, being 1.714 percent a month and significant at 10% level from the four-factor model. The abnormal returns for the least favorable portfolio instead are negative and significant at 10% level, derived from the three-factor and four-factor model. Furthermore, the long-short portfolio yields positive and significantly high abnormal returns from all the three models, being as high as 2.946 percent and significant at 1% level from the four-factor model. These results with earlier data enhance the prior results signaling that the strategy that follows analysts' recommendations to result in significant abnormal returns.

Table 6.
The Monthly Returns for the Daily Rebalanced Value-Weighted Portfolios Constructed According to Analyst Recommendations, 2002-2005.

This table provides statistic of whether the gross returns and abnormal returns are changed when the time period for my data sample is changed. The data is now the similar as the previous one but four years prior. *t*-statistics appear below intercepts in parentheses. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

			Intercept From		
Portfolio	Average Monthly Return	Average Monthly Market Adjusted Return	CAPM	Fama-French	Four-Factor Model
(1)	(2)	(3)	(4)	(5)	(6)
P1 (most favorable)	3.469	3.038	1.786 **	1.740 *	1.714 *
			(2.327)	(1.785)	(1.746)
P5 (least favorable)	1.531	1.100	-0.129	-1.267 *	-1.232 *
			(-0.234)	('1.940)	(-1.904)
P1-P5	1.938	1.938	1.916 **	3.001 ***	2.946 ***
			(2.463)	(3.157)	(3.152)

5.2. The Cost of Less-Frequent Portfolio Rebalancing

All the previous evidence on the abnormal return generation when constructing the portfolios according to analysts' recommendations is based on the assumption of daily portfolio rebalancing, which naturally leads to high trading costs and is time-consuming. In addition, the abnormal returns from the daily rebalancing is at least partially affected by the short-term stock price drift after recommendation announcements which is proven, for example, by Jegadeesh and Woojin (2006), Stickel (1995) and Womack (1996). Table 7 provides statistics of the portfolio returns when the the portfolios are rebalanced less frequently. Panel A shows the returns with weekly rebalancing and Panel B with monthly rebalancing.

Note that none of the intercepts are significant at any level of 1%, 5% or 10% anymore. However, note that the less-frequent portfolio rebalancing leads to lesser returns, signaling that the abnormal returns are firmly the results of frequent rebalancing. Although the intercepts are not statistically significant anymore, there are still positive abnormal returns to be made with weekly rebalancing when buying the most favorable stocks and selling short those with least favorable recommendations, resulting to abnormal return of 0.758 percent a month from the four-factor model. On the other hand, the intercepts turn into negative when the portfolio is rebalanced only on a monthly basis, derived

from the three-factor and four-factor model. The intercept is -0.534 percent monthly from the four-factor model. These results interpret that the abnormal return generation power of the trading strategy that buys the most favorable recommendation stocks and sells short the least favorable recommendation stocks is highly dependent on a daily portfolio rebalancing. The assumption of daily rebalancing is, however, quite naïve and would result into large trading costs that are most likely to wash the abnormal returns away.

Table 7.
The Monthly Returns for the Portfolios with Weekly and Monthly Rebalancing, 2006-2015.

This table provides statistics of whether the gross returns and abnormal returns are changed when the portfolios are less frequently rebalanced. Panel A provides statistics for the portfolio returns that are rebalanced weekly and Panel B for the portfolio returns for portfolios that are rebalanced monthly. Weekly rebalancing is assumed to mean the rebalancing after one trading week, i.e. after 5 trading days. Monthly rebalancing is assumed to mean the rebalancing after one trading month, i.e. after every 21 trading days. *t*-statistics appear below intercepts in parentheses. ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively.

Panel A: Weekly Rebalancing					
			Intercept From		
Portfolio	Average Monthly Return	Average Monthly Market Adjusted Return	CAPM	Fama-French	Four-Factor Model
(1)	(2)	(3)	(4)	(5)	(6)
P1 (most favorable)	1.517	0.949	0.964	0.809	0.845
			(1.529)	(1.384)	(1.424)
P5 (least favorable)	0.127	-0.441	-0.356	-0.284	0.087
			(-0.626)	(-0.505)	(0.166)
P1-P5	1.390	1.390	1.320	1.092	0.758
			(1.544)	(1.406)	(0.992)
Panel B: Monthly Rebalancing					
			Intercept From		
Portfolio	Average Monthly Return	Average Monthly Market Adjusted Return	CAPM	Fama-French	Four-Factor Model
(1)	(2)	(3)	(4)	(5)	(6)
P1 (most favorable)	0.905	0.337	0.350	0.187	0.196
			(0.561)	(0.324)	(0.334)
P5 (least favorable)	0.901	0.334	0.300	0.400	0.730
			(0.568)	(0.779)	(1.507)
P1-P5	0.004	0.004	0.0507	-0.213	-0.534
			(0.058)	(-0.272)	(-0.690)

6. Conclusion

In this thesis I examine the association of sell-side analysts' stock recommendations and long-term stock returns in Finland. Using the daily data of analysts' recommendations consensuses from Bloomberg Terminal between 2006 and 2015, I find clear evidence about the analysts' ability to announce stock recommendations. My results interpret that more favorable recommendations lead to higher returns, and vice versa. Furthermore, I find that a strategy buying the most favorable stocks and selling short the least favorable stocks yields an annualized abnormal return of approximately 14.5 percent when value-weighting and above 20 percent when equally-weighting. I also examine whether the abnormal returns and analysts' forecasting power is mostly pronounced on small firms by dividing the original portfolios into two, according to the firm size. I find that the returns are mostly pronounced on the smaller firms with the exception that the returns of moderate buy recommendations are pronounced on big stocks. However, none of these large stock portfolios that hold stocks with moderate buy recommendations result in significant abnormal returns.

Furthermore, I extend the existing literature by finding that the number of analysts covering the firms also affects the results of these investment strategies. I find that the number of analysts covering the firms interpret the same as small firms: stocks with small analyst coverage tend to outperform those with large analyst coverage. However, the returns for the most favorable recommendations portfolio were significantly driven by large coverage stocks. Furthermore, with moderate buy recommendations and the least favorable recommendations the abnormal returns are clearly pronounced on small coverage firms.

Although my findings interpret that with daily portfolio rebalancing investors could gain abnormal returns by utilizing an investment strategy that follows analysts' recommendations, I do not consider the effect of trading costs that are most likely to fade away the abnormal return generation power of this strategy. Furthermore, the returns are mostly pronounced on small and neglected firms that are relatively rarely traded and thus the investment strategy would be hard to execute in real life. In addition, I show that with less-frequent portfolio rebalancing the abnormal returns were not significant anymore. For a further research, I would like to see similar study made in the Nordics in general, since my results interpret that the percentage returns were notably higher than the studies show in, for example, U.S. In addition, it would be interesting to test whether the strategy relying on analysts' recommendation ability differentiates between different sectors. I needed to drop out this sector analysis from this thesis because of my relatively small sample size, but the analysis could be done for the Nordic stocks altogether, for example.

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Appendix: List of Covered Firms

This appendix provides an alphabetically ordered list of all the covered companies in my sample data, including average analyst recommendation rate and average number of analysts covering the firm, for each company.

Company	Average Rating	Average No. of Analysts	Company	Average Rating	Average No. of Analysts	Company	Average Rating	Average No. of Analysts
Afarak Group Oyj	2.88	1	Lassila & Tikanoja Oyj	3.81	8	SSAB Oyj A	3.46	21
Affecto Oyj	4.06	4	Lemminkäinen Oyj	2.94	6	SSH Communications Security Oyj	3.30	1
Ahlström Oyj	2.48	6	Lite-On Mobile Oyj	3.31	11	Stockmann Oyj A	1.99	1
Aktia Bank Oyj	3.98	2	Marimekko Oyj	2.91	5	Stockmann Oyj B	2.86	12
Alma Media Oyj	2.85	8	Martela Oyj	4.01	1	Stonesoft Oyj	3.19	1
Amer Sports Oyj	3.75	12	Metso Oyj	3.67	23	Stora Enso Oyj A	4.09	3
Apetit Oyj	2.82	3	Metsä Board Oyj A	3.42	2	Stora Enso Oyj R	3.56	19
Asiakastieto Group Oyj	4.82	2	Metsä Board Oyj B	3.29	14	Suominen Oyj	2.74	2
Aspo Oyj	3.42	3	Munksjö Oyj	4.45	3	Symphony EYC Finland Oy	3.52	4
Aspocomp Groyp Oyj	1.39	5	Neste Oyj	3.16	22	Taaleri Oyj A	3.65	1
Atria Oyj	3.11	8	Nokia Oyj	3.37	47	Talentum Oyj	3.80	5
Basware Oyj	3.86	5	Nokian Renkaat Oyj	3.72	18	Talvivaaran Kaivososakeyhtiö Oyj	3.08	12
Biohit Oyj	3.43	1	Nordea Bank AB	3.45	5	Tamfelt Oyj	2.62	1
Biotie Therapies Oyj	4.35	1	Nordic Aluminium Oyj	3.82	1	Technopolis Oyj	4.15	5
Bittium Oyj	2.71	4	Okmetic Oyj	3.75	2	tecnotree Oyj	3.04	4
Capman Oyj	3.99	2	Olvi Oyj A	3.53	5	Tekla Oyj	3.91	6
Cargotec Oyj	3.53	14	OMX AB	2.89	7	Teleste Oyj	3.48	5
Caverion Oyj	4.31	8	OP Insurance Oy	1.04	1	Telia Oyj	3.31	33
Citycon Oyj	3.90	13	Oral Hammaslääkärit Oyj	4.25	1	Terveystalo Healthcare Oyj	2.53	2
Componrenta Oyj	2.90	2	Orava Asuntorahasto Oyj	2.84	1	Tieto Oyj	2.99	21
Comptel Oyj	3.34	6	Oriola KD A	2.91	2	Tiimari Oyj	1.75	1
Cramo Oyj	3.78	9	Oriola-KD B	3.87	8	Tikkurila Oyj	3.25	8
Digia Oyj	4.10	5	Orion B	2.51	11	Trainers' House Oyj	2.18	3
Dovre Group Oyj	4.12	1	Orion Oyj	3.74	4	Tulikivi Oyj	2.14	3
Efore Oyj	2.31	3	Outokumpu Oyj	3.40	20	Turvatiimi Oyj	2.07	1
Elisa Oyj	2.80	25	Outotec Oyj	3.68	15	UPM-Kymmene Oyj	3.55	19
Elqotec Oyj	1.90	9	Panostaja Oyj	2.40	1	Uponor Oyj	3.06	11
Endomines AB	2.24	1	Pihlajalinna Oyj	4.86	1	Vacon Oyj	3.15	6
eQ Oyj	4.00	1	PKC Group Oyj	4.15	6	Vaisala Oyj	2.96	4
Etteplan Oyj	3.35	3	Pohjola Pankki Oyj A	3.28	7	Valmet Oyj	3.81	12
Exel Composites Oyj	3.29	3	Ponsse Oyj	2.99	4	Valoe Oyj	2.92	1
F-Secure Oyj	3.36	8	Pöyry Oyj	3.28	7	Wuff-Yhtiöt Oyj	1.48	1
Finnair Oyj	3.27	9	QPR Software Oyj	3.24	1	Wärtsilä Oyj	3.28	18
Finnlines Oyj	1.49	5	Raisio Yhtymä Oyj	3.55	7	YIT Oyj	3.78	14
Fiskars Oyj	3.10	4	Ramirent Oyj	3.50	10			
Fortum Oyj	3.37	30	Rapala VMC Oyj	3.38	4			
Glaston Oyj	2.96	2	Rauratuukki Oyj	3.41	16			
HKScan Oyj	3.17	8	Raute Oyj	3.33	2			
Honkarakenne B	3.37	2	Restamax Oyj	4.47	2			
Huhtamäki Oyj	3.80	10	Revenio Group Oyj	4.50	2			
Ilkka Yhtmä Oyj	2.22	2	Rocla Oyj	2.12	1			
Incap Oyj	2.38	2	Salpocomp Oyj	3.02	3			
Innofactor Oyj	1.67	1	Sampo Oyj	3.65	24			
Ixonos Oyj	2.97	2	Sanoma Oyj	3.05	11			
Kemira GrowHow Oyj	2.83	5	Scanfil Oyj	4.00	1			
Kemira Oyj	3.25	13	Sievi Capital Oyj	2.47	3			
Keskisuomalainen Oyj	2.95	2	Siili Solutions Oyj	4.72	1			
Kesko Oyj B	3.08	12	Solteq Oyj	1.72	1			
Kone Oyj B	3.14	24	Soprano Oyj	2.28	1			
Konecranes Oyj	3.56	15	Sponda Oyj	3.90	14			
Larox Oyj	3.01	2	SRV Yhtiöt Oyj	2.94	6			