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SUMMARY

The first paper (joint with François Degeorge and Roni Michaely) examines the role of brokers in the performance of securities analysts, after taking into account the inherent abilities of the employed analysts. Brokers can be divided into two groups. The first one includes the prestigious Wall Street firms, the second all the other lesser brokerages. Big Wall Street firms have the resources to hire the best talent and to provide their analysts with the necessary infrastructure. On the other hand, conflicts of interest put limits to how much analysts can reveal and how accurate their forecasts are. The conflicts of interest arise because of the business model of the big Wall Street firms. Most Wall Street firms are not only stock brokers, but also investment banks and want to secure as much lucrative investing business as possible, even by hurting their brokerage business. A way to secure investment banking business is to put pressure upon their employed analysts to issue favorable forecasts. At the same time, minor brokerages are less influenced by conflicts of interest, but on the other hand they don't have the resources to employ the best analysts or to build the necessary infrastructure to support the employed analysts. Michaely and Womack (1999) and Dechow, Hutton and Sloan (2000) provide good description of the conflicts of interest phenomenon. So, working at a big Wall Street firm comes with advantages and disadvantages. Thus, it is interesting to ask if working at a large and resourceful Wall Street firm has overall advantages to the analyst, after controlling for an analyst's inherent ability. To this end, we have analyzed the analysts' quarterly earnings forecasts, long term recommendations value and short term reactions to recommendations release of analysts working both at top Wall Street brokers and lesser brokers. From the analysis of forecasts after controlling for an analyst's inherent ability, we have concluded that the effect of working for a large Wall Street firm is weak and in many cases the top firms are detrimental to their analysts' forecast accuracy relative to the performance of analysts employed by lesser brokers. The evidence from the long term recommendations evaluation is weak with no significant differences in performance; there is only weak evidence that the top firms have a negative effect on the sell recommendations. Finally, from the short term reactions, we find that the top brokers have a positive effect on the buy recommendations, but only for analysts who moved from lesser brokerages. Overall, the top Wall Street firm effect seems to be weak, it is not extended to all aspects of analysts' performance and, assuming it is present, it cannot be exploited by all analysts at all phases of their career. In all cases (forecasts, long term recommendations value and short term reactions), we have found evidence that the top brokers are good at finding and employing non-top broker analysts who are good match for their business and discontinue the employment of analysts who are not.

The second paper uses analysts' quarterly forecasts to investigate the role of dividends. Signaling models, agency models and tax considerations have been put forth to provide explanations for the existence of dividends. Most studies examining the information content of dividends focus on whether dividends signal profitability. The reached consensus perceives dividends as having very limited, if any, signaling content for future earnings. Instead, dividends seem to be related to past profitability; as Miller put it, dividends lag earnings. Grullon, Michaely and Swaminathan (2002) see dividends as signaling the maturity of the firm, which leads to lower discount rates because of the reduction in risk. In the second paper I provide evidence that dividends have an information role, but a different one than the one assumed by signaling studies: I find that paying firms exhibit more information dissemination than their non-paying counterparts. The main challenge is to provide a measure for the information available to investors for each firm. I opt for an indirect way and I use the analysts' forecasts as a way to proxy for this information. More specifically, I use the errors and the dispersion in analysts' forecasts as a proxy to measure the information available to investors. If the forecasts for dividend-paying firms are more accurate than the forecasts produced for non-paying firms, it means that the information for the dividend-paying firms available to analysts was more abundant or of higher quality than the information available for non-paying firms. The same logic applies to forecast dispersion. Higher dispersion means higher disagreement among analysts. So, lower dispersion for a firm means lower disagreement for this firm and lower disagreement may suggest a better information flow than the flow of higher dispersion firm. The results confirm both hypotheses: dividend-paying firms exhibit lower forecast errors and lower forecast dispersion. I also explore three factors which may cause the above results. First, there is more information available for dividend paying firms. A second factor that may contribute to higher information efficiency is the higher accrual quality of the dividend paying firms. Third, the forecasts for dividend paying firms are more evenly distributed across the quarter, implying less reliance on publicly available information and more dependence on private sources. Moreover, the market seems to react more mildly to news regarding dividend paying stocks. Dividend paying stocks exhibit lower return reactions with respect to favorable forecasts and hold/sell recommendations. Furthermore, both in favorable and unfavorable forecasts and buy and sell recommendations, they exhibit lower volume reactions. The reduced forecast errors are more pronounced for the cases of large firms and growth firms, which are the firms that have more discretion at reporting their quarterly earnings. The above results seem to point to an agency explanation of dividends, as described in Easterbrook (1984).

The third paper makes use of the long term forecasts issued by financial analysts to examine the extrapolation hypothesis. The extrapolation hypothesis states that investors are too optimistic about

growth and big firms and too pessimistic about value and small firms, extrapolating the firms' recent performance. The extrapolation hypothesis (Lakonishok, Schleifer and Vishny, 1994) tries to explain why value strategies, buying cheap stocks using book-to-market and price to earnings ratios as measures, earn superior returns over adequately long periods. Long term forecasts forecast mean growth (in percent) of operating earnings over a period of three to five years. I find that the errors of the forecasted growth are greater for the low book-to-market firms and large firms. Also, for most cases during the sample period, the forecasting errors are positive for all categories of book-to-market and size firms. In other words, the analysts overestimate the growth prospects of all firms, but they are particularly more optimistic about the outlook of growth and large firms, confirming in this way the extrapolation hypothesis. Then, I proceed to examine which are the factors that influence the analysts and lead them to issue optimistic long term forecasts for the growth firms, and at the same time cause the long term forecasts of all kind of firms to rise and decline together. I find that analysts seem to base their long term forecasts on the current GDP growth and the age of the firm.

CHAPTER 1

Resources or Ability? The Influence of top Brokers on Analysts' Performance

(joint with Prof. François Degeorge and Prof. Roni Michaely)

Abstract

The paper examines the role of brokers in the performance of the securities analysts. Specifically, we divide the brokers in two groups, where the first group includes the most prestigious Wall Street brokers and the second all the other lesser brokers. The question we ask is if working for a top broker improves the forecast accuracy and the recommendation picks of the employed analysts, after controlling for each analyst's inherent ability.

I. Introduction

Securities analysis is a multi-million dollar business and almost all the big Wall Street firms are involved, spending big amounts to employ analysts, their staff and the required infrastructure to produce reports which include earnings forecasts, recommendations and target prices. Beyond these big players a galaxy of smaller independent brokers produce earnings forecasts and recommend stocks. Most of these smaller brokerages cannot spend the required amounts to employ the star analysts and maintain the costly infrastructure which is necessary. The question is then if working for a big broker can make a difference for the individual analyst. Is the forecasting performance of the analyst improved if he can take advantage of the resources of a big broker, given his own ability? Is it beneficial for an analyst to work for a big broker, with respect to the analyst's accuracy and investment picks?

Stickel (JF, 1992) provides evidence that All American (AA) analysts' forecasts are more accurate than the forecasts by the non-AA analysts. Sinha, Brown and Das (Contemporary Accounting Research, 1997) also report differences in forecasting among analysts. Mikhail, Walther and Willis (Journal of Accounting Research, 1997) attribute part of the forecasting discrepancies among analysts to experience. Clement (Journal of Accounting and Economics, 1999) examines the determinants of analysts' forecasting performance and he argues that working for a resourceful broker is indeed beneficial for the analyst: analysts working for top brokers do seem to issue more accurate forecasts. However, he doesn't examine if the better performance comes because the top brokers provide their analysts with more means to perform their tasks, or it is that top brokers can hire the best analysts. In the same spirit, Jacob, Lys and Neale (Journal of Accounting and Economics, 1999) also investigate the effects of experience, learning and brokerage houses on the accuracy of forecasts.

Analysts do not just merely process financial information and then just report their best forecasts. The company's executives have strong interest to manipulate the data they provide to analysts (Degeorge, Patel and Zeckhauser, JB 1999). Many times the analysts tend to cooperate with the management (Lim, JF 2001). There are also cases where the analysts are under pressure from their employer to produce favorable output, as described in Michaely and Womack (RFS, 1999) and Dechow, Hutton and Sloan (Contemporary Accounting, 2000). Larger brokers, which draw most of their income from the underwriting and investment banking activities in general, are maybe more inclined to put pressure on their analysts to report favorable estimates.

There seem to exist differences in the performance of top and non-top brokers' recommendations value. Barber, Lehavy and Trueman examine the performance of the recommendations of top and non-top brokers before the Global Settlement agreement and they report differential performance between top (mainly investment banks) and non-top brokers.

Hong and Kubic (JF, 2001) analyze the employment changes of analysts and find that the better forecasters have improved probabilities to move to higher status brokers. Also, after controlling for accuracy, they present evidence that the more optimistic analysts have also improved probabilities to move to higher status brokers.

Previous research provides some evidence that there are analysts who consistently seem to perform better. Mikhail, Walther and Willis (JFE, 2004) report that there are analysts who exhibit a relative persistence in their stock picking ability. Groysber, Lee and Nanda (Management Science, 2008) also analyze the moves of AA analysts between brokers. They find that analysts who move lose their competitive advantage when they move to broker with less resources. They deduce that analysts' performance is tied to the broker the analyst works for.

Kim, Morse and Zingales (JFE, 2009) examine a question similar to the one in this paper but in a different setting. They focus on the output of economics and finance professors in top and non-top US universities. They do find that a top university helps its professors to increase output, however the gap with the non-top universities is shrinking, presumably because of advances in Internet and communication technology.

We investigate the analysts’ performance with respect to forecast accuracy and recommendations’ returns. The contribution of this work is to identify if the resources of top brokers have an impact on the output of the analysts they employ, after controlling for the analysts’ inherent ability. In other words, can an analyst working for a top Wall Street firm improve his performance, because his employer is the Wall Street giant which allows the analyst access to unlimited resources? Previous research has investigated the question if *forecasts* and *recommendations* issued by the top brokers are better or worse, without investigating if the forecasts and recommendations are superior because of the broker per se, or because the top broker is able to attract analysts with higher abilities. The assumption is that, as in the case of Kim, Morse and Zingales (JFE, 2009) working for a top broker does make a difference. However, our results do not support such conclusion. The securities analysis landscape seems to be more complicated than academic paper publishing because of the agency problems between brokers, analysts and firms.

We investigate both earnings forecasts and recommendations. For the earnings, we use panel regressions with analysts fixed effects and we regress the forecast accuracy on a set of control variables and a top broker dummy. We use panel regressions for the whole of our sample and we also focus on analysts moving from top to non-top brokers, and controlling for analysts' ability (through analysts fixed effects), we estimate the coefficient of the top broker dummy. Finally, we repeat the analysis for pre and post Global Settlement periods. The conclusion we reach is that the top brokers do not contribute positively to the overall performance of an analyst. In other words, after controlling for the analysts' inherent ability, top brokers cannot offer an improvement on the forecasts' accuracy, despite the resources devoted to the analysis business.

As a next step we examine both the long term performance of the recommendations and the short term price and volume reaction. For the long term performance we form separate long and sell portfolios and we estimate the alphas using the Carhart model. We fail again to establish any reliable positive connection between top brokers and performance.

Finally, we investigate the market's reaction to the recommendations release. The evidence provided points to a higher reaction to buy recommendations issued by analysts moving from top brokers from non-top ones. However, we find no effect on the reactions to sell recommendations.

Section II describes the data used, section III analyzes the hypotheses and the obtained results and section IV concludes.

II. Data

The data comes from IBES and CRSP. We use the IBES Details (earnings forecasts) file from 1990 to 2009, the IBES Recommendations file from 1993 to 2009 and CRSP monthly and daily file from 1990 to 2009. For the investigation of earnings forecasts accuracy we use the intersection firms between CRSP daily file and IBES Details file. For the investigation of the recommendations performance we keep the intersection of firms between IBES Recommendations file and daily CRSP.

Since we are interested not only in the forecasts/recommendations of an analyst, but also in the broker for whom the analyst worked at the time he issued the forecast/recommendation, it is crucial to be able to positively identify the broker who employed the analyst. However, there are cases in the IBES Details file with the same analyst appearing to change employment too often and in most cases between the same two brokers. For example, he may issue a forecast at March 1 for broker X, then at March 10 for broker Y, then at April 1 for broker X, then at April 15 for Y again, and so on for a period which can extend from a few weeks to more than a year. The phenomenon includes both top and non-top brokers, and it is widespread in the whole 1990-2009 period, with a higher density of cases in the early sample. In order to resolve the problem, we require that each analyst has at least one year of continuous presence with the same broker. The one year cutoff was chosen as the minimum meaningful time that a broker would keep an analyst, i.e. it doesn't make sense to hire an analyst and then fire him in less than a year. From the earnings sample we excluded analysts covering less than 4 or more than 40 firms per quarter. No such restrictions were used for the recommendations file: recommendations are far more sparse than quarterly earnings forecasts. We consider as top the following brokers: Bank of

America/Montgomery Securities, Bear Stearns, Credit Suisse/DLJ, First Boston, Deutsche Bank, Goldman Sachs, JP Morgan, Morgan Stanley, Citigroup, Merrill Lynch, UBS/Warburg, Alex Brown, Salomon, and Sanford Bernstein. We create the intersection between the IBES Details file and CRSP monthly and IBES Recommendations file and CRSP daily file using the connection Table provided by WRDS. Summary statistics (after requiring each analyst to stay at a broker for at least a year) on analysts per year and firms covered per year are presented at Table **[1].** There are 11903 firms, 8102 analysts and 492 brokers in the earnings file, for a total of 1777745 observations/ forecasts for quarterly earnings. The mean number of firms covered by each analyst in a top broker is 11.14 (median 10) and 10.95 (median 10) for analyst working at a non-top broker, as shown at Table **[2].** In the recommendations file there are 12148 firms and 11784 analysts, with each analyst working at a top broker having issued 6.57 recommendations on average (median 5) and 7.32 (median 6) if he works at non-top broker, as reported at Table **[3].** CRSP monthly dataset includes 21120 firms, from three exchanges (NYSE, AmEx and NASDAQ). At Table **[4]** we report number of firms at each size decile in the CRSP data. Deciles used are NYSE deciles, and were based on the market equity value at the end of the previous year. At Table **[5]** we present the number of forecasts per size deciles and number of covered firms per size decile. We see that analysts' coverage is tilted towards big firms with respect to forecasts number, but the number of companies covered in the lower size deciles is greater than the number of companies covered in the top deciles: There are more forecasts for the large firms. Table **[6]** presents the same information but separately for top and non-top brokers. We see that the analysts in the top brokers are focused on bigger firms, while their colleagues at smaller brokers cover more smaller firms. Table **[7]** reports the number of recommendations per size decile and number of firms per size decile.

III. Hypothesis formulation and empirical evidence

III. A. Forecasts

III. A. 1. Whole Sample

We create five variables to examine the accuracy of earnings forecast. The first is the absolute error standardized by the price of the stock at the month before the end of the financial quarter of the firm (SAE):

$$SAE_{i,j,t} = \frac{|forecast_{i,j,t} - actual_{j,t}|}{Price_{j,t}} \qquad (1)$$

where $forecast_{i,j,t}$ is the earnings forecast issued by analyst i, for the firm j at quarter t, while $actual_{j,t}$ is the actual earnings announced by the firm j for the quarter t. Since the earnings and earnings forecasts in IBES are already diluted, we divide the forecast error with diluted prices, $Price_{j,t}$.

The other four are come from Bae, Stulz and Tan (JFE, 2008):

$$PMAFE_{i,j,t} = -\frac{abserror_{i,j,t} - \overline{abserror_{j,t}}}{\overline{abserror_{j,t}}} \qquad (2)$$

$$PMAFEP_{i,j,t} = -\frac{SAE_{i,j,t} - \overline{SAE_{j,t}}}{\overline{SAE_{j,t}}} \qquad (3)$$

$$DAFEP_{i,j,t} = -(SAE_{i,j,t} - \overline{SAE_{j,t}}) \qquad (4)$$

$$Range_{i,j,t} = \frac{MaxSAE_{j,t} - SAE_{i,j,t}}{rangeSAE_{j,t}} \qquad (5)$$

with $Error_{i,j,t} = forecast_{i,j,t} - actual_{j,t}$
and $abserror_{i,j,t} = |forecast_{i,j,t} - actual_{j,t}|$.

The absolute error standardized by price (SAE) is a measure of absolute accuracy, while the other four are measures of relative accuracy, in the sense that the performance of the other analysts covering the firm is taken into consideration through the mean forecast error. Notice that the lower the SAE, the better the forecast. On the other hand, for pmafe, pmafep, dafep and range, the higher their value, the better the forecast. Table [8], panel A gives a description of the above performance measures. Table **[9]** reports basic statistics for the Error, absolute error and the 5 performance metrics.

Since we want to find out if working for a top broker is beneficial for an analyst, we run the following regression for each of the 5 forecast performance measures:

$$Measure_{i,j,t} = const + a_1 Maturity_{i,j,t} + a_2 Experience_{i,j,t} + a_3 FirmExperience_{i,j,t} + a_4 NumberofCompanies_{i,j,t} + a_5 Size_{i,j,t} + a_6 Coverage_{i,j,t} + a_7 Difficulty_{i,j,t} + a_8 TopBroker_{i,t} \qquad (6)$$

Forecast maturity is the difference in days between the announcement of the actual earnings and the forecast. The earlier the forecast, the higher the forecast error. Both dates are taken from the IBES details file. The experience of an analyst i is defined as the difference in years between his first forecast and his current forecast j,t. The higher the experience of the analyst, the more accurate his forecasts should be in general. The firm specific experience is defined as the difference in days between the analyst's first forecast for the given firm and his current forecast for the same firm. We postulate that the higher the firm specific experience, the more accurate the forecasts of the analyst for the given firm. The number of firms covered is the number of firms for which the analyst has issued forecasts in the given calendar quarter. We expect that the more firms an analyst covers, the worst his overall forecasting performance. Size is defined as the natural logarithm of the market value of equity at the month before the end of the financial quarter of the given firm. The rationale of the inclusion of size is that bigger firms maybe have different patterns of earnings (e.g. more stable), and this could introduce bias in the results. Also, we see at Table **[6]** that analysts in top brokers tend to cover bigger firms, while their colleagues in non-top brokers focus more on smaller firms. By including size to the set of regressors, we can control for this heterogeneity. Finally, it may be that there is more information for bigger firms, so forecasting may be easier. On the other hand, bigger firms have multiple lines of business, and this could make forecasting more difficult. Coverage measures the number of analysts covering the same firm at the given financial quarter. We postulate that the more extensive the coverage, the lower the forecasting errors of analysts, because of the higher diffusion of information about the given firm. The difficulty is defined as the average number of firms followed by the firm's analysts (Barth, Kasznik and McNichols, Journal of Accounting Research, 1999) and is designed to capture the difficulty of estimating the EPS of the given firm. The notion is that if the coverage of a firm is intrinsically more difficult, then the firm's analysts will cover less firms. The top broker dummy is a dummy which is one when the forecast was issued on behalf of a top broker and zero otherwise. A short description of the regressors is presented at Table [8].

As mentioned above, we take out analysts who cover less than 4 and more than 40 companies. We also windsorize absolute error and SAE at their 99th centile and pmafe and pmafep at their first centile.

We present first the results at Table **[10]** from the pooled regression without size included in the regressors in order to confirm that the forecasts from top brokers are more accurate than forecasts from non-top brokers: top broker dummy is negative at the SAE regression and positive for the other four metrics, indicating increased accuracy. It is also significant except from the case of dafep. So we can confirm previous research (e.g. Clement 1999) that forecasts from more resourceful brokers (a good proxy for top brokers) are more accurate.

Next, we proceed to the examination of our main hypothesis. The results are presented at Table **[11].** We perform both pooled regression estimation, as well as panel data estimation. We estimate both cases with and without quarter fixed effects. In the panel data regressions, we use the analyst and quarter as the panel dimensions. At each quarter we take the average of the analyst's accuracy measure (SAE, pmafe etc), the average experience during the quarter, the mean firm experience of the firms he covered in the quarter, the mean maturity of his forecasts, the mean size of the firms he covered and the mean difficulty of the firms he covered. For the panel estimation we require that the analyst didn't move from a top to a non-top broker (or vice versa) during the quarter, so the TopBroker dummy can take the values 0 or 1, and not fractional values. For the panel data we use analysts fixed effects. In the pooled regression cases we use clustered standard errors. The observations are clustered by firm and quarter.

From the results of Table **[11], Panel A** we see that the SAE is the measure with the highest R^2, while the dafep measure explains almost nothing of the variation of the model. In the pooled regressions we see that in all cases except dafep maturity increases the forecast error and it is strongly significant. Analyst experience improves SAE and causes the other four measures to deteriorate in both pooled regressions (Panel A and B) and it is significant in both cases, except for dafep. The number of companies seems to actually improve performance in the SAE metric, while being insignificant in the other cases. Size seems to strongly improve accuracy with respect to the first metric, but it actually decreases accuracy with respect to the other four measures.

We also see that after controlling for size, the top broker dummy in the pooled regressions has turned positive for the SAE (Panel A, Tables [10] and [11]), while it has been reinforced for the other four metrics. This is an indication that size is beneficial for forecasting. Also the R^2 of the SAE regression has improved substantially, while the R^2 of the other four metrics has remained the same.

Coverage exhibits the opposite behavior, it decreases accuracy for SAE and Dafep, but it improves accuracy for the other metrics. Difficulty has the opposite than the expected sign, except from the Dafep case. The higher “difficulty” means that many firms are covered by the firm’s analysts, which means that the firm’s EPS results are relative easy to forecast. Easiness of forecasts means low SAE and high pmafe and pmafep. So, high “difficulty” implies low SAE, i.e. a negative coefficient, and high pmafe etc., i.e. a positive coefficient. Forecasts issued for a top broker seem to be worse if we use SAE, but they seem better if we use the other four metrics. The forecasts coming from top brokers seem to do better than the forecasts of non-top brokers in relative terms.

As mentioned above, the panel estimation is run over averages for each analyst at every quarter using analyst fixed effects. The underlying assumption is that an analyst's inherent ability remains the same; what changes is the ability of the broker to help him to make the most out of his limited and constant ability. The results are presented at Table[11], Panels C and D. The most important result is of course the coefficient of the TopBroker dummy. Since we have controlled for the analyst's ability, the dummy coefficient measures the marginal effect of the broker on the accuracy of the forecast. We see that in both cases, with and without controlling for time, the coefficient is insignificant for all measures at the 5% level (pmafe and pmafep are marginally significant). Also, all metrics agree that working for a top broker actually deteriorates performance (positive coefficient for SAE, negative for the other cases). So, there is evidence, albeit weak, that working for a top broker is detrimental to the analyst forecast's accuracy. The benefits of more resources and better staff seem to be offset by possible conflicts of interest [Michaely and Womack, RFS 1999]. Maturity again is significant for most cases and again with the predicted sign. Experience seems to contaminate analysts' performance when we use SAE, while it is beneficial when we use pmafe, pmafep and range. Firm experience seems to degrade performance no matter which metric we use (“starts as an analyst, ends as an ambassador”). Size improves forecasts for SAE case, is detrimental for range and irrelevant for the other three metrics. Difficulty has a negative sign in the case without the quarter fixed effects for pmafe, pmafe and range, and it is statistically insignificant for the other two cases. In the quarter fixed effects, it seems to be beneficial based on the SAE metric and statistical insignificant for the other four cases.

In order to shed more light on the effect of top brokers, we isolate the analysts who moved from non-top brokers to top brokers and vice versa. We have 359 cases of analysts who moved from non-top to top brokers and 341 cases of analysts who moved from top to non-top brokers. We see that the number of people who moved to and from top brokers is approximately the same.

The results for the analysts moving from non-top brokers to top brokers are shown at Table [12]. We estimate the same equation [6]. We estimate the model with pooled data (without quarter dummies) and panel data (analyst and quarter as dimensions), with and without quarter dummies. We focus on the top broker dummy. In the pooled case, the coefficient is positive and highly significant for the SAE, indicating deteriorating performance. For the other four cases the results are statistically insignificant, with positive effect for pmafe, pmafep and range, and negative for dafep. Notice that again the version with the SAE has the highest R^2. In the panel data cases, in the case without time dummies, the top broker dummy is positive and significant for the SAE case, indicating decreased accuracy. Pmafe, pmafep and range suggest improved accuracy, while dafep agrees with SAE. When we include the time dummies in the panel regressions, we see that in all cases the coefficient for the top broker dummy is insignificant and with exception of range they agree that the working for a top broker is detrimental for the accuracy of earnings forecast.

The results for the analysts who moved from top brokers to non-top ones are shown at Table [13]. In the pooled regressions, we see that according to SAE, the forecasts issued on behalf of top brokers are better than the one of non-top brokers, the opposite for pmafe and pmafep, and no difference for dafep and range. Again, we move to the panel regressions to evaluate the marginal significance of the broker. At the panel estimation without quarter dummies (Panel B), we see that the topbroker dummy is negative (improved performance in top brokers) and significant for the SAE case, positive (improved performance in top brokers) and insignificant for dafep, while it is negative (improved performance in the non-top brokers) and significant for pmafe, pmafep and range. So, in this case we get mixed signals, the top brokers are either detrimental to performance or have insignificant effect. At the case with quarter dummies (Table [13], Panel C), only Pmafe, Pmafep and Range are significant and negative, indicating negative top broker effect.

Finally we put analysts moving from non-top to top and top to non-top together. The results are presented at Table [14]. In the panel estimation without year dummies we see that no coefficient is significant, but again SAE and dafep point to positive effects of top brokers, while pmafe, pmafe and range point to negative effects. When we include time dummies, we get significance for pmafe and pmafep. So, by focusing on the analysts who move between top and non-top brokers, we see that the effect of top brokers is insignificant or even negative.

III. A. 2. Global Settlement

Global settlement brought changes in the way the securities business was conducted. In this section we repeat the analysis of the previous section for each period before (1990-2002) and after (2003-2009) the Global settlement, in order to check if the findings of previous section still hold for both periods, or the results are driven by the results of one sub-period.

The results for the pre-Global Settlement period are presented at Tables [15] through [18]. We focus on the panel regressions (with time dummies) and the top broker dummy. For the whole sample (Table [15], panel D), we see that the top broker dummy indicates improved marginal performance after controlling for analysts' intrinsic ability, but the effect is insignificant. For analysts moving from non-top to top (Table [16], panel C), the t-statistics are very small, so the evidence is very weak, implying no benefit or loss of accuracy. For analysts moving from top to non-top brokers (Table [17], panel C), we see that the sign of all metrics agree that there is a deterioration in performance, but again the coefficients are not statistically significant, pointing to only weak deterioration. Putting both categories together (Table [18], panel C) we get the same evidence, that there is no effect of the top brokers on the accuracy of forecasts.

The results for the post Global Settlement period appear at Tables [19] through [22]. We examine again to the estimates of the top broker dummy at the panel regressions. For the case with the whole sample (Table [19], panel D), the results point to deteriorating performance of the analysts: SAE, pmafe, pmafep and range point to negative top broker effect and are all significant, while dafep has a t-statistic of only 0.1. For the analysts who move from non-top to top (Table [20], panel C), we get again the same effect, deterioration of performance, but with no significance. The effect is more pronounced in the case of analysts moving from top to non-top brokers (Table [21], panel C). All coefficients point to the same effect (deterioration of performance) and are all significant with the exception of dafep. Adding the two categories of movers together (Table [22], panel C), gives the same picture of performance deterioration, with all but the dafep coefficients significant.

III. A. 3. Focusing on the same firms

When analysts change brokers, they don't keep covering the same firms they covered in their previous employer. Different brokers serve different clienteles and the analyst should change the firms he covers. Dropping some of the firms he covers and starting the coverage of new ones may decrease his overall performance because of bad forecasts about the earnings of the newly covered firms. This conjecture, coupled with the fact that he has to adapt to his new environment with more or less resources may introduce bias to the previous results. For this reason we expand the analysis to the analysts who move between top and non-top brokers examining only the firms for which there was a continuation of coverage, despite the analyst's job change. We do it in two ways: In the first, we use the whole employment history in the two brokers, and in the second we focus on the two last quarters at his old job and at the third and fourth at his second. In the second approach we choose to focus on a limited period for the following reasons: we focus on the last two quarters at the old employer because the analyst would be well established in the broker and most probably able to make the most out of his employer, and also suffering because of all the drawbacks of his broker. We focus on the third and fourth quarter because the first two may be a transition period for the analyst, plus we want to avoid his performance to be contaminated by any other effects, e.g. later shocks to the broker, later problems with his new employer, increased pressure by the broker for favorable forecasts, changes in the firms covered (e.g. change of management) etc. In the first approach we keep a firm in the dataset if there is a forecast for it at least once in both the first and the second broker, i.e. the analyst covers the firm but not necessarily on a frequent basis. In order a firm to be included in the dataset of the second approach, there should be coverage of it in all the four quarters examined in the second approach, i.e. the analyst covers the firms on a regular basis.

The results for the first approach are presented at Tables [23] and [24]. For analysts moving from non-top to top brokers, the panel regressions with quarter dummies (Table [23], panel C) which measure the incremental benefits of the broker show improved but insignificant performance using SAE, and deteriorating but again insignificant performance for the other metrics. For the analysts moving from top to non-top brokers, the panel regressions with quarter dummies (Table [24], panel C) show deteriorating performance , insignificant for the case of SAE and Dafep and significant effect (pmafe, pmafep, and range). The results show that there is a positive effect for the analysts who leave the top brokers (i.e. negative top broker effect), both in absolute and relative accuracy.

The results for the second approach (two quarters per broker) are presented at Tables [25] and [26]. Notice that because of the small amount of observations used, the tests fall short of statistical power. For the analysts moving from non-top to top brokers, the panel regressions (Table [25], panel C) show an improvement in both absolute accuracy (SAE, insignificant) and the relative one (Pmafe, significant). For the case on analysts moving from top to non-top brokers, focusing on the panel regression results (Table [26], panel C), we see that the top broker effect is detrimental but insignificant for SAE, but significant for the relative accuracy (Pmafe and Pmafep).

The results of the two approaches point to an asymmetric behavior: analysts who move to top brokers form non-top ones, improve their forecasts, even marginally, and analysts who leave their top brokers, again improve their forecasts. This points to the hypothesis that the top brokers know which analyst to hire and which one to let go or fire.

III. A. 4. Discussion on the forecasts results

We see from the above analysis of the forecasts issued by analysts working at top and non-top brokers, that overall there is some evidence that top brokers are detrimental for their analysts. This is especially the case also for the sub-sample after the Global Settlement agreement, i.e. negative top broker effect. However, the situation is different before the Global Settlement, with no clear evidence of any top broker effect. If we focus on the firms that analysts covered before their move and continued to covered after the move, there is some evidence that there is a positive top broker effect for the analysts who move to top brokers and negative for the ones who leave the top brokers. As mentioned above, this points to the hypothesis that the top brokers know which analyst to hire and which one to let go or fire. Indirectly, this is also evidence contrary to the existence of a positive top broker effect. We have seen that in general the analysts who move from non-top to top brokers do not exhibit any increase on their performance (after controlling for their own abilities). Given that there is a somewhat improved performance on the forecasts of the continuously covered firms, it follows that for the new firms which are assigned to the analyst there is no positive (actually slightly negative) effect, indicating that the top broker effect does not apply to all firms an analyst covers. Also, the top broker effect is not continuously active on an analyst; analysts leaving the top brokers improve their performance, an evidence of a negative top broker effect. In any case, there is not enough strong evidence to conclude that there is a positive top broker effect. If anything, there is evidence of a negative top broker effect.

We also note that the top broker dummy for SAE is in general lower for the analysts moving to top brokers from non-top brokers than for the analysts who leave the top brokers, with the exception the comparison between the values of the dummy at Panel C of Tables [12] and [13]: 0.00008 for the analysts moving to top brokers and -0.00011 for analysts leaving the top brokers. For the other cases (Panel C at Tables [16] and [17], Panel C at Tables [20] and [21], Panel C at Tables [23] and [24], Panel C at Tables [25] and [26]), the value of the dummy for the analysts moving to top brokers is lower than the value of the dummy for the ones who leave. For the case of Pmafe, the value of the dummy is always higher for the analysts who move to the top brokers than the value of the dummy for the ones who leave the top brokers (again, Panel C at Tables [12] and [13], Panel C at Tables [16] and [17], Panel C at Tables [20] and [21], Panel C at Tables [23] and [24], Panel C at Tables [25] and [26]). So, the analysts who move to top brokers seem to make more out of their employer than the analysts who left the top brokers. This is evidence that the top brokers are good at hiring analysts who are a good match for their business.

III. B. Long term recommendations value

III. B. 1. Whole Sample

Recommendations are maybe the most visible output of the analysts research. In order to analyze the recommendations performance, we will use the framework proposed by Barber, Lehavy and Trueman [JFE, 2007]. We estimate the investment value of the of the recommendations of analysts working at top and non-top brokers, analysts who move from non-top to top brokers and vice versa and we also repeat the analysis for ex and post global settlement periods. Long term evaluations have the advantage of non being influenced by short term market reactions. The drawback is that we have to introduce a model to account for the risk of the recommendations portfolio.

For the long term evaluation of the recommendations the basic methodology is the following: We form buy and sell portfolios and then we evaluate the performance of each portfolio by the alpha generating after adjusting for risk using the Fama and French factors plus momentum (Carhart model). We use buy and short portfolios instead of one portfolio (long-short), so we can compare the analysts performance for buy and sell recommendations separately. Given that the problem with the analysts changing employers too fast (as described in the Data section) is also present in the Recommendations file, we cleaned the IBES Recommendations dataset in the same way we cleaned the IBES Details file. The top brokers are the same as the ones used to analyze the Details file. After cleaning the recommendations data, we have identified 307 moves from non-top brokers to top ones and 301 moves from top to non-top brokers.

We create two daily rebalancing portfolios (one buy, one sell) for each analyst category of interest. We group buys and strong buys together ("buy" recommendations), and holds, sells and strong sells together ("sell" recommendations). We explain the formation of each portfolio with the following example. Assume we want to evaluate the performance of buy recommendations of analysts working at top brokers. For each buy recommendation we buy $1.00 of the recommended stock at the close of the trading day the recommendations was issued. If the recommendation was issued after trading hours or during weekend, the recommendation enters the portfolio at the beginning of the next trading day at a price equal to the closing price of the previous trading day. By waiting until the end of the trading hours, we try to take into account the fact that small investors will not be aware of the recommendations immediately just after the release of the recommendation. The recommendation will remain in the portfolio for a year, except if it is reiterated, in which case the one year counting starts anew, or if it is removed by the analyst earlier than the one year limit by issuing a sell recommendation for the stock. There is a limit of two years that a recommendation can stay continuously in the portfolio. If the stock is recommended by more than one analyst, the stock enters the portfolio as many times as recommended. Since the portfolio is updated daily, we take the recommendation out of the portfolio at the end of the drop day (or the one year limit). In the case an analyst changes broker before a recommendation in the portfolio expires, the recommendation stays in the portfolio until its expiration, i.e. a position is not liquidated if the analyst leaves his broker. The above approach will produce a time series of daily returns which are calculated the following way:

$$r_{i,t}^{portfolio} = \frac{\sum_{i=1}^{n_t} x_{i,t} * r_{i,t}^{rec}}{\sum_{i=1}^{n_t} x_{i,t}} \qquad (7)$$

where $r_{i,t}^{portfolio}$ is the daily return of the recommendations portfolio, $r_{i,t}^{rec}$ is the gross return on recommendation i at date t, n_t is the number of recommendations in the portfolio, and $x_{i,t}$ is the compounded daily return of recommended stock i from the close of trading on the day the recommendation was issued through day t-1.

These daily returns will be used to estimate the alpha of the portfolio using the three Fama-French factors plus the momentum factor (Carhart model):

$$r_{i,t}^{portfolio} - r_{f,t} = \alpha - \beta\left(r_{m,t} - r_{f,t}\right) + s(HML_t) + h(HML_t) + \mu(WML_t) + \varepsilon_t \quad (8)$$

$r_{i,t}^{portfolio}$ is the date t return of portfolio j, $r_{f,t}$ is the date t risk-free rate, $r_{m,t}$ is the date t return on the value-weighted market index, SMB_t is the date t return on a value-weighted portfolio of small-cap stocks minus the date t return on a value-weighted portfolio of large-cap stocks, HML_t is the date t return on a value-weighted portfolio of high book-to-market stocks minus the date t return on a value-weighted portfolio of low book-to-market stocks, and WML_t is the date t return on a value-weighted portfolio of stocks with high recent returns minus the date t return on a value-weighted portfolio of stocks with low recent returns. The four factors come from the website of Kenneth French.

In order a daily return to be included in the regression to estimate alpha, at least 50 active recommendations are required to be active that day. The reason is to have a well-diversified portfolio in order to avoid the results being driven by a few really good or bad recommendations. We use the above methodology to evaluate the buy and sells portfolios of top and non-top brokers, analysts who moved from non-top to top and vice versa and we also repeat the analysis of the movers case for ex and post Global Settlement. Finally, we perform the movers analysis by putting each recommendation one day earlier in the portfolio. The idea is to replicate the benefits of a big institutional investor with privileged access to information.

Table [27] presents the daily alphas of the buy and sell recommendations of top and non-top brokers. Only the alpha for the case of buy recommendations of the top brokers is significant, while the differences between the alphas of non-top and top brokerages are not significant. Figure [1] demonstrates the evolution of the portfolio value and the number of active recommendations for each portfolio.

We present the results of the moving analysts at Table [28]and at Figure [2]. We focus initially on the analysts who move from non-top brokers to top ones. The results are presented at Table [28], Panel A. We see that the non-top buy recommendations are significant at the 5% for the analysts moving from a non-top to a top broker, their top brokers recommendations are significant at the 10%, but the difference in performance is not significant. The performance of the sell recommendations also is better when the analyst was at the non-top broker, but again the difference is not significant. For the analysts moving from top to non-top brokers, the performance of the buy recommendations Is better at the top broker, but for the sell recommendations it is better at the non-top broker. In either case, the difference in performance is not significant. We see that there is weak evidence that there is a detrimental effect on the sell recommendations, and no clear effect on the buy recommendations.

III. B. 2. Global Settlement

We delve deeper, we break the sample into before and after Global Settlement periods, and we repeat the analysis of the recommendations of analysts who move between the two broker groups. The results are presented at Tables [29] and [30] and Figures [3] and [4]. We focus initially on the performance before the Global Settlement, Table [29] and Figure [3]. An analyst who moves from a non-top to a top broker exhibits deteriorating performance after he leaves his old broker. However, the differences are very small and none is significant. An analyst who moves from a top to a non-top broker issues worse buy and sell recommendations at his new non-top broker. Again, no difference in performance is significant. The negative top broker effect (non-top to top case) and the positive effect (top to non-top case) are not statistically significant and the overall it seems that no top broker effect is present, or the top broker effect doesn't apply to all analysts in a uniform fashion.

For the case of the moves after the Global Settlement (Table [30] and Figure [4]), there is weak evidence that the buy recommendations perform better at the top brokers, since in both movers categories the buy recommendations perform better, but the difference in performance is statistically insignificant. The opposite is true for the sell recommendations: in both categories the sell recommendations issued when the analyst was at the non-top broker perform better. Again however, no difference in performance is significant.

Next we try to see if an institution with earlier access to analysts' recommendations can achieve abnormal returns. To this end, we move the inclusion of each recommendation to the corresponding portfolio the day before the recommendation was issued. The results are presented at Table [31] and Figure [5]. Most results are now significant. For the non-top to top analysts, the top brokers have no effect on the buy recommendations and to deteriorate the sell ones. The differences in performance are again insignificant. The difference in performance between the sell recommendations issued by analysts who moved from non-top to top, even if it is not significant statistically, it is a 3% annual return, which economically is significant and it is possible to point to the fact that initially (at the non-top broker) the analysts were mostly following the drop of a stock, while in their top broker are making more original calls. For analysts moving from top to non-top brokers, the buy recommendations perform the same, but the sell ones are slightly better at the non-top broker, but the difference is not significant.

III. B. 3. Discussion on the recommendations value

The evidence from the long term recommendations value is that working for a top broker has only limited effect on the profitability of the recommendations picks of a given analyst. There is only limited evidence that there is a detrimental effect in the sell calls, coming mainly from the period after the Global Settlement agreement and the use of the sell recommendations one day before their public release. If we compare the alphas generated by the two categories of analysts, we see that the analysts moving to top brokers from non-top ones, usually perform better in the top brokers than the analysts who leave the top brokers to move to non-top ones. This is also valid for the performance of the two groups at the non-top brokers. This provides some weak evidence that the top brokers are good at hiring competent analysts and replace with them analysts with inferior performance, who then move to non-top brokers.

III. C. Return and volume reaction

III. C. 1. Methodology and results

Next, we investigate the short term effect of the recommendations. We focus on the return and volume reactions during a short reaction of three days centered on the day the recommendation was issued. We take into consideration the Hansen critique that the analysts simply react to publicly available information by using the First Call Preannouncement dataset and remove from our sample the recommendations which are close to events recorded in the Preannouncement database. We also require that each recommendation is six trading days away from another recommendation and announcement of quarterly results. Following the above methodology, we can isolate each recommendation from a number of confounding effects that might actually cause the return and volume reaction. The quarter results announcement dates are taken from Compustat. Because of the nature of the metrics used, we require that each recommendation has 61 valid trading days before and after the recommendation release.

In order to measure the volume reaction, we use the following ratio:

$$V_{i,t}^{reaction} = \frac{V_t^i}{(\sum_{t=-2}^{-61} V_t^i + \sum_{t=2}^{61} V_t^i) * ^1/_{120}} \qquad (9)$$

with V_t^i the volume of the stock i at date t.

In order to measure the return reaction, we use the following metrics:

$$r_{i,t}^{reaction} = \frac{|r|_t^i}{(\sum_{t=-2}^{-61}|r|_t^i + \sum_{t=2}^{61}|r|_t^i) * 1/120} \quad (10)$$

$$r_{i,t}^{e,size} = [\prod_{t=-1}^{+1}(1 + r_t^i) - \prod_{t=-1}^{+1}(1 + r_t^{size})] \quad (11)$$

$$r_{i,t}^{e} = \frac{1}{n_t}\sum_{i=1}^{n_t}(r_{i,t} - r_{m,t}) \quad (12)$$

with r_t^i the return at day t for the stock i, r_t^{size} is the size decile return at day t and $r_{m,t}$ the market return at day t.

The idea of the first metric is to compare the volume of the day of recommendation release and the adjacent days to the medium term average trading volume of the stock. The second metric does the same thing but for returns, using absolute returns since returns can be negative and the average return goes close to zero. The third measures the size adjusted return for a window of one before and one day after the release of the recommendation. The fourth one is just the market adjusted daily return.

First, we present results for top and non-top brokers. The results are presented at Tables [32] through [35]. We see that for all cases, the reactions are statistically significant. The difference between the size adjusted return of non-top and top brokers is significant for the case of buy recommendations (t=3.728), but not for the case of sell recommendations. For the buy recommendations the volume reaction at the day of the release and the same day return reaction of the recommendations of the top brokers are higher than the ones from the non-top ones. For the sell recommendations, the volume reaction to non-top brokers is larger than the one to top brokers. The opposite is true for the return reactions, the sell recommendations of the top brokers cause higher return reactions and have more negative cumulative size-adjusted returns .

In order to evaluate the top broker effect, we focus again on the analysts who move from non-top to top brokers and from top to non-top brokers. The results are presented at Tables [36] through [43] and also at Figures [6] through [17]. In all cases, the reactions at the day of release are significant for all metrics. The same applies for the reactions at the days previous and after the release of the recommendation. The size-adjusted return for the buy recommendations appears to be higher than the size adjusted return for the sell recommendations for most cases. Notice that for volume reactions and return reactions, we test significance against one, since we are using volume reaction standardized by the average volume/return of the stock. For the size adjusted returns, we test significance against zero.

In order to evaluate the influence of the brokers, we compare the size-adjusted returns when the analysts were at the non-top and top brokers. For the case of analysts moving from non-top to top brokers we find that the difference for the buy recommendations is (non-top: 0.01207, top: 0.0205) is significant at the 5% level. The difference in returns for the sell case is not significant. For the case of analysts moving from top to non-top brokers, the differences in the size adjusted returns are not statistically significant, even if in both cases the returns related to recommendations which come from the top brokers are larger both for the buy and the sell recommendations.

III. C. 2. Discussion on the short term reactions

The tables presented above present evidence of weak top broker effect, focused on buy recommendations: buy recommendations in both cases of moving analysts have higher return reactions and higher size-adjusted returns, with the size-adjusted returns of the analysts moving from non-top to top to be significant. However, since top brokers recommendations in general cause larger reactions, it is not clear if the increased reactions of “promoted” analysts is because the top broker enhanced their abilities (or, more precisely the marker thinks that the top broker enhanced their abilities) or it is that the increase in the reaction comes because of the weight the investors put on recommendations coming from top brokers. In order to resolve the issue, we test the response of the “promoted” analysts’ buy recommendations size adjusted return (0.0205) to the one of the top brokers in general (0.015). The t-test yields t=1.647, which is marginally significant at the 10% level, providing some evidence that the top broker improves the analysts' abilities. We get no clear evidence from the sell recommendations, since for one group (non-top to top) the reactions are higher for the non-top brokers, for the other group higher for the top broker recommendations. Notice also that for the analysts moving from top to non-top, their buy recommendations' reaction are very close to the ones for all buy recommendations issued by top brokers. Moreover, even if the size adjusted return reactions of the recommendations issued by non-top broker analysts who were to move to top brokers are about the same with the average size-adjusted reactions to non-top brokers, after moving to top brokers, the size adjusted return reactions their recommendations cause are above the average of a top broker issued buy recommendation.

Overall, the evidence points to the case that there is a limited top broker effect for the buy recommendations and also that the top brokers are able to hire analysts that may perform better than the average top broker analyst.

The overall analysis from the reactions to recommendations shows that top brokers might help their analysts to increase the responsiveness of the market to their buy recommendations, but have no effect on the sell recommendations.

IV. Conclusions

We have tried to evaluate the effect of top brokers on analysts' performance. To this end, we have analyzed the analysts' forecasts, long term recommendations value and short term reactions to recommendations release. From the analysis of forecasts we have concluded that the top broker effect is weak and in many cases the top brokers are detrimental to their analysts forecast accuracy. The evidence from the long term recommendations evaluation is weak with no significant differences in performance; there is only weak evidence that the top brokers have a negative effect on the sell recommendations. Finally, from the short term reactions, we see that the top brokers have a positive effect on the buy recommendations, but only for analysts who moved from non-top brokers. Overall, the top broker effect seems to be weak, it is not extended to all aspects of analysts performance and, assuming it is present, it cannot be exploited by all analysts at all phases of their careers.

In all cases (forecasts, long term recommendations value and short term reactions), we have found evidence that the top brokers are good at finding and employing non-top broker analysts who are good match for their business and discontinue the employment of analysts who are not.

Table 1 . Basic Summary Statistics for earnings file

Panel A: Number of firms in the IBES details file

	yyy	num
1.	1990	2594
2.	1991	2808
3.	1992	3211
4.	1993	3577
5.	1994	4182
6.	1995	4496
7.	1996	5105
8.	1997	5388
9.	1998	5311
10.	1999	5167
11.	2000	4752
12.	2001	4182
13.	2002	3946
14.	2003	3897
15.	2004	4237
16.	2005	4383
17.	2006	4427
18.	2007	4536
19.	2008	4220
20.	2009	3825

Unique firms present for all years: 11903

Panel B: Number of analysts in the IBES details file

	yyy	num
1.	1990	1129
2.	1991	1296
3.	1992	1340
4.	1993	1558
5.	1994	1799
6.	1995	1976
7.	1996	2137
8.	1997	2491
9.	1998	2736
10.	1999	2878
11.	2000	2841
12.	2001	2904
13.	2002	2786
14.	2003	2777
15.	2004	2891
16.	2005	2995
17.	2006	3042
18.	2007	3005
19.	2008	2872
20.	2009	2297

Unique analysts present for all years: 8102

Panel C: Number of brokers in the IBES details file

	yyy	num
1.	1990	115
2.	1991	115
3.	1992	119
4.	1993	145
5.	1994	163
6.	1995	169
7.	1996	180
8.	1997	199
9.	1998	211
10.	1999	206
11.	2000	197
12.	2001	197
13.	2002	196
14.	2003	235
15.	2004	253
16.	2005	271
17.	2006	260
18.	2007	251
19.	2008	225
20.	2009	208

Unique brokerss present for all years: 492

Table 1: The table reports descriptive statistics of the data included in the earnings forecasts sample. The data come from the intersection of IBES earnings file and CRSP monthly file, after requiring each analyst to stay with his broker for at least one year.

Table 2: Number of firms covered according to the broker category

Panel A: Number of firms covered: top brokers

yyy	mean(meanNu~s)	med(meanNu~s)	sd(meanNu~s)
1990	10.5514	10	8.493263
1991	10.8026	10	8.478238
1992	12.81915	12	9.222392
1993	12.98519	12	9.657193
1994	12.58998	11	9.667235
1995	12.39916	12	9.462796
1996	12.4472	12	8.79559
1997	11.6456	11	8.489722
1998	11.5051	11	8.235364
1999	11.37146	11	8.453212
2000	10.35628	10	7.29088
2001	10.08875	10	6.794093
2002	10.06616	9	7.112914
2003	9.776358	9	7.015596
2004	10.18143	10	7.314246
2005	10.44661	10	7.468655
2006	10.869	10	7.808252
2007	11.48592	11	8.300396
2008	11.53795	11	8.574792
2009	11.66721	11	8.894514

All years: mean: 11.14, median: 10, std: 8.2

Panel B: Number of firms covered: non-top brokers

yyy	mean(meanNu~s)	med(meanNu~s)	sd(meanNu~s)
1990	9.52849	8	8.376392
1991	10.3242	9	8.751531
1992	11.46498	10	9.407547
1993	11.6324	10	9.646353
1994	12.23669	11	9.637233
1995	11.7465	11	9.490662
1996	11.43307	10	9.204965
1997	10.78319	10	8.244837
1998	10.40313	9	7.794388
1999	10.50422	9	7.674718
2000	10.15718	9	7.283477
2001	9.763517	9	7.212565
2002	9.918005	10	6.863027
2003	10.20824	10	6.812195
2004	10.90928	11	6.579288
2005	11.14216	11	7.012056
2006	11.42829	11	7.145503
2007	11.64892	12	7.332205
2008	11.63876	12	6.979713
2009	12.24778	13	7.058325

All years: mean: 10.95, median: 10, std: 7.78

Table 2: The table reports number of firms covered by year and broker category in the earnings forecasts sample. The data come from the intersection of IBES earnings file and CRSP monthly file, after requiring each analyst to stay with his broker for at least one year. Top brokers are defined at Table 8.

Table 3. Basic summary statistics for Recommendations file

Panel A: Number of firms

1.	1992	1
2.	1993	3420
3.	1994	4407
4.	1995	4593
5.	1996	5193
6.	1997	5409
7.	1998	5508
8.	1999	5312
9.	2000	4860
10.	2001	4248
11.	2002	4317
12.	2003	4196
13.	2004	4226
14.	2005	4345
15.	2006	4425
16.	2007	4460
17.	2008	4189
18.	2009	3760

Unique firms present at all years: 12148

Panel B: Number of analysts

	yyy	num
1.	1992	1
2.	1993	1296
3.	1994	2000
4.	1995	2197
5.	1996	2521
6.	1997	2866
7.	1998	3349
8.	1999	3529
9.	2000	3418
10.	2001	3270
11.	2002	3535
12.	2003	3300
13.	2004	3407
14.	2005	3485
15.	2006	3485
16.	2007	3520
17.	2008	3450
18.	2009	3242

Unique analysts present at all years: 11784

Panel C: Recommendations issued by analysts: top brokers

yyy	mean(meanNu~s)	med(meanNu~s)	sd(meanNu~s)
1993	9.911043	8	7.729747
1994	10.55596	9	9.725133
1995	8.021834	7	6.800218
1996	7.456724	6	6.001594
1997	7.129762	6	6.273357
1998	6.696479	5	6.243486
1999	6.429173	5	5.822737
2000	5.632688	5	4.897762
2001	5.421728	4	4.507517
2002	7.790997	6	6.970785
2003	6.488605	4	6.354212
2004	5.598478	4	4.81432
2005	5.325367	4	4.604987
2006	5.788618	4	5.544864
2007	6.02336	5	5.736369
2008	6.523279	4	6.083884
2009	6.084243	4	5.616028

All years: mean: 6.57, median: 5, std: 6.1

Panel D: Recommendations issued by analysts: non-top brokers

yyy	mean(meanNu~s)	med(meanNu~s)	sd(meanNu~s)
1993	10.1448	8	9.355524
1994	9.049652	7	8.140511
1995	8.645236	7	7.177566
1996	8.054886	7	6.952403
1997	7.221441	6	5.666084
1998	7.28748	6	6.562487
1999	6.964625	6	5.823819
2000	6.629484	6	5.3609
2001	6.568452	6	4.919975
2002	8.165094	7	5.880309
2003	7.548919	7	5.39711
2004	7.256266	6	12.63269
2005	6.516016	6	5.922339
2006	6.770264	6	6.004221
2007	6.726257	6	5.157846
2008	7.184401	6	5.511893
2009	7.117683	6	5.352582

All years: mean: 7.32, median: 6, std: 6.75

Panel E: Buy and sell recommendations for the top brokers

	RecCode	
yyy	Buy	Sell
1993	1,984	1,367
1994	4,614	3,371
1995	4,275	3,351
1996	5,060	2,709
1997	5,343	2,661
1998	6,066	3,064
1999	6,749	2,980
2000	5,834	2,738
2001	5,417	3,073
2002	7,130	8,906
2003	3,846	6,840
2004	2,803	5,257
2005	2,985	4,923
2006	3,239	5,820
2007	3,876	5,882
2008	3,461	6,494
2009	2,023	3,659

Panel F: Buy and sell recommendations for the non-top brokers

yyy	RecCode Buy	Sell
1993	3,972	3,019
1994	8,195	5,765
1995	10,483	7,040
1996	10,929	6,332
1997	11,339	5,581
1998	13,026	6,489
1999	12,781	5,512
2000	11,889	4,685
2001	10,190	6,143
2002	12,156	10,709
2003	8,837	10,656
2004	9,585	10,190
2005	8,764	9,173
2006	8,924	9,896
2007	9,162	9,814
2008	9,322	11,532
2009	7,160	9,087

Table 3: The table reports descriptive statistics of the data included in our recommendations sample, after requiring each analyst to stay with his broker for at least one year. "Buy" recommendations include "Buy" and "Strong Buy", while "Sell" recommendations include "Hold", "Sell" and "Strong Sell". Top brokers are defined at Table [8].

Table 4. Number of firms per size decile in the monthy CRSP file 1990-2009.

decile	Freq.	Percent	Cum.
1	63,718	38.91	38.91
2	21,338	13.03	51.95
3	16,685	10.19	62.14
4	13,550	8.28	70.41
5	11,268	6.88	77.29
6	9,394	5.74	83.03
7	8,209	5.01	88.04
8	7,292	4.45	92.50
9	6,532	3.99	96.49
10	5,753	3.51	100.00
Total	163,739	100.00	

Table 4: The table reports the number of firms per size decile in the CRSP monthly file 1990-2009. Deciles used are NYSE deciles, and were based on the market equity value at the end of the previous year.

Table 5. Number of forecasts and firms per size decile

Panel A: Number of forecasts for each decile

	decile									
yyy	1	2	3	4	5	6	7	8	9	10
1990	1,831	2,043	2,277	2,803	3,207	3,551	3,554	4,700	5,501	7,521
1991	1,678	2,358	3,038	3,414	3,810	4,467	4,643	5,754	6,839	9,528
1992	1,838	2,944	3,572	4,154	4,274	5,497	5,617	6,897	9,193	11,650
1993	2,232	2,828	3,669	3,639	4,032	4,552	5,642	6,445	8,667	11,699
1994	4,365	4,645	4,237	4,739	4,906	6,117	7,524	8,555	11,241	14,808
1995	4,265	3,882	4,792	4,360	5,667	5,855	7,812	9,457	12,308	16,177
1996	4,245	4,287	5,298	5,659	5,466	5,789	7,619	9,490	12,639	15,806
1997	4,370	5,271	5,577	5,689	6,361	6,302	7,125	9,257	12,877	16,310
1998	4,446	6,065	6,137	6,492	7,031	8,058	8,223	10,275	13,412	19,032
1999	3,377	4,504	5,334	5,800	6,969	7,704	9,715	12,313	14,215	19,424
2000	1,734	2,434	3,302	4,600	5,361	6,614	8,756	10,985	14,156	20,472
2001	2,151	3,074	3,970	5,243	7,491	8,491	10,566	13,411	16,581	25,211
2002	1,614	2,854	4,075	5,506	7,829	9,029	11,658	12,107	15,726	21,981
2003	2,139	3,916	5,288	7,170	7,627	9,229	10,595	11,464	16,535	21,525
2004	1,784	3,947	7,792	8,798	10,993	10,368	11,610	13,910	18,625	24,317
2005	2,366	5,575	8,222	10,934	10,619	10,641	12,601	14,482	18,616	24,352
2006	3,401	6,475	9,180	10,978	11,477	12,720	11,348	14,450	19,648	24,744
2007	3,968	6,916	10,627	11,949	11,700	12,230	12,760	13,808	19,154	24,134
2008	5,348	7,257	10,019	12,321	13,371	15,263	14,143	16,371	20,482	27,446
2009	4,444	4,793	7,027	9,635	10,999	12,480	14,145	14,306	17,068	22,799

Panel B: Number of firms for each decile

	decile									
yyy	1	2	3	4	5	6	7	8	9	10
1990	457	333	275	285	250	229	213	204	175	164
1991	424	370	362	321	281	263	211	214	187	168
1992	452	446	422	410	310	288	243	230	208	187
1993	595	483	468	394	347	292	274	266	231	212
1994	897	646	459	396	349	321	301	297	270	230
1995	906	587	558	421	410	350	346	330	300	261
1996	1,006	703	627	583	458	380	373	343	331	270
1997	1,079	795	685	553	508	386	379	354	335	288
1998	1,048	824	646	528	454	443	340	355	325	312
1999	862	666	580	554	461	455	443	421	369	326
2000	579	478	477	513	506	451	493	443	428	371
2001	565	493	429	430	462	403	373	358	331	319
2002	419	461	425	429	455	410	395	319	302	298
2003	483	526	459	437	392	373	333	288	295	272
2004	420	527	648	485	475	362	347	306	298	291
2005	521	606	584	547	436	362	343	321	312	292
2006	608	574	576	506	447	397	327	315	323	295
2007	638	600	636	517	432	387	347	304	323	292
2008	722	510	499	459	431	375	307	311	285	279
2009	644	400	395	424	390	378	332	288	286	268

Table 5: The table reports the number of forecasts and firms per decile in the intersection of IBES and monthly CRSP files for the 1990-2009 period. deciles used are NYSE deciles, and were based on the market equity value at the end of the previous year.

Table 6. Number of forecasts and firms per size decile and broker category

Panel A: Number of forecasts for each decile for top broker analysts

	decile									
yyy	1	2	3	4	5	6	7	8	9	10
1990	296	627	888	978	1,310	1,442	1,408	2,078	2,391	3,223
1991	238	611	971	1,092	1,419	1,680	1,945	2,299	2,993	4,056
1992	231	654	1,022	1,405	1,517	2,223	2,178	2,948	4,212	5,038
1993	262	554	1,021	1,174	1,389	1,755	2,342	2,743	3,819	4,904
1994	438	1,003	1,099	1,543	1,834	2,408	2,976	3,626	4,955	6,079
1995	452	693	1,246	1,465	2,000	2,383	3,125	4,100	5,465	7,103
1996	467	869	1,357	1,764	1,895	2,195	3,007	4,210	5,798	7,036
1997	504	1,044	1,386	1,765	2,330	2,609	3,071	4,276	6,249	7,754
1998	528	1,237	1,685	2,024	2,558	3,181	3,658	4,992	6,583	9,355
1999	472	811	1,493	1,735	2,567	3,003	4,149	5,763	7,236	9,774
2000	196	300	779	1,291	2,024	2,602	3,711	4,921	6,759	9,855
2001	383	705	998	1,590	2,658	3,471	4,686	6,265	8,148	12,009
2002	241	441	836	1,309	2,285	3,319	4,714	5,400	7,346	10,510
2003	229	384	673	1,422	1,974	3,042	3,842	4,705	7,217	9,638
2004	134	259	824	1,653	2,681	3,203	4,130	5,625	8,272	10,999
2005	170	470	1,003	2,134	2,975	3,143	4,509	6,043	8,609	11,222
2006	262	589	1,359	2,545	2,990	4,045	4,201	6,096	8,961	11,536
2007	269	772	1,690	2,617	3,301	3,929	4,963	5,855	9,286	12,072
2008	362	827	1,546	2,511	3,156	4,609	5,152	6,628	9,131	12,985
2009	417	494	896	1,768	2,096	2,736	3,641	4,716	6,231	9,178

Panel B: Number of firms for each decile for top broker analysts

	decile									
yyy	1	2	3	4	5	6	7	8	9	10
1990	99	151	172	183	179	182	181	191	173	162
1991	85	138	197	194	204	214	183	198	184	168
1992	67	163	213	249	228	233	213	219	204	186
1993	85	168	240	256	250	245	250	244	228	212
1994	138	260	240	252	254	270	266	282	262	229
1995	150	189	286	269	300	290	297	313	292	257
1996	158	276	316	365	326	312	322	326	323	268
1997	170	313	340	355	363	319	333	332	328	285
1998	188	324	350	351	343	357	298	336	321	306
1999	142	209	296	300	328	358	381	400	354	323
2000	64	106	178	277	329	354	427	406	413	367
2001	115	163	191	254	332	332	341	341	325	317
2002	68	104	177	221	304	321	361	301	292	295
2003	62	101	140	224	230	278	287	262	283	271
2004	35	77	180	247	305	272	305	284	289	282
2005	44	109	201	314	296	266	303	295	303	284
2006	65	129	240	312	307	324	282	296	308	287
2007	72	160	282	332	331	316	318	286	311	290
2008	83	151	227	271	312	316	278	284	278	276
2009	75	90	138	228	225	257	278	253	270	263

Panel C: Number of forecasts for each decile for non-top broker analysts

	decile									
yyy	1	2	3	4	5	6	7	8	9	10
1990	1,535	1,416	1,389	1,825	1,897	2,109	2,146	2,622	3,110	4,298
1991	1,440	1,747	2,067	2,322	2,391	2,787	2,698	3,455	3,846	5,472
1992	1,607	2,290	2,550	2,749	2,757	3,274	3,439	3,949	4,981	6,612
1993	1,970	2,274	2,648	2,465	2,643	2,797	3,300	3,702	4,848	6,795
1994	3,927	3,642	3,138	3,196	3,072	3,709	4,548	4,929	6,286	8,729
1995	3,813	3,189	3,546	2,895	3,667	3,472	4,687	5,357	6,843	9,074
1996	3,778	3,418	3,941	3,895	3,571	3,594	4,612	5,280	6,841	8,770
1997	3,866	4,227	4,191	3,924	4,031	3,693	4,054	4,981	6,628	8,556
1998	3,918	4,828	4,452	4,468	4,473	4,877	4,565	5,283	6,829	9,677
1999	2,905	3,693	3,841	4,065	4,402	4,701	5,566	6,550	6,979	9,650
2000	1,538	2,134	2,523	3,309	3,337	4,012	5,045	6,064	7,397	10,617
2001	1,768	2,369	2,972	3,653	4,833	5,020	5,880	7,146	8,433	13,202
2002	1,373	2,413	3,239	4,197	5,544	5,710	6,944	6,707	8,380	11,471
2003	1,910	3,532	4,615	5,748	5,653	6,187	6,753	6,759	9,318	11,887
2004	1,650	3,688	6,968	7,145	8,312	7,165	7,480	8,285	10,353	13,318
2005	2,196	5,105	7,219	8,800	7,644	7,498	8,092	8,439	10,007	13,130
2006	3,139	5,886	7,821	8,433	8,487	8,675	7,147	8,354	10,687	13,208
2007	3,699	6,144	8,937	9,332	8,399	8,301	7,797	7,953	9,868	12,062
2008	4,986	6,430	8,473	9,810	10,215	10,654	8,991	9,743	11,351	14,461
2009	4,027	4,299	6,131	7,867	8,903	9,744	10,504	9,590	10,837	13,621

Panel D: Number of firms for each decile for non-top broker analysts

yyy	decile 1	2	3	4	5	6	7	8	9	10
1990	400	286	226	243	227	201	196	195	170	162
1991	383	332	319	291	254	240	196	205	185	168
1992	420	398	372	366	275	262	227	220	207	186
1993	563	440	425	350	321	274	255	259	228	211
1994	846	582	424	361	320	303	285	289	268	227
1995	863	535	513	360	382	323	328	317	294	258
1996	955	626	578	515	420	346	354	329	323	270
1997	1,022	745	631	502	464	350	364	342	326	288
1998	988	777	595	488	417	409	317	334	318	308
1999	806	639	543	519	429	419	406	399	364	323
2000	547	458	454	478	461	422	459	427	416	367
2001	514	453	402	404	427	372	355	343	317	318
2002	380	430	408	406	434	393	377	305	298	294
2003	458	507	445	424	377	358	318	283	290	271
2004	404	515	631	464	458	344	336	296	292	289
2005	510	588	564	531	421	348	337	316	305	291
2006	592	567	556	487	430	387	317	310	316	289
2007	619	592	614	502	419	372	337	298	318	285
2008	712	500	491	447	417	362	305	307	280	276
2009	630	393	391	416	385	369	327	286	280	267

Table 6: The table reports the number of forecasts and firms per decile in the intersection of IBES and monthly CRSP files for the 1990-2009 period both for top and non-top brokers. deciles used are NYSE deciles, and were based on the market equity value at the end of the previous year. Top brokers are defined at Table [8].

Table 7. Number of recommendations and firms per size decile

Panel A: Number of recommendations for each decile

yyy	decile 1	2	3	4	5	6	7	8	9	10
1992									1	
1993	825	924	1,064	1,034	1,098	1,204	1,427	1,608	2,090	2,769
1994	2,245	2,166	2,027	2,041	2,011	2,467	2,853	3,276	4,158	5,445
1995	2,069	1,859	2,182	1,984	2,452	2,331	2,823	3,302	4,123	5,583
1996	2,233	2,093	2,537	2,666	2,443	2,405	2,681	3,116	3,685	4,316
1997	2,253	2,371	2,541	2,516	2,724	2,434	2,715	2,875	3,491	4,257
1998	2,488	2,845	2,828	2,857	2,807	3,090	2,863	3,421	4,118	5,311
1999	1,926	2,043	2,222	2,662	2,956	3,290	3,646	4,378	4,544	5,825
2000	939	1,137	1,472	2,019	2,345	2,850	3,504	3,987	4,914	6,556
2001	949	1,339	1,586	1,892	2,617	2,780	3,116	3,958	4,928	6,837
2002	1,167	1,721	2,113	2,963	3,835	4,531	5,692	5,470	6,894	9,706
2003	1,322	1,773	2,252	2,884	2,890	3,301	3,757	3,843	5,097	6,227
2004	980	1,616	2,757	2,840	3,469	2,901	3,062	3,612	4,259	4,989
2005	1,101	1,998	2,699	3,213	2,953	2,690	2,823	3,156	3,690	4,166
2006	1,408	2,085	3,068	3,262	3,147	3,131	2,918	3,202	3,827	4,408
2007	1,375	2,080	3,141	3,466	3,168	3,073	3,225	3,203	4,097	4,386
2008	1,462	1,858	2,618	3,205	3,380	3,900	3,475	3,950	4,521	5,611
2009	1,208	1,236	1,804	2,583	3,049	3,342	4,102	3,656	4,248	4,983

Panel B: Number of firms for each decile

yyy	decile 1	2	3	4	5	6	7	8	9	10
1992									1	
1993	524	447	449	372	331	287	274	254	231	213
1994	956	668	497	416	363	335	313	295	272	233
1995	905	564	550	445	435	372	356	339	300	262
1996	992	678	654	602	476	402	393	342	332	269
1997	1,025	761	672	568	534	413	400	365	337	289
1998	1,075	834	661	554	473	467	363	368	338	313
1999	857	641	558	567	481	490	472	440	388	332
2000	531	434	477	522	528	492	514	485	451	380
2001	513	458	435	421	481	436	397	373	348	328
2002	491	519	452	464	489	442	420	341	311	302
2003	533	508	461	440	406	386	350	306	300	275
2004	442	497	622	482	471	374	351	316	307	292
2005	500	575	572	538	442	368	350	326	313	293
2006	566	550	582	515	459	403	334	329	329	298
2007	563	570	611	526	434	399	359	317	331	295
2008	612	482	503	468	429	388	317	334	298	284
2009	517	361	387	430	415	383	350	300	295	278

Table 7: The table reports the number of recommendations and firms per decile in the intersection of IBES and daily CRSP files for the 1992-2009 period. deciles used are NYSE deciles, and were based on the market equity value at the end of the previous year.

Table 8. Accuracy metrics and regressors used in equation [6]

Panel A: Forecast Metrics

Accuracy Metric	Definition
Forecast error for analyst i, company j, quarter t	$error_{i,j,t} = forecast_{i,j,t} - actual_{j,t}$
Absolute Forecast error for analyst i, company j, quarter t	$abserror_{i,j,t} = \lvert forecast_{i,j,t} - actual_{j,t} \rvert$
Standardized Absolute Error for analyst i, company j, quarter t. The absolute forecast error is standardized by the stock price of the second month of the firm's financial quarter.	$SAE_{i,j,t} = \frac{\lvert forecast_{i,j,t} - actual_{j,t} \rvert}{Price_{j,t}}$
Proportional Mean Absolute Forecast Error is defined as the ratio of the difference between the absolute forecast error ($abserror_{i,j,t}$) by analyst i for firm j at time t and the mean absolute forecast error $avg(abserror)_{j,t}$ of all of the forecasts for firm j for fiscal quarter t, to the mean absolute forecast error $avg(abserror)_{j,t}$. A positive $pmafe_{i,j,t}$ indicates that the absolute forecast error $abserror_{i,j,t}$ by analyst i for firm j at time t is larger than the average absolute forecast error of all of the forecasts for firm j for the same fiscal fiscal quarter t. To facilitate interpretation, it is multiplied by minus one.	$PMAFE_{i,j,t} = -\frac{abserror_{i,j,t} - \overline{abserror_{j,t}}}{\overline{abserror_{j,t}}}$
Proportional Mean Price-scaled Absolute Forecast Error is similar to pmafe except that $abserror_{i,j,t}$ is standardized by the stock price of the second month of the firm's financial quarter, i.e,. $pmafep_{i,j,t} =(SAE_{i,j,t} - avgSAE_{j,t})/avgSAE_{j,t}$. To facilitate interpretation, it is multiplied by minus one.	$PMAFEP_{i,j,t} = -\frac{SAE_{i,j,t} - \overline{SAE_{j,t}}}{\overline{SAE_{j,t}}}$
De-meaned Absolute Forecast Error standardized by the stock price of the second month of the firm's financial quarter. The price scaled absolute forecast error $SAE_{i,j,t}$ of analyst i for firm j at quarter t is computed as the price-scaled absolute difference between an earnings forecast and the actual disclosed earnings. To facilitate interpretation, it is multiplied by minus one.	$DAFEP_{i,j,t} = -(SAE_{i,j,t} - \overline{SAE_{j,t}})$
$Range_{i,j,t}$ is the ratio of the difference between the maximum $SAE_{i,j,t}$ for firm j, fiscal quarter t and analyst's $SAE_{i,j,t}$ to the range of $SAE_{i,j,t}$ for firm j and fiscal quarter t.	$Range_{i,j,t} = \frac{MaxSAE_{j,t} - SAE_{i,j,t}}{rangeSAE_{j,t}}$

Panel B: Regressors

Regressors	Description
Maturity	difference in days between the announcement of the actual earnings and the forecast
Experience	defined in years as the difference between analyst’s first forecast and his current forecast
FirmExperience	defined as the difference in days between the analyst's first forecast for the given firm and his current forecast for the same firm
NumberofCompanies	is the number of firms the analysts has issued forecasts for in the given calendar quarter
Size	Logarithm of market value of equity at the month before the end of the financial quarter of the given firm
Coverage	number of analysts covering the same firm at the given financial quarter
Difficulty	the negative of the average number of firms followed by the firm's analysts
TopBroker	dummy which is one when the forecast was issued on behalf of a top broker and zero otherwise
Top brokers	Bank of America/Montgomery Securities, Bear Stearns, Credit Suisse/DLJ, First Boston, Deutsche Bank, Goldman Sachs, JP Morgan, Morgan Stanley, Citigroup, Merrill Lynch, UBS/Warburg, Alex Brown, Salomon, and Sanford Bernstein

Panel C: Regressors of the panel regressors

Regressors of panel regressions	Description
MeanMaturity	Mean maturity of the forecasts issued by the same analyst in the same quarter
MeanExperience	Mean experience for the same analyst in the same quarter
MeanFirmExperience	Mean firm experience for the same analyst in the same quarter
MeanNumberofCompanies	The number of firms the analysts has issued forecasts for in the given calendar quarter
MeanSize	Mean of size of the firms covered by the analyst in the same quarter.
MeanCoverage	Mean of the coverage of the firms covered by the analyst in the same quarter
MeanDifficulty	Mean of difficulty of the firms covered by analyst at the same quarter.
TopBroker	dummy which is one when the forecast was issued on behalf of a top broker and zero otherwise. If the analyst has moved during the quarter he is dropped from the given quarter.
Top brokers	Bank of America/Montgomery Securities, Bear stearns, Credit Suisse/DLJ, First Boston, Deutsche Bank, Goldman Sachs, JP Morgan, Morgan Stanley, Citigroup, Merrill Lynch, UBS/Warburg, Alex Brown, Salomon, and Sanford Bernstein

Table 8: The table presents the accuracy metrics and the regressors used at equations [6].

Table 9. Summary statistics for error metrics

stats	Error	abserror	AbsMea~e	Pmafe	Pmafep	Dafep	Range
mean	.6538275	.845209	.1255962	-1.70e-09	3.28e-11	6.46e-10	.5694327
p50	-.01	.0249	.0012632	0	0	0	.6666666
p10	-.095	0	0	-.764706	-.7647059	-.0013962	0
p90	.07	.17	.0101695	1	1	.0015152	1
sd	215.4716	215.4709	39.02066	.7635448	.7639026	2.092748	.3884016

Table 9: The table presents summary statistics for the 7 error metrics.

Table 10. Pooled regression results

Panel A: Results without quarter dummies

Pooled regression, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00175***	-0.00176***	-0.00011	-0.00119***
	(24.7)	(-57.5)	(-57.4)	(-1.3)	(-59.2)
AnalystExperience	0.00002***	-0.00020	-0.00019	-0.00080	-0.00080***
	(3.3)	(-1.1)	(-1.1)	(-0.8)	(-6.6)
FirmExperience	-0.00000**	0.00000***	0.00000***	0.00000	0.00000***
	(-2.9)	(6.6)	(6.5)	(0.9)	(10.7)
NumberOfCompaniesF~d	-0.00000	-0.00011	-0.00011	-0.00027**	-0.00003
	(-1.3)	(-0.7)	(-0.7)	(-2.7)	(-0.4)
Coverage	-0.00026***	0.00057***	0.00056***	-0.00009	0.00522***
	(-46.8)	(9.0)	(8.8)	(-1.2)	(54.1)
difficulty	0.00009***	-0.00230***	-0.00231***	0.00017*	-0.00141***
	(11.7)	(-14.2)	(-14.2)	(2.1)	(-10.0)
TopBrokerDummy	-0.00059***	0.00660***	0.00667***	0.00523	0.00596***
	(-18.3)	(5.0)	(5.0)	(1.0)	(7.7)
Constant	0.00540***	0.13605***	0.13672***	0.00883	0.60401***
	(44.8)	(57.3)	(57.3)	(1.2)	(272.9)
R-squared	0.016	0.008	0.008	0.000	0.020
N	1182437	1163457	1161538	1182437	1072255

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Results with quarter dummies

Pooled regression with quarter fixed effects, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00182***	-0.00182***	-0.00012	-0.00121***
	(22.5)	(-56.9)	(-56.8)	(-1.3)	(-58.4)
AnalystExperience	-0.00005***	-0.00120***	-0.00120***	-0.00099	-0.00086***
	(-9.5)	(-5.8)	(-5.8)	(-0.8)	(-6.8)
FirmExperience	0.00000	0.00001***	0.00001***	0.00000	0.00000***
	(1.8)	(7.6)	(7.5)	(0.9)	(10.4)
NumberOfCompaniesF~d	0.00001***	0.00002	0.00001	-0.00025**	-0.00002
	(4.4)	(0.1)	(0.1)	(-2.8)	(-0.2)
Coverage	-0.00029***	0.00024***	0.00022***	-0.00015	0.00528***
	(-50.9)	(3.6)	(3.3)	(-1.1)	(54.0)
difficulty	-0.00001	-0.00193***	-0.00193***	0.00016*	-0.00127***
	(-1.1)	(-11.9)	(-11.9)	(2.0)	(-8.9)
TopBrokerDummy	-0.00026***	0.00767***	0.00775***	0.00562	0.00518***
	(-8.3)	(5.7)	(5.7)	(1.0)	(6.7)
Constant	0.00910***	0.10750***	0.10793***	0.00490	0.58529***
	(19.3)	(34.4)	(34.4)	(1.5)	(102.1)
R-squared	0.054	0.009	0.009	-0.000	0.020
N	1182437	1163457	1161538	1182437	1072255

* p<0.05, ** p<0.01, *** p<0.001

Table 10: The table reports the results from the pooled regression [6]. The dependent and independent variables are described at Table [8]. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. Numbers in parentheses are clustered corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 11. Pooled and panel regression estimation of the whole sample.

Panel A: Pooled regression

Pooled regression, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00176***	-0.00176***	-0.00011	-0.00119***
	(21.3)	(-57.5)	(-57.5)	(-1.3)	(-59.3)
AnalystExperience	0.00001**	-0.00031	-0.00031	-0.00075	-0.00082***
	(2.7)	(-1.8)	(-1.8)	(-0.8)	(-7.0)
FirmExperience	0.00000***	0.00001***	0.00001***	0.00000	0.00001***
	(25.5)	(7.7)	(7.7)	(0.9)	(11.8)
NumberOfCompaniesF~d	-0.00002***	-0.00012	-0.00012	-0.00028**	-0.00004
	(-15.3)	(-0.8)	(-0.8)	(-2.7)	(-0.4)
size	-0.00272***	-0.00234***	-0.00234***	-0.00050	-0.00138***
	(-83.1)	(-9.9)	(-9.9)	(-1.1)	(-3.9)
Coverage	0.00024***	0.00099***	0.00099***	0.00001	0.00546***
	(26.7)	(12.3)	(12.3)	(0.4)	(44.6)
difficulty	0.00012***	-0.00230***	-0.00230***	0.00018*	-0.00141***
	(15.0)	(-14.2)	(-14.2)	(2.2)	(-9.9)
TopBrokerDummy	0.00080***	0.00781***	0.00783***	0.00549	0.00659***
	(24.9)	(5.7)	(5.7)	(1.1)	(8.5)
Constant	0.03869***	0.16577***	0.16576***	0.01503	0.62140***
	(94.1)	(45.6)	(45.6)	(1.1)	(130.5)
R-squared	0.076	0.008	0.008	0.000	0.020
N	1182437	1161541	1161538	1182437	1072255

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Pooled regression with quarter dummies

Pooled regression with quarter fixed effects, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00001***	-0.00183***	-0.00183***	-0.00012	-0.00121***
	(18.3)	(-56.9)	(-56.9)	(-1.3)	(-58.5)
AnalystExperience	-0.00006***	-0.00135***	-0.00135***	-0.00095	-0.00091***
	(-12.8)	(-6.7)	(-6.7)	(-0.8)	(-7.3)
FirmExperience	0.00000***	0.00001***	0.00001***	0.00000	0.00001***
	(29.6)	(9.0)	(9.0)	(0.9)	(11.7)
NumberOfCompaniesF~d	-0.00001***	0.00001	0.00001	-0.00025**	-0.00002
	(-9.4)	(0.1)	(0.1)	(-2.8)	(-0.3)
size	-0.00255***	-0.00294***	-0.00294***	-0.00056	-0.00158***
	(-82.9)	(-12.3)	(-12.3)	(-1.1)	(-4.4)
Coverage	0.00018***	0.00075***	0.00075***	-0.00005	0.00555***
	(20.8)	(9.1)	(9.1)	(-1.2)	(44.9)
difficulty	0.00004***	-0.00189***	-0.00189***	0.00018*	-0.00124***
	(5.7)	(-11.6)	(-11.6)	(2.3)	(-8.7)
TopBrokerDummy	0.00101***	0.00920***	0.00921***	0.00590	0.00590***
	(31.9)	(6.6)	(6.6)	(1.0)	(7.5)
Constant	0.04054***	0.14430***	0.14429***	0.01175	0.60524***
	(67.9)	(33.8)	(33.8)	(1.2)	(84.3)
R-squared	0.106	0.009	0.009	-0.000	0.020
N	1182437	1161541	1161538	1182437	1072255

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression

Whole sample, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	PmafeQ	PmafepQ	DafepY	RangeQ
meanexp	0.00018***	0.00216***	0.00218***	-0.00072	0.00019
	(17.1)	(4.3)	(4.4)	(-0.4)	(0.6)
NumberOfCompaniesF~d	0.00003***	0.00119***	0.00118***	-0.00200	0.00024
	(5.4)	(4.1)	(4.1)	(-1.8)	(1.3)
meanFirmExp	0.00000***	-0.00001***	-0.00001***	0.00001	-0.00000*
	(14.5)	(-4.8)	(-4.8)	(0.8)	(-2.2)
meanMat	0.00002***	-0.00213***	-0.00213***	-0.00000	-0.00122***
	(20.1)	(-45.8)	(-45.8)	(-0.0)	(-42.3)
meansize	-0.00433***	-0.00274	-0.00269	-0.00681	-0.00338***
	(-133.6)	(-1.8)	(-1.8)	(-1.2)	(-3.6)
meanCoverage	0.00046***	-0.00113**	-0.00114**	-0.00045	0.00484***
	(48.6)	(-2.6)	(-2.6)	(-0.3)	(17.8)
meandifficulty	-0.00002	-0.00281***	-0.00278***	0.00053	-0.00124***
	(-1.3)	(-4.7)	(-4.6)	(0.2)	(-3.3)
TopBrokerDummy	0.00008	-0.00561	-0.00563	0.00159	0.00030
	(0.9)	(-1.3)	(-1.3)	(0.1)	(0.1)
Constant	0.05987***	0.21003***	0.20945***	0.11332	0.65837***
	(134.9)	(10.2)	(10.1)	(1.5)	(51.2)
R-squared	0.096	-0.042	-0.042	-0.063	-0.042
N	117814	117807	117807	117814	117578

* p<0.05, ** p<0.01, *** p<0.001

Panel D: Panel regression with quarter dummies

Whole sample, panel regression with quarter fixed effects

	abs(FE)/Pr~e	PmafeQ	PmafepQ	DafepY	RangeQ
meanexp	0.01389***	0.50601***	0.50727***	-0.04385	0.24847***
	(21.1)	(15.6)	(15.6)	(-0.4)	(12.3)
NumberOfCompaniesF~d	0.00005***	0.00088**	0.00086**	-0.00219*	0.00012
	(8.0)	(3.0)	(3.0)	(-2.0)	(0.6)
meanFirmExp	0.00000***	-0.00001***	-0.00001***	0.00001	-0.00000
	(18.5)	(-3.6)	(-3.7)	(0.9)	(-2.0)
meanMat	0.00005***	-0.00117***	-0.00117***	-0.00012	-0.00074***
	(28.5)	(-12.9)	(-12.9)	(-0.4)	(-13.1)
meansize	-0.00345***	-0.00200	-0.00196	-0.01005	-0.00274**
	(-104.7)	(-1.2)	(-1.2)	(-1.6)	(-2.7)
meanCoverage	0.00038***	-0.00078	-0.00078	-0.00035	0.00539***
	(41.1)	(-1.7)	(-1.7)	(-0.2)	(19.0)
meandifficulty	-0.00013***	-0.00028	-0.00025	0.00206	-0.00018
	(-9.6)	(-0.4)	(-0.4)	(0.8)	(-0.4)
TopBrokerDummy	0.00003	-0.00838	-0.00837	0.00007	-0.00221
	(0.3)	(-2.0)	(-1.9)	(0.0)	(-0.8)
Constant	0.14145***	3.35481***	3.36226***	-0.13431	2.18531***
	(34.1)	(16.4)	(16.4)	(-0.2)	(17.1)
R-squared	0.201	-0.037	-0.037	-0.064	-0.037
N	117814	117807	117807	117814	117578

* p<0.05, ** p<0.01, *** p<0.001

Table 11: The table presents the results from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 12. Regressions results of the sample consisting of analysts moving from non-top to top brokers

Panel A: Pooled regression

Analysts who moved from bottom to top, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00211***	-0.00211***	-0.00001***	-0.00137***
	(10.3)	(-29.6)	(-29.6)	(-5.9)	(-31.5)
AnalystExperience	-0.00001	-0.00242**	-0.00241**	0.00010	-0.00138**
	(-0.8)	(-3.0)	(-3.0)	(1.4)	(-3.0)
FirmExperience	0.00000***	0.00001**	0.00001**	-0.00000	0.00001***
	(10.8)	(3.1)	(3.1)	(-0.6)	(4.6)
NumberOfCompaniesF~d	-0.00002*	0.00050	0.00049	-0.00000	0.00023
	(-2.3)	(1.0)	(1.0)	(-0.2)	(0.9)
size	-0.00228***	0.00304	0.00303	-0.00005	0.00028
	(-44.9)	(1.9)	(1.9)	(-0.5)	(0.3)
Coverage	0.00016***	0.00066	0.00066	0.00000	0.00532***
	(15.2)	(1.4)	(1.4)	(0.2)	(19.8)
difficulty	0.00007***	-0.00190**	-0.00189**	0.00001	-0.00099*
	(4.4)	(-2.6)	(-2.6)	(0.4)	(-2.1)
TopBrokerDummy	0.00060***	0.00593	0.00590	-0.00021	-0.00011
	(6.0)	(1.1)	(1.1)	(-1.0)	(-0.0)
Constant	0.03370***	0.11828***	0.11836***	0.00111	0.61317***
	(46.7)	(5.3)	(5.3)	(0.8)	(42.1)
R-squared	0.075	0.012	0.012	0.000	0.025
N	97264	95816	95816	97264	89884

Panel B: Panel regression

Analysts who moved from bottom to top, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00005	-0.00111	-0.00124	0.00033***	-0.00169
	(1.4)	(-0.5)	(-0.6)	(3.4)	(-1.4)
NumberOfCompaniesF~d	0.00007***	0.00099	0.00096	-0.00003	-0.00006
	(3.9)	(1.0)	(0.9)	(-0.7)	(-0.1)
meanFirmExp	0.00000***	-0.00000	-0.00000	-0.00000*	0.00000
	(5.5)	(-0.0)	(-0.0)	(-2.4)	(0.3)
meanMat	0.00002***	-0.00239***	-0.00239***	-0.00002*	-0.00129***
	(5.7)	(-13.8)	(-13.8)	(-2.5)	(-13.1)
meansize	-0.00345***	0.00271	0.00280	-0.00021	-0.00052
	(-35.2)	(0.5)	(0.5)	(-0.9)	(-0.2)
meanCoverage	0.00031***	-0.00309*	-0.00306*	-0.00001	0.00431***
	(11.7)	(-2.1)	(-2.1)	(-0.1)	(5.3)
meandifficulty	-0.00011**	-0.00592**	-0.00594**	0.00010	-0.00265*
	(-2.8)	(-2.7)	(-2.7)	(1.0)	(-2.1)
TopBrokerDummy	0.00034*	0.00512	0.00576	-0.00066	0.00534
	(2.0)	(0.6)	(0.6)	(-1.5)	(1.0)
Constant	0.04955***	0.21868**	0.21781**	0.00290	0.65895***
	(36.2)	(3.0)	(2.9)	(0.8)	(15.7)
R-squared	0.102	-0.016	-0.016	-0.040	-0.016
N	9021	9021	9021	9021	9016

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from bottom to top, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01298***	0.25341*	0.26333*	-0.00609	0.07187
	(5.8)	(2.0)	(2.1)	(-1.0)	(1.0)
NumberOfCompaniesF~d	0.00008***	0.00035	0.00032	-0.00003	-0.00041
	(4.4)	(0.3)	(0.3)	(-0.6)	(-0.7)
meanFirmExp	0.00000***	0.00000	0.00000	-0.00000*	0.00000
	(7.4)	(0.1)	(0.1)	(-2.2)	(0.5)
meanMat	0.00005***	-0.00205***	-0.00202***	-0.00004*	-0.00124***
	(7.7)	(-5.6)	(-5.5)	(-2.1)	(-5.9)
meansize	-0.00301***	-0.00011	0.00007	-0.00027	-0.00337
	(-30.8)	(-0.0)	(0.0)	(-1.0)	(-1.1)
meanCoverage	0.00030***	-0.00308*	-0.00304*	0.00001	0.00540***
	(11.3)	(-2.0)	(-2.0)	(0.1)	(6.3)
meandifficulty	-0.00024***	-0.00030	-0.00030	0.00005	0.00009
	(-5.5)	(-0.1)	(-0.1)	(0.5)	(0.1)
TopBrokerDummy	0.00008	-0.00154	-0.00093	-0.00059	0.00161
	(0.5)	(-0.2)	(-0.1)	(-1.3)	(0.3)
Constant	0.10329***	1.23681*	1.27508*	-0.02094	0.95742**
	(11.4)	(2.4)	(2.5)	(-0.9)	(3.3)
R-squared	0.201	-0.013	-0.013	-0.043	-0.009
N	9021	9021	9021	9021	9016

Table 12: The table presents the results for analysts who moved from a non-top to a top broker (see Table [8] for the regressors definition). The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 13. Regressions results of the sample consisting of analysts moving from top to non-top brokers.

Panel A: pooled regression

Analysts who moved from top to bottom, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00199***	-0.00199***	-0.00003**	-0.00130***
	(8.8)	(-25.0)	(-25.0)	(-3.0)	(-27.2)
AnalystExperience	-0.00001	-0.00308***	-0.00308***	0.00003	-0.00238***
	(-0.9)	(-4.5)	(-4.5)	(0.5)	(-6.1)
FirmExperience	0.00000***	-0.00000	-0.00000	-0.00000*	0.00000
	(13.9)	(-0.3)	(-0.3)	(-2.4)	(1.5)
NumberOfCompaniesF~d	-0.00002	0.00072	0.00072	0.00006	0.00028
	(-1.6)	(1.4)	(1.4)	(1.8)	(1.0)
size	-0.00293***	-0.00488**	-0.00488**	0.00063	-0.00252*
	(-45.0)	(-2.8)	(-2.8)	(1.7)	(-2.4)
Coverage	0.00019***	0.00171***	0.00171***	-0.00007	0.00578***
	(14.2)	(3.4)	(3.4)	(-1.7)	(20.5)
difficulty	0.00012***	-0.00170*	-0.00170*	0.00003	-0.00094
	(6.1)	(-2.2)	(-2.2)	(0.3)	(-1.9)
TopBrokerDummy	-0.00117***	-0.01339*	-0.01339*	0.00047	-0.00123
	(-11.2)	(-2.5)	(-2.5)	(0.7)	(-0.4)
Constant	0.04338***	0.22101***	0.22096***	-0.00808	0.64621***
	(46.8)	(8.7)	(8.7)	(-1.3)	(40.6)
R-squared	0.081	0.010	0.010	0.000	0.023
N	88469	87223	87223	88469	82377

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Analysts who moved from top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00013**	-0.00300	-0.00286	0.00035	-0.00174
	(3.1)	(-1.6)	(-1.5)	(1.2)	(-1.6)
NumberOfCompaniesF~d	0.00002	0.00168	0.00163	0.00010	0.00067
	(1.1)	(1.6)	(1.6)	(0.6)	(1.1)
meanFirmExp	0.00000***	-0.00001	-0.00001	-0.00000*	-0.00001
	(6.5)	(-1.3)	(-1.4)	(-2.4)	(-1.5)
meanMat	0.00001**	-0.00215***	-0.00215***	-0.00001	-0.00122***
	(2.7)	(-12.3)	(-12.3)	(-0.4)	(-12.2)
meansize	-0.00430***	-0.00233	-0.00151	0.00080	0.00065
	(-37.2)	(-0.5)	(-0.3)	(1.0)	(0.2)
meanCoverage	0.00039***	0.00058	0.00052	-0.00008	0.00407***
	(11.8)	(0.4)	(0.4)	(-0.3)	(4.8)
meandifficulty	-0.00012*	0.00139	0.00146	0.00012	0.00197
	(-2.4)	(0.6)	(0.7)	(0.4)	(1.6)
TopBrokerDummy	-0.00045*	-0.03146**	-0.03152**	0.00081	-0.01182*
	(-2.1)	(-3.2)	(-3.2)	(0.5)	(-2.1)
Constant	0.06240***	0.17545*	0.16335*	-0.01298	0.58553***
	(38.4)	(2.4)	(2.3)	(-1.1)	(14.0)
R-squared	0.126	-0.019	-0.020	-0.042	-0.015
N	8390	8389	8389	8390	8387

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01466***	0.23746	0.24253	0.03163	0.17714*
	(5.3)	(1.8)	(1.9)	(1.5)	(2.4)
NumberOfCompaniesF~d	0.00007***	0.00128	0.00122	0.00010	0.00052
	(3.4)	(1.2)	(1.2)	(0.6)	(0.9)
meanFirmExp	0.00000***	-0.00001	-0.00001	-0.00000*	-0.00001
	(7.2)	(-1.2)	(-1.3)	(-2.5)	(-1.6)
meanMat	0.00005***	-0.00173***	-0.00171***	0.00007	-0.00087***
	(6.1)	(-4.6)	(-4.6)	(1.2)	(-4.0)
meansize	-0.00359***	-0.00257	-0.00184	0.00116	0.00118
	(-31.0)	(-0.5)	(-0.3)	(1.3)	(0.4)
meanCoverage	0.00034***	0.00115	0.00112	-0.00010	0.00450***
	(10.4)	(0.7)	(0.7)	(-0.4)	(5.1)
meandifficulty	-0.00035***	0.00444	0.00458	-0.00002	0.00356*
	(-6.7)	(1.8)	(1.8)	(-0.0)	(2.5)
TopBrokerDummy	-0.00011	-0.03168**	-0.03176**	0.00065	-0.01464**
	(-0.5)	(-3.2)	(-3.2)	(0.4)	(-2.6)
Constant	0.12529***	1.18234*	1.19120*	0.12032	1.31104***
	(10.4)	(2.1)	(2.1)	(1.3)	(4.0)
R-squared	0.231	-0.019	-0.019	-0.043	-0.010
N	8390	8389	8389	8390	8387

* p<0.05, ** p<0.01, *** p<0.001

Table 13: The table presents the results for analysts who moved from a top to a non-top broker (see Table [8] for the regressors definition). The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 14. Regressions results of the sample consisting of analysts moving from non-top to top brokers and from top to non-top brokers.

Panel A: pooled regression

Both bottom to top and top to bottom, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00206***	-0.00206***	-0.00002***	-0.00134***
	(12.6)	(-35.4)	(-35.4)	(-4.4)	(-36.8)
AnalystExperience	0.00006***	-0.00229***	-0.00229***	0.00003	-0.00200***
	(4.8)	(-4.9)	(-4.9)	(1.1)	(-7.3)
FirmExperience	0.00000***	0.00000	0.00000	-0.00000*	0.00000***
	(15.3)	(1.7)	(1.7)	(-2.5)	(4.2)
NumberOfCompaniesF~d	-0.00002***	0.00071	0.00071	0.00003	0.00035
	(-3.8)	(1.9)	(1.9)	(1.6)	(1.7)
size	-0.00258***	-0.00031	-0.00031	0.00026	-0.00080
	(-55.6)	(-0.3)	(-0.3)	(1.5)	(-1.0)
Coverage	0.00018***	0.00118***	0.00118***	-0.00004	0.00551***
	(17.2)	(3.3)	(3.3)	(-1.8)	(25.7)
difficulty	0.00010***	-0.00193***	-0.00193***	0.00001	-0.00106**
	(7.3)	(-3.5)	(-3.5)	(0.1)	(-2.9)
TopBrokerDummy	-0.00029***	0.00196	0.00196	0.00038	0.00360
	(-4.2)	(0.6)	(0.6)	(1.3)	(1.9)
Constant	0.03782***	0.15680***	0.15683***	-0.00282	0.62457***
	(58.3)	(9.2)	(9.2)	(-1.0)	(55.0)
R-squared	0.077	0.011	0.011	0.000	0.024
N	185733	183039	183039	185733	172261

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Both bottom to top and top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00016***	0.00085	0.00090	0.00023	-0.00017
	(6.7)	(0.8)	(0.8)	(1.8)	(-0.3)
NumberOfCompaniesF~d	0.00005***	0.00085	0.00081	0.00003	0.00017
	(3.6)	(1.2)	(1.1)	(0.3)	(0.4)
meanFirmExp	0.00000***	-0.00001	-0.00001	-0.00000**	-0.00000
	(7.9)	(-1.5)	(-1.6)	(-2.7)	(-1.5)
meanMat	0.00001***	-0.00219***	-0.00218***	-0.00002	-0.00123***
	(5.0)	(-17.5)	(-17.4)	(-1.1)	(-17.1)
meansize	-0.00395***	0.00152	0.00195	0.00030	0.00008
	(-51.4)	(0.4)	(0.5)	(0.7)	(0.0)
meanCoverage	0.00038***	-0.00132	-0.00133	-0.00004	0.00417***
	(17.4)	(-1.3)	(-1.3)	(-0.3)	(7.0)
meandifficulty	-0.00012***	-0.00181	-0.00178	0.00010	-0.00040
	(-3.7)	(-1.2)	(-1.2)	(0.6)	(-0.5)
TopBrokerDummy	-0.00011	-0.00894	-0.00913	0.00040	-0.00102
	(-1.2)	(-1.9)	(-2.0)	(0.7)	(-0.4)
Constant	0.05671***	0.15717**	0.15128**	-0.00465	0.61452***
	(53.1)	(3.1)	(3.0)	(-0.8)	(20.9)
R-squared	0.120	-0.018	-0.018	-0.038	-0.015
N	16511	16510	16510	16511	16503

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Both bottom to top and top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01465***	0.22534*	0.23288*	0.01284	0.13917**
	(8.1)	(2.4)	(2.5)	(1.2)	(2.6)
NumberOfCompaniesF~d	0.00009***	0.00030	0.00026	0.00003	-0.00007
	(6.1)	(0.4)	(0.4)	(0.3)	(-0.2)
meanFirmExp	0.00000***	-0.00001	-0.00001	-0.00000**	-0.00000
	(10.0)	(-1.3)	(-1.3)	(-2.8)	(-1.3)
meanMat	0.00005***	-0.00186***	-0.00183***	0.00002	-0.00099***
	(9.5)	(-7.0)	(-6.9)	(0.6)	(-6.5)
meansize	-0.00334***	-0.00053	-0.00011	0.00036	-0.00103
	(-43.6)	(-0.1)	(-0.0)	(0.8)	(-0.5)
meanCoverage	0.00033***	-0.00083	-0.00083	-0.00003	0.00494***
	(15.6)	(-0.8)	(-0.8)	(-0.2)	(7.9)
meandifficulty	-0.00031***	0.00217	0.00223	0.00004	0.00154
	(-9.1)	(1.2)	(1.3)	(0.2)	(1.5)
TopBrokerDummy	-0.00001	-0.01191*	-0.01214*	0.00047	-0.00355
	(-0.1)	(-2.5)	(-2.5)	(0.8)	(-1.3)
Constant	0.11827***	1.09473**	1.11952**	0.04873	1.18035***
	(15.5)	(2.8)	(2.9)	(1.1)	(5.3)
R-squared	0.227	-0.016	-0.016	-0.039	-0.009
N	16511	16510	16510	16511	16503

* p<0.05, ** p<0.01, *** p<0.001

Table 14: The table presents the results for analysts who moved from a top to a non-top broker and vice versa (see Table [8] for the regressors definition). The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 15. Regressions results for the period before Global Settlement

Panel A: Pooled regression

Pooled regression, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00003***	-0.00217***	-0.00217***	-0.00003	-0.00144***
	(21.4)	(-45.2)	(-45.2)	(-1.9)	(-55.0)
AnalystExperience	-0.00019***	0.00058	0.00058	0.00047	0.00003
	(-19.6)	(1.8)	(1.8)	(1.5)	(0.1)
FirmExperience	0.00000***	0.00001***	0.00001***	-0.00000	0.00001***
	(20.2)	(7.4)	(7.4)	(-1.0)	(10.4)
NumberOfCompaniesF~d	0.00001***	-0.00054**	-0.00055**	-0.00038**	-0.00024*
	(5.8)	(-2.6)	(-2.6)	(-2.8)	(-2.1)
size	-0.00254***	-0.00195***	-0.00195***	-0.00004	-0.00032
	(-61.8)	(-5.8)	(-5.8)	(-1.1)	(-0.7)
Coverage	0.00028***	0.00079***	0.00079***	-0.00001	0.00601***
	(18.5)	(6.1)	(6.1)	(-1.0)	(33.2)
difficulty	-0.00002**	-0.00210***	-0.00210***	0.00036*	-0.00150***
	(-2.8)	(-9.5)	(-9.5)	(2.6)	(-8.3)
TopBrokerDummy	0.00076***	0.03205***	0.03206***	0.00006	0.01683***
	(19.8)	(17.5)	(17.5)	(0.2)	(15.7)
Constant	0.03707***	0.16585***	0.16583***	0.00130	0.61108***
	(72.7)	(32.5)	(32.5)	(0.6)	(98.2)
R-squared	0.080	0.011	0.011	-0.000	0.023
N	635206	619475	619472	635206	555025

Panel B: Pooled regression with quarter dummies

Pooled regression with quarter fixed effects, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00225***	-0.00225***	-0.00003	-0.00148***
	(20.1)	(-44.1)	(-44.1)	(-1.8)	(-54.1)
AnalystExperience	-0.00011***	-0.00132***	-0.00132***	0.00057	-0.00063*
	(-13.4)	(-3.3)	(-3.3)	(1.5)	(-2.5)
FirmExperience	0.00000***	0.00001***	0.00001***	-0.00000	0.00001***
	(23.9)	(8.7)	(8.7)	(-1.0)	(10.9)
NumberOfCompaniesF~d	-0.00000	-0.00039	-0.00039	-0.00039**	-0.00018
	(-1.9)	(-1.9)	(-1.9)	(-2.7)	(-1.6)
size	-0.00255***	-0.00240***	-0.00240***	-0.00002	-0.00051
	(-62.1)	(-7.1)	(-7.1)	(-0.5)	(-1.1)
Coverage	0.00028***	0.00058***	0.00058***	-0.00001	0.00598***
	(18.9)	(4.5)	(4.5)	(-0.4)	(33.1)
difficulty	0.00001	-0.00143***	-0.00143***	0.00035**	-0.00121***
	(1.4)	(-6.6)	(-6.6)	(2.6)	(-6.7)
TopBrokerDummy	0.00063***	0.03285***	0.03287***	0.00000	0.01699***
	(16.9)	(17.9)	(17.9)	(0.0)	(15.8)
Constant	0.04010***	0.14680***	0.14679***	0.00232	0.59659***
	(58.6)	(26.4)	(26.4)	(1.6)	(72.5)
R-squared	0.090	0.012	0.012	-0.000	0.024
N	635206	619475	619472	635206	555025

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression

Whole sample, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	PmafeQ	PmafepQ	DafepY	RangeQ
meanexp	0.00001	0.00403***	0.00406***	0.00036	0.00079
	(0.6)	(4.7)	(4.7)	(0.3)	(1.5)
NumberOfCompaniesF~d	0.00007***	0.00181***	0.00179***	-0.00037	0.00071**
	(8.8)	(4.4)	(4.4)	(-0.6)	(2.7)
meanFirmExp	-0.00000**	-0.00001	-0.00001	0.00001	0.00000
	(-2.6)	(-1.7)	(-1.7)	(0.9)	(1.8)
meanMat	0.00004***	-0.00240***	-0.00241***	0.00000	-0.00144***
	(29.2)	(-36.7)	(-36.7)	(0.0)	(-34.7)
meansize	-0.00342***	-0.00533*	-0.00527*	-0.00472	-0.00471***
	(-87.9)	(-2.6)	(-2.5)	(-1.6)	(-3.6)
meanCoverage	0.00045***	-0.00130*	-0.00132*	-0.00073	0.00553***
	(37.4)	(-2.0)	(-2.0)	(-0.8)	(13.6)
meandifficulty	-0.00027***	-0.00233**	-0.00230**	0.00034	-0.00187***
	(-17.0)	(-2.8)	(-2.7)	(0.3)	(-3.5)
TopBrokerDummy	0.00024*	0.00378	0.00379	-0.00028	0.00193
	(2.1)	(0.6)	(0.6)	(-0.0)	(0.5)
Constant	0.04966***	0.22926***	0.22868***	0.06775	0.67902***
	(94.8)	(8.1)	(8.1)	(1.7)	(38.2)
R-squared	0.068	-0.055	-0.055	-0.078	-0.053
N	65946	65935	65935	65946	65737

* p<0.05, ** p<0.01, *** p<0.001

Panel D: Panel regression with quarter dummies

Whole sample, panel regression with quarter fixed effects

	abs(FE)/Pr~e	PmafeQ	PmafepQ	DafepY	RangeQ
meanexp	0.01474***	0.50545***	0.50718***	-0.05536	0.24664***
	(17.3)	(10.7)	(10.8)	(-0.8)	(8.3)
NumberOfCompaniesF~d	0.00003***	0.00161***	0.00159***	-0.00042	0.00066*
	(4.0)	(3.9)	(3.8)	(-0.7)	(2.5)
meanFirmExp	0.00000***	-0.00001	-0.00001	0.00001	0.00000
	(7.1)	(-1.3)	(-1.4)	(1.1)	(1.9)
meanMat	0.00006***	-0.00152***	-0.00152***	-0.00013	-0.00097***
	(26.6)	(-11.4)	(-11.3)	(-0.7)	(-11.5)
meansize	-0.00344***	-0.00261	-0.00256	-0.00570	-0.00327*
	(-86.6)	(-1.2)	(-1.2)	(-1.9)	(-2.4)
meanCoverage	0.00044***	-0.00086	-0.00088	-0.00068	0.00589***
	(35.6)	(-1.3)	(-1.3)	(-0.7)	(13.7)
meandifficulty	-0.00007***	-0.00122	-0.00119	0.00067	-0.00140*
	(-4.2)	(-1.3)	(-1.3)	(0.5)	(-2.4)
TopBrokerDummy	-0.00014	0.00349	0.00353	-0.00080	0.00147
	(-1.3)	(0.6)	(0.6)	(-0.1)	(0.4)
Constant	0.09984***	1.82138***	1.82634***	-0.09969	1.44052***
	(35.8)	(11.8)	(11.8)	(-0.5)	(14.8)
R-squared	0.119	-0.050	-0.050	-0.079	-0.049
N	65946	65935	65935	65946	65737

* p<0.05, ** p<0.01, *** p<0.001

Table 15: The table presents the results from the pooled and panel estimation of equation [6] for the period before Global Settlement. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2002. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 16. Regressions results of the sample consisting of analysts moving from non-top to top brokers for the period before Global Settlement

Panel A: Pooled regression

Analysts who moved from bottom to top, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00235***	-0.00235***	-0.00001***	-0.00154***
	(10.5)	(-26.5)	(-26.5)	(-5.9)	(-28.2)
AnalystExperience	-0.00018***	-0.00004	-0.00003	-0.00001	0.00007
	(-7.6)	(-0.0)	(-0.0)	(-0.3)	(0.1)
FirmExperience	0.00000***	0.00000	0.00000	-0.00000	0.00001*
	(13.9)	(0.2)	(0.2)	(-0.8)	(2.5)
NumberOfCompaniesF~d	-0.00001	0.00073	0.00072	0.00001	0.00005
	(-1.4)	(1.2)	(1.2)	(0.5)	(0.2)
size	-0.00248***	0.00034	0.00033	0.00005	-0.00048
	(-36.8)	(0.2)	(0.2)	(0.6)	(-0.4)
Coverage	0.00019***	0.00232***	0.00232***	-0.00001	0.00655***
	(11.8)	(3.5)	(3.5)	(-0.5)	(17.1)
difficulty	0.00002	-0.00114	-0.00113	-0.00002	-0.00035
	(1.0)	(-1.3)	(-1.3)	(-0.8)	(-0.6)
TopBrokerDummy	0.00009	0.01250	0.01245	0.00008	0.00364
	(0.8)	(1.9)	(1.9)	(0.5)	(0.9)
Constant	0.03700***	0.13501***	0.13513***	0.00037	0.61134***
	(39.8)	(5.0)	(5.0)	(0.3)	(33.4)
R-squared	0.089	0.013	0.013	0.000	0.027
N	61088	59900	59900	61088	54978

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Analysts who moved from bottom to top, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	-0.00023***	0.00260	0.00241	0.00012	-0.00022
	(-3.9)	(0.8)	(0.7)	(0.9)	(-0.1)
NumberOfCompaniesF~d	0.00007**	0.00040	0.00033	0.00002	0.00000
	(3.1)	(0.3)	(0.3)	(0.4)	(0.0)
meanFirmExp	0.00000***	0.00001	0.00001	-0.00000	0.00001
	(3.9)	(0.4)	(0.4)	(-1.4)	(1.0)
meanMat	0.00003***	-0.00263***	-0.00263***	-0.00002*	-0.00141***
	(8.7)	(-12.0)	(-12.0)	(-2.5)	(-11.0)
meansize	-0.00361***	-0.00500	-0.00487	-0.00016	-0.00327
	(-30.0)	(-0.7)	(-0.7)	(-0.6)	(-0.8)
meanCoverage	0.00038***	-0.00378	-0.00375	-0.00003	0.00521***
	(10.7)	(-1.9)	(-1.9)	(-0.4)	(4.4)
meandifficulty	-0.00031***	-0.00314	-0.00310	-0.00008	-0.00305
	(-6.4)	(-1.1)	(-1.1)	(-0.7)	(-1.9)
TopBrokerDummy	0.00072***	0.00718	0.00794	-0.00020	0.00200
	(3.4)	(0.6)	(0.7)	(-0.4)	(0.3)
Constant	0.05375***	0.29026**	0.28890**	0.00475	0.69069***
	(32.6)	(3.1)	(3.1)	(1.3)	(12.7)
R-squared	0.130	-0.024	-0.024	-0.049	-0.024
N	5907	5906	5906	5907	5901

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from bottom to top, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01805***	0.06622	0.07298	-0.00678	-0.06066
	(6.2)	(0.4)	(0.4)	(-1.0)	(-0.6)
NumberOfCompaniesF~d	0.00004	0.00006	-0.00000	0.00002	-0.00022
	(1.7)	(0.0)	(-0.0)	(0.4)	(-0.3)
meanFirmExp	0.00000***	0.00001	0.00001	-0.00000	0.00001
	(6.2)	(0.7)	(0.7)	(-1.3)	(1.1)
meanMat	0.00007***	-0.00273***	-0.00271***	-0.00004	-0.00167***
	(8.2)	(-5.5)	(-5.4)	(-1.8)	(-5.8)
meansize	-0.00352***	-0.00651	-0.00632	-0.00026	-0.00677
	(-28.5)	(-0.9)	(-0.9)	(-0.9)	(-1.6)
meanCoverage	0.00040***	-0.00352	-0.00349	-0.00003	0.00622***
	(10.9)	(-1.6)	(-1.6)	(-0.3)	(5.0)
meandifficulty	-0.00015**	-0.00104	-0.00099	-0.00007	-0.00106
	(-2.9)	(-0.3)	(-0.3)	(-0.6)	(-0.6)
TopBrokerDummy	0.00002	0.00483	0.00558	-0.00014	0.00268
	(0.1)	(0.4)	(0.4)	(-0.3)	(0.4)
Constant	0.10050***	0.47000	0.48413	-0.01064	0.57400*
	(13.8)	(1.1)	(1.1)	(-0.6)	(2.3)
R-squared	0.179	-0.024	-0.024	-0.054	-0.019
N	5907	5906	5906	5907	5901

* p<0.05, ** p<0.01, *** p<0.001

Table 16: The table presents the results for analysts who moved from a non-top to a top broker (see Table [8]) for the period before Global Settlement. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2002. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 17. Regressions results of the sample consisting of analysts moving from top to non-top brokers for the period before Global Settlement

Panel A: Pooled regression

Analysts who moved from top to bottom, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00003***	-0.00273***	-0.00273***	-0.00004**	-0.00169***
	(8.9)	(-22.4)	(-22.4)	(-2.6)	(-23.7)
AnalystExperience	-0.00019***	-0.00243	-0.00243	-0.00007	-0.00121
	(-5.1)	(-1.5)	(-1.5)	(-0.7)	(-1.3)
FirmExperience	0.00000***	0.00001	0.00001	-0.00000	0.00001*
	(6.5)	(1.7)	(1.7)	(-0.1)	(2.2)
NumberOfCompaniesF~d	0.00002	0.00266***	0.00266***	0.00001	0.00129**
	(1.5)	(3.5)	(3.5)	(0.4)	(3.1)
size	-0.00291***	-0.00465	-0.00465	0.00016	-0.00205
	(-30.0)	(-1.6)	(-1.6)	(0.8)	(-1.2)
Coverage	0.00029***	0.00178*	0.00178*	-0.00007	0.00647***
	(11.9)	(2.0)	(2.0)	(-1.3)	(12.9)
difficulty	-0.00001	-0.00344**	-0.00344**	0.00000	-0.00212**
	(-0.2)	(-3.1)	(-3.1)	(0.1)	(-2.7)
TopBrokerDummy	-0.00006	-0.01448	-0.01448	0.00022	0.00008
	(-0.4)	(-1.6)	(-1.6)	(0.7)	(0.0)
Constant	0.04255***	0.23583***	0.23586***	0.00025	0.64686***
	(31.7)	(5.8)	(5.8)	(0.1)	(25.0)
R-squared	0.087	0.016	0.016	0.003	0.029
N	34186	33502	33502	34186	30677

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Analysts who moved from top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	-0.00033***	-0.00448	-0.00394	-0.00031*	-0.00077
	(-4.2)	(-1.1)	(-1.0)	(-2.2)	(-0.3)
NumberOfCompaniesF~d	0.00008*	0.00229	0.00219	0.00010	0.00217*
	(2.4)	(1.4)	(1.3)	(1.7)	(2.2)
meanFirmExp	0.00000	0.00001	0.00000	-0.00000	0.00000
	(0.5)	(0.4)	(0.3)	(-1.5)	(0.6)
meanMat	0.00004***	-0.00267***	-0.00266***	-0.00004***	-0.00161***
	(7.5)	(-9.1)	(-9.0)	(-4.0)	(-9.3)
meansize	-0.00339***	0.00754	0.00926	0.00060*	0.00658
	(-20.4)	(0.9)	(1.1)	(2.0)	(1.3)
meanCoverage	0.00045***	0.00352	0.00343	-0.00002	0.00693***
	(9.2)	(1.4)	(1.4)	(-0.3)	(4.7)
meandifficulty	-0.00049***	0.00228	0.00244	-0.00005	0.00097
	(-7.1)	(0.7)	(0.7)	(-0.4)	(0.5)
TopBrokerDummy	-0.00098**	-0.02793	-0.02742	-0.00125*	-0.00105
	(-3.0)	(-1.7)	(-1.7)	(-2.2)	(-0.1)
Constant	0.05404***	0.00143	-0.02500	-0.00377	0.47243***
	(22.8)	(0.0)	(-0.2)	(-0.9)	(6.6)
R-squared	0.106	-0.022	-0.022	-0.041	-0.009
N	3343	3343	3343	3343	3341

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01366**	0.53075*	0.54147*	0.03226***	0.23196
	(3.2)	(2.3)	(2.3)	(4.0)	(1.7)
NumberOfCompaniesF~d	0.00005	0.00168	0.00156	0.00009	0.00181
	(1.6)	(1.0)	(0.9)	(1.6)	(1.9)
meanFirmExp	0.00000**	0.00001	0.00001	-0.00000	0.00001
	(2.7)	(0.6)	(0.4)	(-1.3)	(0.6)
meanMat	0.00007***	-0.00137*	-0.00131	0.00005*	-0.00109**
	(5.4)	(-2.0)	(-1.9)	(2.0)	(-2.7)
meansize	-0.00347***	0.00744	0.00908	0.00058	0.00698
	(-20.9)	(0.8)	(1.0)	(1.9)	(1.3)
meanCoverage	0.00043***	0.00483	0.00476	0.00003	0.00713***
	(8.8)	(1.8)	(1.8)	(0.3)	(4.6)
meandifficulty	-0.00029***	0.00586	0.00605	-0.00003	0.00280
	(-4.1)	(1.6)	(1.6)	(-0.3)	(1.3)
TopBrokerDummy	0.00014	-0.02572	-0.02521	-0.00150*	-0.00132
	(0.5)	(-1.5)	(-1.5)	(-2.5)	(-0.1)
Constant	0.08653***	1.10644*	1.10126*	0.06412***	0.92293**
	(9.5)	(2.2)	(2.2)	(3.7)	(3.2)
R-squared	0.199	-0.022	-0.022	-0.026	-0.008
N	3343	3343	3343	3343	3341

* p<0.05, ** p<0.01, *** p<0.001

Table 17: The table presents the results for analysts who moved from a top to a non-top broker (see Table [8]) for the period before Global Settlement. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2002. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 18. Regressions results of the sample consisting of analysts moving from non-top to top brokers and analysts moving from top to non-top brokers for the period before Global Settlement

Panel A: Pooled regression

Both bottom to top and top to bottom, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00248***	-0.00248***	-0.00002***	-0.00159***
	(12.8)	(-33.0)	(-33.0)	(-4.1)	(-35.0)
AnalystExperience	-0.00018***	0.00012	0.00013	-0.00004	-0.00029
	(-8.8)	(0.1)	(0.1)	(-1.0)	(-0.5)
FirmExperience	0.00000***	0.00000	0.00000	-0.00000	0.00001**
	(13.2)	(1.0)	(1.0)	(-0.6)	(3.2)
NumberOfCompaniesF~d	0.00000	0.00141**	0.00140**	0.00001	0.00055*
	(0.3)	(2.8)	(2.8)	(0.6)	(2.0)
size	-0.00263***	-0.00110	-0.00110	0.00009	-0.00090
	(-41.8)	(-0.6)	(-0.7)	(0.9)	(-0.8)
Coverage	0.00023***	0.00210***	0.00210***	-0.00003	0.00648***
	(13.3)	(3.8)	(3.8)	(-1.4)	(19.6)
difficulty	0.00001	-0.00211**	-0.00210**	-0.00002	-0.00108*
	(0.6)	(-3.0)	(-3.0)	(-0.7)	(-2.2)
TopBrokerDummy	0.00016	0.00377	0.00376	0.00022	0.00336
	(1.8)	(0.8)	(0.8)	(1.5)	(1.2)
Constant	0.03887***	0.16202***	0.16212***	0.00042	0.62180***
	(45.5)	(7.2)	(7.2)	(0.3)	(40.2)
R-squared	0.088	0.014	0.014	0.001	0.027
N	95274	93402	93402	95274	85655

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Both bottom to top and top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	-0.00012**	0.00288	0.00302	0.00001	-0.00015
	(-3.2)	(1.4)	(1.5)	(0.1)	(-0.1)
NumberOfCompaniesF~d	0.00007***	0.00094	0.00085	0.00005	0.00076
	(3.7)	(0.9)	(0.8)	(1.3)	(1.3)
meanFirmExp	0.00000	0.00000	0.00000	-0.00000	0.00001
	(1.8)	(0.1)	(0.0)	(-2.0)	(1.2)
meanMat	0.00004***	-0.00266***	-0.00265***	-0.00003***	-0.00149***
	(10.7)	(-14.9)	(-14.8)	(-4.2)	(-14.2)
meansize	-0.00355***	-0.00100	-0.00034	0.00016	-0.00072
	(-36.1)	(-0.2)	(-0.1)	(0.8)	(-0.2)
meanCoverage	0.00042***	-0.00105	-0.00106	-0.00003	0.00594***
	(14.4)	(-0.7)	(-0.7)	(-0.5)	(6.4)
meandifficulty	-0.00039***	-0.00128	-0.00120	-0.00008	-0.00172
	(-9.5)	(-0.6)	(-0.5)	(-0.9)	(-1.3)
TopBrokerDummy	0.00027*	0.00018	-0.00007	0.00001	0.00129
	(2.2)	(0.0)	(-0.0)	(0.0)	(0.3)
Constant	0.05377***	0.18189*	0.17241*	0.00049	0.62580***
	(39.6)	(2.5)	(2.4)	(0.2)	(14.6)
R-squared	0.124	-0.022	-0.022	-0.045	-0.017
N	8914	8913	8913	8914	8906

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Both bottom to top and top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01678***	0.30467*	0.31250*	0.00805	0.08644
	(6.9)	(2.2)	(2.3)	(1.5)	(1.1)
NumberOfCompaniesF~d	0.00005*	0.00059	0.00051	0.00004	0.00052
	(2.5)	(0.6)	(0.5)	(1.1)	(0.9)
meanFirmExp	0.00000***	0.00000	0.00000	-0.00000	0.00001
	(5.5)	(0.5)	(0.4)	(-1.8)	(1.4)
meanMat	0.00007***	-0.00209***	-0.00206***	-0.00000	-0.00137***
	(9.6)	(-5.2)	(-5.1)	(-0.3)	(-5.8)
meansize	-0.00348***	-0.00162	-0.00096	0.00008	-0.00228
	(-35.0)	(-0.3)	(-0.2)	(0.4)	(-0.7)
meanCoverage	0.00042***	-0.00041	-0.00041	0.00000	0.00660***
	(14.1)	(-0.2)	(-0.2)	(0.0)	(6.7)
meandifficulty	-0.00021***	0.00121	0.00131	-0.00005	0.00003
	(-5.0)	(0.5)	(0.6)	(-0.6)	(0.0)
TopBrokerDummy	-0.00010	-0.00123	-0.00150	-0.00004	0.00061
	(-0.8)	(-0.2)	(-0.2)	(-0.2)	(0.2)
Constant	0.09629***	0.89726**	0.90496**	0.01987	0.82546***
	(16.7)	(2.8)	(2.8)	(1.6)	(4.3)
R-squared	0.194	-0.022	-0.022	-0.047	-0.014
N	8914	8913	8913	8914	8906

* p<0.05, ** p<0.01, *** p<0.001

Table 18: The table presents the results for analysts who moved from a non-top to a top broker and from a top to a non-top broker (see Table [8]) for the period before the Global Settlement. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2002. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 19. Pooled and panel regression results for the period after Global Settlement

Panel A: Pooled regression

Pooled regression, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00000***	-0.00143***	-0.00143***	-0.00019	-0.00097***
	(4.2)	(-35.7)	(-35.7)	(-1.1)	(-34.0)
AnalystExperience	0.00000	-0.00154***	-0.00154***	-0.00152	-0.00097***
	(0.8)	(-6.6)	(-6.6)	(-1.0)	(-6.7)
FirmExperience	0.00000***	0.00000***	0.00000***	0.00000	0.00000***
	(21.6)	(4.2)	(4.2)	(1.0)	(5.8)
NumberOfCompaniesF~d	-0.00003***	0.00067**	0.00067**	-0.00017	0.00017
	(-16.5)	(3.0)	(3.0)	(-0.9)	(1.4)
size	-0.00307***	-0.00229***	-0.00229***	-0.00146	-0.00277***
	(-55.8)	(-6.5)	(-6.5)	(-1.0)	(-5.2)
Coverage	0.00018***	0.00089***	0.00089***	-0.00004	0.00534***
	(15.9)	(8.5)	(8.5)	(-1.1)	(32.2)
difficulty	0.00032***	-0.00285***	-0.00285***	0.00004	-0.00097***
	(20.0)	(-11.6)	(-11.6)	(0.6)	(-4.2)
TopBrokerDummy	0.00152***	-0.02051***	-0.02050***	0.01273	-0.00632***
	(26.5)	(-9.6)	(-9.6)	(1.0)	(-5.5)
Constant	0.04334***	0.16691***	0.16690***	0.03706	0.62627***
	(61.9)	(28.2)	(28.2)	(1.1)	(83.0)
R-squared	0.084	0.006	0.006	-0.000	0.018
N	547231	542066	542066	547231	517230

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Pooled regression with quarter dummies

Pooled regression with quarter fixed effects, whole sample

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00001***	-0.00144***	-0.00144***	-0.00020	-0.00098***
	(5.9)	(-35.4)	(-35.4)	(-1.1)	(-33.9)
AnalystExperience	-0.00003***	-0.00150***	-0.00150***	-0.00153	-0.00100***
	(-5.7)	(-6.4)	(-6.4)	(-1.0)	(-6.9)
FirmExperience	0.00000***	0.00000***	0.00000***	0.00000	0.00000***
	(20.4)	(4.3)	(4.3)	(1.0)	(5.9)
NumberOfCompaniesF~d	-0.00002***	0.00066**	0.00066**	-0.00017	0.00017
	(-12.2)	(2.9)	(3.0)	(-0.9)	(1.5)
size	-0.00270***	-0.00269***	-0.00269***	-0.00149	-0.00285***
	(-54.4)	(-7.4)	(-7.4)	(-1.0)	(-5.3)
Coverage	0.00012***	0.00094***	0.00094***	-0.00004	0.00536***
	(11.6)	(8.9)	(8.9)	(-1.1)	(32.3)
difficulty	0.00010***	-0.00266***	-0.00266***	-0.00004	-0.00125***
	(6.8)	(-10.8)	(-10.8)	(-0.9)	(-5.3)
TopBrokerDummy	0.00162***	-0.02071***	-0.02070***	0.01281	-0.00645***
	(29.0)	(-9.7)	(-9.7)	(1.0)	(-5.6)
o.quarter==199	0.00000	0.00000	0.00000	0.00000	0.00000
	(.)	(.)	(.)	(.)	(.)
Constant	0.04210***	0.18568***	0.18567***	0.04102	0.62365***
	(40.8)	(18.5)	(18.5)	(1.1)	(46.4)
R-squared	0.121	0.007	0.007	-0.000	0.018
N	547231	542066	542066	547231	517230

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression

Whole sample, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	PmafeQ	PmafepQ	DafepY	RangeQ
meanexp	0.00092***	-0.00573***	-0.00573***	-0.00514	-0.00178*
	(33.4)	(-4.7)	(-4.7)	(-0.8)	(-2.4)
NumberOfCompaniesF~d	0.00001	0.00126**	0.00125*	-0.00600*	-0.00003
	(1.3)	(2.6)	(2.6)	(-2.2)	(-0.1)
meanFirmExp	0.00000***	-0.00001	-0.00001	0.00002	-0.00000
	(12.6)	(-1.6)	(-1.6)	(0.6)	(-1.4)
meanMat	0.00001***	-0.00203***	-0.00203***	0.00002	-0.00112***
	(5.2)	(-31.4)	(-31.4)	(0.1)	(-29.0)
meansize	-0.00598***	-0.00835**	-0.00840**	-0.01741	-0.00515**
	(-99.4)	(-3.1)	(-3.2)	(-1.2)	(-3.2)
meanCoverage	0.00064***	0.00090	0.00092	-0.00082	0.00557***
	(40.9)	(1.3)	(1.3)	(-0.2)	(13.5)
meandifficulty	-0.00018***	-0.00076	-0.00072	0.00606	0.00175*
	(-6.2)	(-0.6)	(-0.6)	(0.9)	(2.3)
TopBrokerDummy	0.00089***	-0.05775***	-0.05763***	0.00525	-0.01696**
	(3.8)	(-5.6)	(-5.6)	(0.1)	(-2.8)
Constant	0.08026***	0.30786***	0.30833***	0.26508	0.65363***
	(95.0)	(8.3)	(8.3)	(1.3)	(29.2)
R-squared	0.171	-0.058	-0.058	-0.084	-0.060
N	53502	53481	53481	53502	53378

* p<0.05, ** p<0.01, *** p<0.001

Panel D: Panel regression with quarter dummies

Whole sample, panel regression with quarter fixed effects

	abs(FE)/Pr~e	PmafeQ	PmafepQ	DafepY	RangeQ
meanexp	0.01330***	0.36320***	0.36312***	-0.06746	0.18910***
	(12.9)	(7.6)	(7.6)	(-0.3)	(6.6)
NumberOfCompaniesF~d	0.00003**	0.00113*	0.00112*	-0.00608*	-0.00009
	(2.8)	(2.3)	(2.3)	(-2.3)	(-0.3)
meanFirmExp	0.00000***	-0.00000	-0.00000	0.00002	-0.00000
	(12.3)	(-0.6)	(-0.6)	(0.6)	(-0.4)
meanMat	0.00004***	-0.00114***	-0.00115***	-0.00019	-0.00059***
	(16.0)	(-8.9)	(-8.9)	(-0.3)	(-7.6)
meansize	-0.00405***	-0.00641*	-0.00652*	-0.02510	-0.00359*
	(-62.5)	(-2.1)	(-2.2)	(-1.5)	(-2.0)
meanCoverage	0.00037***	0.00129	0.00131	-0.00005	0.00576***
	(23.9)	(1.8)	(1.8)	(-0.0)	(13.4)
meandifficulty	-0.00023***	-0.00025	-0.00021	0.00635	0.00205**
	(-8.3)	(-0.2)	(-0.2)	(0.9)	(2.7)
TopBrokerDummy	0.00082***	-0.05978***	-0.05963***	0.00462	-0.02003**
	(3.7)	(-5.8)	(-5.8)	(0.1)	(-3.3)
o.quarter==199	0.00000	-2.36562***	-2.36251***	0.00000	0.00000
	(.)	(-5.8)	(-5.8)	(.)	(.)
Constant	-0.06512***	-0.87241**	-0.87376**	0.94849	-1.20986***
	(-6.5)	(-3.0)	(-3.0)	(0.4)	(-4.4)
R-squared	0.252	-0.054	-0.054	-0.085	-0.053
N	53502	53481	53481	53502	53378

* p<0.05, ** p<0.01, *** p<0.001

Table 19: The table presents the results from the pooled and panel estimation of equation [6] for the period after Global Settlement. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 2003 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 20. Regressions results of the sample consisting of analysts moving from non-top to top brokers for the period after Global Settlement

Panel A: Pooled regression

Analysts who moved from bottom to top, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00000	-0.00154***	-0.00154***	-0.00001**	-0.00089***
	(0.8)	(-8.7)	(-8.7)	(-2.8)	(-9.3)
AnalystExperience	0.00019***	-0.00833**	-0.00833**	0.00000	-0.00259
	(3.9)	(-3.1)	(-3.1)	(0.0)	(-1.9)
FirmExperience	0.00000***	0.00004***	0.00004***	0.00000	0.00001***
	(5.1)	(4.5)	(4.5)	(1.0)	(3.4)
NumberOfCompaniesF~d	-0.00007**	-0.00185	-0.00185	0.00004	-0.00101
	(-2.7)	(-1.5)	(-1.5)	(1.3)	(-1.6)
size	-0.00214***	-0.00089	-0.00089	0.00008	-0.00136
	(-16.3)	(-0.2)	(-0.2)	(0.5)	(-0.6)
Coverage	0.00002	-0.00160	-0.00160	-0.00002	0.00427***
	(1.1)	(-1.4)	(-1.4)	(-1.6)	(7.3)
difficulty	0.00021***	-0.00382	-0.00382	-0.00007	-0.00242
	(4.3)	(-1.8)	(-1.8)	(-1.2)	(-1.9)
TopBrokerDummy	0.00319***	-0.02532*	-0.02531*	-0.00023	0.00091
	(14.5)	(-2.0)	(-2.0)	(-0.9)	(0.1)
Constant	0.03079***	0.25822***	0.25819***	-0.00004	0.65517***
	(16.0)	(3.8)	(3.8)	(-0.0)	(17.6)
R-squared	0.072	0.009	0.009	0.000	0.017
N	14214	14138	14138	14214	13861

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Analysts who moved from bottom to top, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00127***	-0.02377*	-0.02409*	-0.00002	-0.00651
	(5.4)	(-2.1)	(-2.1)	(-0.1)	(-1.2)
NumberOfCompaniesF~d	0.00018**	-0.00274	-0.00267	0.00006	-0.00148
	(2.9)	(-0.9)	(-0.9)	(0.9)	(-1.0)
meanFirmExp	0.00000	0.00006	0.00006	-0.00000	0.00002
	(1.8)	(1.7)	(1.7)	(-0.0)	(1.0)
meanMat	-0.00000	-0.00127**	-0.00127**	-0.00001	-0.00093***
	(-0.5)	(-2.9)	(-2.8)	(-1.0)	(-4.2)
meansize	-0.00440***	-0.01393	-0.01369	0.00012	0.00214
	(-11.7)	(-0.8)	(-0.8)	(0.3)	(0.2)
meanCoverage	0.00066***	-0.00148	-0.00148	-0.00006	0.00377
	(7.5)	(-0.4)	(-0.4)	(-0.7)	(1.8)
meandifficulty	-0.00061***	0.01507	0.01505	-0.00009	0.01124**
	(-3.5)	(1.8)	(1.8)	(-0.5)	(2.7)
TopBrokerDummy	-0.00005	-0.06137*	-0.06069*	-0.00015	-0.02412
	(-0.1)	(-2.1)	(-2.0)	(-0.2)	(-1.6)
Constant	0.06059***	0.29211	0.28823	0.00005	0.47892***
	(11.1)	(1.1)	(1.1)	(0.0)	(3.7)
R-squared	0.191	-0.017	-0.018	-0.057	-0.024
N	1199	1199	1199	1199	1199

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from bottom to top, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00968	1.04307**	1.04969**	0.00527	0.60962***
	(1.3)	(2.9)	(2.9)	(0.7)	(3.4)
NumberOfCompaniesF~d	0.00018**	-0.00264	-0.00257	0.00005	-0.00125
	(3.0)	(-0.9)	(-0.9)	(0.8)	(-0.8)
meanFirmExp	0.00000	0.00007	0.00007	0.00000	0.00002
	(1.5)	(1.9)	(1.9)	(0.0)	(1.2)
meanMat	0.00002	0.00112	0.00114	0.00001	0.00067
	(1.2)	(1.1)	(1.1)	(0.3)	(1.3)
meansize	-0.00286***	-0.02119	-0.02076	-0.00009	0.00190
	(-7.2)	(-1.1)	(-1.0)	(-0.2)	(0.2)
meanCoverage	0.00036***	0.00016	0.00014	-0.00001	0.00417
	(4.1)	(0.0)	(0.0)	(-0.1)	(1.9)
meandifficulty	-0.00058***	0.01444	0.01448	-0.00006	0.01022*
	(-3.4)	(1.7)	(1.7)	(-0.3)	(2.4)
TopBrokerDummy	0.00015	-0.05847	-0.05792	-0.00014	-0.01948
	(0.2)	(-1.9)	(-1.9)	(-0.2)	(-1.3)
Constant	0.02479	-1.72150*	-1.74186*	-0.00872	-0.65620
	(1.5)	(-2.1)	(-2.1)	(-0.5)	(-1.6)
R-squared	0.270	-0.021	-0.022	-0.062	-0.012
N	1199	1199	1199	1199	1199

* p<0.05, ** p<0.01, *** p<0.001

Table 20: The table presents the results for analysts who moved from a non-top to a top broker (see Table [8]) for the period after Global Settlement. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 2003 to 2009 Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 21. Regressions results of the sample consisting of analysts moving from top to non-top brokers for the period after Global Settlement

Panel A: Pooled regression

Analysts who moved from top to bottom, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00001*** (3.5)	-0.00147*** (-9.9)	-0.00147*** (-9.9)	-0.00004** (-2.7)	-0.00098*** (-11.7)
AnalystExperience	-0.00003 (-1.0)	-0.00315* (-2.4)	-0.00315* (-2.4)	0.00008 (1.1)	-0.00241** (-3.2)
FirmExperience	0.00000*** (11.5)	-0.00000 (-0.5)	-0.00000 (-0.5)	-0.00000* (-2.4)	0.00000 (0.1)
NumberOfCompaniesF~d	-0.00013*** (-5.4)	-0.00002 (-0.0)	-0.00002 (-0.0)	0.00005 (0.7)	-0.00003 (-0.0)
size	-0.00358*** (-25.6)	0.00395 (1.1)	0.00397 (1.1)	0.00056 (0.9)	0.00099 (0.5)
Coverage	0.00007*** (3.6)	0.00253** (2.8)	0.00253** (2.8)	-0.00005 (-1.2)	0.00580*** (11.9)
difficulty	0.00049*** (10.1)	-0.00430* (-2.3)	-0.00431* (-2.3)	-0.00014 (-1.2)	-0.00219* (-2.0)
TopBrokerDummy	-0.00358*** (-14.9)	-0.04217*** (-4.3)	-0.04215*** (-4.3)	-0.00069 (-1.0)	-0.02156*** (-4.0)
Constant	0.05299*** (26.2)	0.10648* (2.0)	0.10628* (2.0)	-0.00424 (-0.5)	0.59925*** (19.2)
R-squared	0.115	0.009	0.009	0.001	0.023
N	20690	20557	20557	20690	20068

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Analysts who moved from top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00132*** (6.2)	-0.02642*** (-3.4)	-0.02646*** (-3.4)	0.00020 (0.3)	-0.01132** (-2.7)
NumberOfCompaniesF~d	0.00012 (1.9)	0.00232 (1.0)	0.00227 (1.0)	0.00022 (1.2)	0.00089 (0.7)
meanFirmExp	0.00000*** (4.9)	-0.00001 (-0.6)	-0.00001 (-0.6)	-0.00000 (-1.6)	-0.00001 (-0.5)
meanMat	-0.00001 (-1.1)	-0.00209*** (-6.3)	-0.00210*** (-6.4)	-0.00004 (-1.4)	-0.00123*** (-6.9)
meansize	-0.00768*** (-21.0)	-0.01780 (-1.3)	-0.01796 (-1.4)	0.00066 (0.6)	-0.00464 (-0.6)
meanCoverage	0.00065*** (7.0)	0.00082 (0.2)	0.00073 (0.2)	-0.00028 (-1.0)	0.00182 (1.0)
meandifficulty	-0.00105*** (-5.8)	0.01391* (2.1)	0.01407* (2.1)	0.00009 (0.2)	0.00902* (2.5)
TopBrokerDummy	0.00136* (2.2)	-0.09424*** (-4.2)	-0.09420*** (-4.2)	-0.00184 (-1.0)	-0.04153*** (-3.4)
Constant	0.11051*** (21.0)	0.45592* (2.4)	0.45871* (2.4)	-0.00571 (-0.4)	0.68453*** (6.5)
R-squared	0.249	-0.015	-0.015	-0.055	-0.016
N	1869	1868	1868	1869	1867

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.02971***	-0.16701	-0.17170	0.00131	0.15266
	(4.1)	(-0.6)	(-0.6)	(0.1)	(1.1)
NumberOfCompaniesF~d	0.00013*	0.00220	0.00215	0.00024	0.00073
	(2.1)	(0.9)	(0.9)	(1.3)	(0.6)
meanFirmExp	0.00000***	-0.00001	-0.00001	-0.00000	-0.00001
	(4.3)	(-0.5)	(-0.5)	(-1.7)	(-0.5)
meanMat	0.00007***	-0.00232**	-0.00235**	-0.00004	-0.00066
	(3.6)	(-3.1)	(-3.1)	(-0.6)	(-1.6)
meansize	-0.00614***	-0.01770	-0.01800	0.00089	-0.00002
	(-15.3)	(-1.2)	(-1.2)	(0.8)	(-0.0)
meanCoverage	0.00049***	-0.00014	-0.00024	-0.00033	0.00120
	(5.1)	(-0.0)	(-0.1)	(-1.2)	(0.6)
meandifficulty	-0.00108***	0.01151	0.01167	-0.00004	0.00780*
	(-6.0)	(1.7)	(1.7)	(-0.1)	(2.1)
TopBrokerDummy	0.00193**	-0.10097***	-0.10093***	-0.00142	-0.04589***
	(3.1)	(-4.3)	(-4.3)	(-0.8)	(-3.6)
Constant	-0.06137	1.19671	1.22135	-0.01093	-0.00781
	(-1.7)	(1.0)	(1.0)	(-0.1)	(-0.0)
R-squared	0.294	-0.009	-0.008	-0.055	0.001
N	1869	1868	1868	1869	1867

* p<0.05, ** p<0.01, *** p<0.001

Table 21: The table presents the results for analysts who moved from a top to a non-top broker (see Table [8]) for the period after Global Settlement. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 2003 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

<u>Table 22.</u> Regressions results of the sample consisting of analysts moving from non-top to top brokers and analysts moving from top to non-top brokers for the period after Global Settlement.

Panel A: Pooled regression

Both bottom to top and top to bottom, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00001**	-0.00149***	-0.00149***	-0.00002**	-0.00094***
	(2.7)	(-11.9)	(-11.9)	(-3.2)	(-13.3)
AnalystExperience	0.00015***	-0.00550***	-0.00550***	0.00004	-0.00293***
	(5.9)	(-5.0)	(-5.0)	(0.8)	(-4.7)
FirmExperience	0.00000***	0.00001	0.00001	-0.00000*	0.00000
	(10.9)	(1.8)	(1.8)	(-2.2)	(1.4)
NumberOfCompaniesF~d	-0.00010***	-0.00074	-0.00074	0.00004	-0.00040
	(-5.7)	(-0.9)	(-0.9)	(1.1)	(-0.9)
size	-0.00304***	0.00197	0.00198	0.00036	-0.00021
	(-28.4)	(0.7)	(0.7)	(1.0)	(-0.1)
Coverage	0.00008***	0.00102	0.00102	-0.00004	0.00538***
	(4.6)	(1.4)	(1.4)	(-1.5)	(13.4)
difficulty	0.00042***	-0.00337*	-0.00337*	-0.00009	-0.00186*
	(11.2)	(-2.4)	(-2.4)	(-1.4)	(-2.2)
TopBrokerDummy	-0.00097***	-0.03440***	-0.03438***	-0.00040	-0.01024*
	(-5.3)	(-4.6)	(-4.6)	(-0.9)	(-2.5)
Constant	0.04350***	0.16393***	0.16381***	-0.00251	0.62153***
	(28.7)	(3.9)	(3.9)	(-0.5)	(24.9)
R-squared	0.088	0.009	0.009	0.001	0.021
N	34904	34695	34695	34904	33929

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Both bottom to top and top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00118***	-0.01968***	-0.01973***	0.00033	-0.00629*
	(9.4)	(-4.0)	(-4.0)	(1.1)	(-2.4)
NumberOfCompaniesF~d	0.00018***	-0.00087	-0.00088	0.00013	-0.00037
	(4.0)	(-0.5)	(-0.5)	(1.2)	(-0.4)
meanFirmExp	0.00000***	0.00000	0.00000	-0.00000	-0.00000
	(5.4)	(0.1)	(0.1)	(-1.8)	(-0.4)
meanMat	-0.00001	-0.00178***	-0.00179***	-0.00003	-0.00114***
	(-1.5)	(-6.7)	(-6.7)	(-1.7)	(-8.1)
meansize	-0.00658***	-0.01856	-0.01855	0.00039	-0.00240
	(-24.1)	(-1.7)	(-1.7)	(0.6)	(-0.4)
meanCoverage	0.00072***	-0.00028	-0.00032	-0.00019	0.00242
	(10.6)	(-0.1)	(-0.1)	(-1.1)	(1.7)
meandifficulty	-0.00094***	0.01516**	0.01525**	0.00004	0.01000***
	(-7.1)	(2.9)	(2.9)	(0.1)	(3.6)
TopBrokerDummy	0.00092**	-0.06095***	-0.06085***	-0.00096	-0.01900**
	(3.2)	(-5.5)	(-5.4)	(-1.4)	(-3.2)
Constant	0.09424***	0.38929*	0.38917*	-0.00360	0.59072***
	(24.3)	(2.6)	(2.6)	(-0.4)	(7.3)
R-squared	0.225	-0.017	-0.017	-0.053	-0.021
N	2989	2988	2988	2989	2987

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Both bottom to top and top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.02527***	0.31949	0.31863	0.00664	0.35143**
	(4.7)	(1.5)	(1.4)	(0.5)	(3.0)
NumberOfCompaniesF~d	0.00019***	-0.00120	-0.00121	0.00012	-0.00061
	(4.3)	(-0.7)	(-0.7)	(1.1)	(-0.6)
meanFirmExp	0.00000***	0.00001	0.00001	-0.00000	-0.00000
	(4.8)	(0.3)	(0.3)	(-1.9)	(-0.3)
meanMat	0.00006***	-0.00093	-0.00094	-0.00001	-0.00010
	(4.1)	(-1.5)	(-1.6)	(-0.3)	(-0.3)
meansize	-0.00504***	-0.02004	-0.02005	0.00049	0.00213
	(-17.1)	(-1.7)	(-1.7)	(0.7)	(0.3)
meanCoverage	0.00050***	0.00009	0.00004	-0.00019	0.00230
	(7.3)	(0.0)	(0.0)	(-1.1)	(1.6)
meandifficulty	-0.00097***	0.01501**	0.01514**	0.00004	0.00989***
	(-7.5)	(2.9)	(2.9)	(0.1)	(3.6)
TopBrokerDummy	0.00081**	-0.06170***	-0.06161***	-0.00082	-0.02088***
	(2.9)	(-5.4)	(-5.4)	(-1.2)	(-3.5)
Constant	-0.02985	-0.68965	-0.68753	-0.02729	-0.62892
	(-1.3)	(-0.9)	(-0.9)	(-0.5)	(-1.5)
R-squared	0.282	-0.015	-0.015	-0.051	-0.003
N	2989	2988	2988	2989	2987

* p<0.05, ** p<0.01, *** p<0.001

Table 22: The table presents the results for analysts who moved from a non-top to a top broker and from a top to a non-top broker (see Table [8]) for the period before the Global Settlement. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 2003 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 23. Regressions results of the sample consisting of analysts moving from non-top to top brokers and also restricting the firms covered to the ones covered before and after the move

Panel A: Pooled regression

Analysts who moved from bottom to top, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00197***	-0.00197***	-0.00002***	-0.00132***
	(8.8)	(-20.6)	(-20.6)	(-4.2)	(-22.2)
AnalystExperience	-0.00007**	-0.00186	-0.00185	0.00019	-0.00044
	(-2.8)	(-1.7)	(-1.7)	(1.7)	(-0.7)
FirmExperience	0.00000***	0.00001	0.00001	-0.00000	0.00001
	(11.1)	(1.7)	(1.7)	(-1.0)	(1.9)
NumberOfCompaniesF~d	0.00000	-0.00070	-0.00070	0.00000	0.00001
	(0.4)	(-1.0)	(-1.0)	(0.1)	(0.0)
size	-0.00288***	0.00234	0.00233	-0.00009	0.00006
	(-37.3)	(1.0)	(1.0)	(-0.5)	(0.0)
Coverage	0.00024***	0.00008	0.00008	0.00001	0.00568***
	(13.9)	(0.1)	(0.1)	(0.3)	(14.3)
difficulty	0.00006*	0.00017	0.00017	0.00002	-0.00048
	(2.6)	(0.2)	(0.2)	(0.4)	(-0.7)
TopBrokerDummy	0.00093***	0.01059	0.01060	-0.00063	-0.00162
	(5.1)	(1.3)	(1.3)	(-1.4)	(-0.3)
Constant	0.04123***	0.09912**	0.09928**	0.00131	0.59673***
	(38.7)	(3.2)	(3.2)	(0.6)	(29.5)
R-squared	0.083	0.010	0.010	0.000	0.022
N	49018	48100	48100	49018	44058

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Analysts who moved from bottom to top, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00007	-0.00266	-0.00265	0.00036**	-0.00265
	(1.2)	(-0.9)	(-0.9)	(2.6)	(-1.5)
NumberOfCompaniesF~d	0.00007*	-0.00065	-0.00071	-0.00002	-0.00092
	(2.4)	(-0.4)	(-0.5)	(-0.3)	(-1.1)
meanFirmExp	0.00000***	-0.00001	-0.00001	-0.00000*	0.00000
	(5.4)	(-0.6)	(-0.6)	(-2.1)	(0.2)
meanMat	0.00003***	-0.00230***	-0.00230***	-0.00002*	-0.00136***
	(8.2)	(-11.0)	(-11.0)	(-2.2)	(-11.0)
meansize	-0.00348***	0.01211*	0.01179	-0.00005	0.00260
	(-28.6)	(2.0)	(1.9)	(-0.2)	(0.7)
meanCoverage	0.00037***	-0.00445*	-0.00437*	-0.00006	0.00428***
	(10.0)	(-2.5)	(-2.4)	(-0.7)	(4.0)
meandifficulty	-0.00004	0.00053	0.00042	0.00010	0.00055
	(-0.7)	(0.2)	(0.2)	(0.8)	(0.3)
TopBrokerDummy	-0.00005	-0.01108	-0.01079	-0.00171*	0.00518
	(-0.1)	(-0.6)	(-0.6)	(-2.0)	(0.5)
Constant	0.04762***	0.04399	0.04915	0.00112	0.59226***
	(29.4)	(0.5)	(0.6)	(0.3)	(12.1)
R-squared	0.079	-0.026	-0.026	-0.043	-0.024
N	8464	8441	8441	8464	8326

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from bottom to top, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01947***	0.30362*	0.30026*	-0.00009	0.11466
	(7.5)	(2.3)	(2.3)	(-0.0)	(1.4)
NumberOfCompaniesF~d	0.00005	-0.00080	-0.00086	-0.00001	-0.00108
	(1.7)	(-0.5)	(-0.6)	(-0.2)	(-1.2)
meanFirmExp	0.00000***	-0.00000	-0.00000	-0.00000*	0.00000
	(6.0)	(-0.3)	(-0.3)	(-2.1)	(0.3)
meanMat	0.00008***	-0.00185***	-0.00186***	-0.00002	-0.00123***
	(10.5)	(-4.8)	(-4.8)	(-1.2)	(-5.3)
meansize	-0.00310***	0.00981	0.00951	-0.00003	0.00167
	(-25.2)	(1.6)	(1.5)	(-0.1)	(0.4)
meanCoverage	0.00033***	-0.00386*	-0.00379*	-0.00006	0.00506***
	(9.1)	(-2.1)	(-2.0)	(-0.7)	(4.6)
meandifficulty	-0.00006	0.00436	0.00425	0.00007	0.00210
	(-1.1)	(1.5)	(1.4)	(0.5)	(1.2)
TopBrokerDummy	-0.00055	-0.01167	-0.01141	-0.00173*	0.00294
	(-1.5)	(-0.6)	(-0.6)	(-2.0)	(0.3)
Constant	0.12993***	1.25902*	1.24911*	0.00086	1.07012**
	(12.2)	(2.3)	(2.3)	(0.0)	(3.2)
R-squared	0.132	-0.022	-0.022	-0.047	-0.019
N	8464	8441	8441	8464	8326

* p<0.05, ** p<0.01, *** p<0.001

Table 23: The table presents the results for i) analysts who moved from a non-top to a top broker and ii) common firms before and after the move (see Table [8] for the regressors definition). A firm is considered to be covered if there is at least on forecast for the firm in both periods, before and after the move. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 24. Regressions results of the sample consisting of analysts moving from top to non-top brokers and also restricting the firms covered to the ones covered before and after the move

Panel A: Pooled regression

Analysts who moved from top to bottom, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00002***	-0.00173***	-0.00173***	-0.00004***	-0.00119***
	(6.6)	(-16.9)	(-16.9)	(-3.7)	(-18.6)
AnalystExperience	0.00000	-0.00204*	-0.00204*	-0.00004	-0.00177***
	(0.0)	(-2.3)	(-2.3)	(-0.7)	(-3.3)
FirmExperience	0.00000***	0.00000	0.00000	-0.00000	0.00000
	(5.9)	(0.1)	(0.1)	(-0.4)	(1.4)
NumberOfCompaniesF~d	0.00000	0.00066	0.00066	0.00007	0.00038
	(0.1)	(1.0)	(1.0)	(1.6)	(1.0)
size	-0.00337***	-0.00703**	-0.00703**	0.00039	-0.00268
	(-38.7)	(-3.0)	(-2.9)	(0.7)	(-1.9)
Coverage	0.00031***	0.00120	0.00120	-0.00014	0.00586***
	(15.0)	(1.6)	(1.6)	(-1.6)	(14.8)
difficulty	0.00015***	-0.00148	-0.00148	-0.00005	-0.00102
	(5.4)	(-1.5)	(-1.5)	(-0.4)	(-1.5)
TopBrokerDummy	-0.00076***	-0.01696*	-0.01698*	-0.00058	-0.00320
	(-4.8)	(-2.2)	(-2.2)	(-0.8)	(-0.7)
Constant	0.04799***	0.22826***	0.22824***	-0.00184	0.63556***
	(40.4)	(6.9)	(6.9)	(-0.2)	(30.0)
R-squared	0.087	0.008	0.008	0.000	0.019
N	49535	48650	48650	49535	44949

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Analysts who moved from top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00025***	-0.00560*	-0.00557*	-0.00020	-0.00367**
	(4.8)	(-2.4)	(-2.4)	(-1.0)	(-2.6)
NumberOfCompaniesF~d	0.00005	0.00139	0.00134	0.00007	0.00085
	(1.5)	(0.9)	(0.9)	(0.5)	(1.0)
meanFirmExp	0.00000	0.00001	0.00001	-0.00000	0.00001
	(0.8)	(1.0)	(1.0)	(-0.1)	(1.9)
meanMat	0.00002***	-0.00208***	-0.00207***	-0.00003	-0.00110***
	(3.7)	(-9.8)	(-9.8)	(-1.8)	(-8.8)
meansize	-0.00402***	0.00351	0.00348	0.00040	-0.00215
	(-31.4)	(0.6)	(0.6)	(0.8)	(-0.6)
meanCoverage	0.00039***	0.00059	0.00063	-0.00007	0.00552***
	(10.1)	(0.3)	(0.4)	(-0.5)	(5.3)
meandifficulty	-0.00016**	-0.00037	-0.00030	-0.00004	0.00079
	(-2.6)	(-0.1)	(-0.1)	(-0.2)	(0.5)
TopBrokerDummy	0.00017	-0.03532*	-0.03566*	-0.00122	-0.01651
	(0.5)	(-2.1)	(-2.1)	(-0.8)	(-1.6)
Constant	0.05790***	0.11178	0.11073	-0.00140	0.61651***
	(31.7)	(1.4)	(1.3)	(-0.2)	(12.5)
R-squared	0.089	-0.031	-0.031	-0.045	-0.027
N	7908	7897	7897	7908	7849

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.01735***	-0.15046	-0.14911	0.01962	0.00439
	(6.0)	(-1.1)	(-1.1)	(1.6)	(0.1)
NumberOfCompaniesF~d	0.00006	0.00131	0.00126	0.00007	0.00088
	(1.8)	(0.9)	(0.8)	(0.5)	(1.0)
meanFirmExp	0.00000***	0.00001	0.00001	0.00000	0.00001*
	(3.8)	(1.0)	(1.0)	(0.0)	(2.0)
meanMat	0.00006***	-0.00253***	-0.00251***	0.00002	-0.00114***
	(6.7)	(-6.4)	(-6.3)	(0.7)	(-4.8)
meansize	-0.00350***	0.00099	0.00089	0.00063	-0.00246
	(-27.4)	(0.2)	(0.1)	(1.2)	(-0.7)
meanCoverage	0.00030***	0.00139	0.00145	-0.00011	0.00596***
	(8.0)	(0.8)	(0.8)	(-0.7)	(5.6)
meandifficulty	-0.00025***	0.00140	0.00154	-0.00001	0.00149
	(-3.9)	(0.5)	(0.5)	(-0.1)	(0.8)
TopBrokerDummy	0.00030	-0.03822*	-0.03876*	-0.00111	-0.02056*
	(0.8)	(-2.2)	(-2.2)	(-0.7)	(-2.0)
Constant	0.13477***	-0.53721	-0.53266	0.07935	0.61125
	(10.8)	(-0.9)	(-0.9)	(1.5)	(1.7)
R-squared	0.170	-0.030	-0.030	-0.047	-0.026
N	7908	7897	7897	7908	7849

* p<0.05, ** p<0.01, *** p<0.001

Table 24: The table presents the results for i) analysts who moved from a top to a non-top broker and ii) common firms before and after the move (see Table [8] for the regressors definition). A firm is considered to be covered if there is at least on forecast for the firm in both periods, before and after the move. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 25. Regressions results of the sample consisting of analysts moving from non-top to top brokers and also restricting the firms covered to the ones continuously covered during the last two quarters at the non-top broker and the third and fourth quarter at the top broker

Panel A: Pooled regression

Analysts who moved from bottom to top, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00001***	-0.00328***	-0.00328***	-0.00001***	-0.00170***
	(3.7)	(-11.8)	(-11.8)	(-4.6)	(-11.4)
AnalystExperience	0.00013	-0.00069	-0.00069	-0.00016	0.00178
	(1.8)	(-0.1)	(-0.1)	(-1.1)	(0.7)
FirmExperience	0.00000*	-0.00002	-0.00002	0.00000	0.00000
	(2.5)	(-1.3)	(-1.3)	(1.7)	(0.2)
NumberOfCompaniesF~d	-0.00006*	0.00129	0.00130	-0.00001	0.00012
	(-2.2)	(0.6)	(0.6)	(-0.5)	(0.1)
size	-0.00132***	0.00609	0.00608	-0.00009	-0.00259
	(-9.3)	(0.8)	(0.8)	(-0.3)	(-0.7)
Coverage	0.00006**	-0.00190	-0.00189	0.00000	0.00406***
	(2.8)	(-1.0)	(-1.0)	(0.2)	(4.2)
difficulty	0.00008	-0.00952**	-0.00952**	-0.00001	-0.00335
	(1.9)	(-2.9)	(-2.9)	(-0.3)	(-1.7)
TopBrokerDummy	0.00052*	0.07441***	0.07434***	0.00023	0.02608*
	(2.3)	(3.7)	(3.6)	(0.8)	(2.5)
Constant	0.01940***	0.23635*	0.23642*	0.00205	0.69988***
	(9.3)	(2.3)	(2.3)	(0.6)	(12.0)
R-squared	0.056	0.024	0.024	0.003	0.029
N	5672	5610	5610	5672	5390

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Both bottom to top and top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00014	0.00161	0.00167	0.00333***	0.02537
	(0.4)	(0.1)	(0.1)	(6.3)	(1.6)
NumberOfCompaniesF~d	0.00002	0.00059	0.00054	0.00001	-0.00191
	(0.4)	(0.1)	(0.1)	(0.1)	(-0.7)
meanFirmExp	0.00000**	-0.00004	-0.00004	-0.00000**	-0.00001
	(3.0)	(-0.7)	(-0.7)	(-2.6)	(-0.5)
meanMat	0.00002**	-0.00384***	-0.00383***	-0.00002*	-0.00188***
	(2.6)	(-7.9)	(-7.9)	(-2.3)	(-7.2)
meansize	-0.00230***	0.00600	0.00558	-0.00025	-0.00794
	(-9.0)	(0.3)	(0.3)	(-0.7)	(-0.7)
meanCoverage	0.00032***	-0.00839	-0.00838	-0.00011	0.00387
	(4.6)	(-1.5)	(-1.5)	(-1.1)	(1.3)
meandifficulty	-0.00035**	-0.01637	-0.01632	0.00020	0.00234
	(-3.1)	(-1.7)	(-1.7)	(1.3)	(0.4)
TopBrokerDummy	-0.00034	0.08708*	0.08709*	-0.00279***	-0.00277
	(-0.7)	(2.1)	(2.1)	(-3.9)	(-0.1)
Constant	0.03414***	0.42865	0.43410	-0.00901	0.66143***
	(8.7)	(1.3)	(1.3)	(-1.6)	(3.7)
R-squared	-0.169	-0.205	-0.206	-0.225	-0.224
N	1511	1505	1505	1511	1484

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from bottom to top, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00544	0.23372	0.23237	0.00895	0.25840
	(1.4)	(0.7)	(0.7)	(1.6)	(1.5)
NumberOfCompaniesF~d	0.00002	0.00173	0.00168	-0.00001	-0.00141
	(0.3)	(0.3)	(0.3)	(-0.1)	(-0.5)
meanFirmExp	0.00000**	-0.00003	-0.00003	-0.00000***	-0.00001
	(3.0)	(-0.6)	(-0.6)	(-3.3)	(-0.5)
meanMat	0.00003*	-0.00333**	-0.00333**	-0.00001	-0.00135*
	(2.3)	(-3.1)	(-3.1)	(-0.7)	(-2.4)
meansize	-0.00212***	0.02089	0.02034	0.00014	-0.00210
	(-7.7)	(0.9)	(0.9)	(0.4)	(-0.2)
meanCoverage	0.00031***	-0.01000	-0.00995	-0.00016	0.00414
	(4.4)	(-1.7)	(-1.7)	(-1.6)	(1.3)
meandifficulty	-0.00021	-0.02275*	-0.02267*	0.00000	-0.00138
	(-1.7)	(-2.1)	(-2.1)	(0.0)	(-0.2)
TopBrokerDummy	-0.00050	0.10380*	0.10388*	-0.00304***	-0.00252
	(-0.9)	(2.3)	(2.3)	(-3.9)	(-0.1)
Constant	0.05642**	2.15620	2.15662	0.02381	2.10161*
	(2.9)	(1.3)	(1.3)	(0.9)	(2.4)
R-squared	-0.144	-0.197	-0.198	-0.167	-0.214
N	1511	1505	1505	1511	1484

* p<0.05, ** p<0.01, *** p<0.001

Table 25: The table presents the results for i) analysts who moved from a non-top to a top broker, ii) common firms before and after the move and iii) the two last quarters at the non-top broker and the third and fourth quarters at the top broke (see Table [8] for the regressors definition). A firm is considered to be covered if it is covered at all the four quarters considered. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 26. Regressions results of the sample consisting of analysts moving from top to non-top brokers and also restricting the firms covered to the ones continuously covered during the last two quarters at the top broker and the third and fourth quarter at the non-top broker

Panel A: Pooled regression

Analysts who moved from bottom to top, Pooled regression

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
ForecastMaturity	0.00004***	-0.00359***	-0.00359***	-0.00006**	-0.00206***
	(4.1)	(-8.9)	(-8.9)	(-3.1)	(-10.5)
AnalystExperience	0.00003	-0.00990*	-0.00990*	-0.00046	-0.00475*
	(0.3)	(-2.1)	(-2.1)	(-1.2)	(-2.1)
FirmExperience	0.00000***	-0.00002	-0.00002	-0.00000	-0.00001
	(6.4)	(-1.2)	(-1.2)	(-1.2)	(-1.1)
NumberOfCompaniesF~d	-0.00008	0.00073	0.00073	0.00019	0.00021
	(-1.0)	(0.2)	(0.2)	(1.0)	(0.1)
size	-0.00358***	0.00117	0.00117	0.00102	-0.00203
	(-11.1)	(0.1)	(0.1)	(1.3)	(-0.4)
Coverage	-0.00000	0.00141	0.00141	0.00012*	0.00446***
	(-0.1)	(0.5)	(0.5)	(2.3)	(3.5)
difficulty	0.00039**	0.00250	0.00250	-0.00023	-0.00075
	(3.3)	(0.4)	(0.4)	(-1.0)	(-0.3)
TopBrokerDummy	-0.00070	-0.14334***	-0.14334***	-0.00054	-0.05393***
	(-1.2)	(-4.9)	(-4.9)	(-0.5)	(-3.8)
Constant	0.04986***	0.27228	0.27228	-0.00726	0.74373***
	(10.8)	(1.7)	(1.7)	(-0.9)	(9.3)
R-squared	0.121	0.037	0.037	0.012	0.049
N	2968	2948	2948	2968	2905

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Panel regression

Both bottom to top and top to bottom, panel regression (no quarter fixed effects)

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00052	0.00986	0.01002	-0.00071	-0.00258
	(1.0)	(0.3)	(0.3)	(-0.5)	(-0.2)
NumberOfCompaniesF~d	-0.00021	0.01524*	0.01532*	0.00067*	0.00693*
	(-1.9)	(2.2)	(2.2)	(2.1)	(2.0)
meanFirmExp	0.00000*	-0.00002	-0.00002	-0.00000	-0.00001
	(2.2)	(-0.3)	(-0.3)	(-0.9)	(-0.2)
meanMat	0.00001	-0.00408***	-0.00410***	-0.00002	-0.00226***
	(0.6)	(-6.5)	(-6.5)	(-0.7)	(-7.2)
meansize	-0.00529***	-0.00505	-0.00482	-0.00030	-0.03154
	(-9.4)	(-0.1)	(-0.1)	(-0.2)	(-1.7)
meanCoverage	0.00024	0.00855	0.00814	0.00057	0.01274**
	(1.9)	(1.1)	(1.0)	(1.5)	(3.2)
meandifficulty	0.00014	-0.02670	-0.02684	-0.00136	-0.01555*
	(0.6)	(-1.7)	(-1.8)	(-1.9)	(-2.0)
TopBrokerDummy	0.00109	-0.10361*	-0.10448*	-0.00266	-0.04819
	(1.4)	(-2.0)	(-2.0)	(-1.1)	(-1.9)
Constant	0.07405***	0.37594	0.37826	0.01948	1.19880***
	(8.5)	(0.7)	(0.7)	(0.7)	(4.3)
R-squared	-0.080	-0.168	-0.168	-0.232	-0.143
N	992	990	989	992	981

* p<0.05, ** p<0.01, *** p<0.001

Panel C: Panel regression with quarter dummies

Analysts who moved from top to bottom, panel regression with quarter fixed effects

	abs(FE)/Pr~e	Pmafe	Pmafep	Dafep	Range
meanexp	0.00698	1.28269*	1.28388*	0.00019	0.68472*
	(0.8)	(2.2)	(2.2)	(0.0)	(2.4)
NumberOfCompaniesF~d	-0.00020	0.01519*	0.01524*	0.00070	0.00709
	(-1.8)	(2.1)	(2.1)	(2.0)	(2.0)
meanFirmExp	0.00000	-0.00001	-0.00001	-0.00000	0.00001
	(1.8)	(-0.1)	(-0.1)	(-0.8)	(0.2)
meanMat	0.00002	-0.00040	-0.00041	-0.00002	-0.00035
	(0.8)	(-0.2)	(-0.2)	(-0.2)	(-0.4)
meansize	-0.00485***	-0.00903	-0.00880	-0.00188	-0.03729
	(-7.4)	(-0.2)	(-0.2)	(-0.9)	(-1.8)
meanCoverage	0.00026	0.00955	0.00917	0.00083*	0.01405**
	(1.9)	(1.1)	(1.1)	(2.0)	(3.3)
meandifficulty	0.00014	-0.02456	-0.02477	-0.00081	-0.01441
	(0.5)	(-1.4)	(-1.4)	(-0.9)	(-1.6)
TopBrokerDummy	0.00151	-0.12246*	-0.12299*	-0.00454	-0.05379
	(1.7)	(-2.1)	(-2.1)	(-1.6)	(-1.9)
Constant	0.10285*	6.96771*	6.97084*	0.03026	5.01499***
	(2.3)	(2.4)	(2.4)	(0.2)	(3.5)
R-squared	-0.094	-0.185	-0.185	-0.318	-0.139
N	992	990	989	992	981

* p<0.05, ** p<0.01, *** p<0.001

Table 26: The table presents the results for i) analysts who moved from a top to a non-top broker, ii) common firms before and after the move and iii) the two last quarters at the-top broker and the third and fourth quarters at the non-top broke (see Table [8] for the regressors definition). A firm is considered to be covered if it is covered at all the four quarters considered. The coefficients come from the pooled and panel estimation of equation [6]. The dependent and independent variables are described at Table [8]. The panel dimensions are analyst and quarter. The regressors in the panel cases are the mean of the values of the corresponding variables (Table [8]) for the same analyst over the same quarter. For the panel regressions we drop the quarters in which the analyst changed employment to ensure that the topbroker dummy has only 0 and 1 as values. Data is the intersection of IBES details file and monthly CRSP for 1990 to 2009. Observations are earnings forecasts for financial quarters. Only the last forecast of every analyst for a given firm at the given quarter was used. The quarter dummies are not reported. For pooled regressions we report cluster corrected t-statistics. Clusters are formulated based on quarter and firm.

Table 27. Recommendations evaluation for non-top and top brokers

	Non-top	top	T-stat of difference
buy	0.0000563	0.0000794**	0.448
sell	-0.0000289	-0.0000178	-0.218

Table 27: The table reports the average daily percentage buy-and-hold abnormal returns for portfolios of buy and hold/sell recommendations of top and non-top brokers (see Table [8] for the top brokers). One * means significance at the 10% level and ** significance at the 5% or better. The average daily abnormal return is the intercept from a regression of the daily portfolio excess return over the risk free rate on i)the excess of the market return over the risk-free rate, ii) the difference between the daily returns of a value-weighted portfolio of small stocks and one of large stocks, iii) the difference between the daily returns of a value-weighted portfolio of high book-to-market stocks and one of low book-to-market stocks, and iv) the difference between the daily returns of a value-weighted portfolio of high price momentum stocks and one of low price momentum stocks. The data is from the 1993-2009 period. At least 50 recommendations are required to be active for a daily portfolio return to be included the regression estimation. Recommendations come from IBES, daily stock returns from CRSP and the regressors from the Kenneth French's website.

Table 28. Recommendations evaluation of analysts moving from non-top brokers to top brokers and top brokers to non-top brokers

Panel A

Non-top to top

	Non-top	top	T-stat of difference
buy	0.0001483**	0.0001156*	-0.466
sell	-0.0000543	0.000056	1.27

Panel B

Top to non-top

	Non-top	top	T-stat of difference
buy	0.0000202	0.0000622	0.521
sell	0.000003	0.0000294	-0.0069

Table 28: The table reports the average daily percentage buy-and-hold abnormal returns for portfolios of buy and hold/sell recommendations of analysts moving from non-top to top brokers and top to non-top brokers (see Table [8] for the top brokers). One * means significance at the 10% level and ** significance at the 5% or better. The average daily abnormal return is the intercept from a regression of the daily portfolio excess return over the risk free rate on i)the excess of the market return over the risk-free rate, ii) the difference between the daily returns of a value-weighted portfolio of small stocks and one of large stocks, iii) the difference between the daily returns of a value-weighted portfolio of high book-to-market stocks and one of low book-to-market stocks, and iv) the difference between the daily returns of a value-weighted portfolio of high price momentum stocks and one of low price momentum stocks. The data is from the 1993-2009 period. At least 50 recommendations are required to be active for a daily portfolio return to be included the regression estimation. Recommendations come from IBES, daily stock returns from CRSP and the regressors from the Kenneth French's website.

Table 29. Recommendations evaluation of analysts moving from non-top brokers to top brokers and top brokers to non-top brokers for the period before the Global Settlement

Panel A

Non-top to top

	Non-top	top	T-stat of difference
buy	0.000117	0.000038	-0.57
sell	0.0000219	0.0000396	0.122

Panel B

Top to non top

	Non-top	top	T-stat of difference
buy	-0.0000369	0	0.2985
sell	0.000106	0.0000564	-0.35

Table 29: The table reports the average daily percentage buy-and-hold abnormal returns for portfolios of buy and hold/sell recommendations of analysts moving from non-top to top brokers and top to non-top brokers for the period before Global Settlement (see Table [8] for the top brokers). One * means significance at the 10% level and ** significance at the 5% or better. The average daily abnormal return is the intercept from a regression of the daily portfolio excess return over the risk free rate on i)the excess of the market return over the risk-free rate, ii) the difference between the daily returns of a value-weighted portfolio of small stocks and one of large stocks, iii) the difference between the daily returns of a value-weighted portfolio of high book-to-market stocks and one of low book-to-market stocks, and iv) the difference between the daily returns of a value-weighted portfolio of high price momentum stocks and one of low price momentum stocks. The data is from the 1993-2002 period. At least 50 recommendations are required to be active for a daily portfolio return to be included the regression estimation. Recommendations come from IBES, daily stock returns from CRSP and the regressors from the Kenneth French's website.

Table 30. Recommendations evaluation of analysts moving from non-top brokers to top brokers and top brokers to non-top brokers for the period after the Global Settlement.

Panel A

Non-top to top

	Non-top	top	T-stat of difference
buy	0.0001728	0.000253**	0.53
sell	-0.0001534**	0	1.28

Panel B

Top to non top

	Non-top	top	T-stat of difference
buy	0.0000379	0.0001231	0.69715
sell	-0.0001095	0.0000213	1.0204

Table 30: The table reports the average daily percentage buy-and-hold abnormal returns for portfolios of buy and hold/sell recommendations of analysts moving from non-top to top brokers and top to non-top brokers for the period afterGlobal Settlement (see Table [8] for the top brokers). One * means significance at the 10% level and ** significance at the 5% or better. The average daily abnormal return is the intercept from a regression of the daily portfolio excess return over the risk free rate on i)the excess of the market return over the risk-free rate, ii) the difference between the daily returns of a value-weighted portfolio of small stocks and one of large stocks, iii) the difference between the daily returns of a value-weighted portfolio of high book-to-market stocks and one of low book-to-market stocks, and iv) the difference between the daily returns of a value-weighted portfolio of high price momentum stocks and one of low price momentum stocks. The data is from the 2002-2009 period. At least 50 recommendations are required to be active for a daily portfolio return to be included the regression estimation. Recommendations come from IBES, daily stock returns from CRSP and the regressors from the Kenneth French's website.

Table 31. Recommendations evaluation of analysts moving from non-top brokers to top brokers and top brokers to non-top brokers acting on the recommendation one day before its release

Panel A

Non top to top

	Non-top	top	T-stat of difference
buy	0.0002507**	0.0002521**	-0.01469
sell	-0.0002471**	-0.0001241**	1.17

Panel B

Top to non top

	Non-top	top	T-stat of difference
buy	0.0001407**	0.0001455**	-0.05908
sell	-0.0001483**	-0.0001092	-0.06305

Table 31: The table reports the average daily percentage buy-and-hold abnormal returns for portfolios of buy and hold/sell recommendations of analysts moving from non-top to top brokers and top to non-top brokers, acting on the recommendation one day before its release (see Table [8] for the top brokers). One * means significance at the 10% level and ** significance at the 5% or better. The average daily abnormal return is the intercept from a regression of the daily portfolio excess return over the risk free rate on i)the excess of the market return over the risk-free rate, ii) the difference between the daily returns of a value-weighted portfolio of small stocks and one of large stocks, iii) the difference between the daily returns of a value-weighted portfolio of high book-to-market stocks and one of low book-to-market stocks, and iv) the difference between the daily returns of a value-weighted portfolio of high price momentum stocks and one of low price momentum stocks. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP and the regressors from the Kenneth French's website.

Table 32. Non Top brokers, buy recommendations

Panel A: Volume reaction

days	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	24278	1.0264656	2.0258940	2.0355017
-2	24278	1.0281551	1.4236740	3.0814347
-1	24278	1.1217808	2.1573530	8.7955715
0	24278	1.3018124	1.9796650	23.7548246
1	24278	1.0980523	1.8258940	8.3673643
2	24278	1.0123248	3.7251410	0.5155177
3	24278	0.9757229	1.5672480	-2.4136063

Panel B: Return reaction

-3	24278	0.9962226	0.9931647	-0.5926257
-2	24278	1.0257998	1.0572880	3.8021521
-1	24278	1.1074046	1.2624930	13.2556295
0	24278	1.2989026	1.4774470	31.5227600
1	24278	1.0172226	1.0043610	2.6718700
2	24278	0.9733835	0.9431921	-4.3970029
3	24278	0.9658925	0.9429116	-5.6361800

Panel C: Cumulative size adjusted return

0	24278	0.0121414	0.0727658	25.9984773

Table 32: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the buy recommendations issued by non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 33. Non Top brokers, sell recommendations

Panel A: Volume reaction

days	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	17698	1.0527105	1.963212	3.5718402858
-2	17698	1.0927029	5.631943	2.1897632603
-1	17698	1.2540082	3.003918	11.249203131
0	17698	1.4666247	2.978518	20.841529629
1	17698	1.1194328	1.567702	10.134963689
2	17698	1.0167548	1.444182	1.5434032689
3	17698	0.99183418	1.496854	-0.725742332

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	17698	1.0192678	1.13229	2.2637921691
-2	17698	1.0642521	1.576368	5.4224032502
-1	17698	1.1695254	1.796834	12.551305959
0	17698	1.3334147	1.978675	22.416735752
1	17698	0.99594418	0.9687779	-0.556950432
2	17698	0.95274039	1.010007	-6.224835012
3	17698	0.94771562	1.112958	-6.249644044

Panel C: Cumulative size adjusted return

0	17698	-0.0094555	0.0809235	-15.54432745

Table 33: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the sell recommendations issued by non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 34. Top brokers, buy recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	9436	1.0241087	1.398623	1.6744303725
-2	9436	1.0839789	2.139006	3.813749336
-1	9436	1.2168185	2.22795	9.4533309336
0	9436	1.5014338	2.668785	18.251307537
1	9436	1.1410797	1.542288	8.8857279819
2	9436	1.0712384	1.882026	3.6769058026
3	9436	1.0217394	1.582104	1.3347701663

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	9436	1.0069623	0.9670393	0.6993628757
-2	9436	1.028332	1.043361	2.6377680292
-1	9436	1.1409803	1.256758	10.896844113
0	9436	1.4230301	1.552887	26.462165532
1	9436	1.0215531	0.9432313	2.2196551465
2	9436	0.9668746	0.9345699	-3.443049828
3	9436	0.96772178	0.9076402	-3.454536777

Panel C: Cumulative size adjusted return

0	9436	0.015294	0.0684771	21.695501439

Table 34: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the buy recommendations issued by top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 35. Top brokers, sell recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	9738	0.99771545	1.285063	-0.175432937
-2	9738	1.0022111	1.236808	0.176417224
-1	9738	1.1326767	1.762715	7.427581843
0	9738	1.3685039	1.930448	18.837309179
1	9738	1.0860605	1.204235	7.0522468355
2	9738	1.0005066	1.24911	0.0400220551
3	9738	1.0459521	3.383077	1.3403813172

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	9738	0.98415035	0.9461882	-1.653015911
-2	9738	1.013715	1.19974	1.1280895036
-1	9738	1.0973764	1.626665	5.9073197307
0	9738	1.3341529	1.475134	22.353660288
1	9738	0.99526478	0.9278118	-0.503634132
2	9738	0.96344036	0.8927542	-4.041149281
3	9738	0.96426068	0.8851654	-3.984343203

Panel C: Cumulative size adjusted return

0	9738	-0.0106121	0.0684128	-15.30730915

Table 35: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the sell recommendations issued by top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 36. Non-top to top brokers, non top brokers, buy recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	1033	1.1081067	1.940081	1.7909477216
-2	1033	1.1284736	2.418265	1.7074978451
-1	1033	1.2434793	2.28833	3.4197436439
0	1033	1.6092481	3.874193	5.0543241612
1	1033	1.1293154	1.454436	2.8576286585
2	1033	0.98013912	0.9836642	-0.648935873
3	1033	1.0086959	1.224861	0.2281801655

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	T-stat
-3	1033	1.0013211	1.029322	0.0412510111
-2	1033	1.0438489	1.207448	1.1671869612
-1	1033	1.1088602	1.225083	2.8559708819
0	1033	1.3634805	1.547762	7.547916685
1	1033	1.0937057	0.9838874	3.0610524501
2	1033	1.0428337	0.9548711	1.4417534594
3	1033	0.99958274	1.014764	-0.013215751

Panel C: Cumulative size adjusted return

0	1033	0.0120756	0.0865934	4.4820230677

Table 36: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the non-top broker buy recommendations issued by the analysts who moved from non-top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 37. Non-top to top brokers, non top brokers, sell recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	585	0.89613144	0.7728645	-3.250563725
-2	585	1.0422497	1.863668	0.5483186456
-1	585	1.3112682	5.013748	1.5015859137
0	585	1.4229821	2.749811	3.720463748
1	585	1.0413178	1.33906	0.7463028241
2	585	1.0837892	2.031276	0.9976932631
3	585	1.0232575	1.678906	0.335053826

Panel B: Return reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	585	0.89613144	0.7728645	-3.250563725
-2	585	1.0422497	1.863668	0.5483186456
-1	585	1.3112682	5.013748	1.5015859137
0	585	1.4229821	2.749811	3.720463748
1	585	1.0413178	1.33906	0.7463028241
2	585	1.0837892	2.031276	0.9976932631
3	585	1.0232575	1.678906	0.335053826

Panel C: Cumulative size adjusted return

0	585	-0.0125121	0.0762023	-3.971367341

Table 37: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the non-top broker sell recommendations issued by the analysts who moved from non-top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 38. Non-top to Top brokers, top brokers, buy recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	862	0.95305096	0.9397403	-1.466805392
-2	862	0.99362624	0.8853612	-0.211362946
-1	862	1.1350976	1.759849	2.2538544211
0	862	1.4892187	1.883458	7.6260692038
1	862	1.1282724	0.9868989	3.8160511608
2	862	1.1404007	2.234995	1.844362783
3	862	1.0283121	0.8184733	1.0155965104

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	862	0.9485556	0.9551733	-1.581282866
-2	862	1.0162605	0.9341661	0.5110500387
-1	862	1.1173304	1.341073	2.5686904157
0	862	1.5574936	1.829936	8.9445319139
1	862	1.0699546	0.9590695	2.1415086386
2	862	0.98583328	0.9547411	-0.435649605
3	862	0.98323077	0.887835	-0.554542062

Panel C: Cumulative size adjusted return

0	862	0.0205353	0.0911004	6.6181163938

Table 38: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the top broker buy recommendations issued by the analysts who moved from non top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 39. Non-top to Top brokers, top brokers, sell recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	954	0.92181313	0.6472661	-3.730999177
-2	954	0.94965458	0.8564257	-1.81570155
-1	954	1.1007077	1.404327	2.2149739303
0	954	1.4666954	2.729717	5.2806828256
1	954	1.0436075	0.9141954	1.4733174922
2	954	0.96335147	0.8104384	-1.396724452
3	954	0.96127603	0.7831584	-1.527230019

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	954	1.0085062	0.985609	0.2665662218
-2	954	0.99421201	0.9935806	-0.179928043
-1	954	1.10442	1.08887	2.9619781039
0	954	1.3444447	1.428303	7.4485775817
1	954	0.93088536	0.8374118	-2.549207346
2	954	0.97425117	0.8938185	-0.889779402
3	954	0.97778509	0.9110112	-0.753173497

Panel C: Cumulative size adjusted return

0	954	-0.0101587	0.0732427	-4.283985349

Table 39: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the top broker sell recommendations issued by the analysts who moved from non top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 40. Top to non-top brokers, non-top brokers, buy recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	726	1.0200838	1.25347	0.431718097
-2	726	1.020333	1.073763	0.5102245322
-1	726	1.0728199	1.081649	1.8139780828
0	726	1.2536477	0.9544045	7.1608860119
1	726	1.0614727	1.171035	1.414427604
2	726	0.95046516	1.013771	-1.31655562
3	726	0.90786861	0.670498	-3.702358311

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	726	1.0530244	0.9934454	1.4381363718
-2	726	1.0303045	0.9776399	0.8352115958
-1	726	1.1672448	1.084616	4.1547502927
0	726	1.308758	1.27372	6.5314944368
1	726	0.97124662	0.8806271	-0.879761937
2	726	0.93427689	0.7985149	-2.217703041
3	726	0.94711753	0.8893909	-1.602091663

Panel C: Cumulative size adjusted return

0	726	0.0120286	0.0665732	4.8683742936

Table 40: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the non-top broker buy recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 41. Top to non-top brokers, non-top brokers, sell recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	633	1.0057917	1.737845	0.0838488044
-2	633	0.9771611	0.7926358	-0.724942155
-1	633	1.1508539	1.583984	2.3961147191
0	633	1.5119732	2.186341	5.8915719213
1	633	1.1498639	2.021585	1.8651204282
2	633	1.0039038	0.8934319	0.1099329696
3	633	0.92348372	0.6574798	-2.92801494

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	633	0.94142086	0.836083	-1.762769199
-2	633	1.0152595	0.9285109	0.4134806137
-1	633	1.1164012	1.539059	1.9028477615
0	633	1.4308351	2.02606	5.3500843652
1	633	1.0285846	1.047611	0.6864895401
2	633	0.94419437	0.837539	-1.676389111
3	633	0.85410412	0.7767923	-4.725415167

Panel C: Cumulative size adjusted return

0	633	-0.0066033	0.0840033	-1.977727882

Table 41: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the non-top broker sell recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 42. Top to non-top brokers, top brokers, buy recommendations

Panel A: Volume reaction

day	N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
-3	816	1.0246632	1.266669	0.5562004837
-2	816	1.3596049	5.120454	2.0061444988
-1	816	1.1461227	1.584119	2.6349656909
0	816	1.5681059	2.831032	5.732309101
1	816	1.145425	1.235739	3.3616879591
2	816	1.0585689	1.038806	1.6105629251
3	816	1.1195186	2.190121	1.5588792177

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	816	0.95630266	0.9725156	-1.283522552
-2	816	1.1322075	1.715142	2.2019177397
-1	816	1.124468	1.317423	2.6988425544
0	816	1.41193	1.546624	7.6082321562
1	816	1.017976	0.9968525	0.5151186055
2	816	0.98533572	1.000401	-0.418727714
3	816	0.99752564	1.081797	-0.065337452

Panel C: Cumulative size adjusted return

0	816	0.0160101	0.0731423	6.2527420266

Table 42: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the top broker buy recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

Table 43. Top to non-top brokers, top brokers, sell recommendations

Panel A: Volume reaction

N(volRatio)	mean(volRatio)	sd(volRatio)	T-stat
675	0.92983458	1.191312	-1.530204586
675	0.99691497	1.409899	-0.056849058
675	1.1498801	2.03604	1.9125357182
675	1.5198078	3.02415	4.4657185644
675	1.0947445	1.327642	1.8540648127
675	1.1269237	2.84268	1.1600230966
675	0.99641951	0.96561	-0.096336884

Panel B: Return reaction

day	N(retRatio)	mean(retRatio)	sd(retRatio)	
-3	675	0.95648624	1.039898	-1.087145708
-2	675	1.0704445	1.869893	0.978773543
-1	675	1.1024133	1.408974	1.8884490307
0	675	1.3432384	1.933111	4.6130797552
1	675	0.89546634	0.8655088	-3.137881618
2	675	0.94982043	0.9318777	-1.399007049
3	675	0.96581504	0.905811	-0.980504005

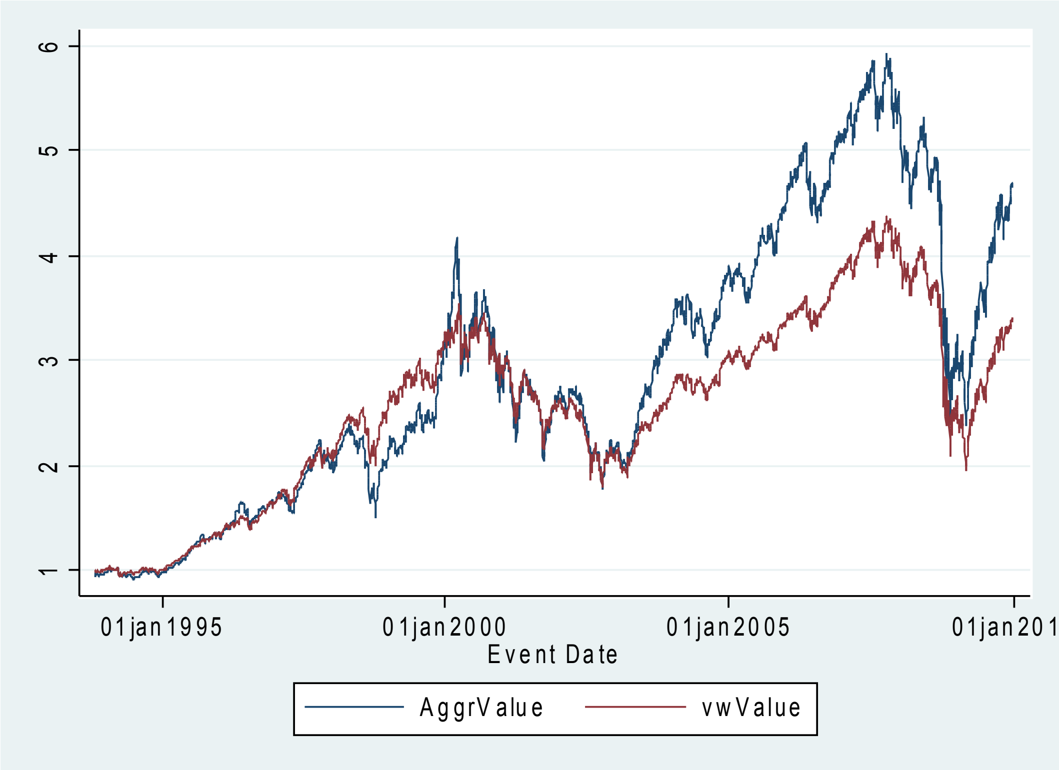
Panel C: Cumulative size adjusted return

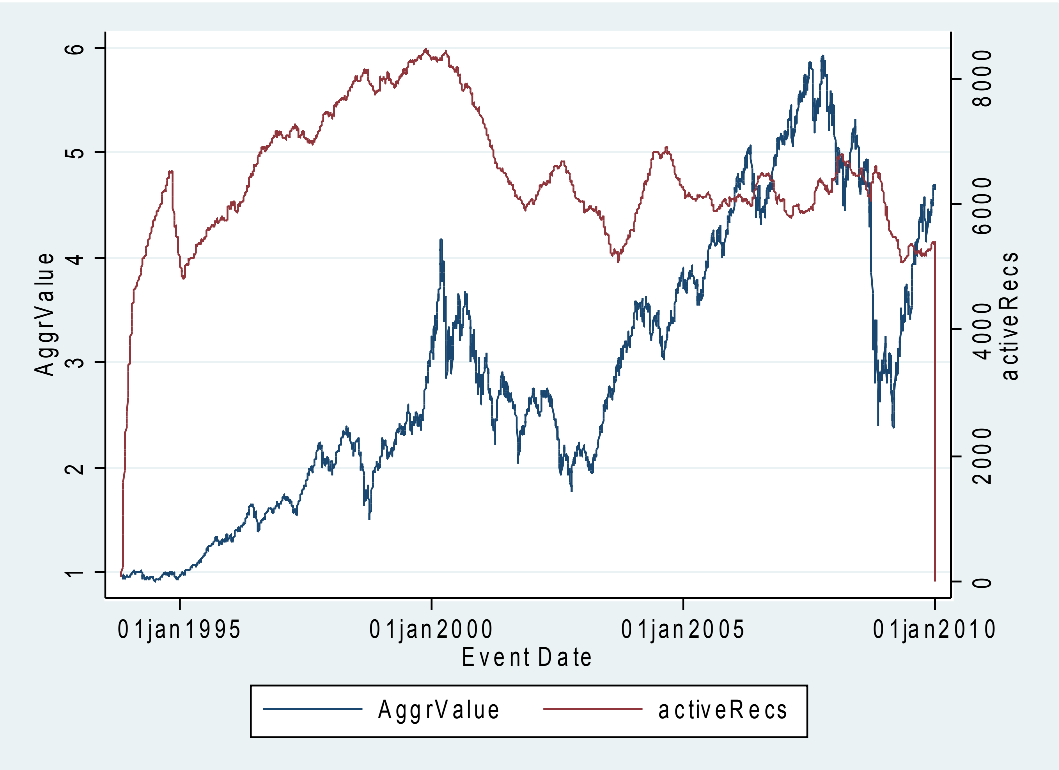
0	675	-0.0127686	0.0776455	-4.27246858

Table 43: The table presents the volume reaction, the return reaction and the cumulative size-adjusted return of the top broker sell recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and cumulative size-adjusted return at equation [11]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns and size deciles returns from CRSP.

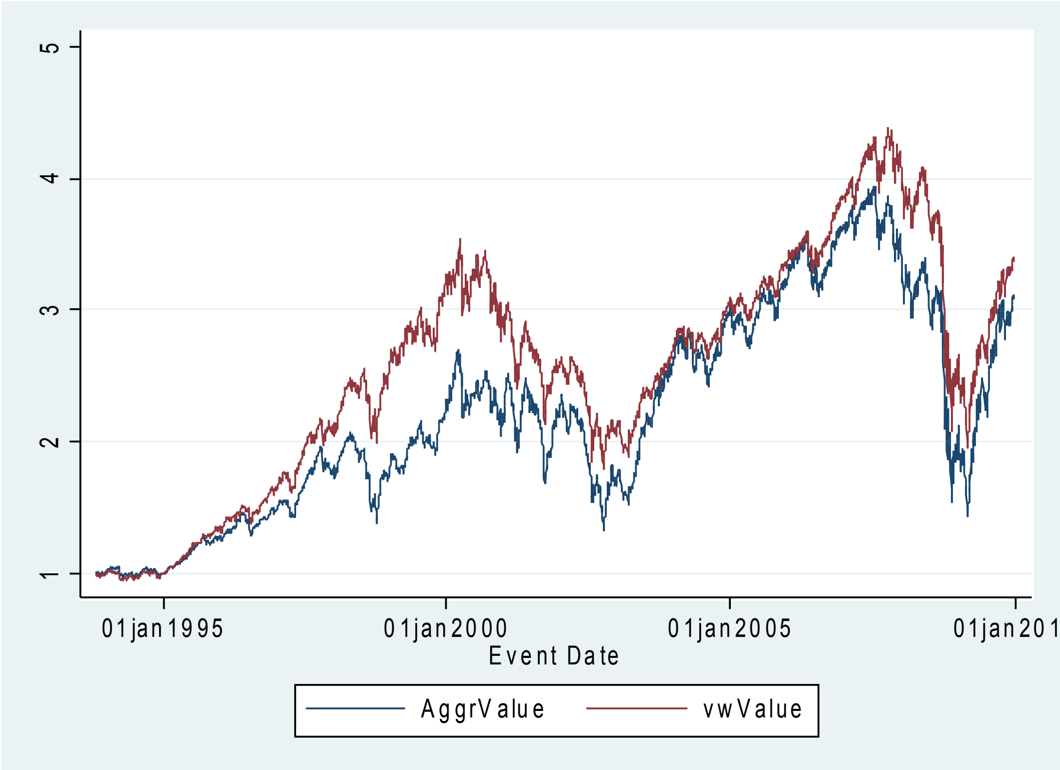
Figure 1. Recommendations' value and active recommendations for the non-top and top brokers

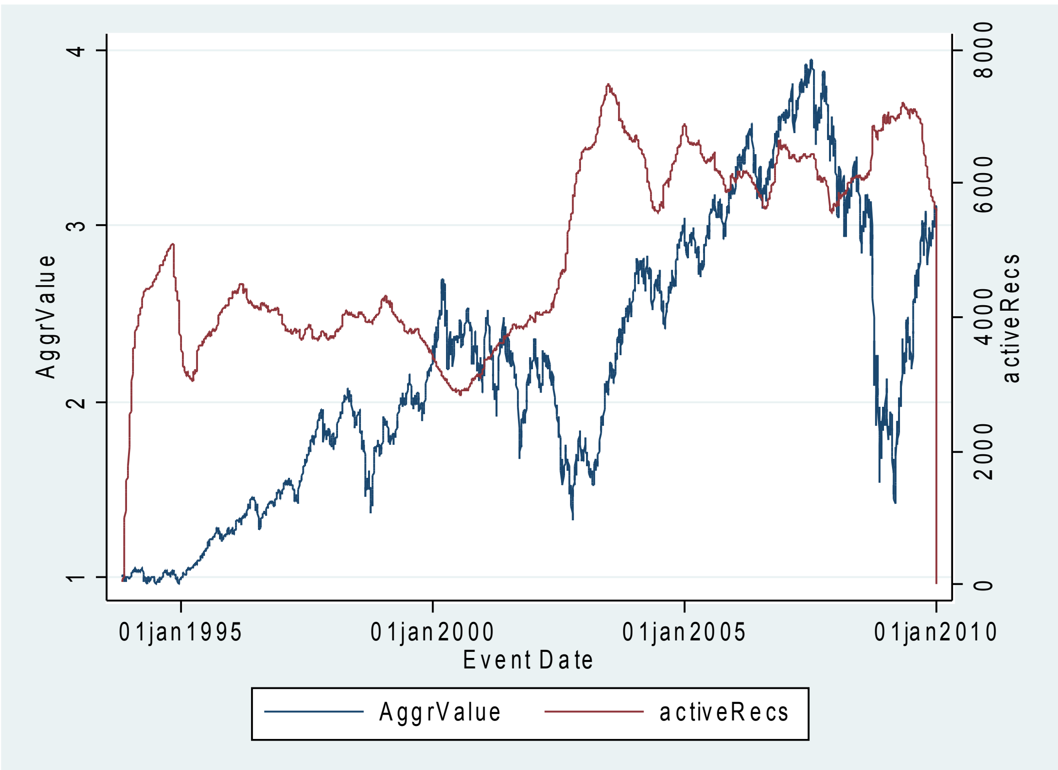
Panel A: Non-top brokers, buy recommendations



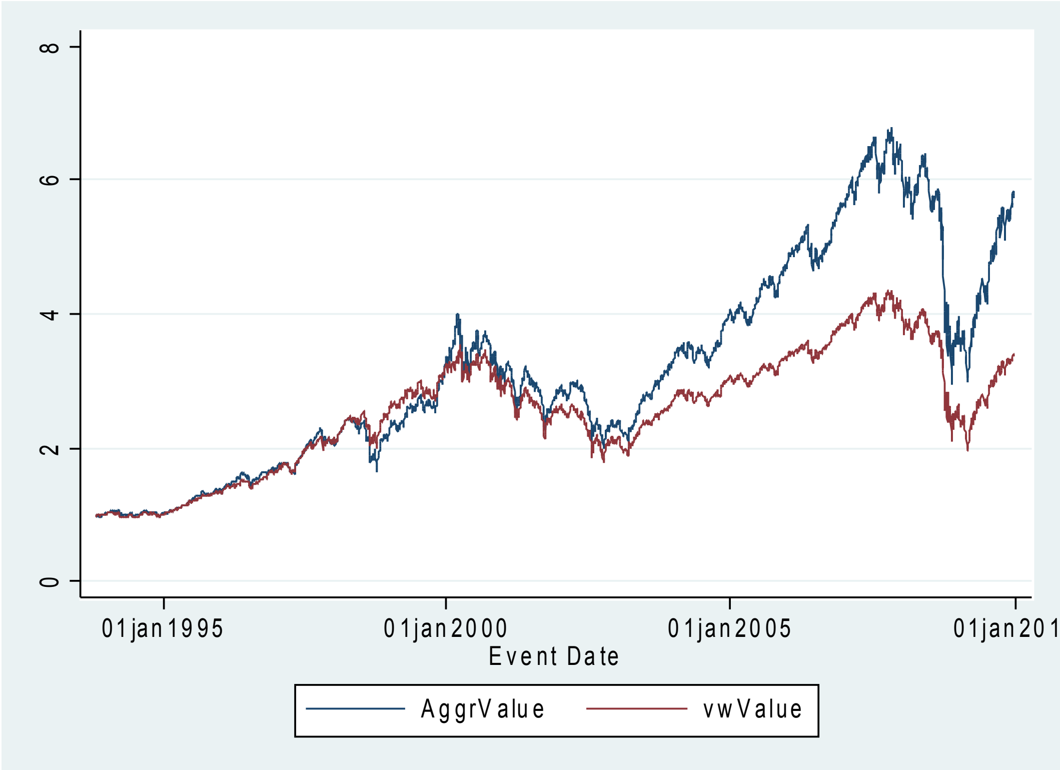


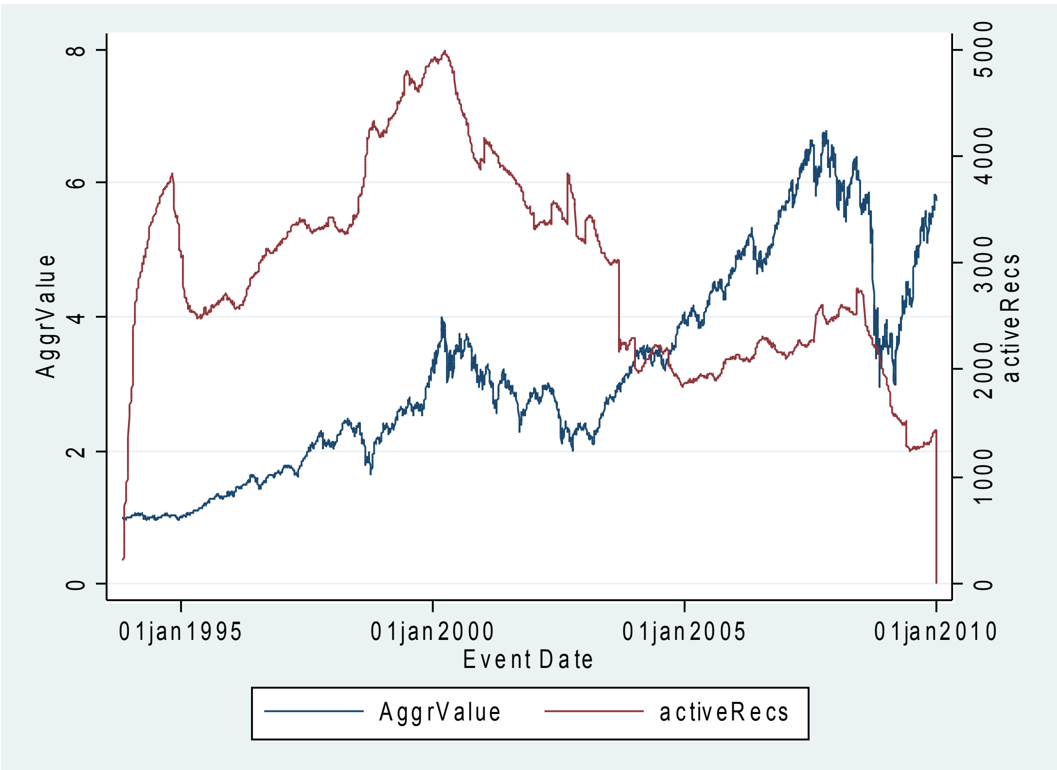
Panel B: Non-top brokers, sell recommendations



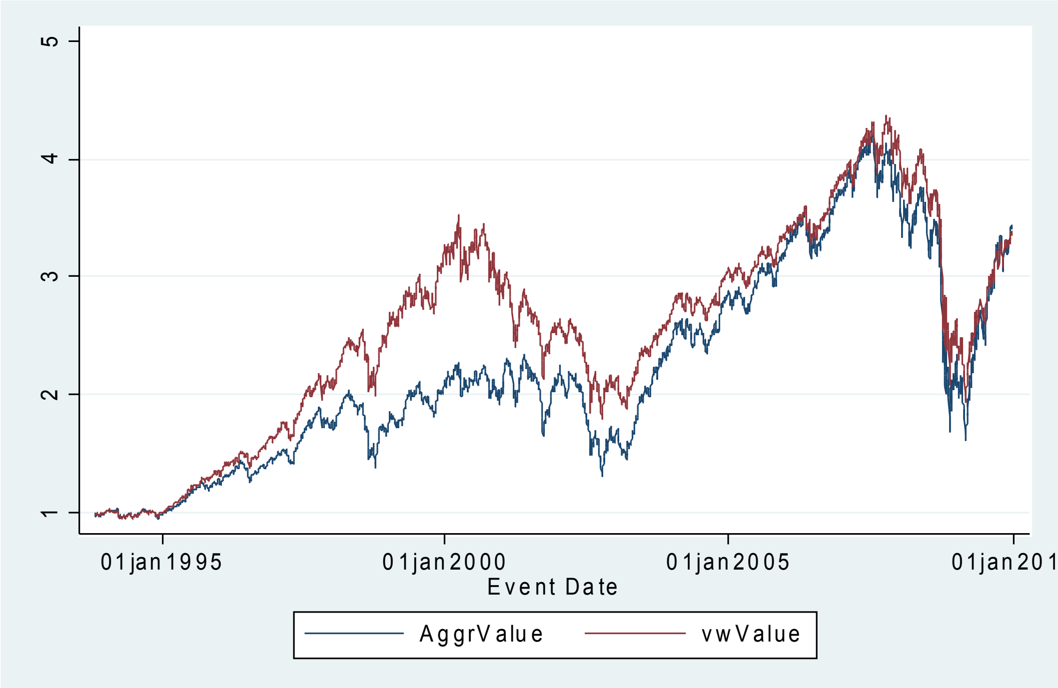


Panel C: Top brokers, buy recommendations





Panel D: Top brokers, sell recommendations



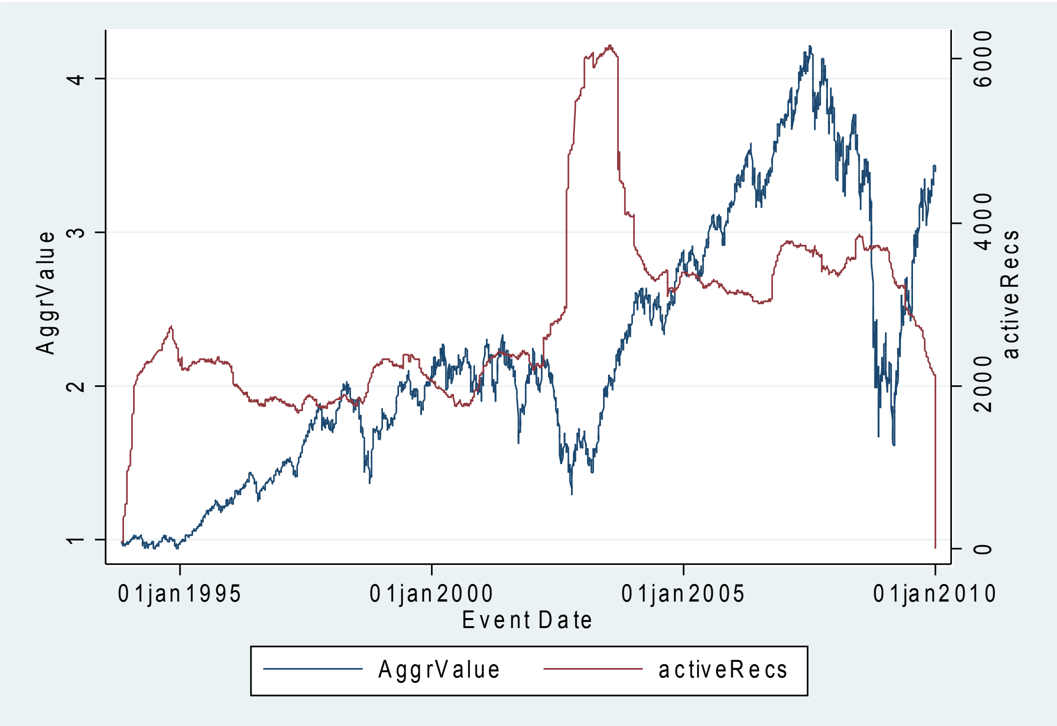
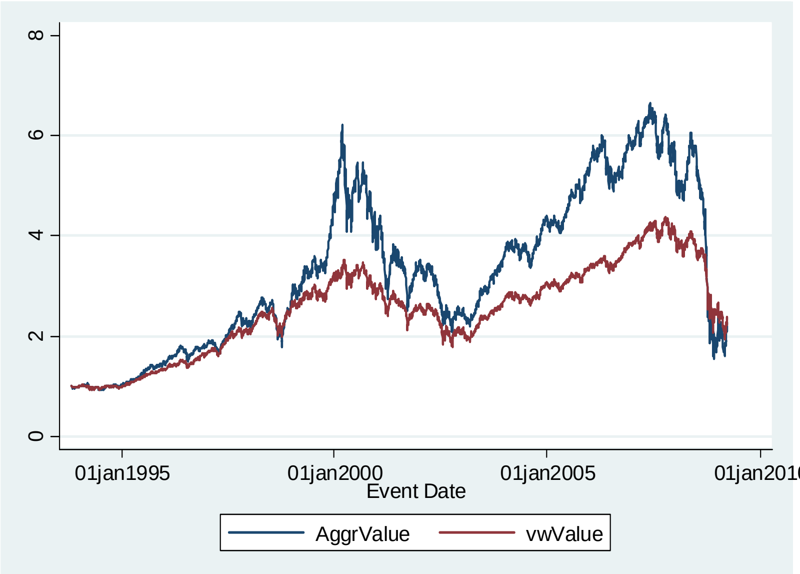


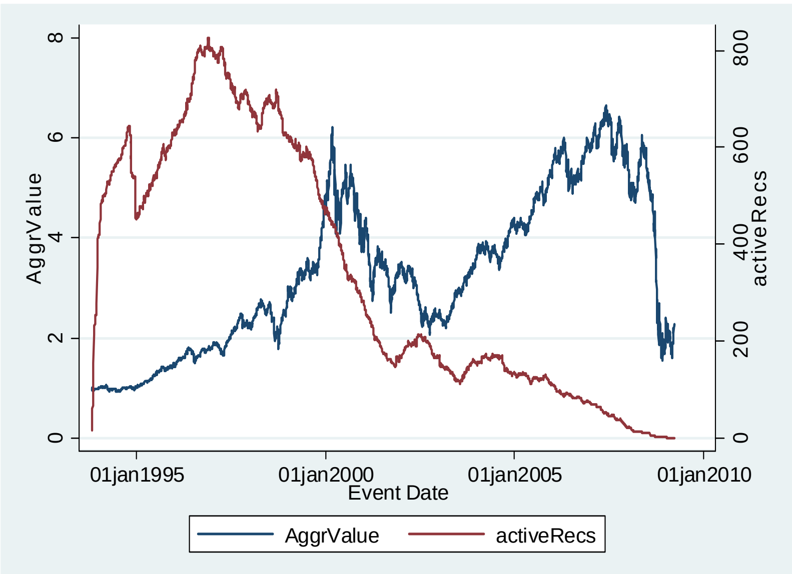
Figure 1: The figure presents the daily value of buy-and-hold strategy and active recommendations for portfolios of buy and hold/sell recommendations of top and non-top brokers (see Table [8] for the top brokers). After having calculating the returns of each buy/sell portfolio, we invest one $1.00 at the portfolio and we track its value. The recommendations active at each portfolio are also presented. VwValue is the value of $1.00 invested at the CRSP value weighted dividends-included index. The data is from the 1993-2009 period. Recommendations come from IBES and daily stock returns from CRSP.

Figure 2. Recommendations' value and active recommendations for analysts moving from non-top to top brokers and analysts moving from top to non-top brokers for the period before Global Settlement

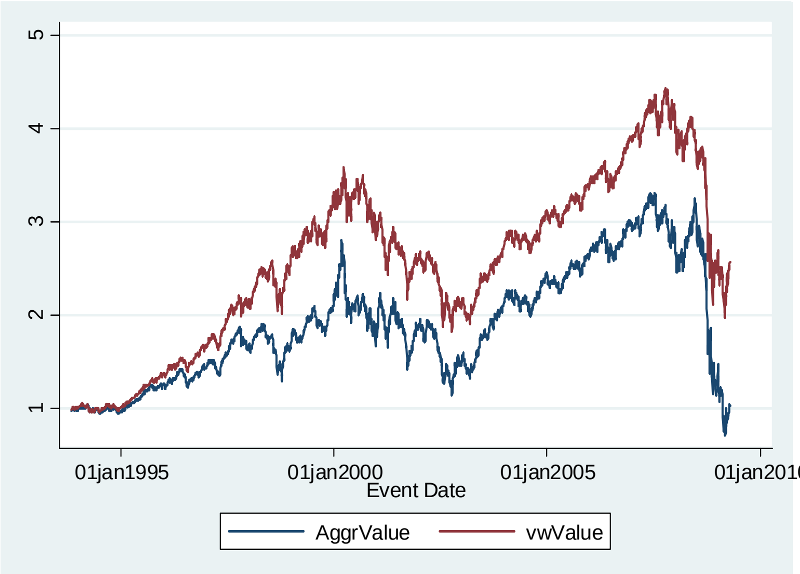
Panel A: Non-top to top

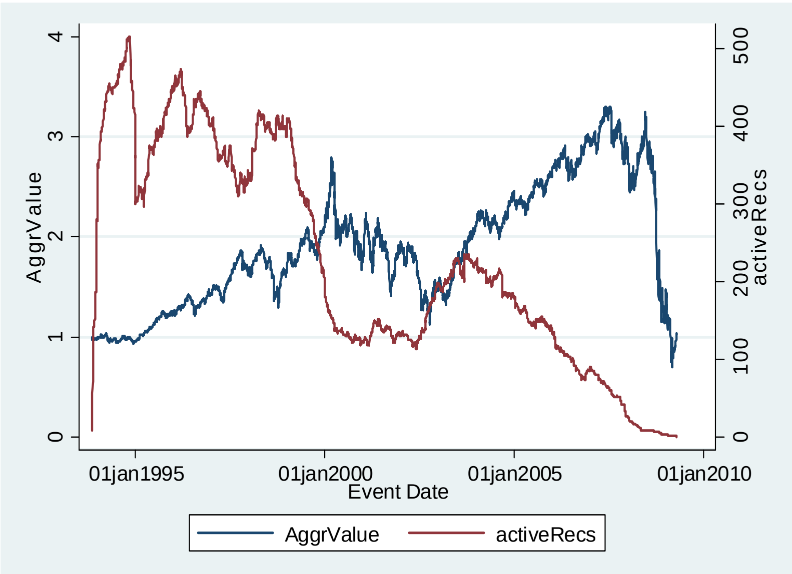
i) Non-top to top: Non top buy



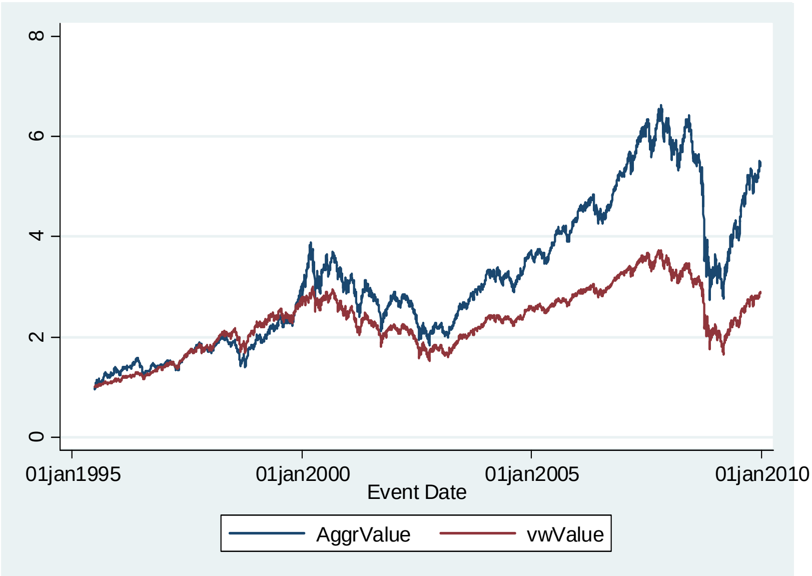


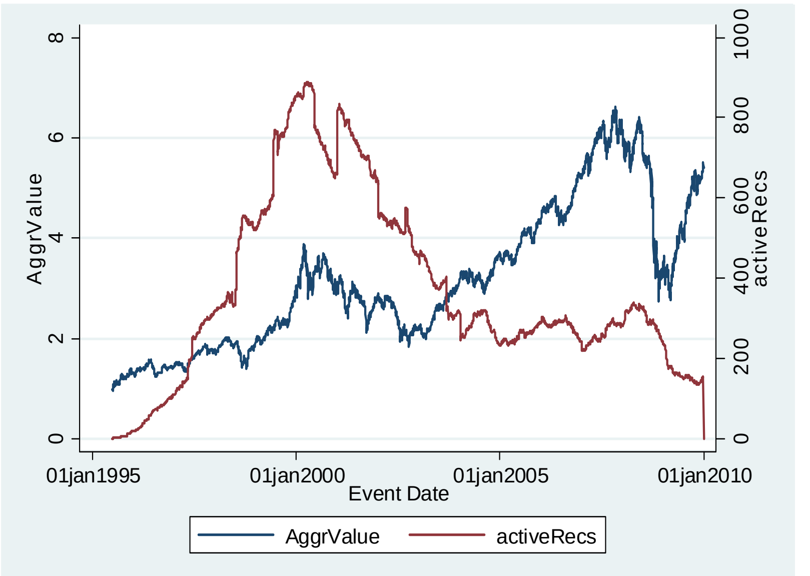
ii) Non-top to top: Non top sell



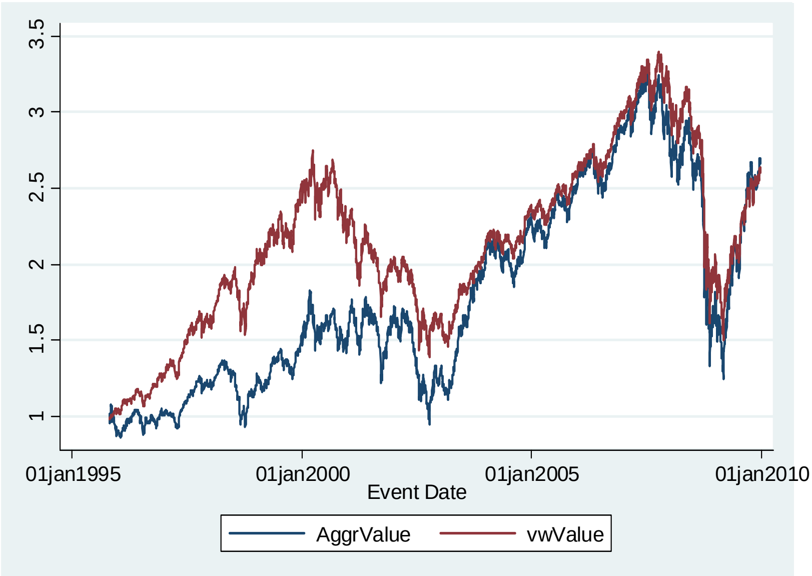


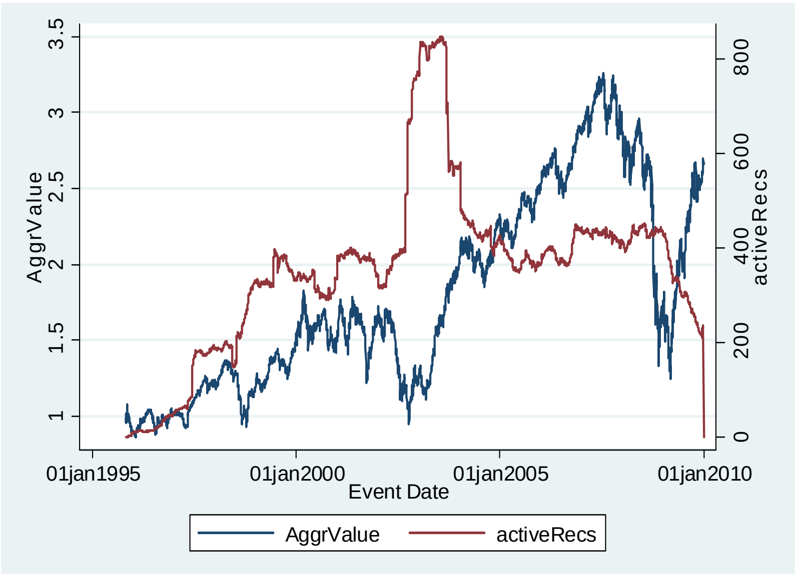
iii) Non-top to top: top buy





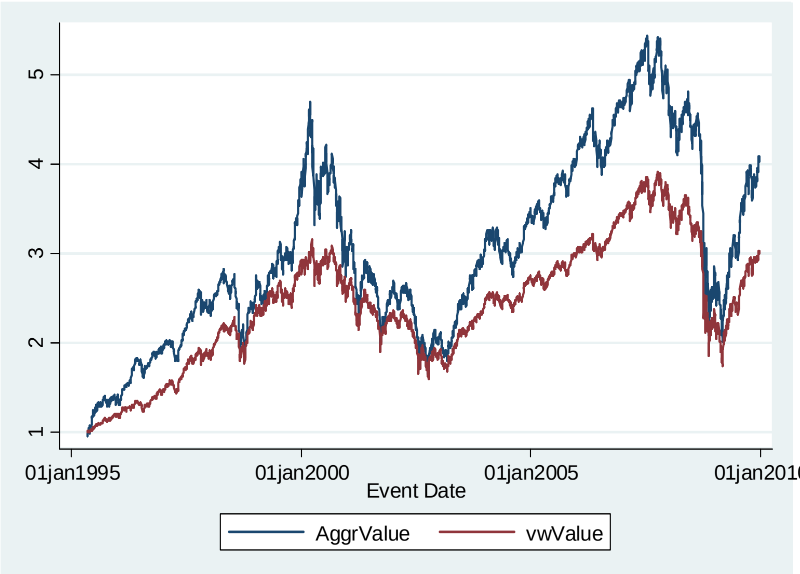
iv) Non-top to top: top sell

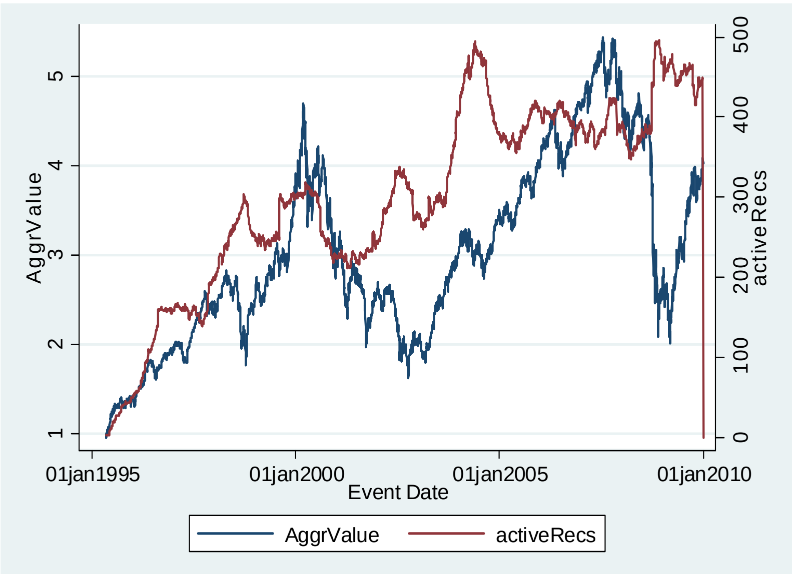




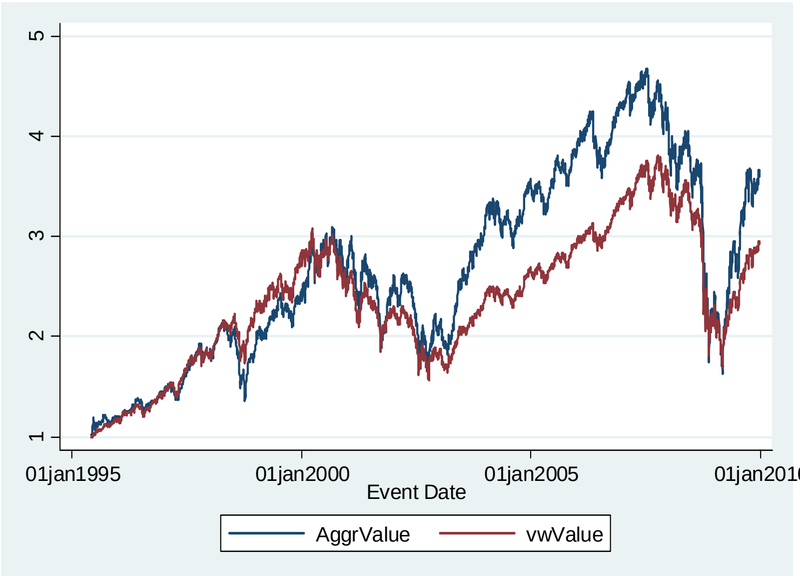
Panel B: Top to non-top

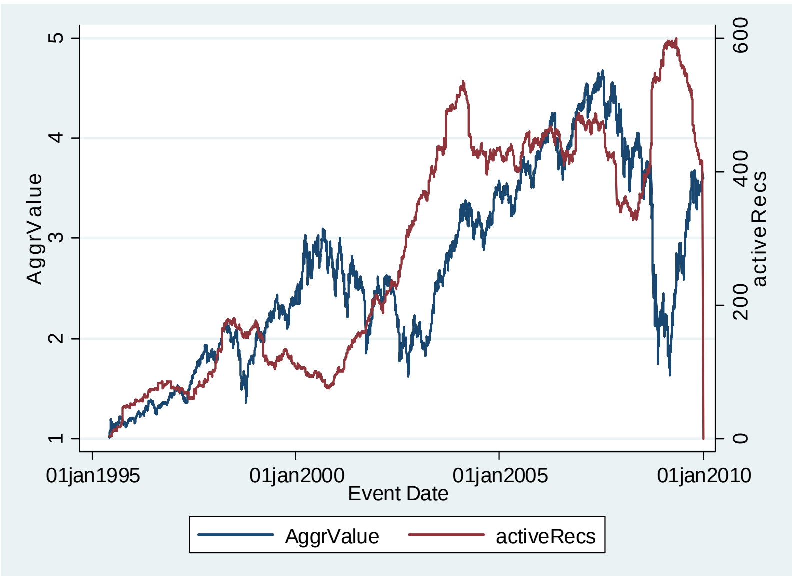
i) Top to non-top: non-top buy



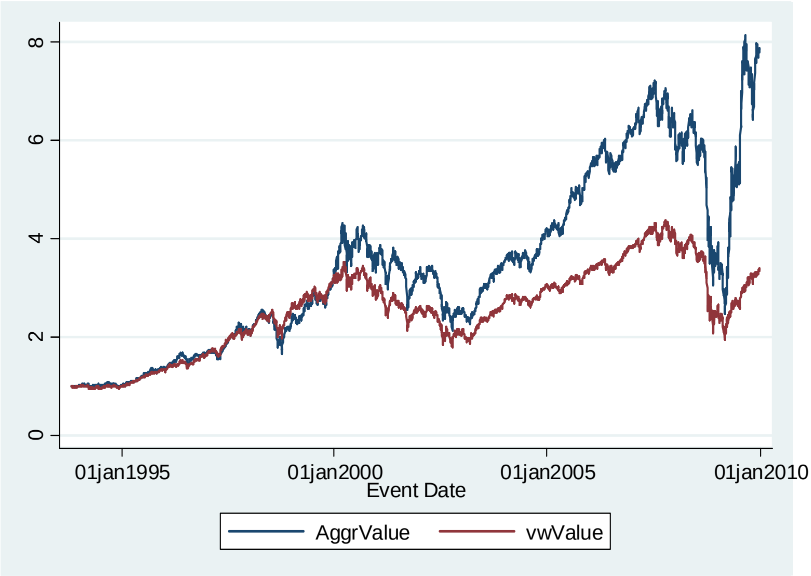


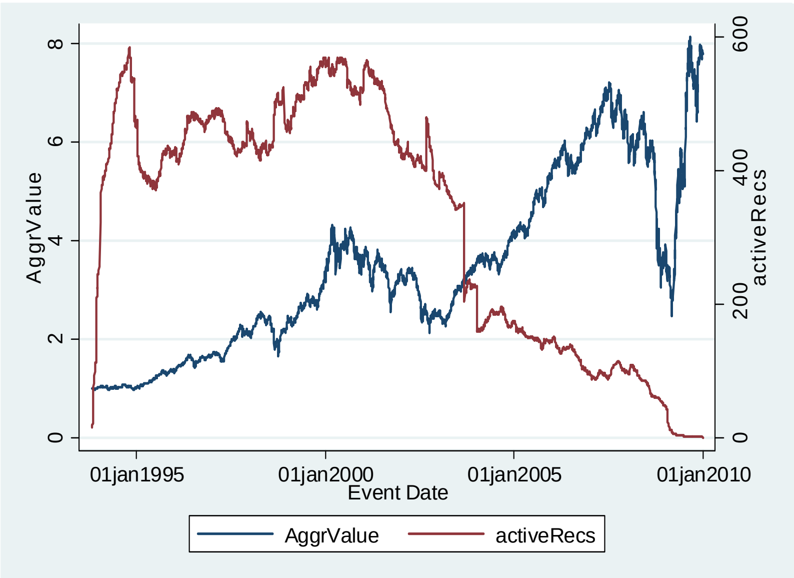
ii) Top to non-top: non-top sell



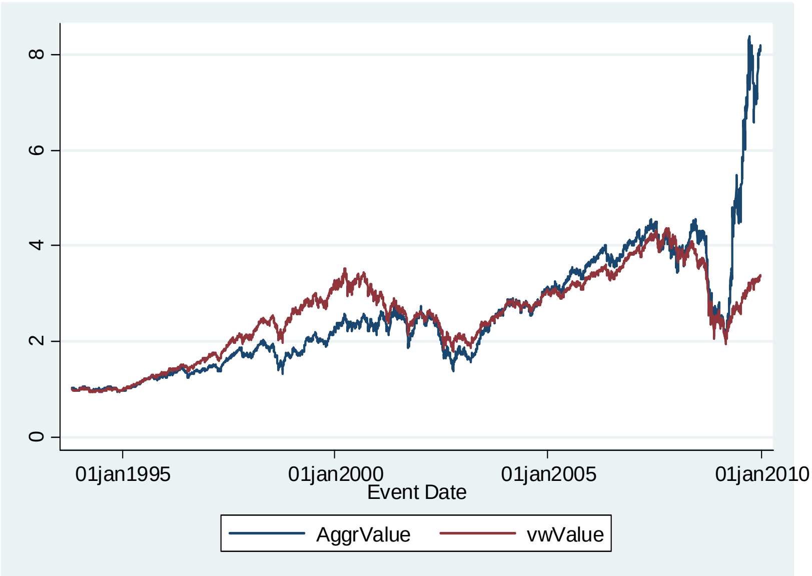


iii) Top to non-top: top buy





iv) Top to non-top: top sell



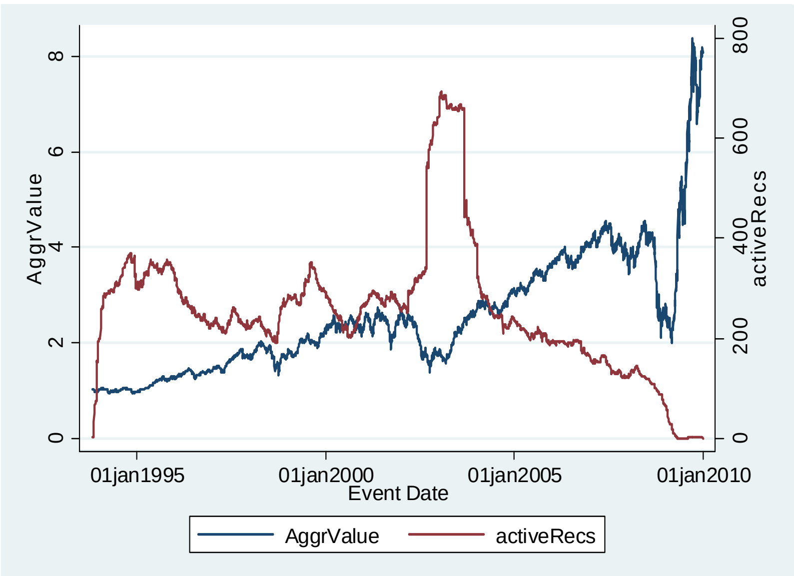
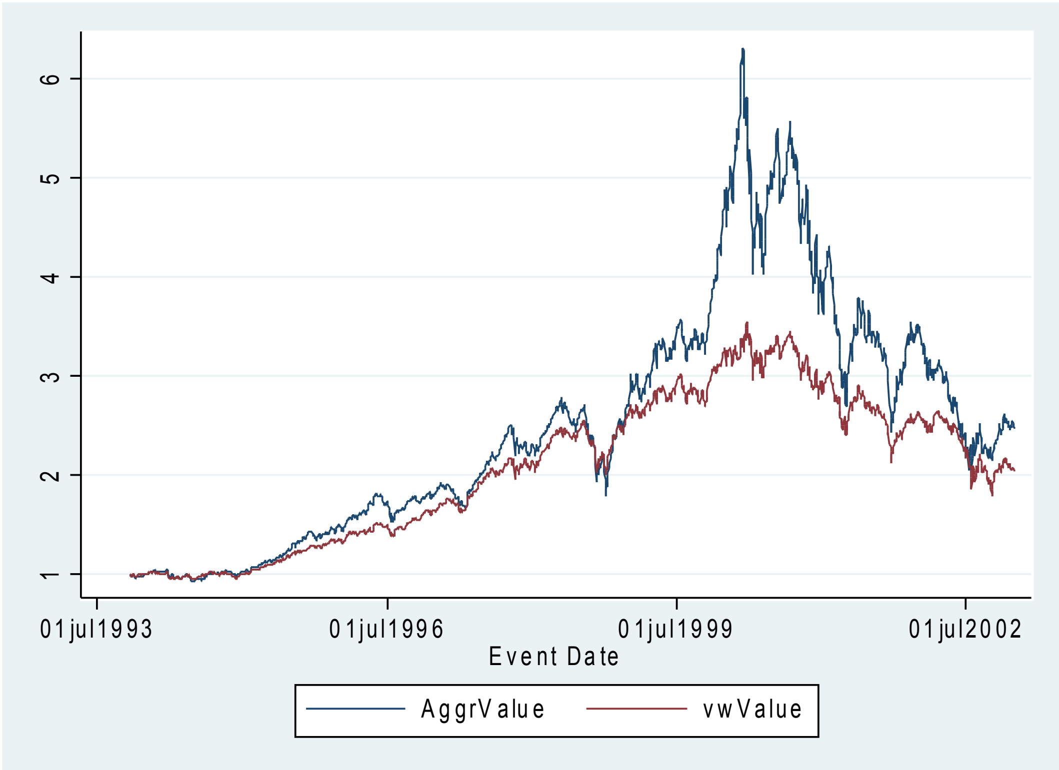


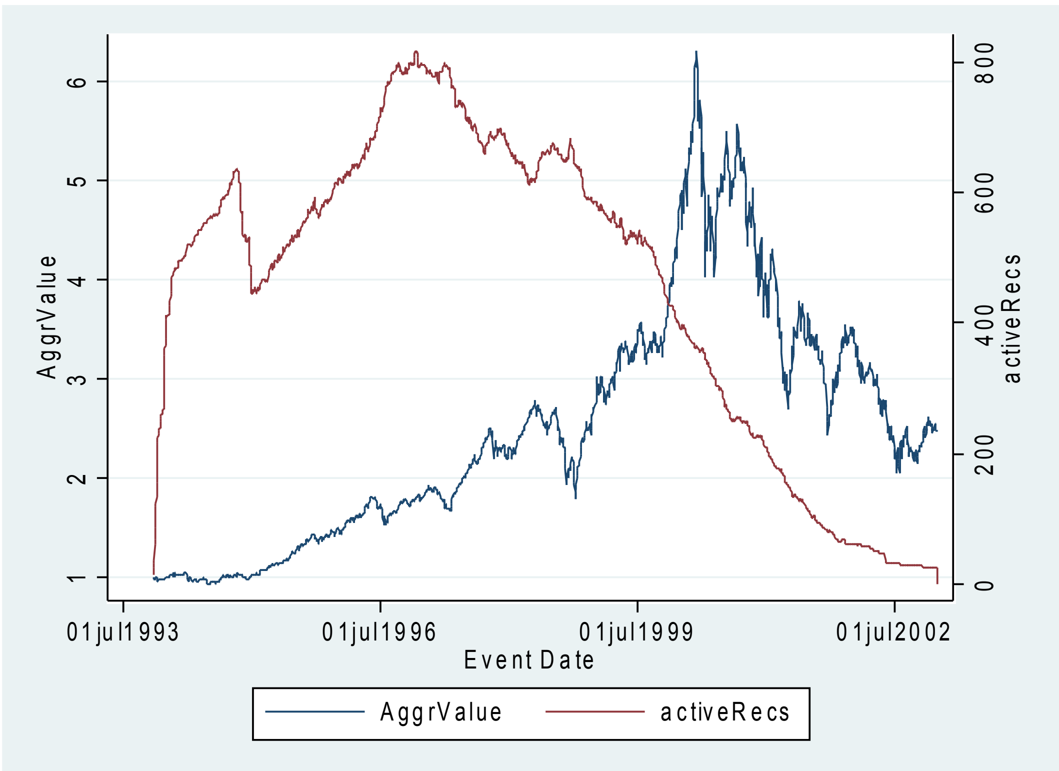
Figure 2: The figure presents the daily value of buy and hold strategy and active recommendations for portfolios of buy and hold/sell recommendations of analysts moving from a non-top to a top broker and from a top to a non-top broker fro the period after Global Settlement (see table [8] for the top brokers). After having calculating the returns of each buy/sell portfolio, we invest one $1.00 at the portfolio and we track its value. The recommendations active at each portfolio are also presented. VwValue is the value of $1.00 invested at the CRSP value weighted dividends-included index. The data are from 1994-2009 period. Recommendations come from IBES and daily stock returns from CRSP.

Figure 3. Recommendations' value and active recommendations for analysts moving from non-top to top brokers and analysts moving from top to non-top brokers for the period before Global Settlement

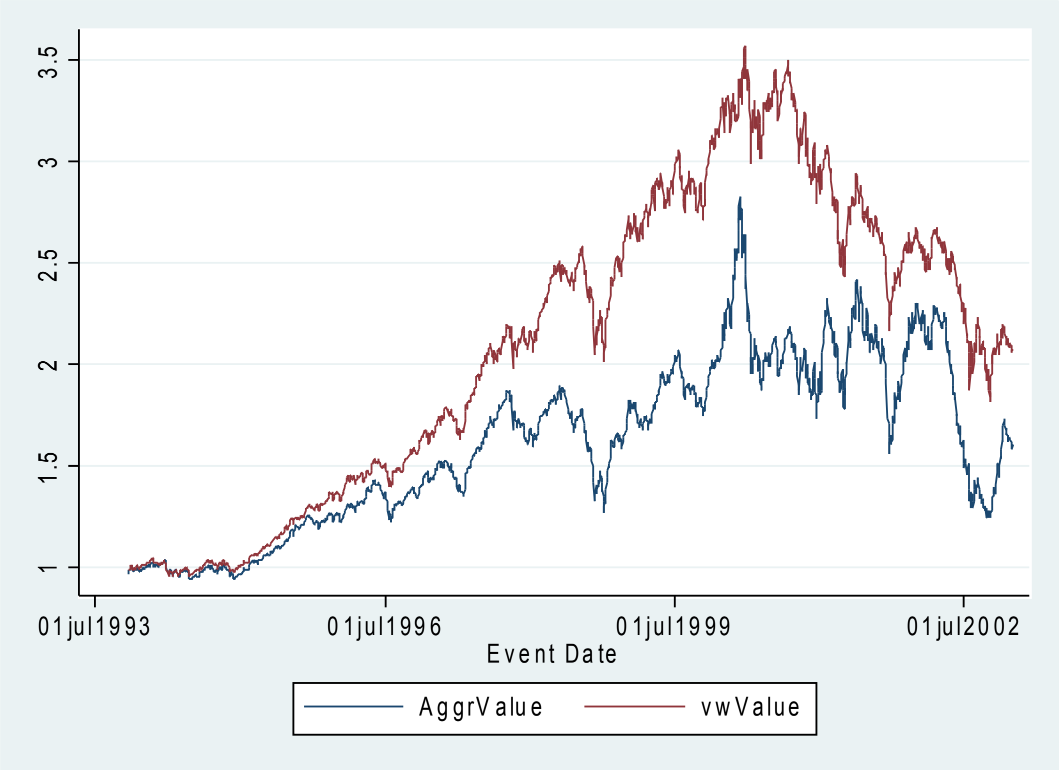
Panel A: Non-top to Top

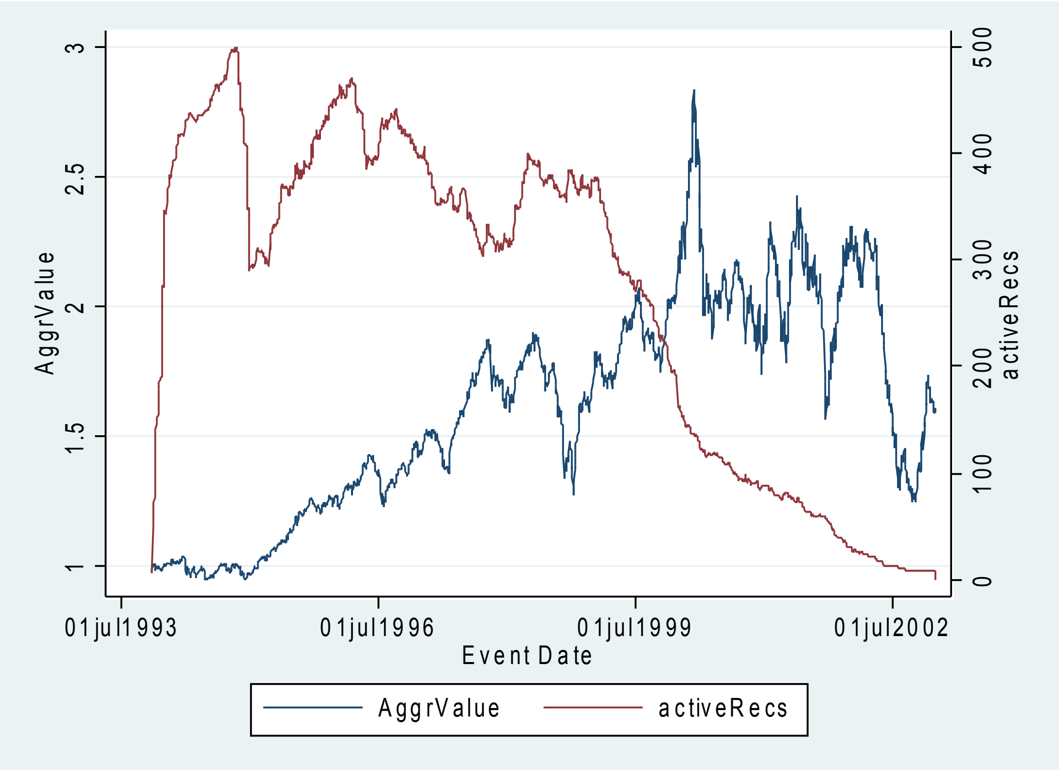
i) Non-top to top: non-top buy



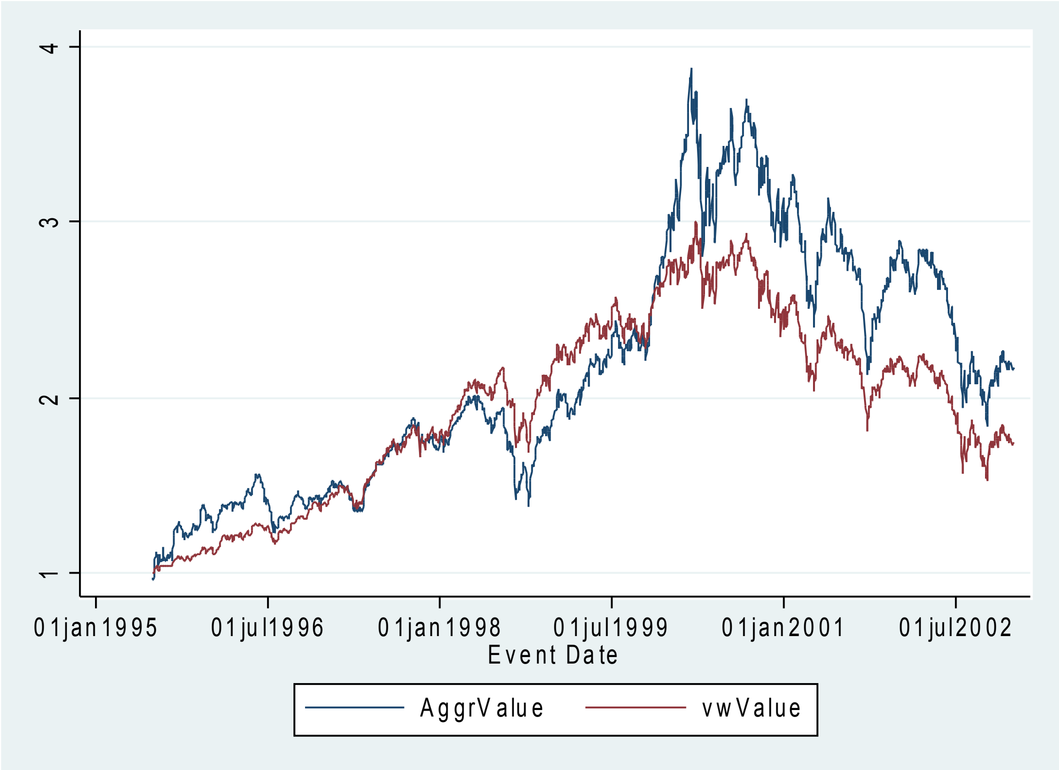


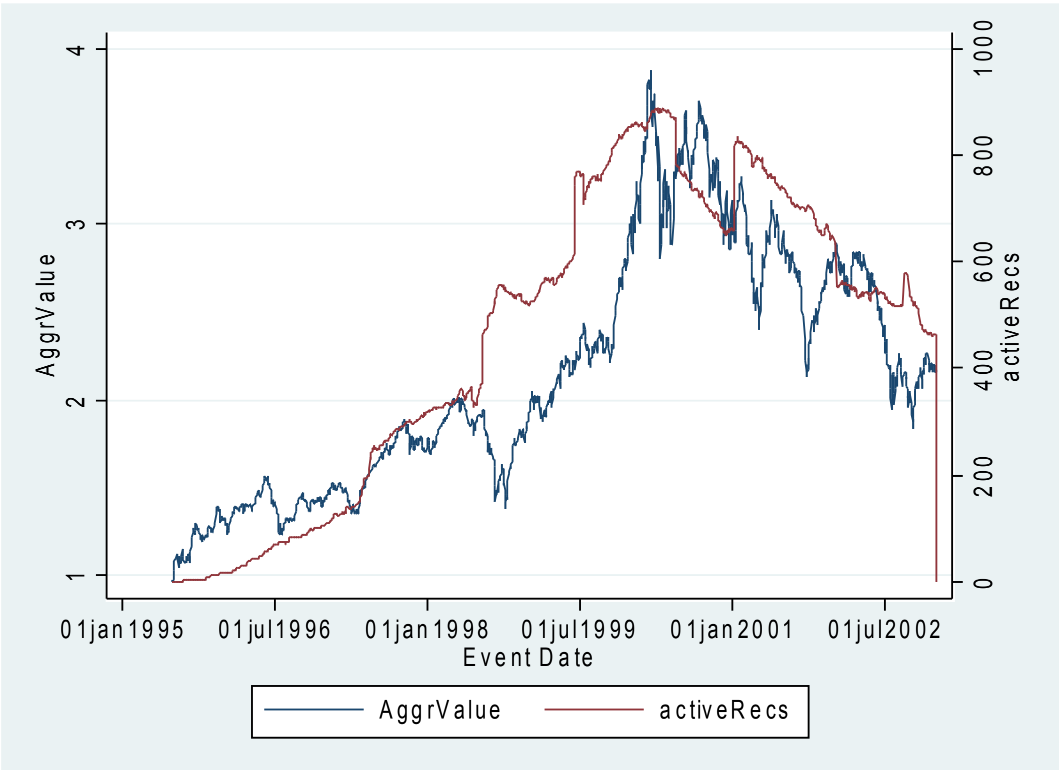
ii) Not-top to top: non-top sell



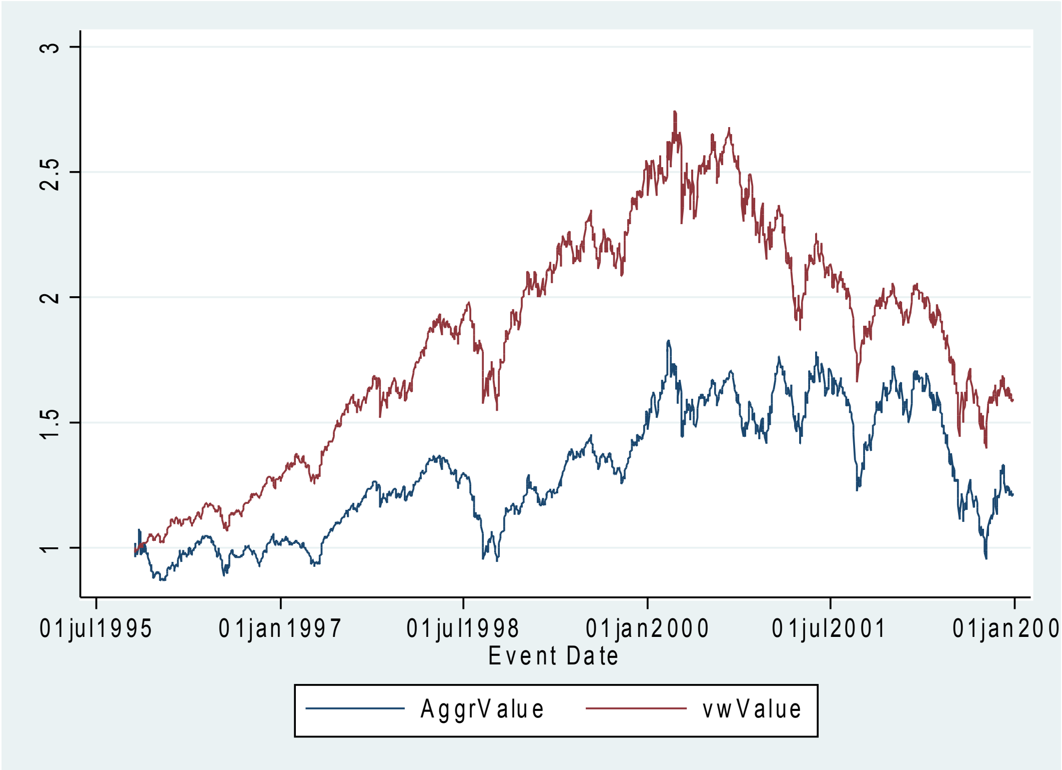


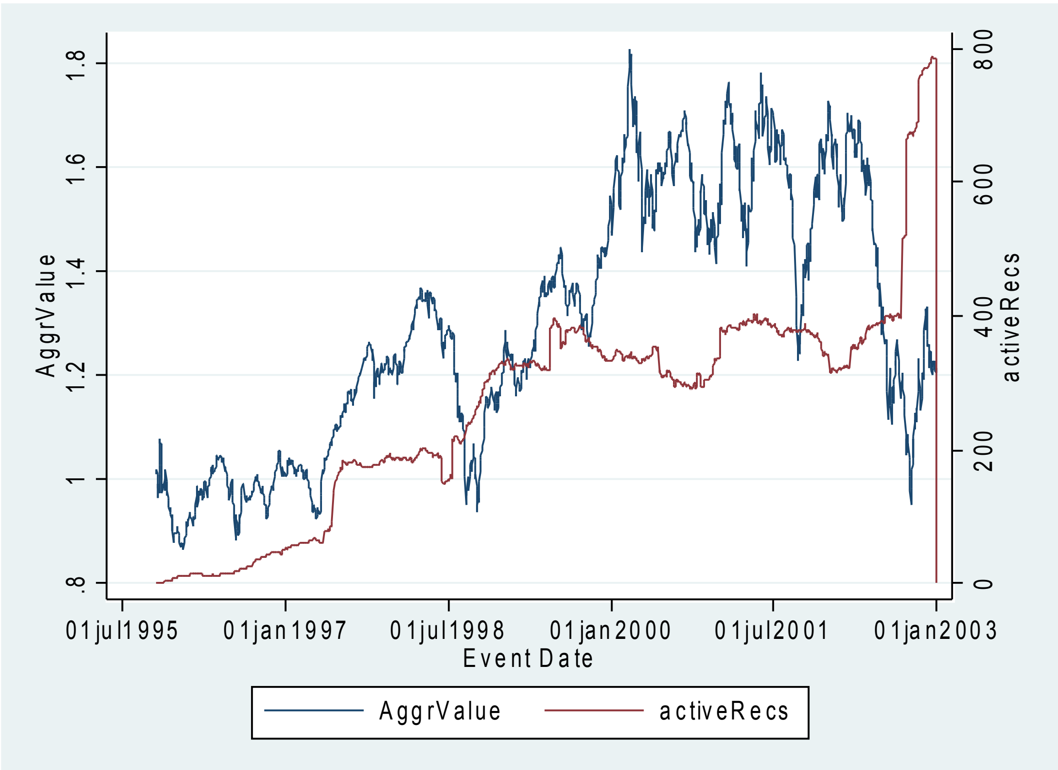
iii) Not-top to top: top buy





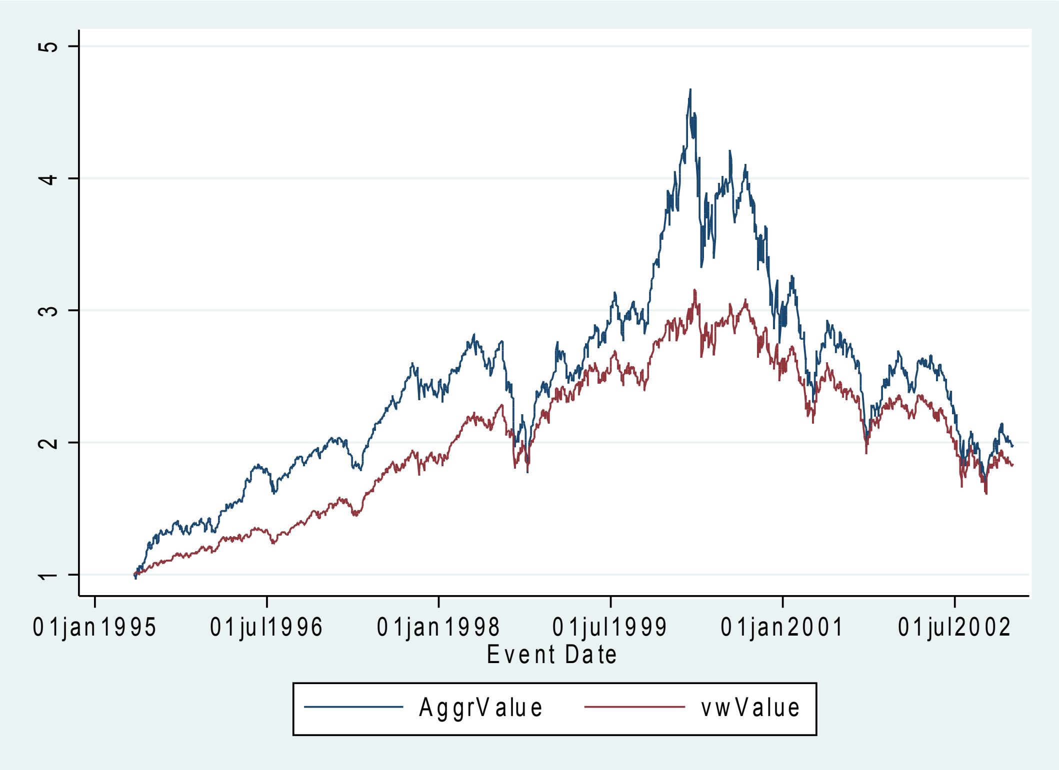
iv) Not-top to top: non-top sell

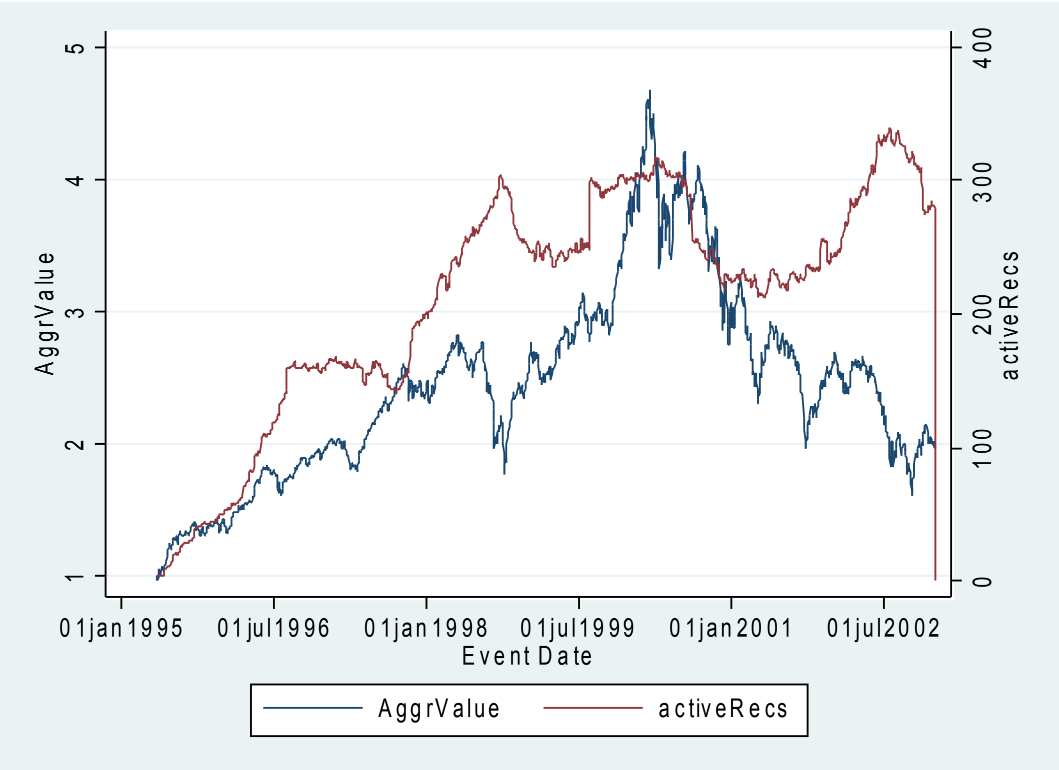




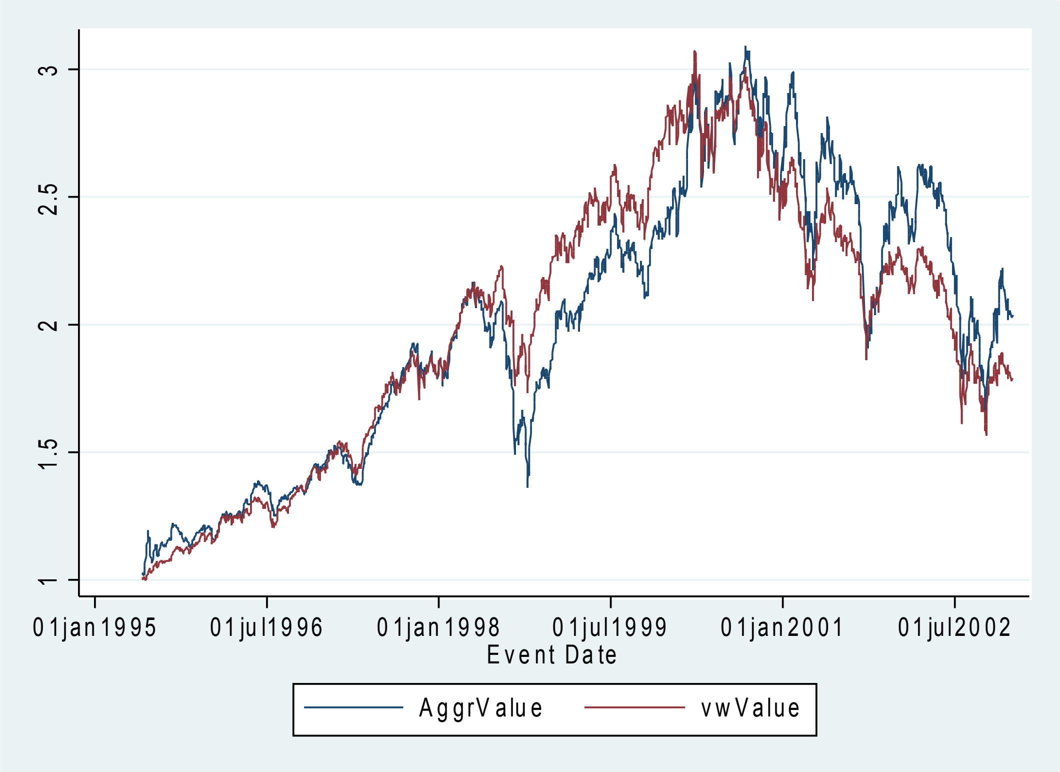
Panel B: Top to non-top

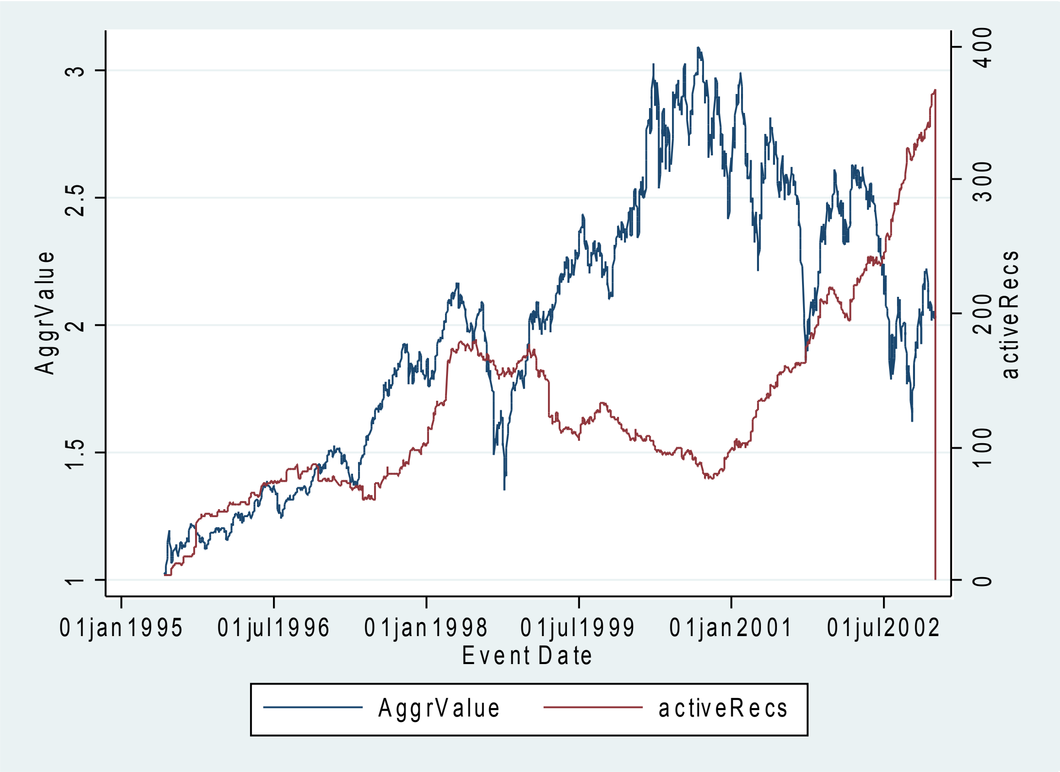
i) Top to non-top: non-top buy



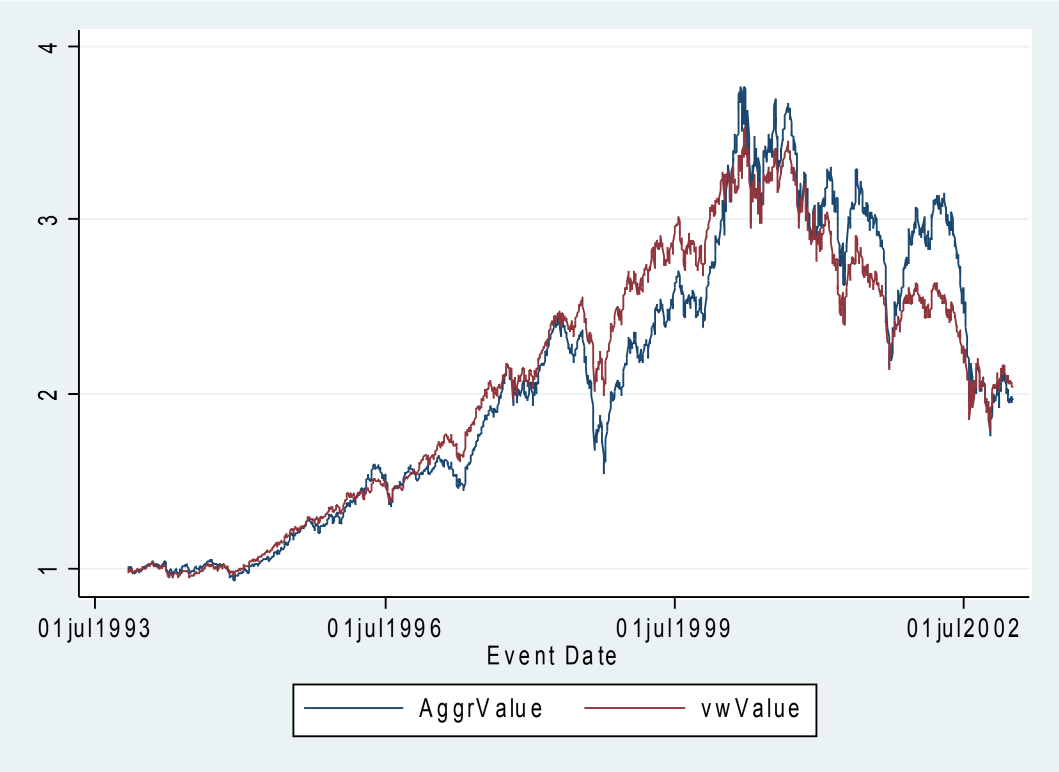


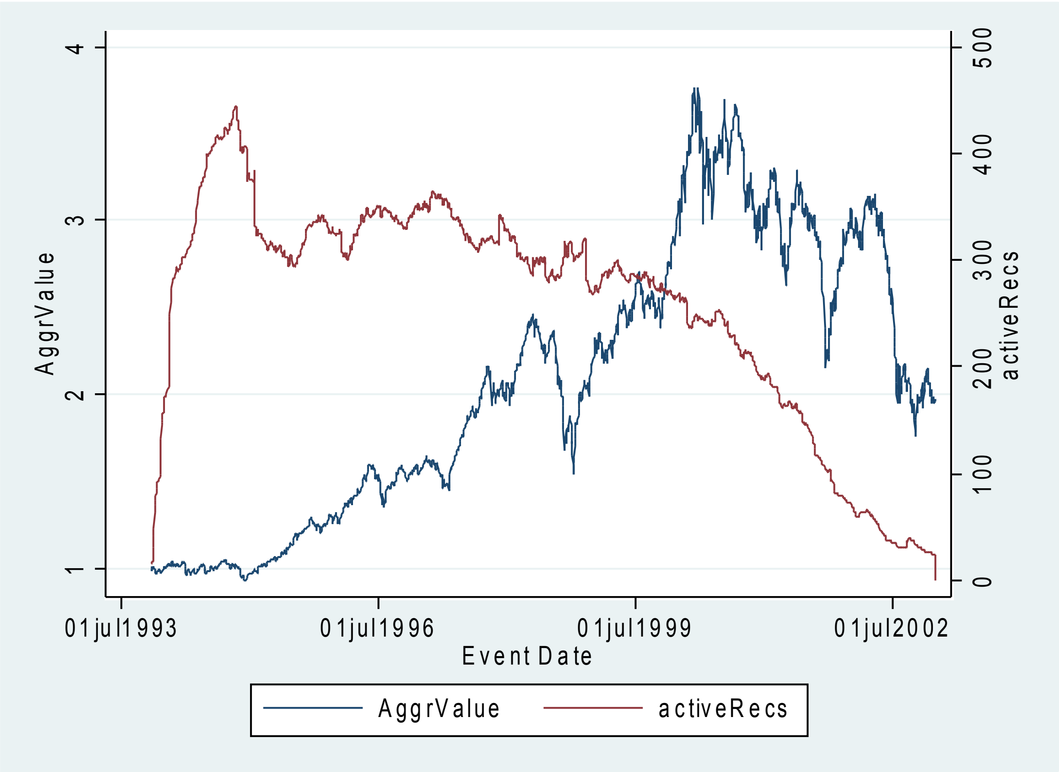
ii) Top to non-top: non-top sell



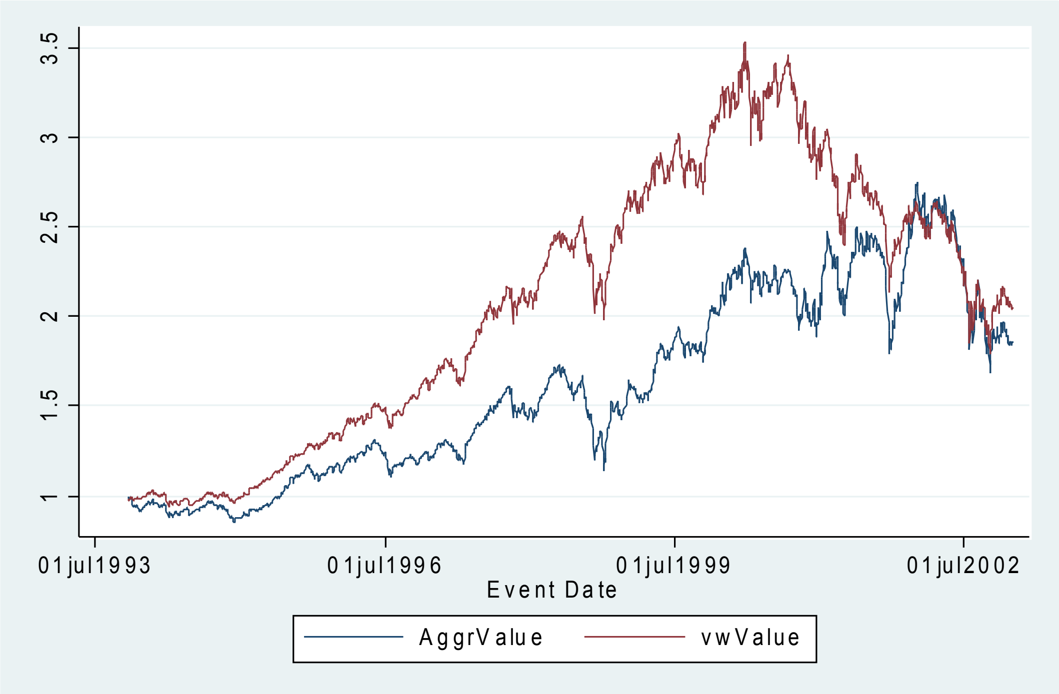


iii) Top to non-top: top buy





iv) Top to non-top: top sell



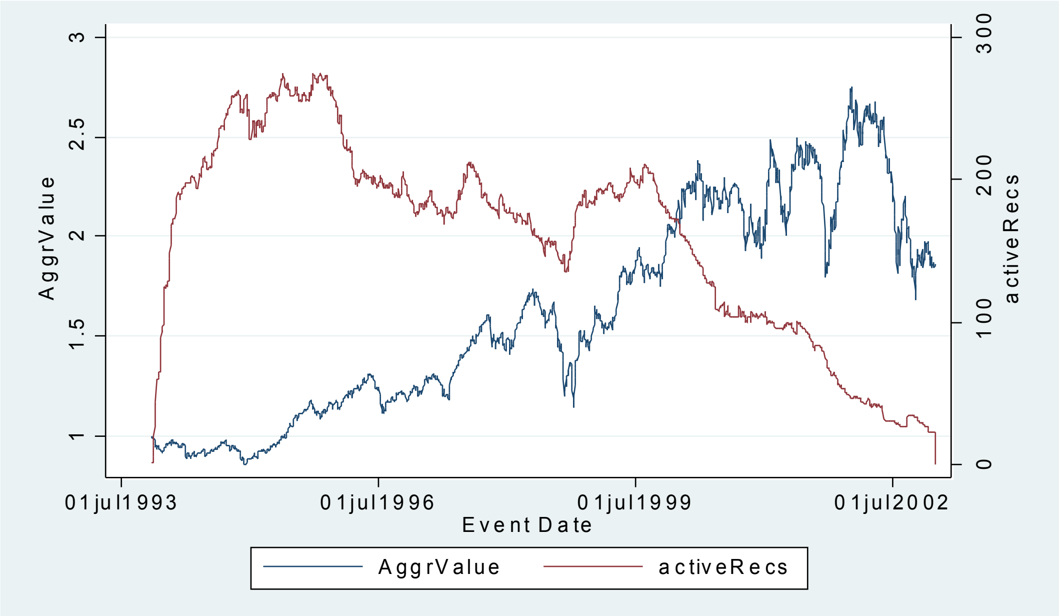
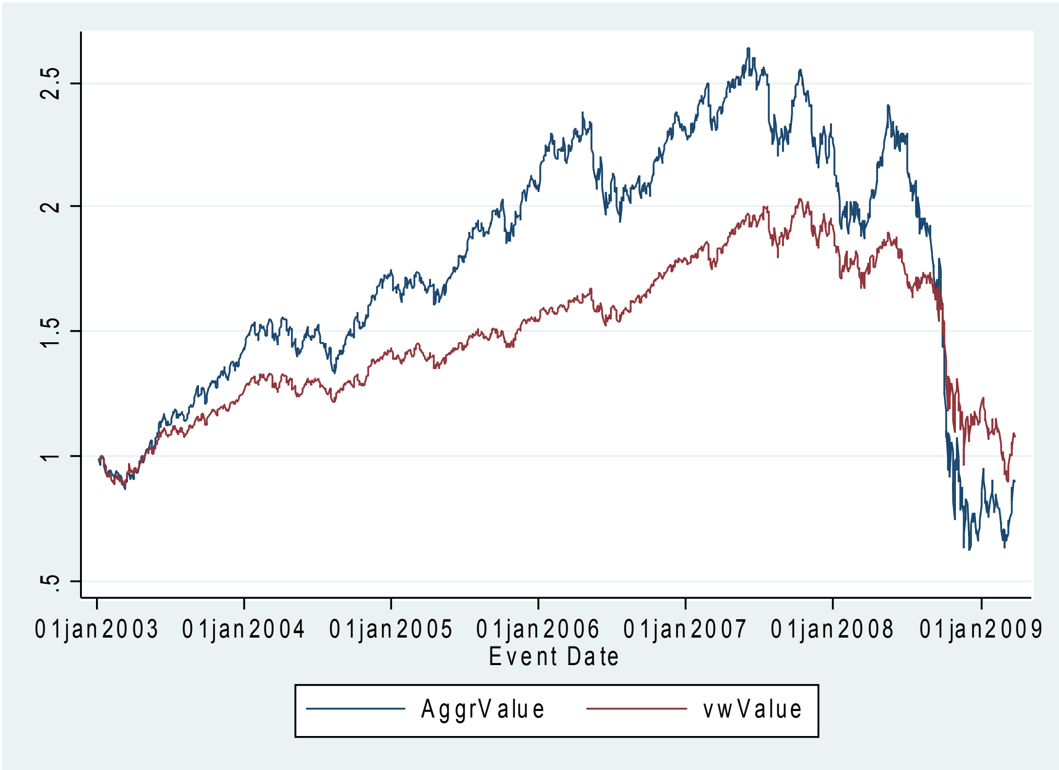


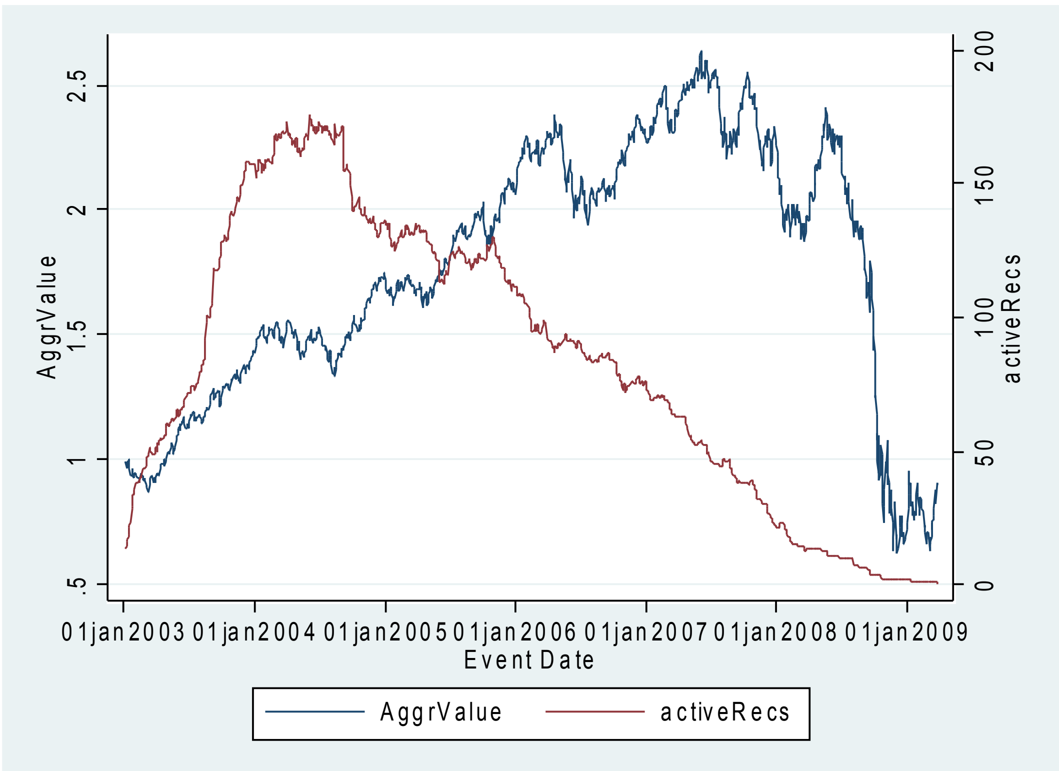
Figure 3: The figure presents the daily value of buy-and-hold strategy and active recommendations for portfolios of buy and hold/sell recommendations of analysts moving from a non-top to a top broker and from a top to a non-top broker fro the period before Global Settlement (see Table [8] for the top brokers). After having calculating the returns of each buy/sell portfolio, we invest one $1.00 at the portfolio and we track its value. The recommendations active at each portfolio are also presented. VwValue is the value of $1.00 invested at the CRSP value weighted dividends-included index. The data is from the 1993-2002 period. Recommendations come from IBES and daily stock returns from CRSP.

Figure 4. Recommendations' value and active recommendations for analysts moving from non-top to top brokers and analysts moving from top to non-top brokers for the period after Global Settlement

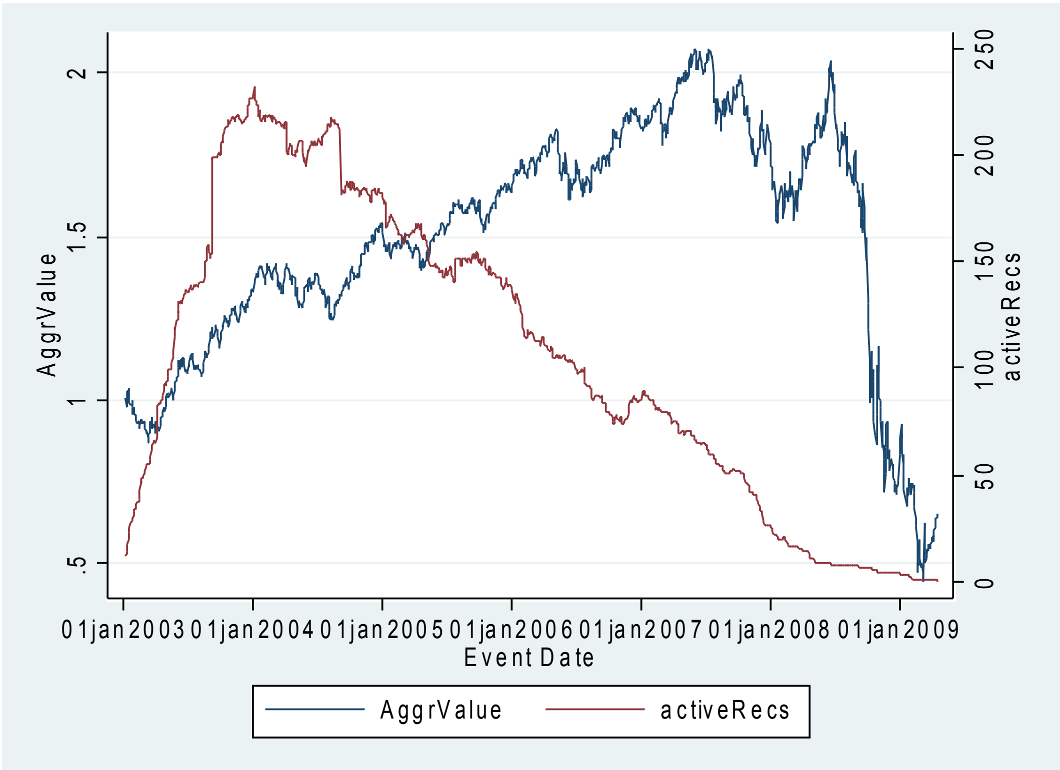
Panel A:Non-top to Top

i) Non-top to top: non-top buy

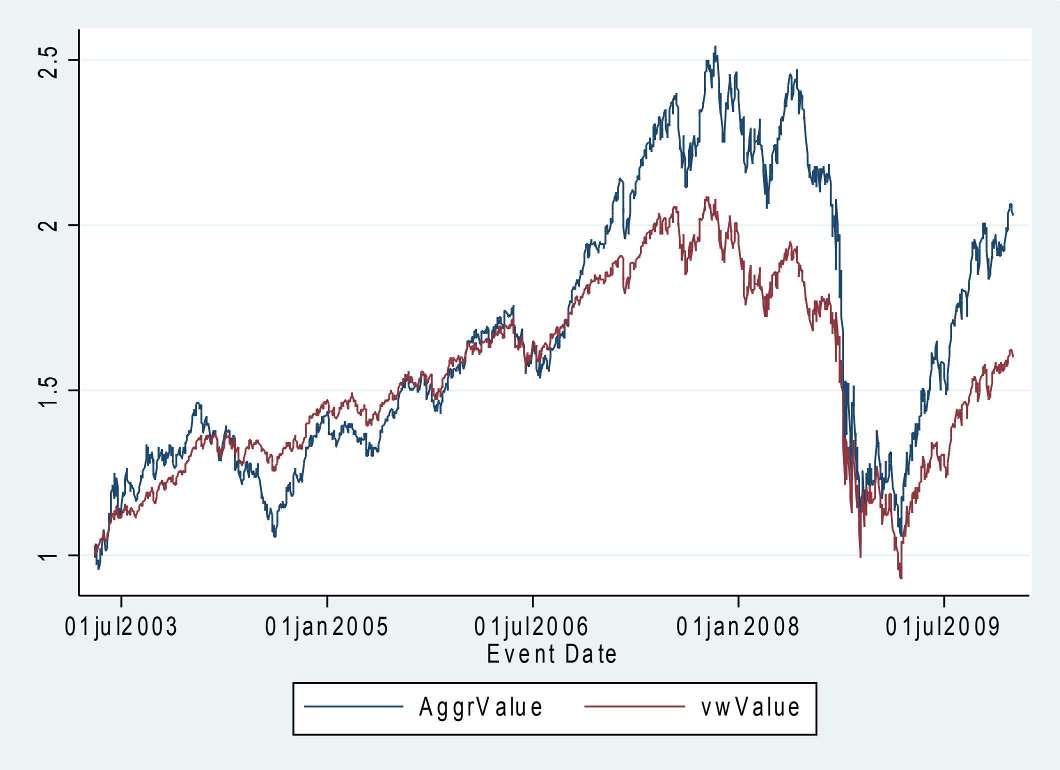


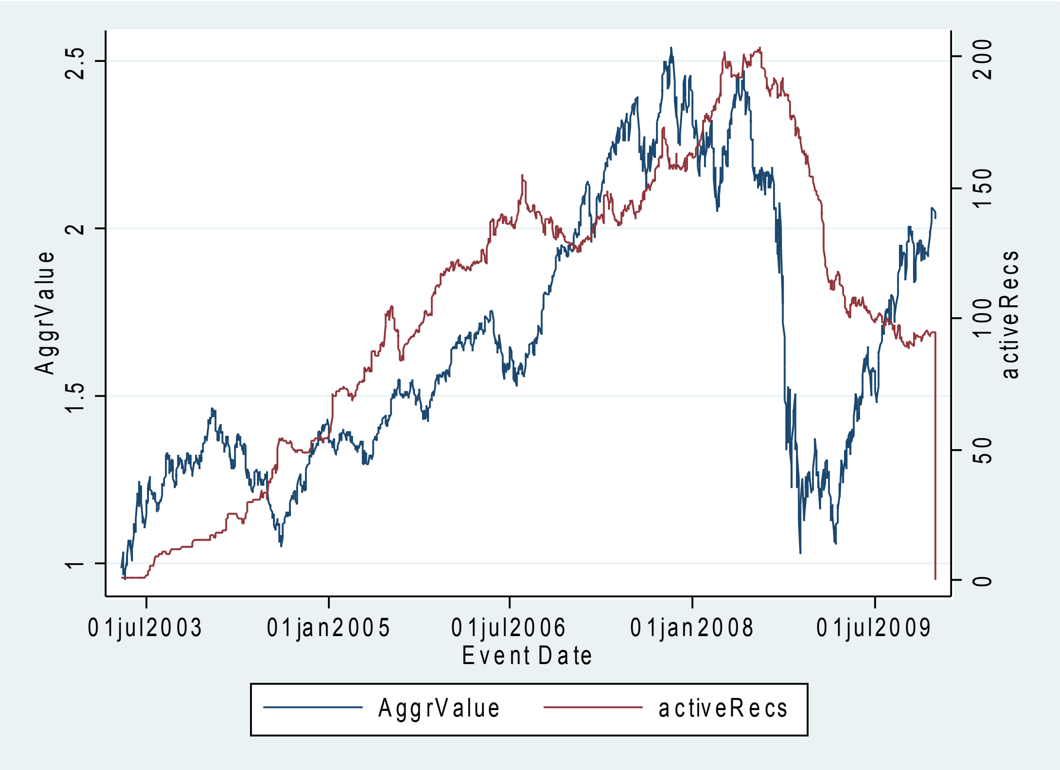


ii) Non-top to top: non-top sell

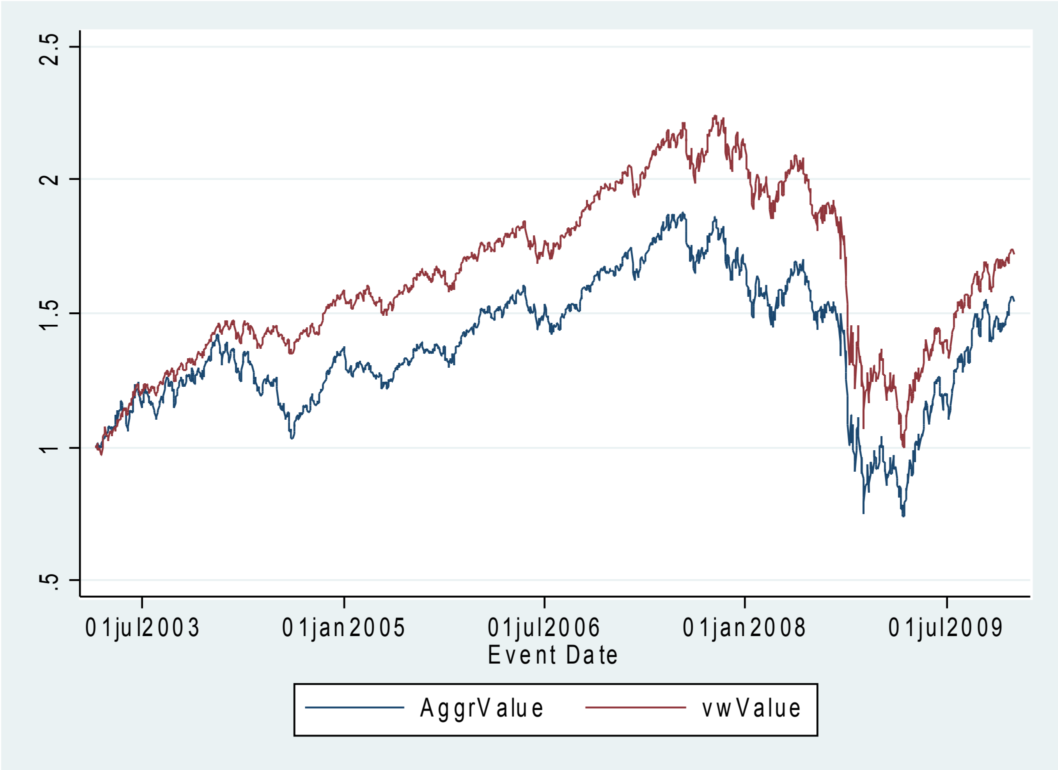


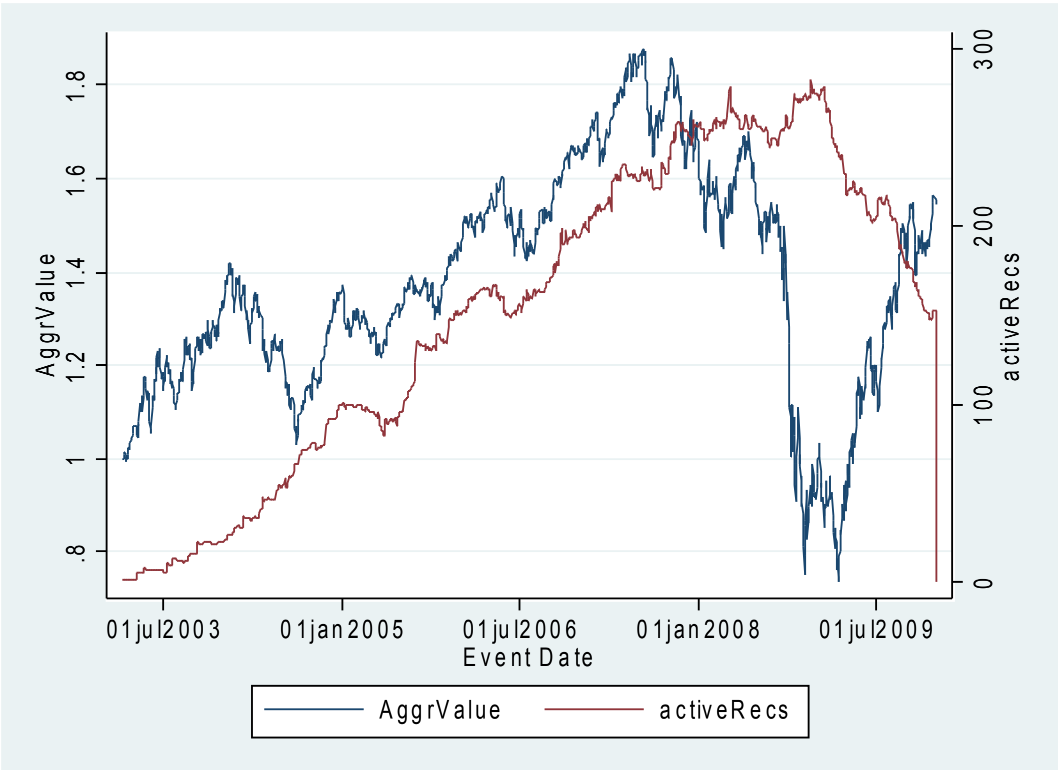
iii) Non-top to top: top sell





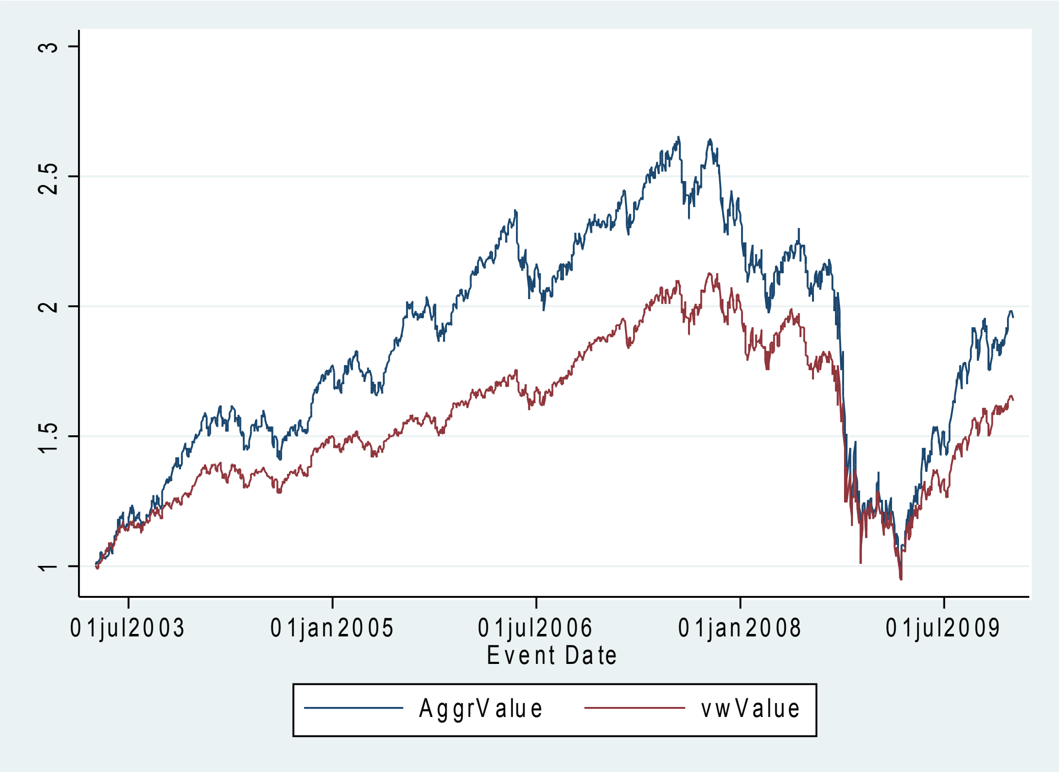
iv) Non-top to top: top sell

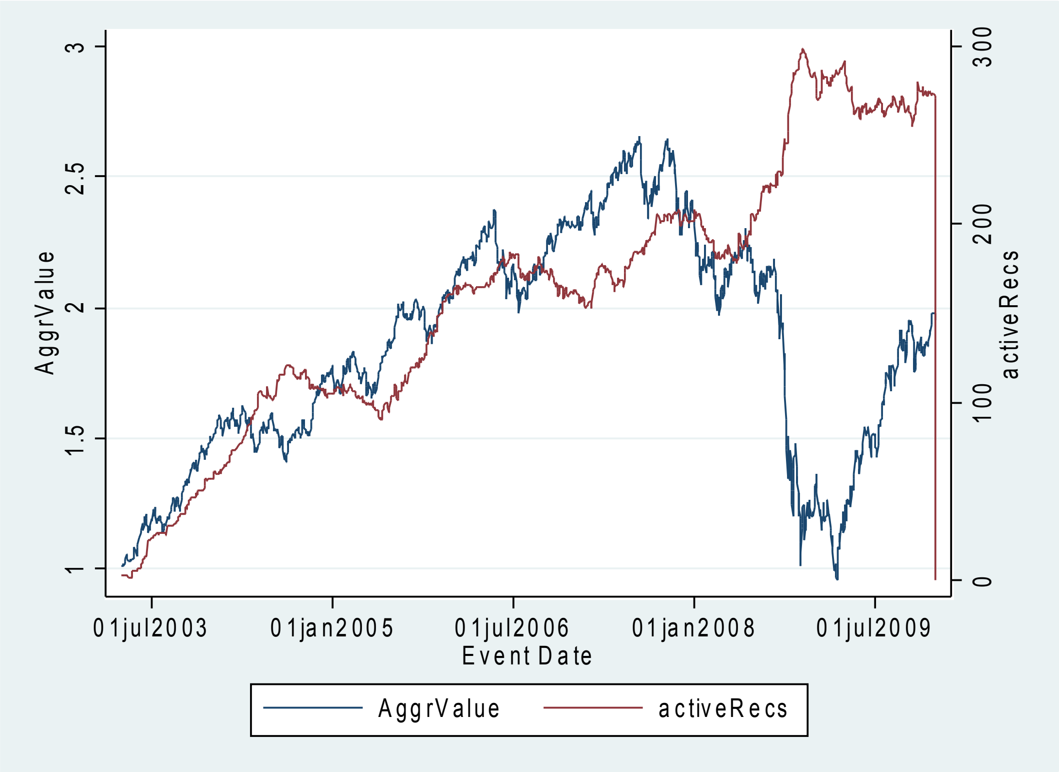




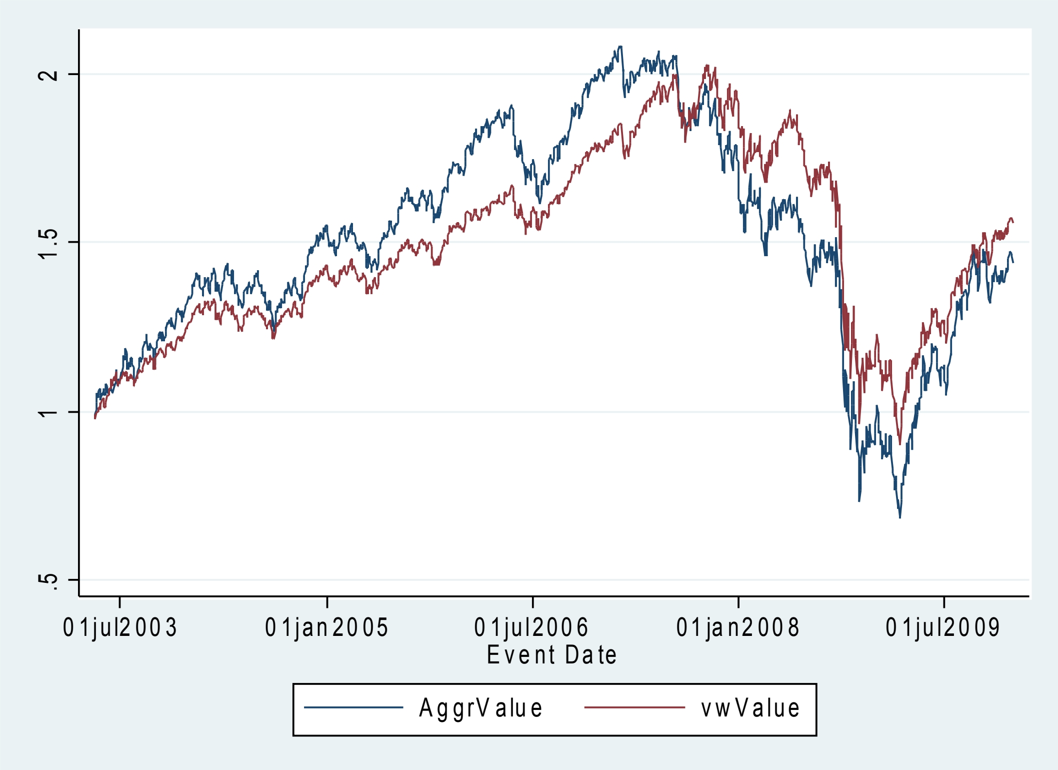
Panel B: Top to non-top

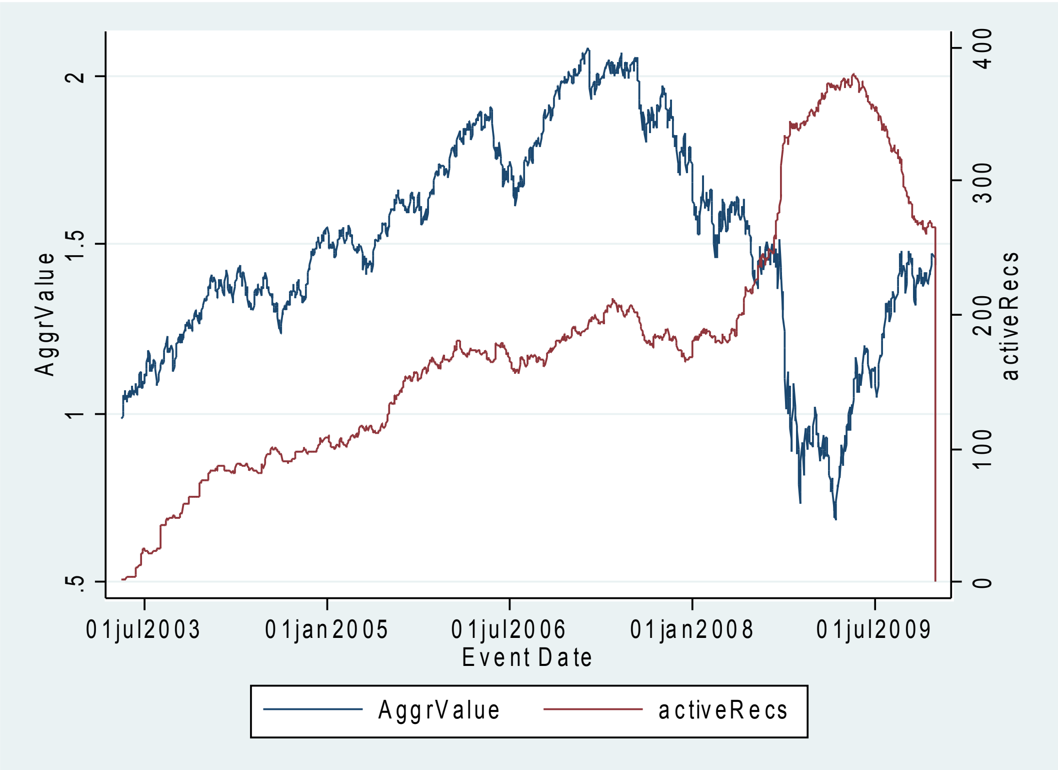
i) Top to non-top: non-top buy



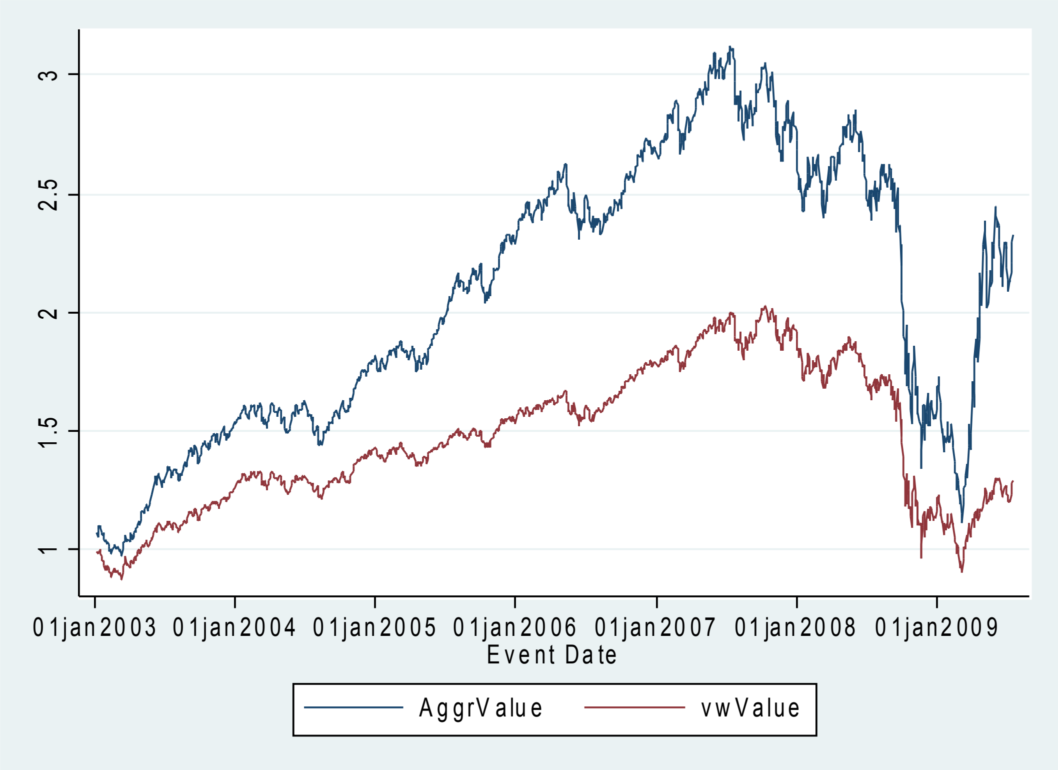


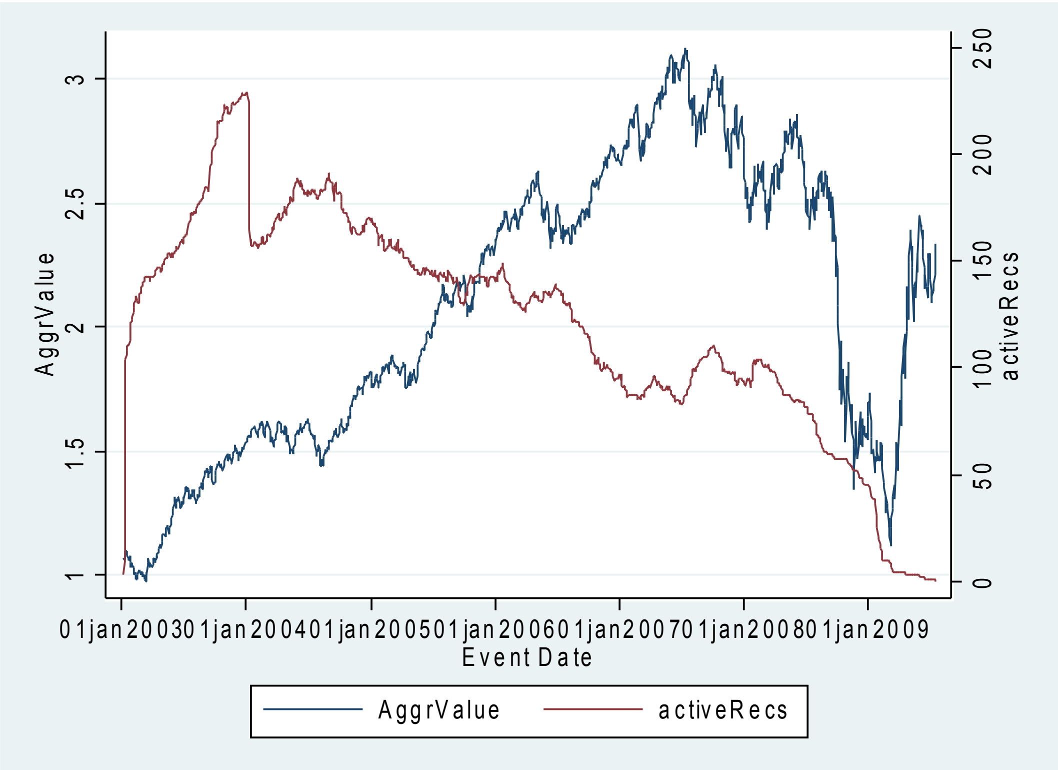
ii) Top to non-top: non-top sell



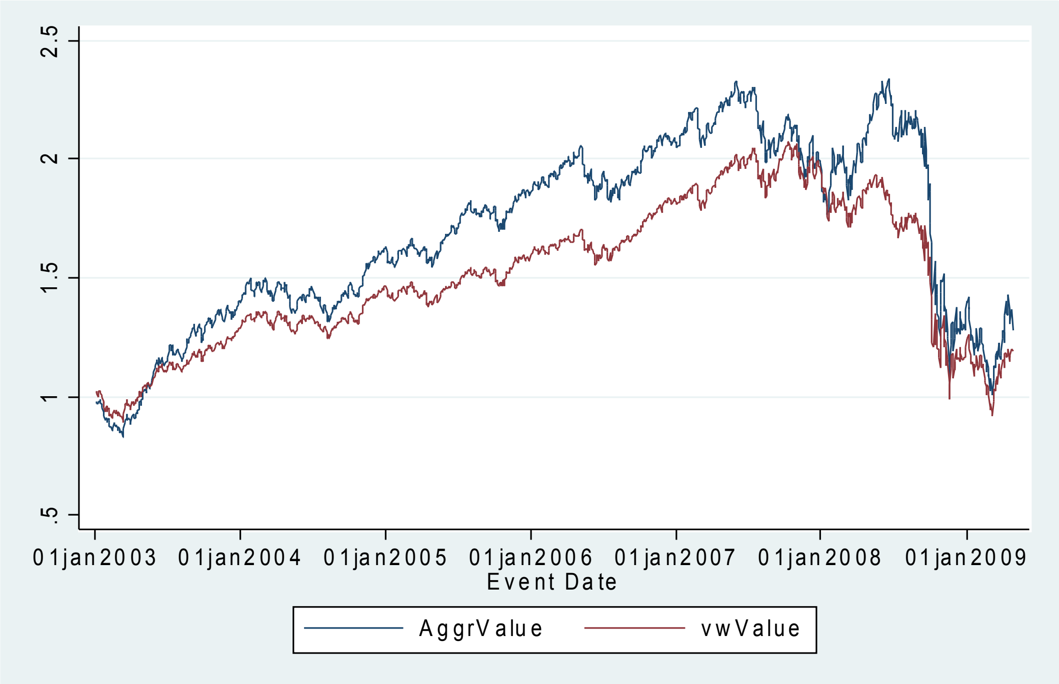


iii) Top to non-top: top buy





iv) Top to non-top: top sell



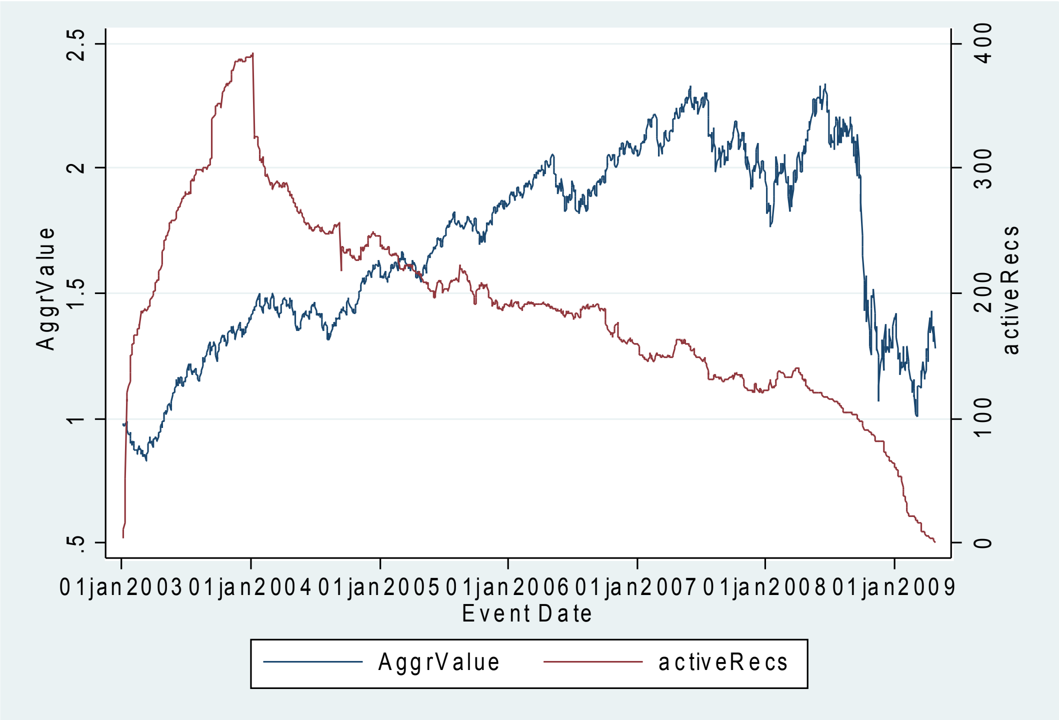
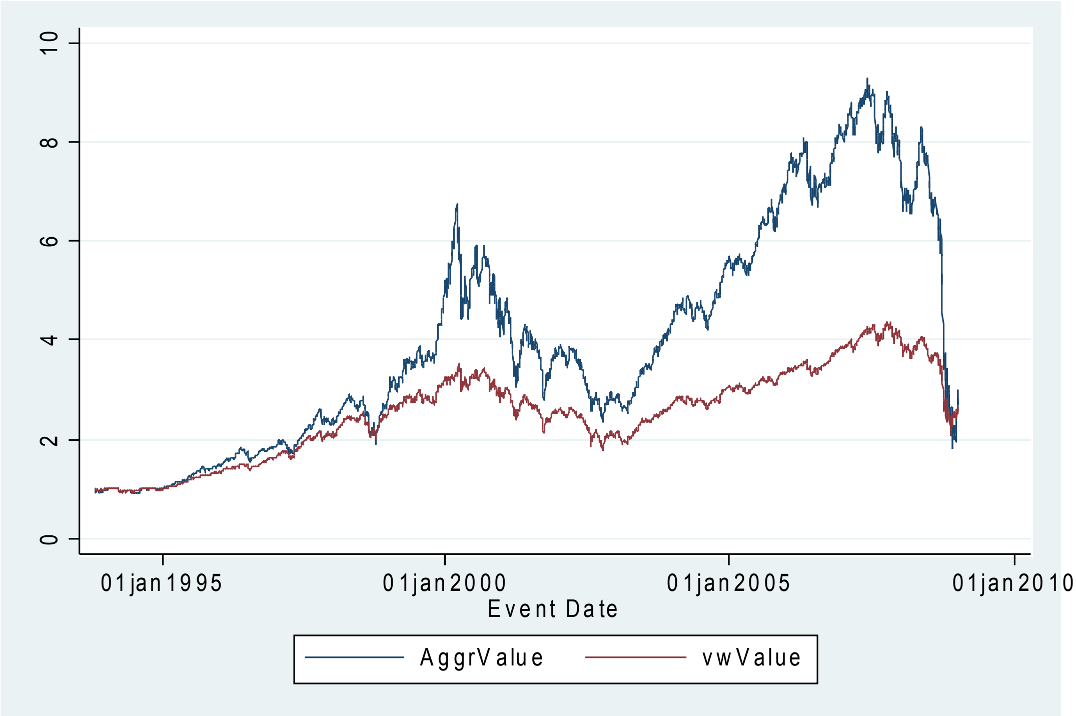


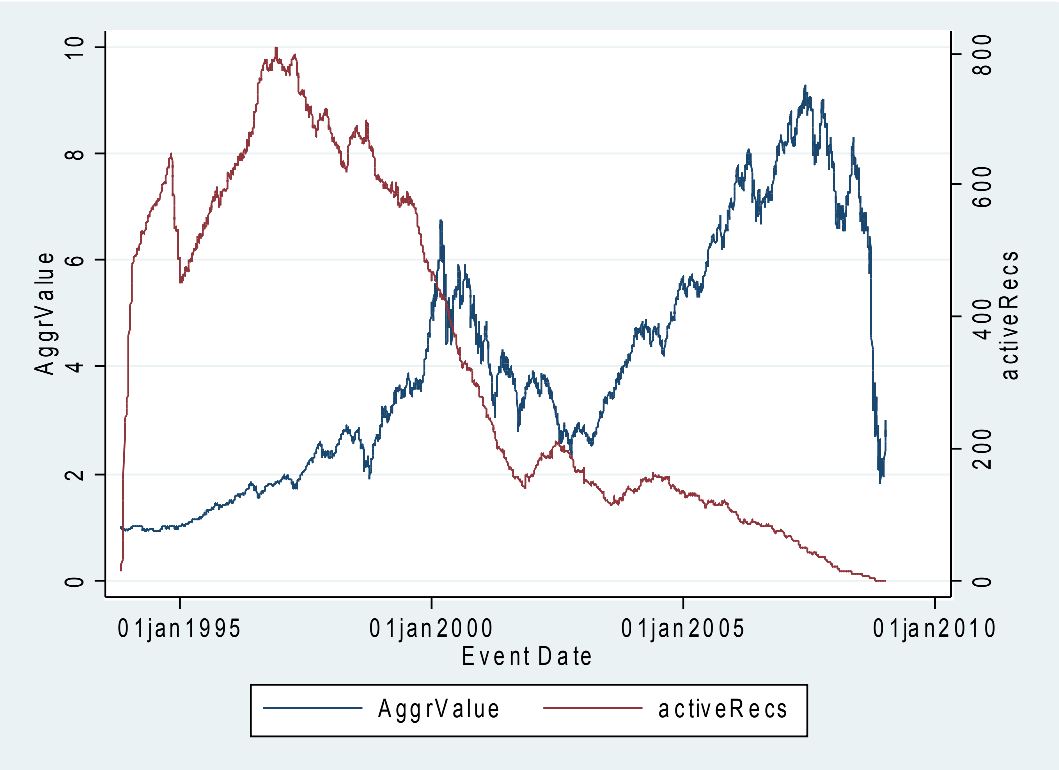
Figure 4: The figure presents the daily value of buy-and-hold strategy and active recommendations for portfolios of buy and hold/sell recommendations of analysts moving from a non-top to a top broker and from a top to a non-top broker fro the period after Global Settlement (see Table [8] for the top brokers). After having calculating the returns of each buy/sell portfolio, we invest one $1.00 at the portfolio and we track its value. The recommendations active at each portfolio are also presented. VwValue is the value of $1.00 invested at the CRSP value weighted dividends-included index. The data is from the 2003-2009 period. Recommendations come from IBES and daily stock returns from CRSP.

Figure 5. Recommendations' value acting on the recommendation one day before its release and active recommendations for analysts moving from non-top to top brokers and analysts moving from top to non-top brokers

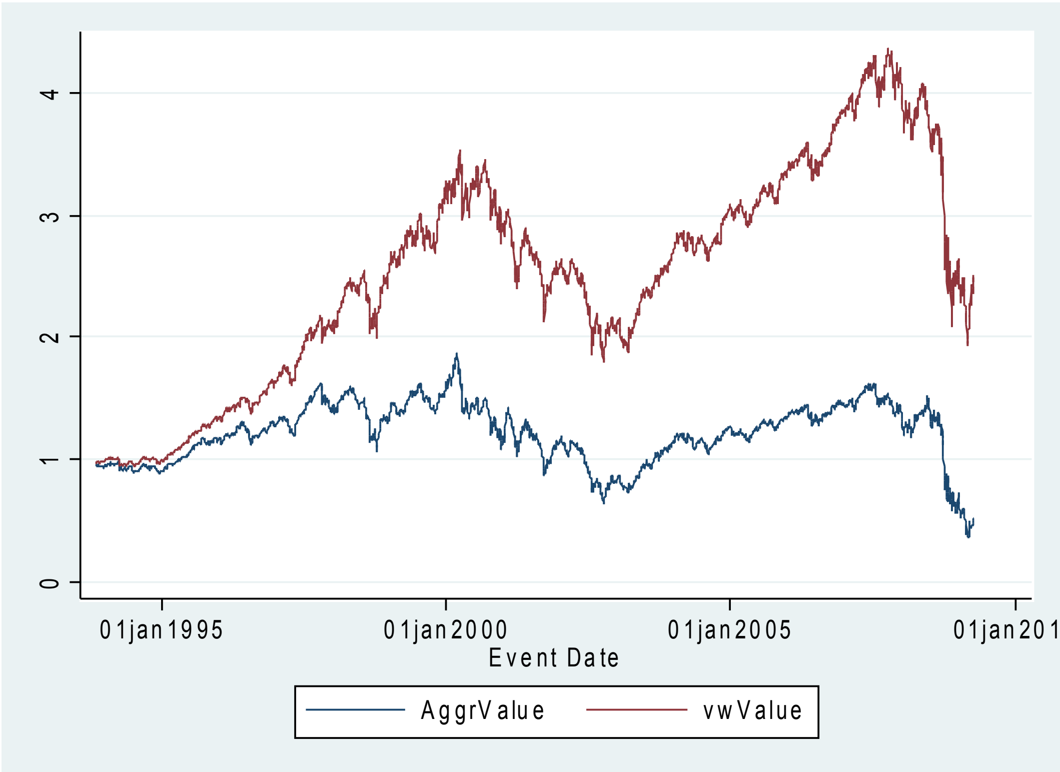
Panel A:Non-top to Top

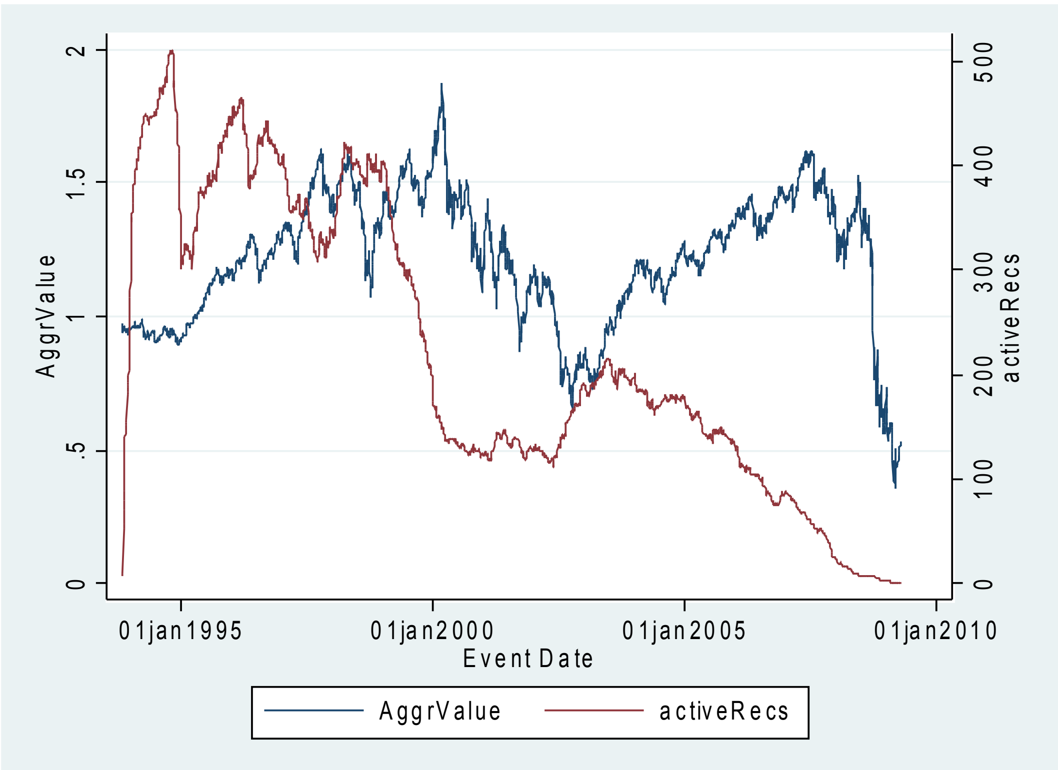
i) Non-top to top: non-top buy



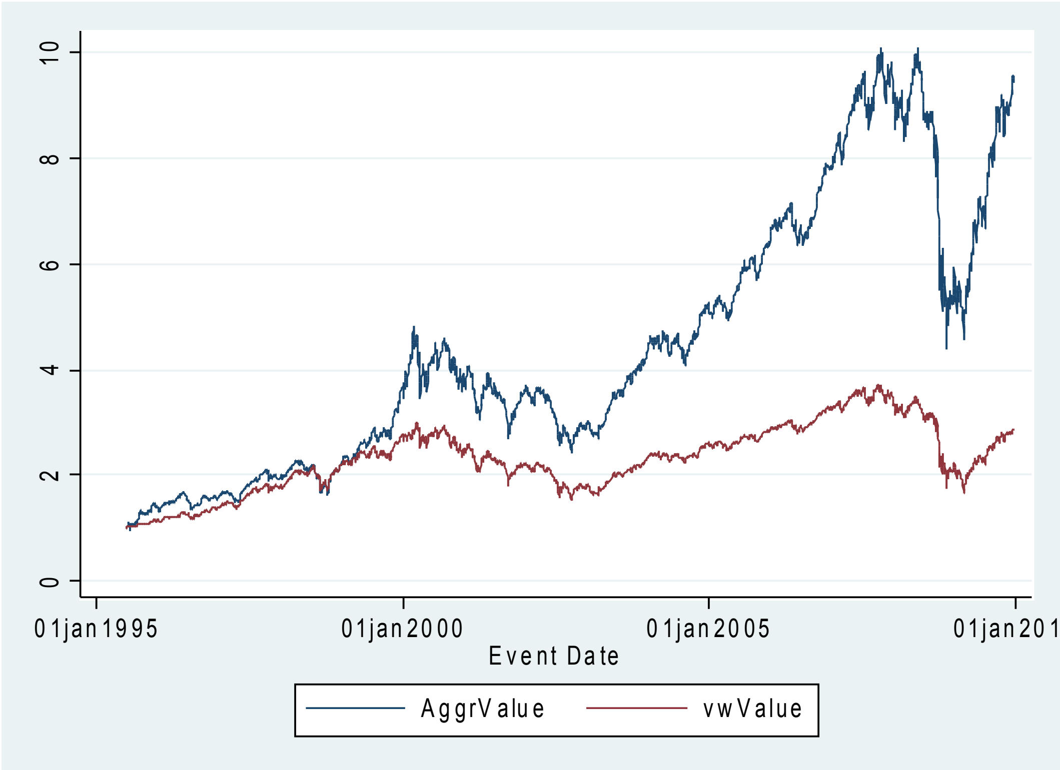


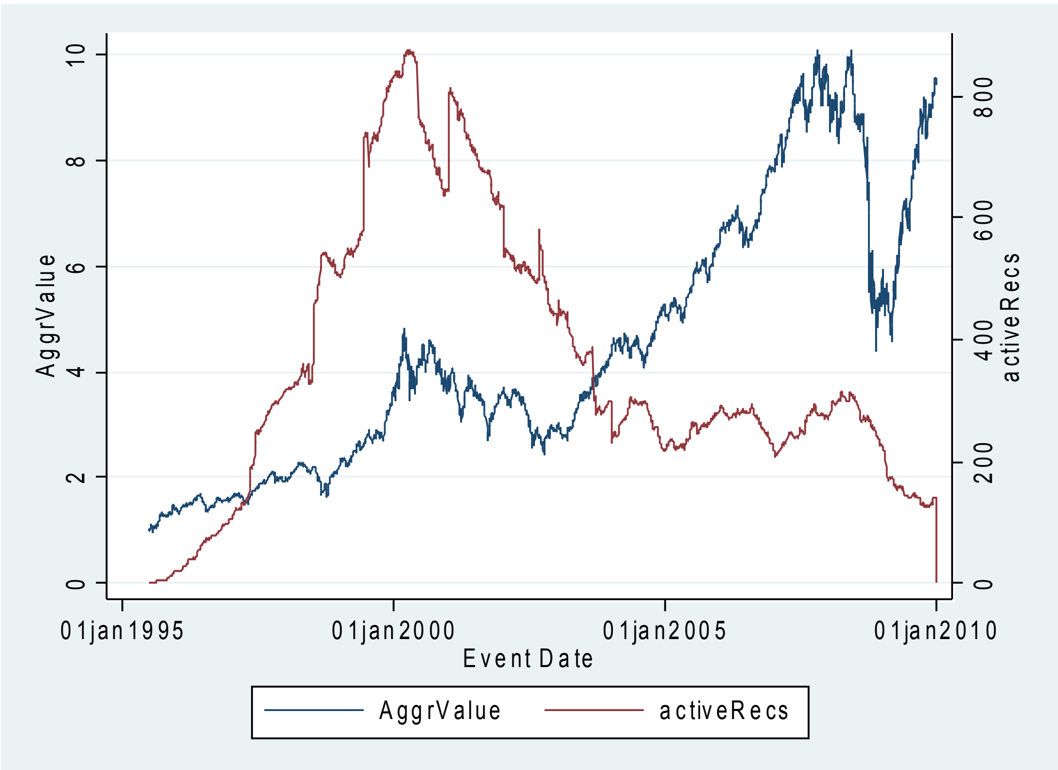
ii) Non-top to top: non-top sell



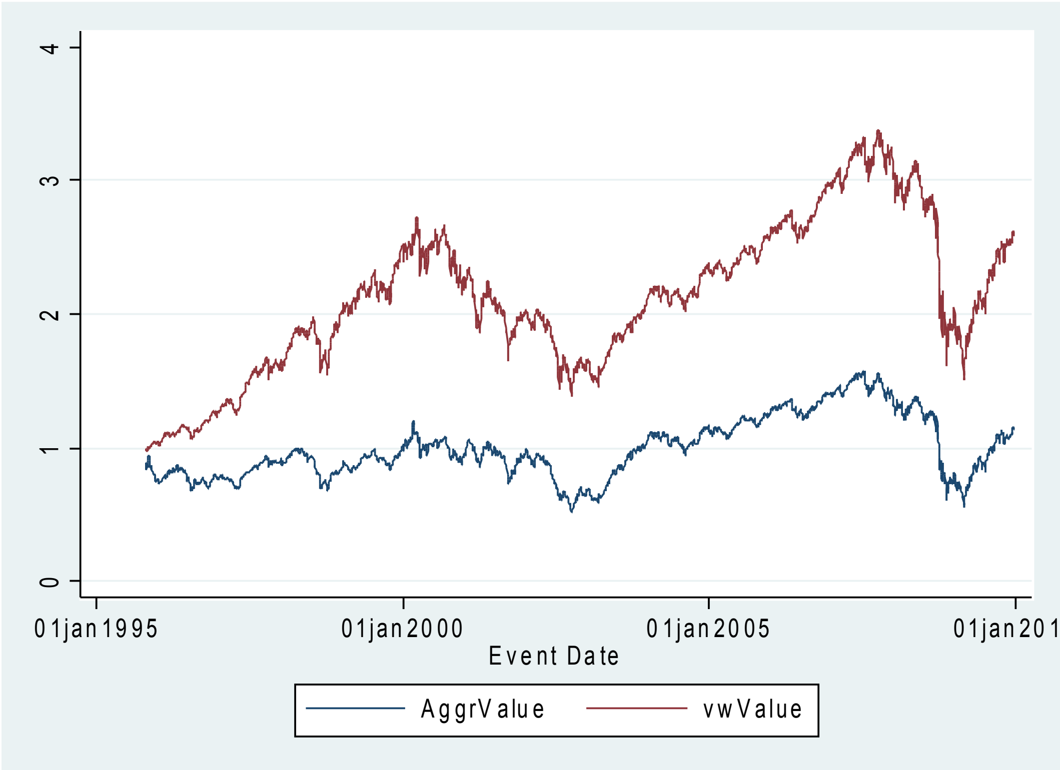


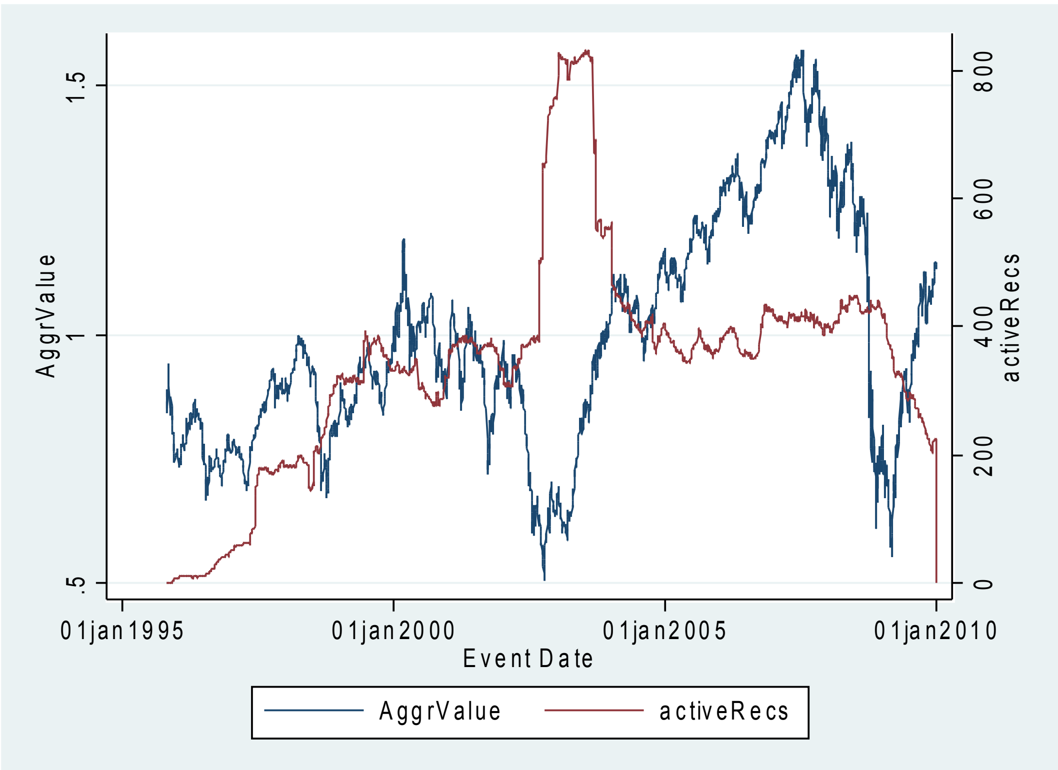
iii) Non-top to top: top buy





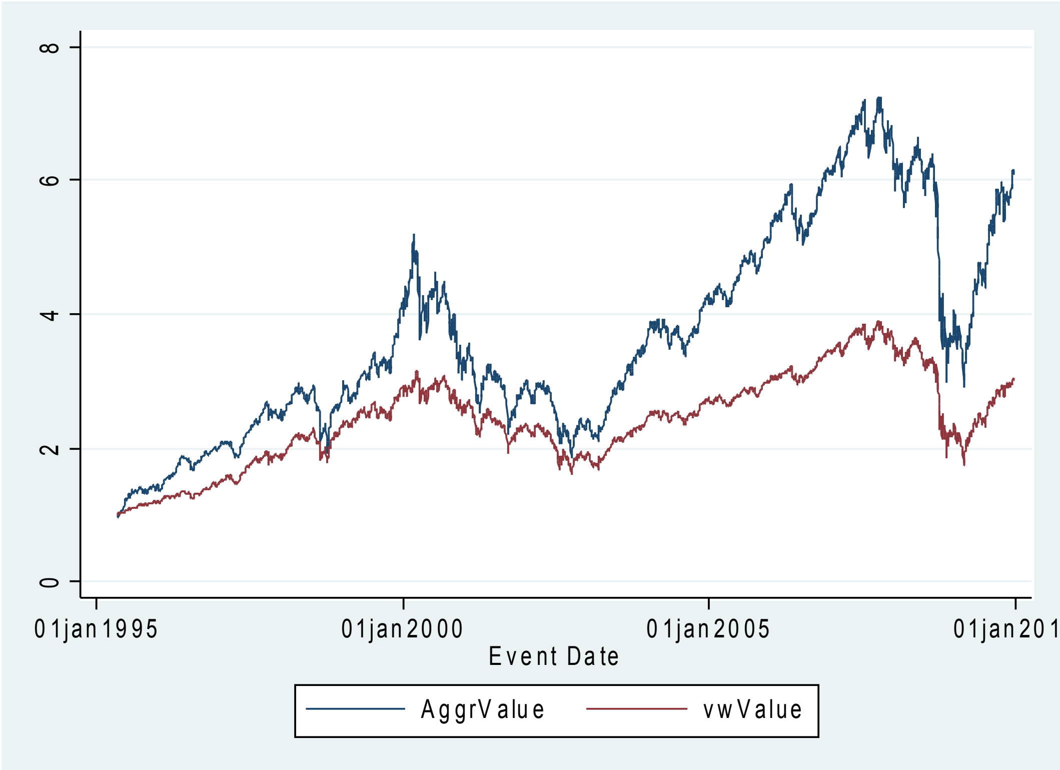
iv) Non-top to top: top sell

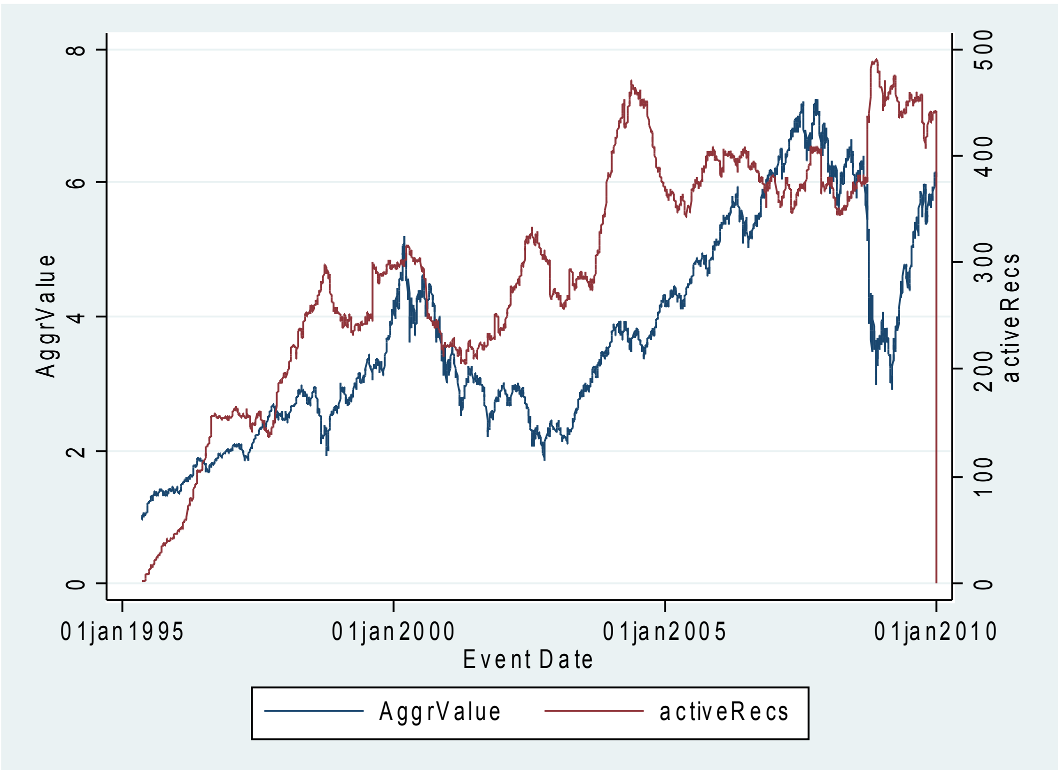




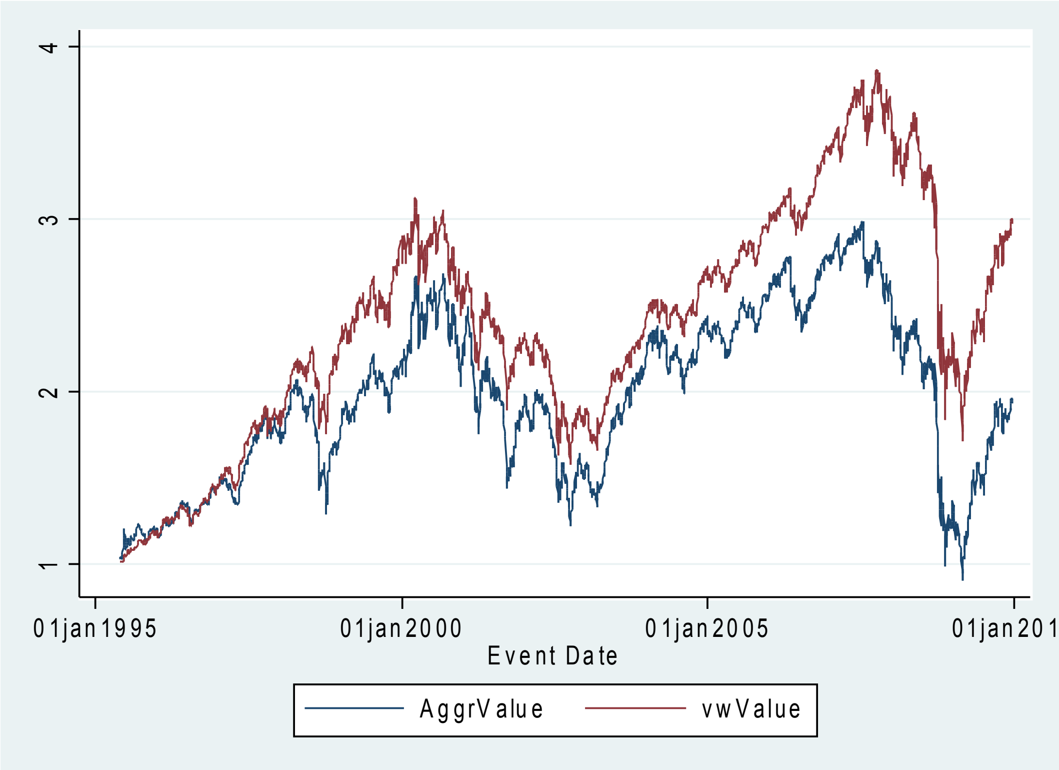
Panel B: Top to bottom

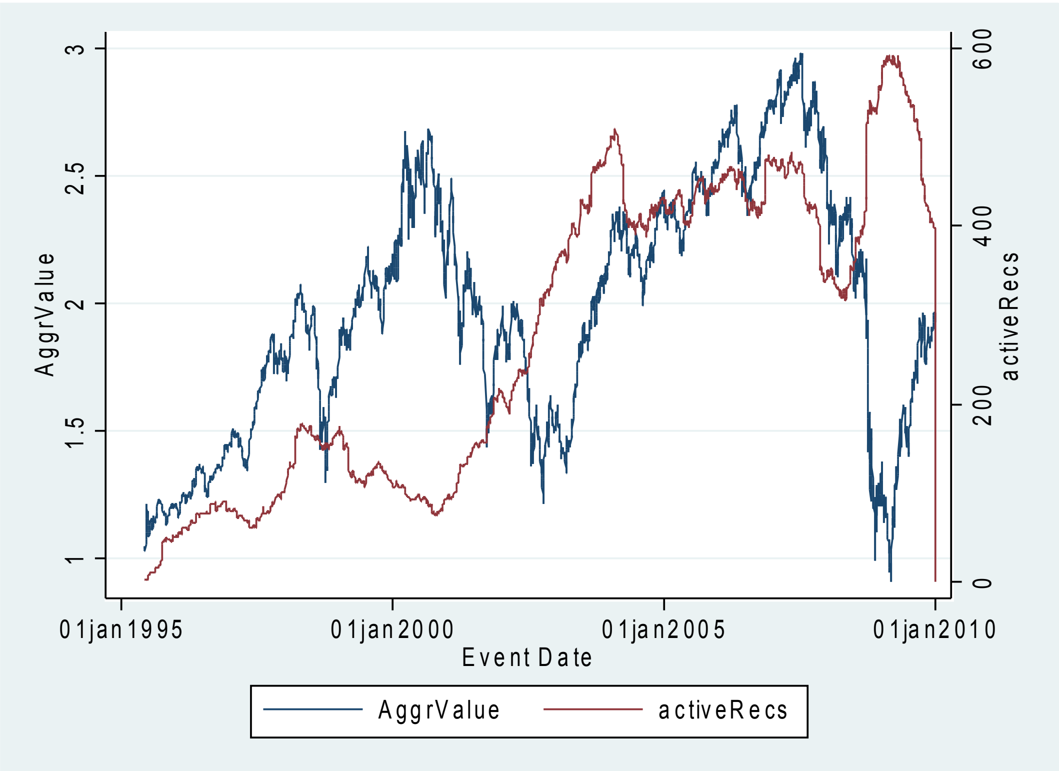
i) Top to non-top: non-top buy



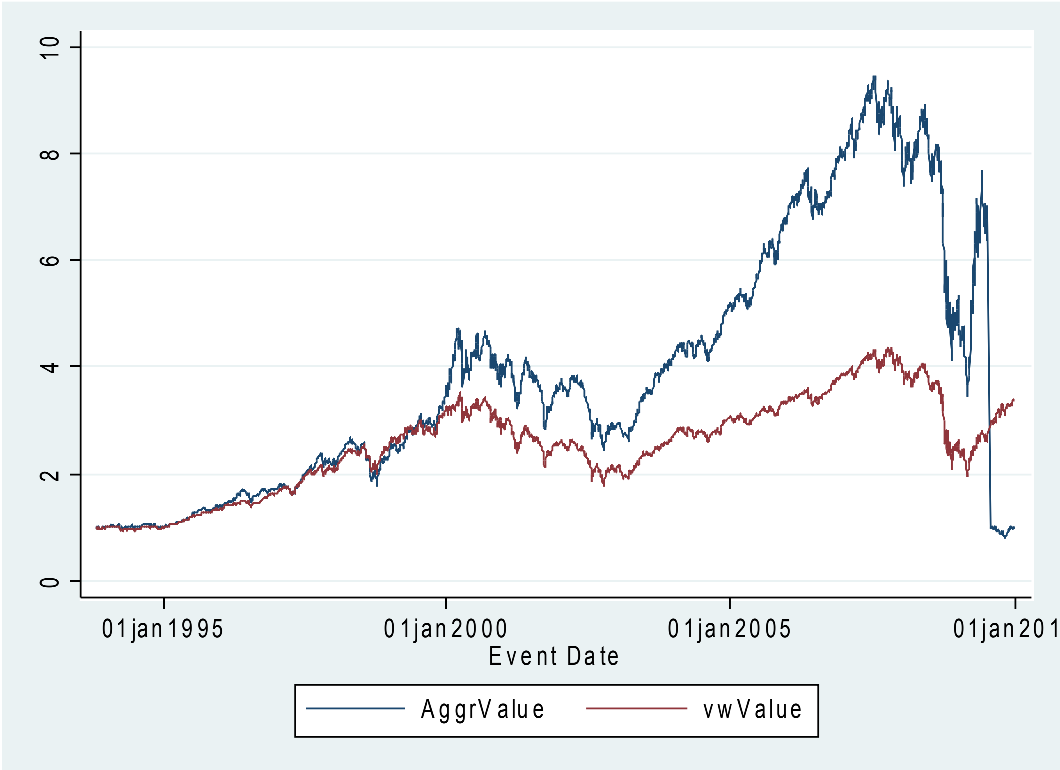


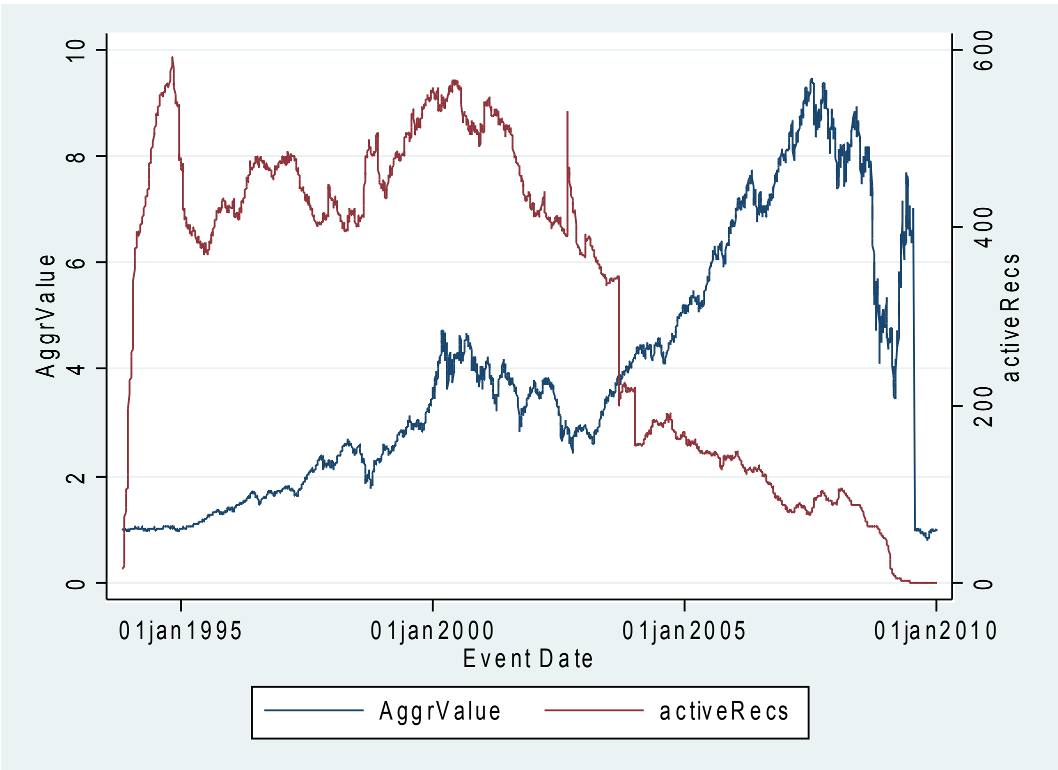
i) Top to non-top: non-top sell



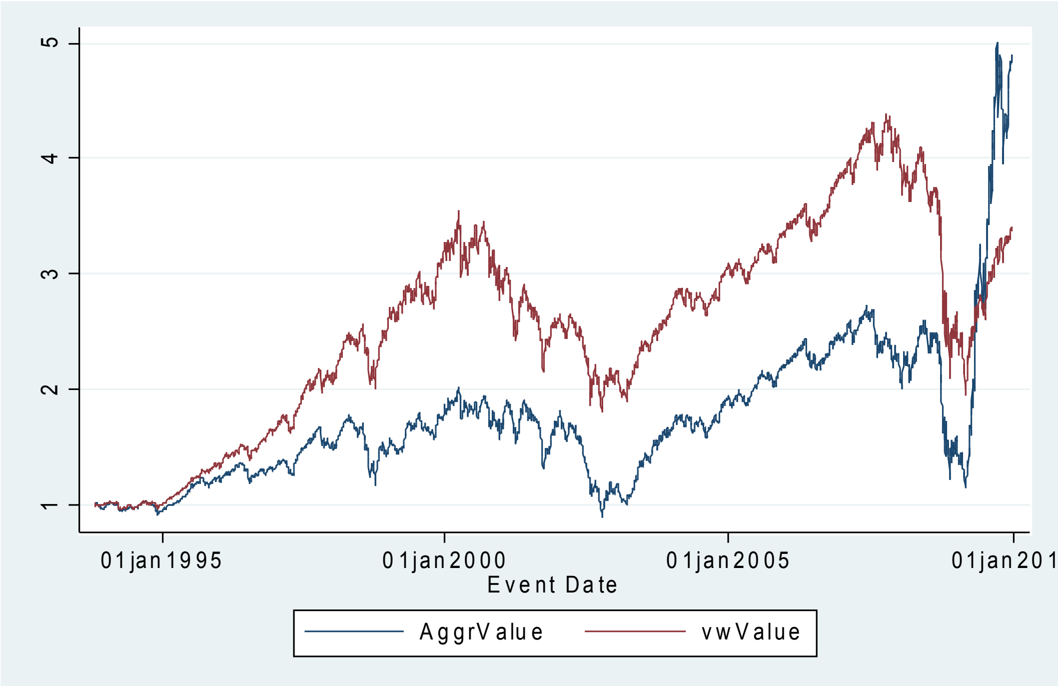


iii) Top to non-top: top buy





iv) Top to non-top: top sell



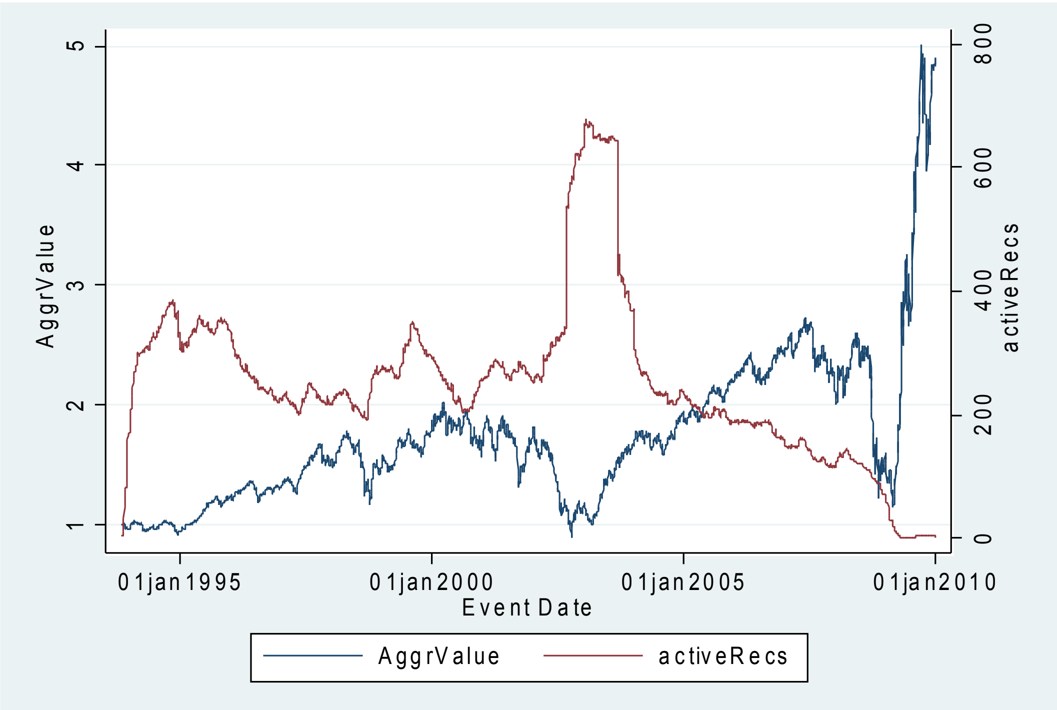


Figure 5: The figure presents the daily value of buy-and-hold strategy and active recommendations for portfolios of buy and hold/sell recommendations of analysts moving from a non-top to a top broker and from a top to a non-top broker if an investor acts on the recommendation one day before its release (see Table [8] for the top brokers). After having calculating the returns of each buy/sell portfolio, we invest one $1.00 at the portfolio and we track its value. The recommendations active at each portfolio are also presented. VwValue is the value of $1.00 invested at the CRSP value weighted dividends-included index. The data is from the 1993-2002 period. Recommendations come from IBES and daily stock returns from CRSP.

Figure 6. Non top brokers, buy recommendations

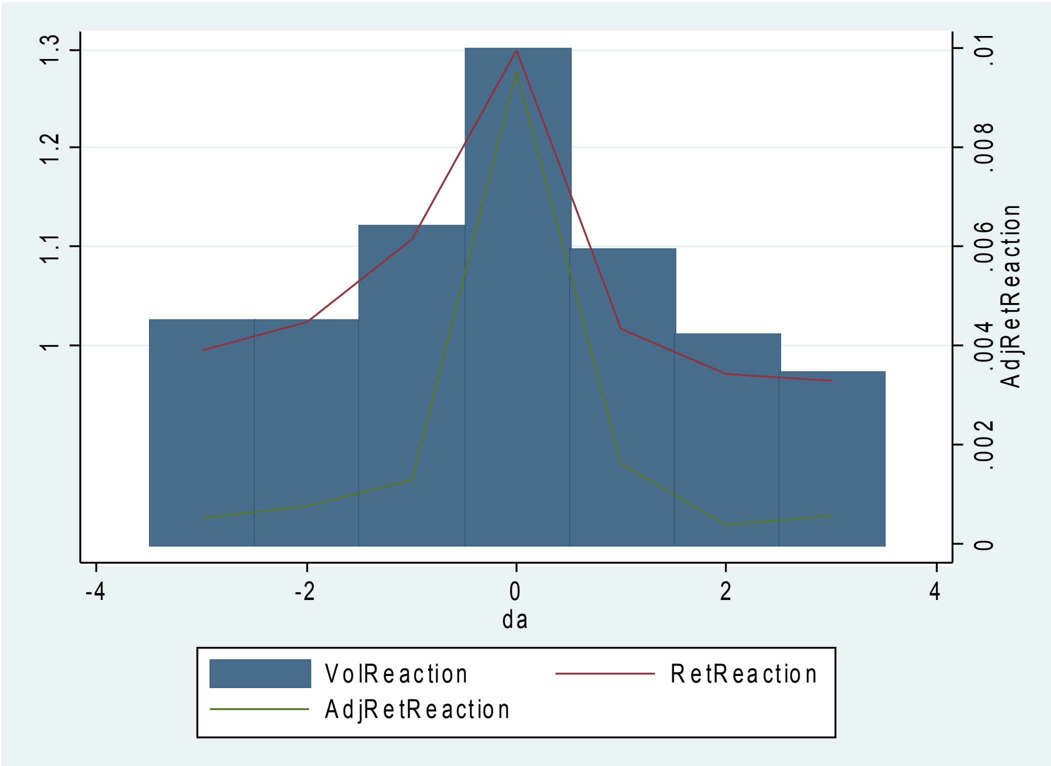


Figure 6: The figure presents the volume reaction, the return reaction and the market-adjusted return of the non-top broker buy recommendations. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 7. Non top brokers, sell recommendations

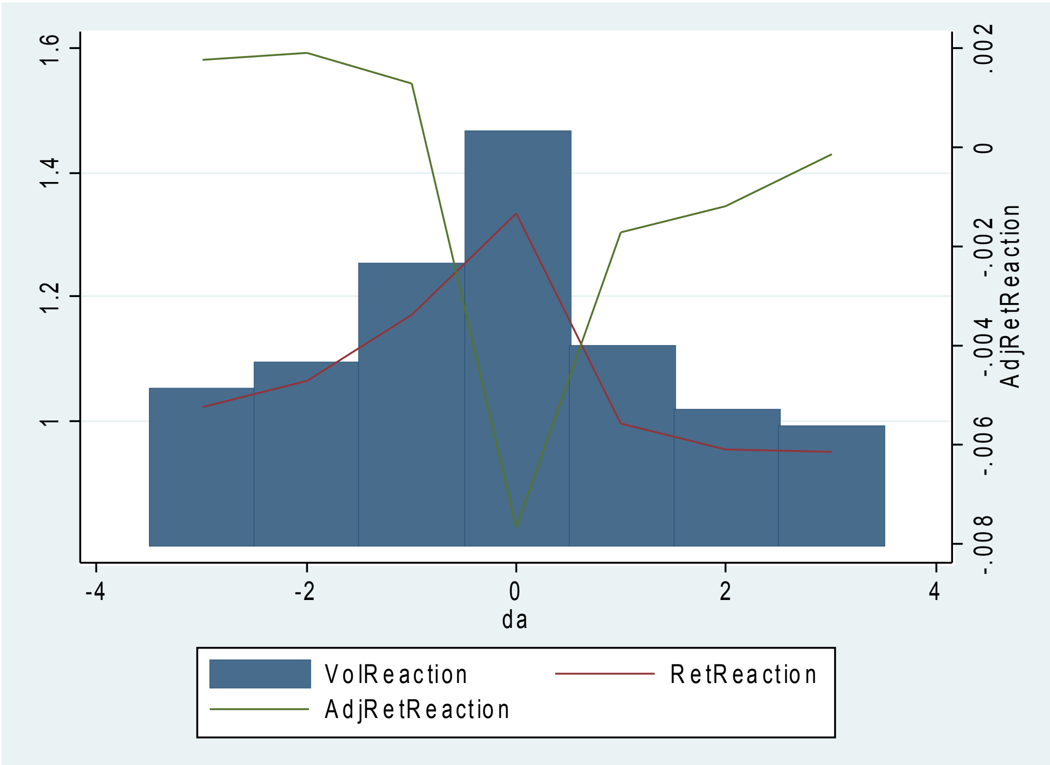


Figure 7: The figure presents the volume reaction, the return reaction and the market-adjusted return of the non-top broker sell recommendations. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

<u>Figure 8.</u> Top brokers, buy recommendations

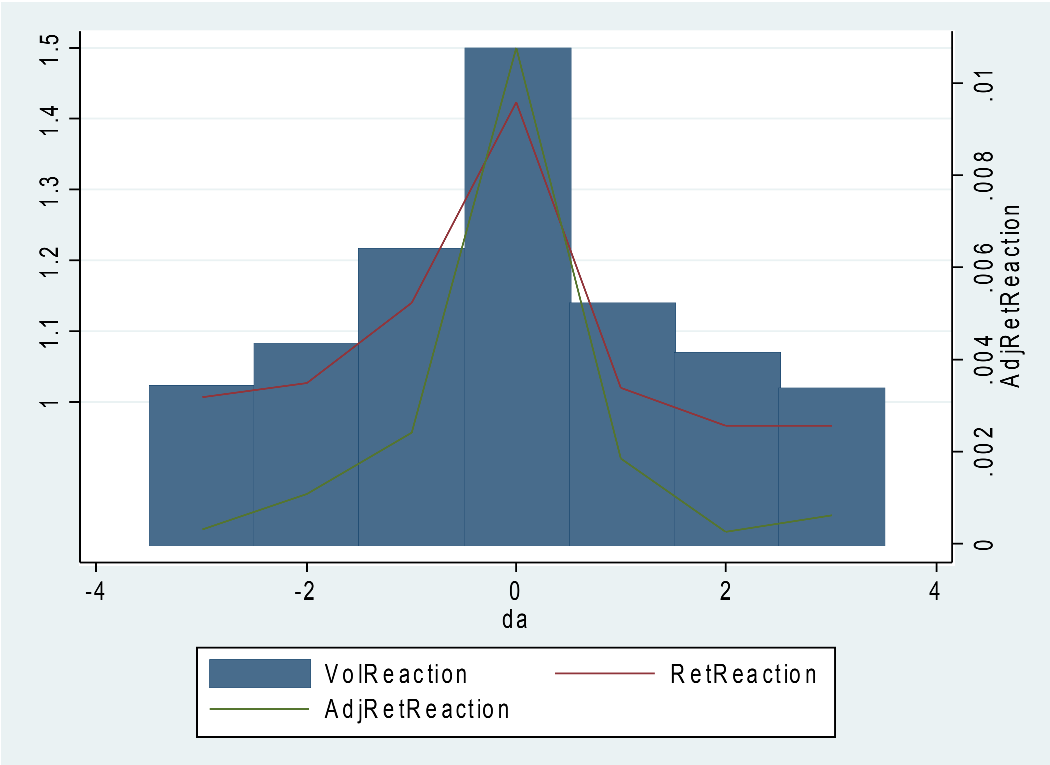


Figure 8: The figure presents the volume reaction, the return reaction and the market-adjusted return of the top broker buy recommendations. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 9. Top brokers, sell recommendations

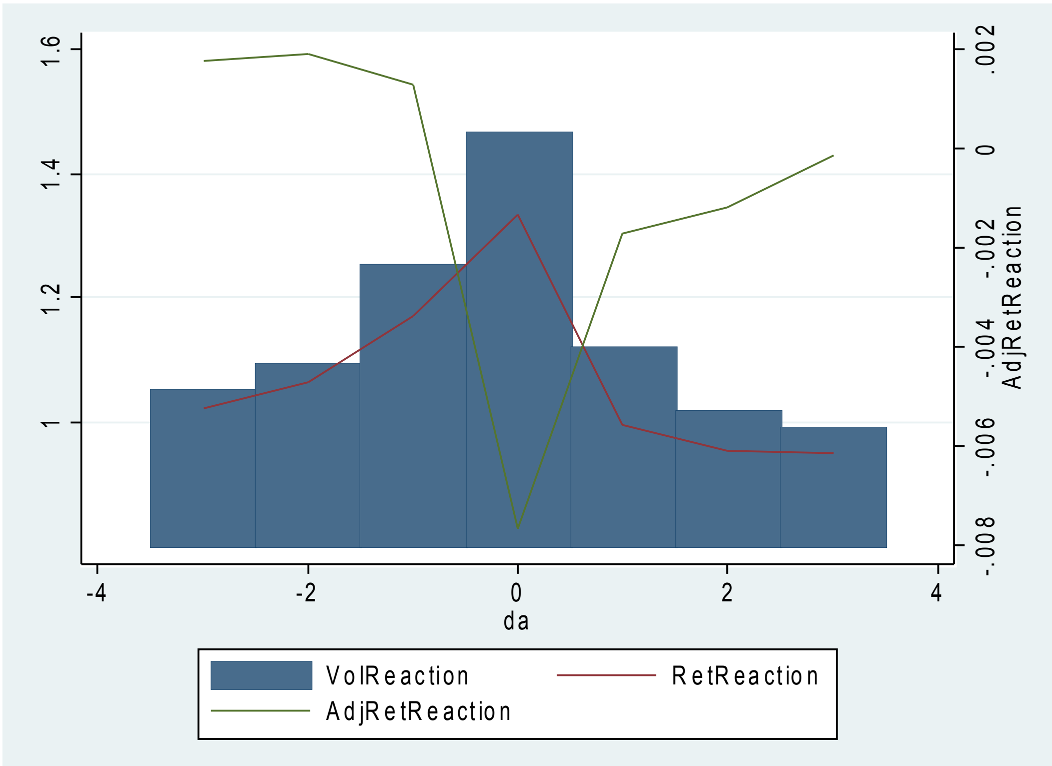


Figure 9: The figure presents the volume reaction, the return reaction and the market-adjusted return of the top broker sell recommendations. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 10. Non-top to top brokers, non-top brokers, buy recommendations

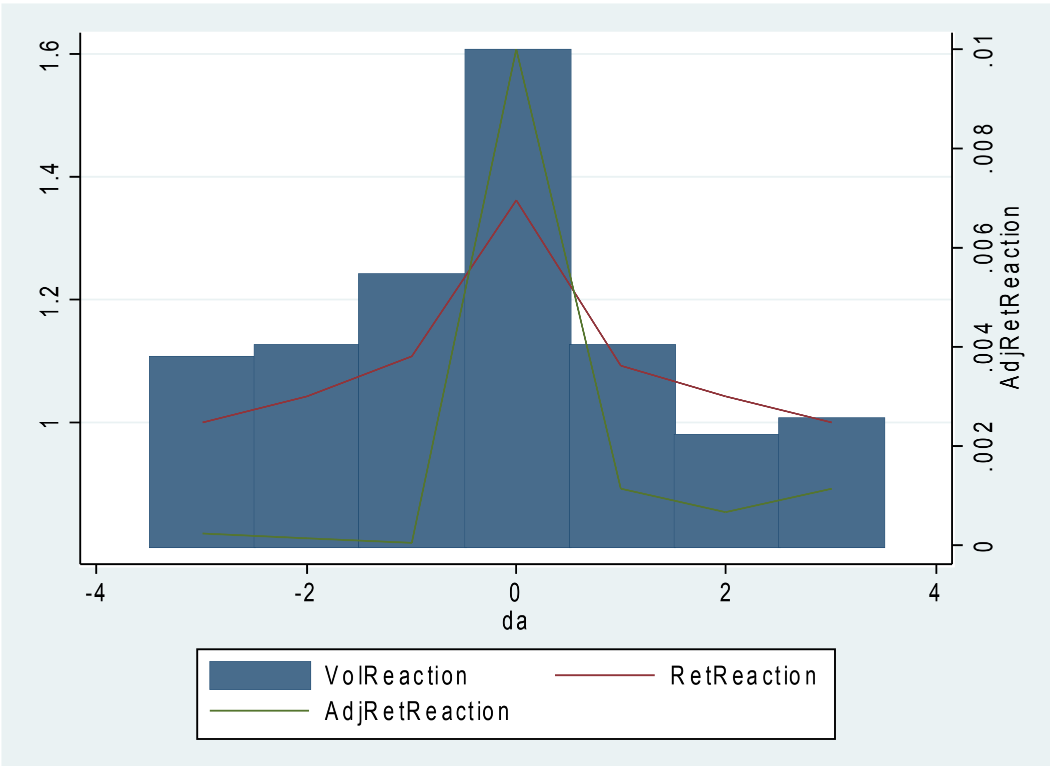


Figure 10: The figure presents the volume reaction, the return reaction and the market-adjusted return of the non-top broker buy recommendations issued by the analysts who moved from non-top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 11. Non-top to top brokers, non-top brokers, sell recommendations

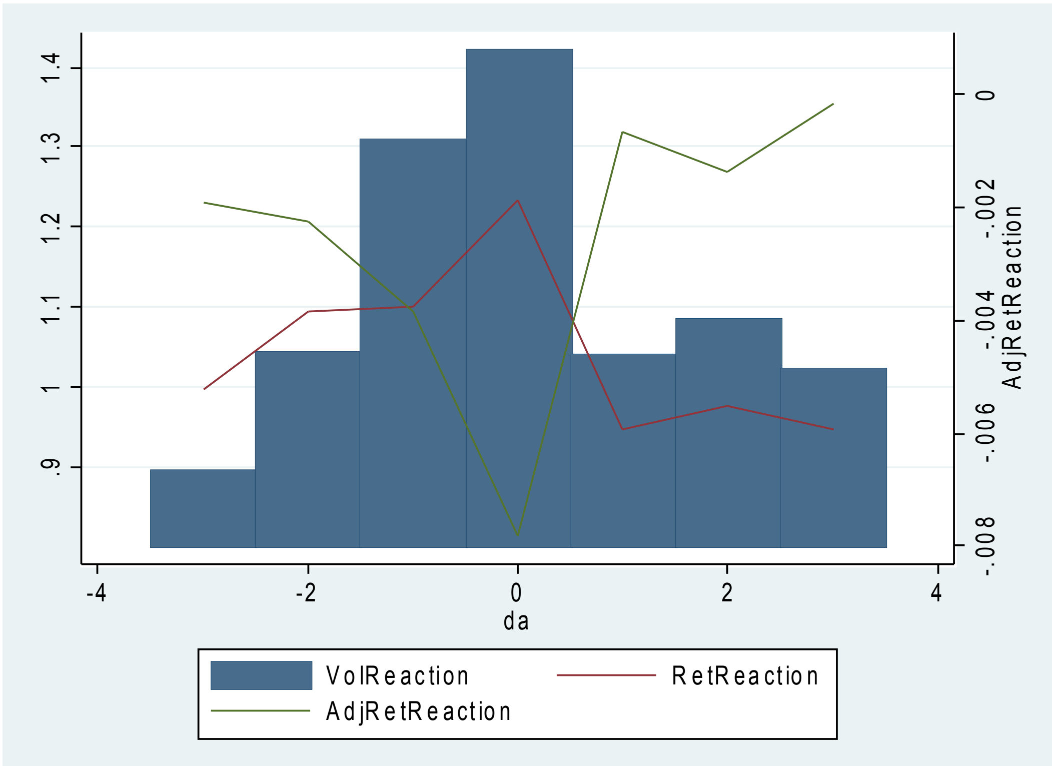


Figure 11: The figure presents the volume reaction, the return reaction and the market-adjusted return of the non-top broker sell recommendations issued by the analysts who moved from non-top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 12. Non-top to top brokers, top brokers, buy recommendations

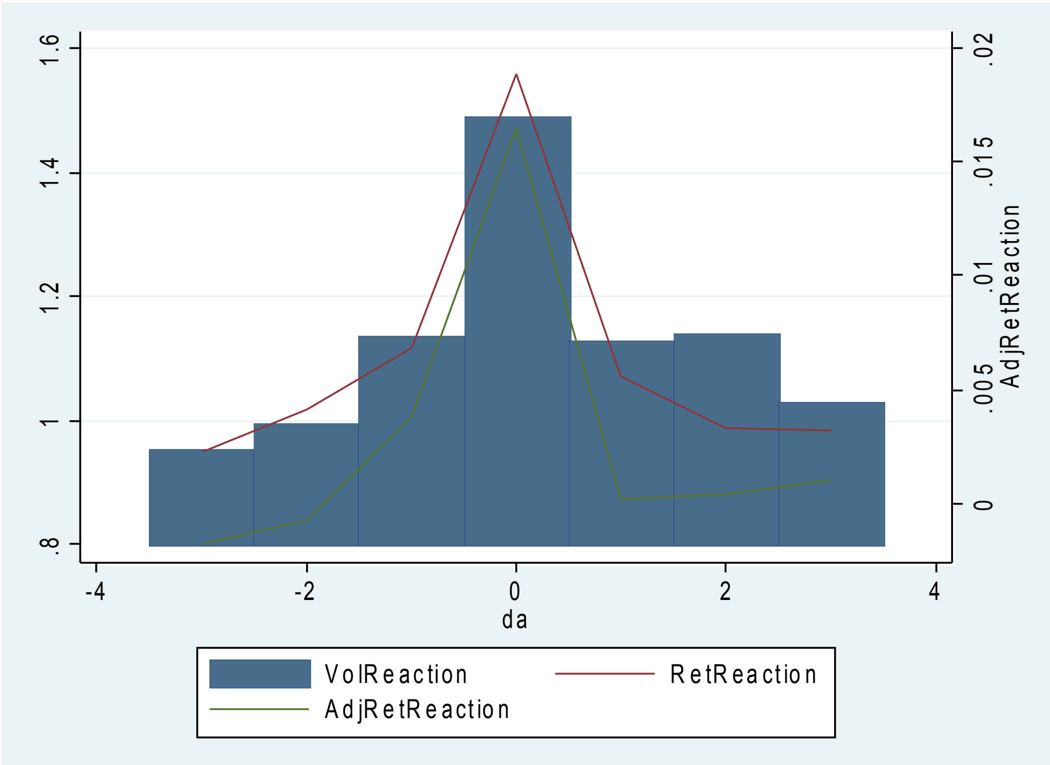


Figure 12: The figure presents the volume reaction, the return reaction and the market-adjusted return of the top broker buy recommendations issued by the analysts who moved from non-top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 13. Non-top to top brokers, top brokers, sell recommendations

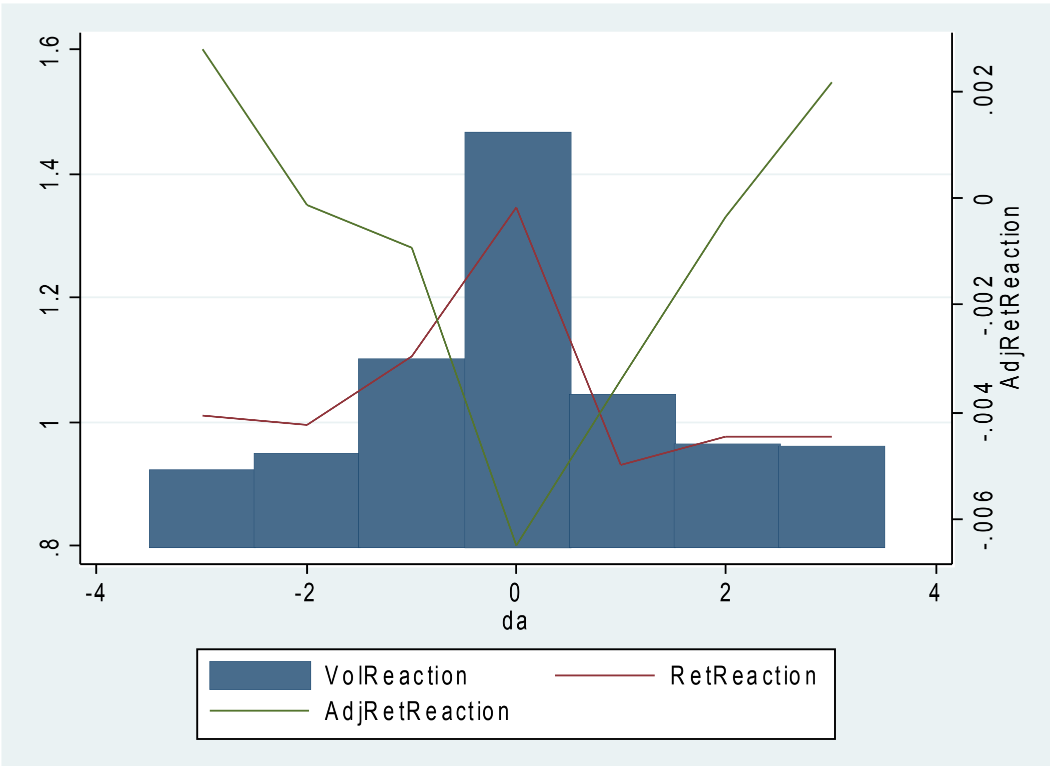


Figure 13: The figure presents the volume reaction, the return reaction and the market-adjusted return of the top broker sell recommendations issued by the analysts who moved from non-top to top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 14. Top to non-top brokers, non-top brokers, buy recommendations

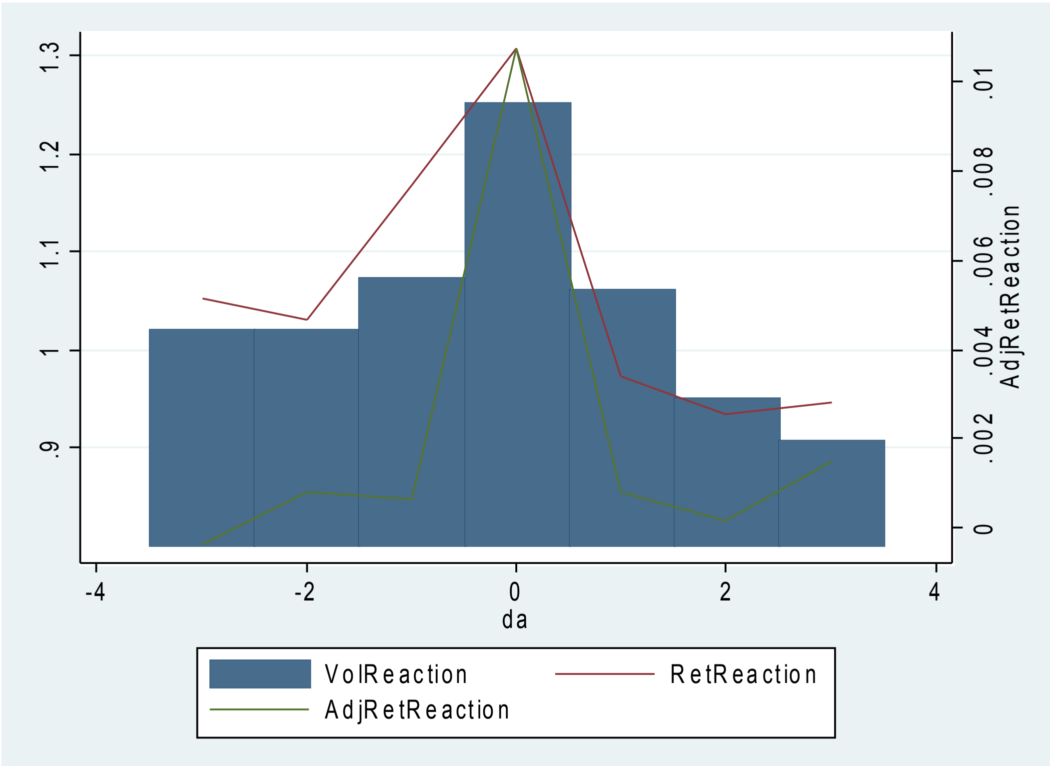


Figure 14: The figure presents the volume reaction, the return reaction and the market-adjusted return of the non-top broker buy recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 15. Top to non-top brokers, non-top brokers, sell recommendations

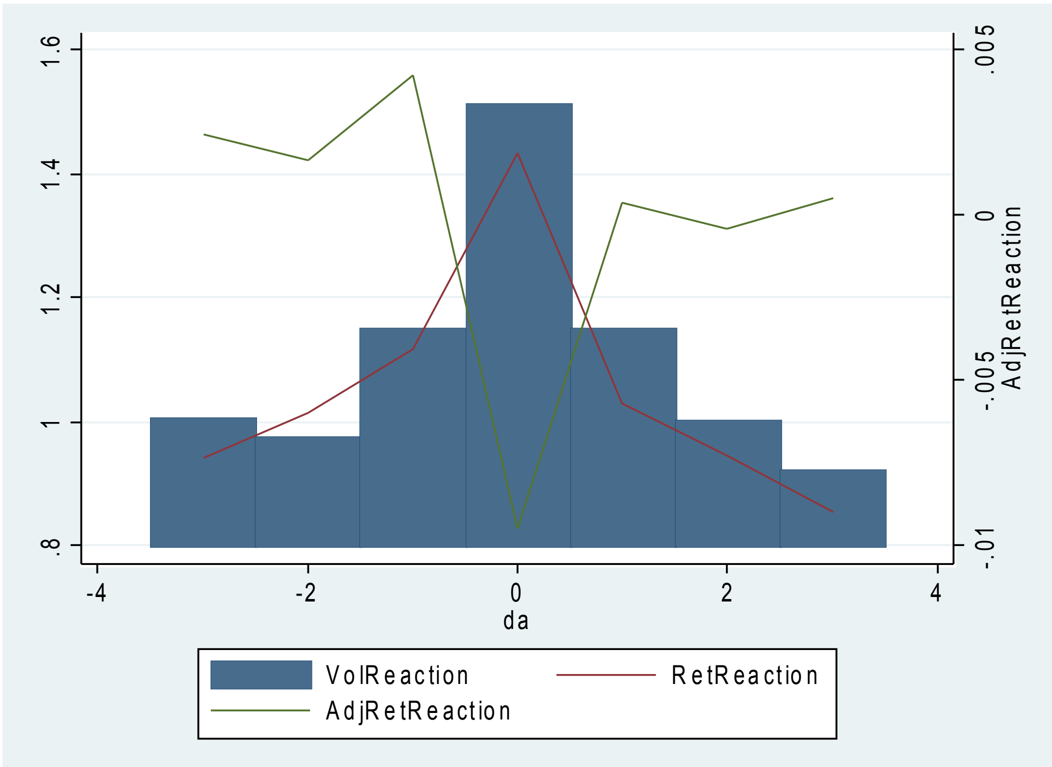


Figure 15: The figure presents the volume reaction, the return reaction and the market-adjusted return of the non-top broker sell recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 16. Top to non-top brokers, top brokers, buy recommendations

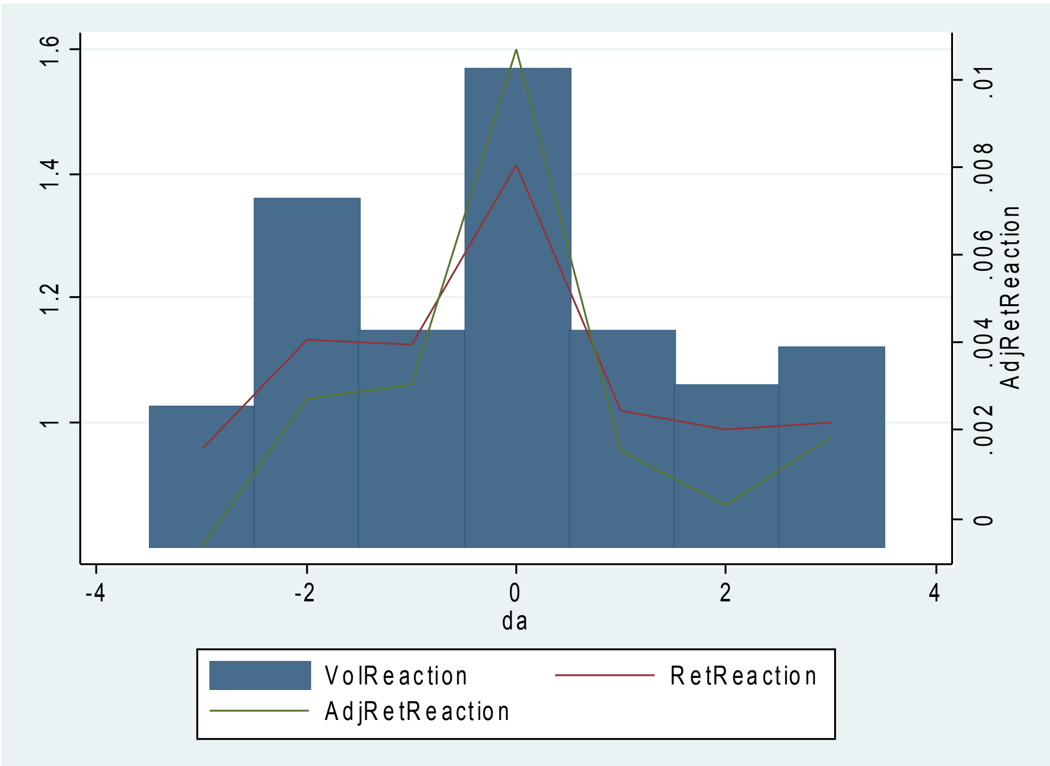


Figure 16: The figure presents the volume reaction, the return reaction and the market-adjusted return of the top broker buy recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

Figure 17. Top to non-top brokers, top brokers, sell recommendations

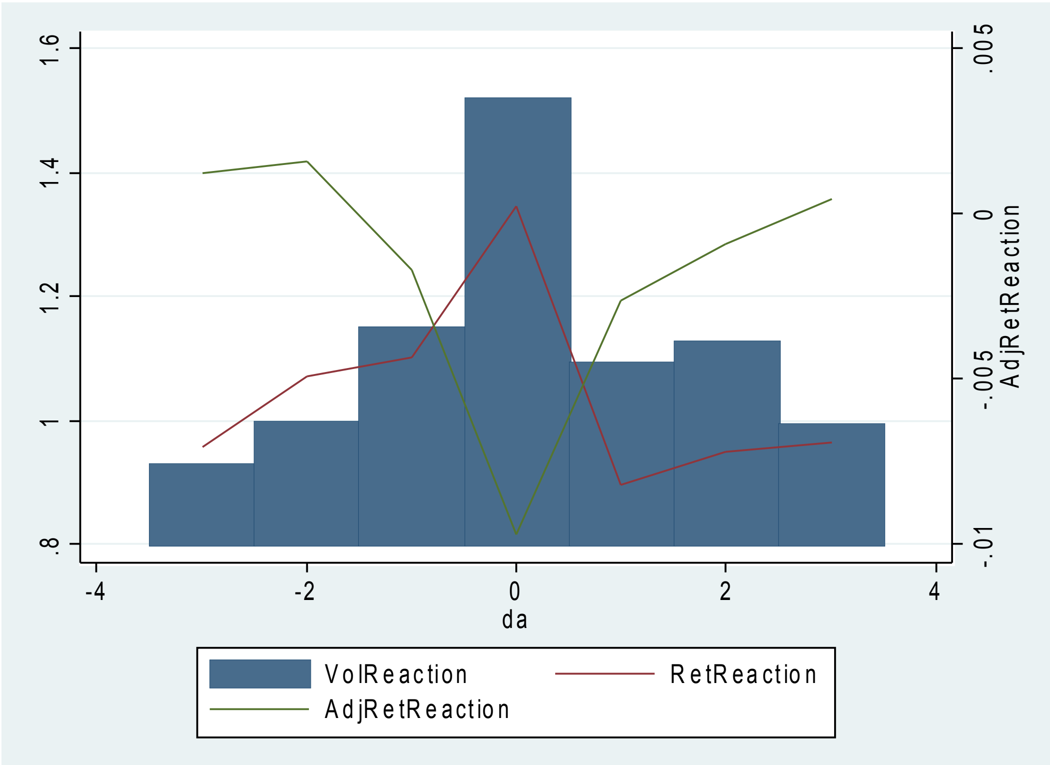


Figure 17: The figure presents the volume reaction, the return reaction and the market-adjusted return of the top broker sell recommendations issued by the analysts who moved from top to non-top brokers. The top brokers are defined at Table [8]. Volume reaction is defined at equation [9], return reaction at equation [10] and market-adjusted return is defined at equation [12]. The data is from the 1993-2009 period. Recommendations come from IBES, daily stock returns from CRSP.

CHAPTER 2

Do Dividends Impose Discipline? Evidence from Earnings Forecasts

Abstract

I study financial analysts' forecast errors and dispersion with respect to dividends paying firms. I find that errors and the dispersion for firms that pay ordinary quarterly dividends are lower than for firms that do not. I examine if there is more information or better quality information for dividend paying firms as an explanation for the lower errors and dispersion. The empirical results confirm this hypothesis. I also examine the market reactions for forecasts announcements and recommendations releases and I find evidence of lower return and volume reactions for dividend-paying firms. Finally, I use the propensity matching method to check for endogeneity and the results confirm that dividend-paying firms exhibit lower forecast errors and lower dispersion.

I. Introduction

The corporate finance literature has long striven to explain the dividends puzzle. Modigliani and Miller (AER 1958, JB1961) proved that in an efficient market, the value of a firm is unaffected by how a firm is financed. However, markets are not perfect and agency considerations plague contracts. So, dividends may play some role in the corporate strategies of firms. The seminal paper by Lintner (AER, 1956) sheds some light on corporations' payout policy. Since then, signaling models, agency models and tax considerations have been put forth to provide explanations for the existence of dividends. Most studies examining the information content of dividends focused on whether dividends signal profitability. The reached consensus perceives dividends as having very limited, if any, signaling content for future earnings. Instead, dividend seem to be related to past profitability; as Miller put it, dividends lag earnings. Grullon, Michaely and Swaminathan (JB 2002) see dividends as signaling the maturity of the firm, which leads to lower discount rates because of the reduction in risk. In this study I provide evidence that dividends have an information role, but a different one than the one assumed by signaling studies: I find that paying firms exhibit more information dissemination than their non-paying counterparts.

The proposition of this paper is that dividend-paying firms exhibit higher information efficiency than non-paying firms and dividends are an important factor towards information efficiency. Managers are imperfect agents of shareholders and because of that there is a need to be monitored. On the other hand, monitoring is expensive, because the agent performing the monitoring pays all the cost and gets only part of the reward. However, the monitoring problem is less serious if the firm is constantly monitored (Easterbrook, AER 1984). By paying dividends a firm is more thoroughly monitored by the financial markets, as it is more probable to raise external capital. Because of this monitoring, dividend-paying firms are more disciplined than the non-paying ones. Dividends may also impose discipline by limiting the degrees of freedom the management has. For example, the manager will not undertake a very risky project that may have negative NPV, since this means that the future dividends may be cut, a very unpleasant prospect for most managers. Firms that exhibit higher discipline will also be less opaque to shareholders and lenders. This can be achieved in two ways. First, it will be easier to examine and evaluate the data regarding the firm and second the firm's management will have relatively fewer things to hide and numbers to manipulate. In other words, dividends improve the information efficiency of the paying firms by imposing discipline on them.

The main challenge is to provide a measure for the information available to investors for each firm. I opt for an indirect way and I use the analysts' forecasts as a way to proxy for this information. More specifically, I use the errors and the dispersion in analysts' forecasts as a proxy to measure the information available to investors. If the forecasts of dividend paying firms are more accurate than the forecasts produced for non-paying firms, it means that the information available to analysts was more abundant or of higher quality than the information available for non-paying firms.

The same logic applies to forecast dispersion. Higher dispersion means higher disagreement between analysts. Disagreement may stem from differences in information sets among analysts and different abilities of analysts. If the analysts covering dividend paying and non-paying firms have on average the same skills, then a difference in dispersion between firms may be attributed to the heterogeneity of information among the analysts covering the firm. In turn, heterogeneity may be attributed to difference in the amount of information or the quality of information available to analysts. This means that some analysts possess more or better information than others, which is a sign of flawed information flow. So, lower dispersion for a firm may suggest a better information flow than the flow of higher dispersion firm. The assumption behind the use of forecast accuracy and forecast dispersion is of course that analysts' expectations proxy for the ones of the investors.

After having established that dividend paying firms are actually more information efficient based on forecast accuracy and forecast dispersion, I investigate the factors which may contribute to this efficiency. First, I document that analysts covering dividend-paying firms issue on average more forecasts than their colleagues covering non-paying firms. Assuming that analysts release a new forecast every time they receive new information, then more forecasts per analyst means more information for dividend-paying firms. The fact that there are more forecasts per analyst for dividend paying firms means that more information becomes available for dividend-paying firms during the course of the quarter and the analysts respond to this flow of information by issuing new forecasts updating their estimates, thus resulting in more forecasts per analyst for the dividend-paying firms.

In order to investigate the quality of information, I use as a proxy the accruals quality for each firm. Since the financial statements are one of the most influential inputs for the analysis of firms, good quality of financial statements is of high important to financial analysts, and will produce higher quality forecasts. I find that dividend-paying firms have higher quality accruals, and thus the information about them appears to be of higher quality.

As an additional step to examine the quantity of information, I examine the time clustering of forecasts for paying and non-paying firms. I find that the forecasts of paying firms are less clustered than the forecasts of non-paying firms. Clusters are formed when all analysts update their forecasts at the same time, possibly as a result of new public information. Less forecast clustering may indicate less dependence on publicly available news. If each analyst has his own sources which he can use to produce forecasts, the information efficiency is increased, meaning that the information efficiency for dividend paying firms is higher than the non-paying ones.

Next, I examine the market reactions to forecast releases, recommendation releases and earnings announcements. I find that market return reactions are more moderate for favorable forecast releases, hold/sell recommendations and favorable earnings announcements for dividend paying firms. Lower return reactions mean that or the news innovation was taken already partially into account, or that the innovation was not marginally important. In any case, stocks with these characteristics appear to be more information efficient. Moreover, in all cases, favorable or unfavorable forecasts, buy or sell recommendations, and earnings announcements the volume reactions is lower for dividend paying firms. If the volume reaction is treated as a measure of information heterogeneity, then there is evidence that the paying firms are more efficient.

Additionally, I examine the effect of dividends on each size and book-to-market decile. If the hypothesis that monitoring is expensive and shareholders use dividends as an efficient and effective way to monitor a firm's management, dividends' effect on monitoring will be more evident in the cases where monitoring is more difficult. It is natural to assume that big firms with many lines of business are more difficult to be monitored than smaller firms with limited business scope. In the same logic, it is natural to assume that firms with many growth opportunities are more difficult to monitor. The results confirm the above hypothesis: Distribution of dividends seems to have the strongest effect on large and growth firms.

Finally, I address the endogeneity problem. The finding that forecasts for dividend-paying firms are more accurate and the corresponding market reactions milder provides evidence that dividend payers are information efficient as result of more disciplined practices, but the same results may come from the fact that the already disciplined firms are the ones to distribute dividends at the first place, while the non-disciplined ones don't initiate dividends. In this view, it is not dividends that make firms disciplined, it is that disciplined firms pay dividends. I address the endogeneity problem in two ways. First, I use the dividend tax cut of 2003 as a natural experiment. Second, I use a propensity matching method to compare dividend paying firms with non-paying firms with the same characteristics. In both cases, the results show that paying dividends results in lower forecast errors.

The results of the current study point to agency theory as a partial explanation of the dividend puzzle. If firms become more transparent and efficient to disseminate information to investors, it means that the cost of controlling the management and the overall performance of firm is substantially reduced.

The paper is organized as follows. Section II describes the data. Section III investigates the forecast errors and dispersion. Section IV provide some possible explanations for the findings of Section III. Section V examines the market reaction to new forecasts and recommendations. Section VI examines the effects for size and book-to-market deciles. Section VII investigates the endogeneity issue. Section VIII includes some robustness checks and Section IX concludes.

II. Data

The data comes from IBES, CRSP and Compustat. I use quarterly earnings forecasts from the IBES Details unadjusted file from 1990 to 2009, the IBES Recommendations file from 1993 to 2009, the CRSP monthly and daily file from 1990 to 2009, the CRSP events file from 1960 to 2009, the Compustat annual fundamentals file from 1960 to 2009 and the Thompson 13F database from 1990 to 2009. For the analysis related to the quarterly earnings forecasts accuracy I use the intersection of firms between CRSP monthly file, IBES Details unadjusted file and Compustat. For the analysis of the firms' accounting data I use the intersection between CRSP events file and Compustat annual fundamentals file. Finally, for the investigation of market's reaction, I use the intersection between IBES unadjusted Details File, CRSP daily file and Compustat annual fundamentals file for the forecasts case and the intersection between IBES recommendations file, CRSP daily file and Compustat annual fundamentals file for the recommendations case.

I create the intersection between the IBES Details file and CRSP monthly and IBES Recommendations file and CRSP daily file using the connection Table provided by WRDS. I also use the procedure proposed by WRDS to connect CRSP and Compustat. I use the CRSP identifier (permno) to connect IBES and Compustat files. I use cusip to connect 13F file to the other datasets.

Descriptive statistics for the IBES Details unadjusted file (intersection with CRSP) are presented at Table [1], Panel A. The table reports the number of firms per year, the number of forecasts, analysts, the mean number of companies covered by analyst, the mean number of analysts covering a firm and the mean firm size defined as the logarithm of the market equity. Descriptive statistics for all years are presented at Panel B. On average there are 4.5 analysts per firm with a standard deviation of 4.4 and median of 3. The average analyst covers 9.9 firms (median 9) with a standard deviation of 5.11.

Table [2] presents descriptive statistics for the IBES recommendations file. The file starts at 1993 (with only one recommendation in 1992) and contains more than 500,000 recommendations. IBES assigns each recommendation to five categories (related but distinct to the different ones used by each broker): strong buy, buy, hold, underperform and sell. I group the number of buy and strong buy together and the number of hold, underperform and sell together. The reason is that underperform and sell recommendations are relatively rare, and it seems that hold recommendations serve the role of a sell recommendation in disguise (Barber, Lehavy and Trueman, JFE 2007).

Table [3] presents summary statistics about the size of the firms of the CRSP monthly database. The dataset includes 21120 firms, from three exchanges (NYSE, AmEx and NASDAQ).The CRSP stocks are assigned to ten size deciles. The decile breakpoints correspond to NYSE deciles, and each stock is assigned to each portfolio at the beginning of each year, based on its market equity at the end of the previous year. Each stock stays at the portfolio for a year.

Table [4] Panel A presents the average number of firms per size decile and the average number of forecasts per size decile over a typical year for the whole IBES Details unadjusted and CRSP intersection. The number of firms is larger for the lower size deciles, however the number of forecasts is much larger for each of the larger firms. This confirms a well-documented regularity in the literature, namely that the IBES forecasts are geared towards larger firms. Panel B presents the same numbers for the case of the dividend paying firms.

III. Hypothesis Formulation and Empirical Evidence

A. Choice of measure

The literature on analysts' forecasts has used a variety of measures to measure the accuracy of the released forecasts. In order to adjust for scale and to put all forecasts on equal footing, many researchers have divided the forecast error by a scale factor, usually price. However, a recent paper by Cheong and Thomas (JAR 2011) casts doubts on this practice: by using the unadjusted IBES file, they find that actually the variability of forecast errors across stocks is actually small and dividing by price to adjust for scale actually introduces a lot more variability. Degeorge, Patel and Zeckhauser (JB 1999) also document such a phenomenon: the error increases with price very slowly and only after the 80^{th} centile of the price distribution there is a distinct increase in the error.

At the first part of their paper, Cheong and Thomas (JAR 2011) studied the properties of absolute mean forecast error (AMFE), defined at equation (1) below, and the distribution of the commonly used absolute forecast error standardized by price (PSAMFE), defined at equation (2) below. After calculating both AMFE and PSAMFE, they constructed bar charts of AMFE and PSAMFE with respect to ten price deciles. They find that the practice of dividing by price actually distorts the distribution of errors, rather than fixing any problems. Since the choice of error metric influences directly any conclusions on forecast accuracy, I study the choice of measure more in depth below.

As a first step to the choice of a reliable accuracy metric, I repeat here a part of the analysis of Cheong and Thomas (JAR 2011) in order to investigate the distribution of the errors of the sample of this study. The results are presented at Table [5]. Panel A presents the average absolute mean forecast error (AMFE) for each firm-quarter, as it is also described in Table[6] Panel A:

$$AMFE_{i,t} = \left| \frac{\sum_{j=1}^{n} (value_{i,j,t} - actual_{i,t})}{n} \right| \quad (1)$$

With n the number of forecasts for the given firm-quarter, $actual_{i,t}$ the actual value of the earnings for the firm i at quarter t and $value_{i,j,t}$ the value of the forecast issued by analyst j for the firm i at quarter t. Notice that for the calculation of the AMFE of every firm quarter I keep only the last forecast by every analyst. Table [5] Panel A presents the means, medians, 75^{th} and 90^{th} percentiles of AMFE for each price decile.

Table [5] Panel C presents the distribution for the case that AMFE is divided by price (PSAMFE), also described at Table [6]:

$$PSAMFE_{i,t} = \frac{\left| \frac{\sum_{j=1}^{n} (value_{i,j,t} - actual_{i,t})}{n} \right|}{Price_{i,t}} \quad (2)$$

The price chosen to divide the AMFE is the closing price of the second month of the fiscal quarter for each firm.

Two things are evident from Panels A and C. First, the distributions of AMFE and PSAMFE confirm the results presented by Cheong and Thomas (JAR 2011). The distribution is greatly altered by dividing with price, instead of becoming smoother, which was the purpose of dividing by price; There is evidence that dividing by price creates more problems than solves the problems encountered in the initial distribution. Second , there is actually a mild variance by scale in AMFE, with the means increasing monotonically after the 5^{th} price decile, the medians after the 7^{th} decile, and the 75^{th} and 90^{th} percentiles after the 6^{th} price decile. As a conclusion, the purpose of altering the distribution of AMFE is legitimate, but trying to achieve it by dividing AMFE by price will lead to erroneous conclusions.

Below I try to mitigate the scale problems of AMFE (small AMFE for small prices, large AMFE for large prices). As mentioned in Degeorge, Patel and Zeckhauser (JB 1999), the error increases slightly and only after the price has increased enough. However, price increases steadily and linearly, so when the AMFE has increased only slightly, price is already greatly increased. The results of dividing by a large price slightly increased AMFE will lead to small outcome. On the other hand, dividing an average AMFE with a small price will lead to a large outcome.

A way to solve the problem is to divide AMFE with a factor that also increases only slightly by price, i.e. a non-linear scaling factor. In order to mitigate the scaling problems, I divide AMFE with the following scaling factor (also at Table [6] Panel A):

$$SF = \left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1 \quad (3)$$

The purpose is to eliminate the large AMFE variation by price with respect to the median. The construction of the scaling factor is simple. First, for small prices the SF is close to one, so for the small price deciles the AMFE is not altered. In order to accommodate larger prices, I divide price by large number and raise the fraction to 1.1. The 1.1 power ensures that the SF is an increasing function of price, but the increase is moderate. So, even if the price is a large number, I avoid altering the distribution of errors with respect to price too much. The reason for choosing 200 is that the resulting variation of error by price decile is low, observed ex post by trying different values of the denominator. The specification of equation [3] is robust and the use of e.g. 180 or 220 wouldn't change the results. Also, since the median variation is zero up to the 6th decile and it is monotonic and non-linear after the 7th decile, I need a function which exhibits a non-linear behavior after high input values and it has also low values for low input values. The low exponential of 1.1 approximately delivers this behavior: low increase for low input values, coupled with non-linear increase for high values .

The results of the AMFE divided by the scaling factor (SAMFE) are reported at Table [5] Panel B. The median, 75th and 90th percentile of the 8th, 9th and 10th price deciles are now close to the other deciles, while the values of the other lower deciles remain virtually unchanged. Table [5] Panel D presents the values of SAMFE with winsorization at the 99th percentile, which is the practice to be followed at the subsequent sections. There is an improvement in the means, with the average SAMFE of the first price decile to drop and take a value much closer to the other deciles.

Since AMFE scaled by the factor of equation (3) seems to mitigate the scaling problems with relative success, it will be used to the subsequent section to measure forecast accuracy. Since the scaling of the absolute error by prices is widespread in the literature, I repeat the analysis by dividing the absolute error by price (PSAMFE) and without dividing with price at all (AMFE) as a robustness check for the sake of comparability with other studies. The results remain qualitatively the same as in the case with dividing with the scale factor of equation (3) (see Section VI).

I avoid subtracting and dividing by the mean error, as carried through a number of papers (e.g. Bae, Stulz and Tan JFE 2008, Clement JAR 1999), since this measure is more adequate to evaluate the differences of performance among analysts, and not the across the cross section of different firms. I don't standardize by earnings because earnings close to zero will create numerical problems and because the treatment of negative earnings could obscure the interpretation of the results.

Finally, I use the IBES unadjusted Details file to calculate means and standard deviations. The use of the unadjusted data is motivated by the results of Diether, Malloy and Scherbina (JF, 2002), who report that there are problems with the use of diluted earnings when they calculate means and standard deviations.

B. Forecast Error and Forecast Dispersion

B1. Forecast Error

As a first step towards the investigation of the information advantages of the dividend paying firms, I study the error of the financial analysts' quarterly earnings forecasts. The intuition is that the smaller error, the more information is available to the analysts who produce the forecasts, thus the reduced error relative to the forecast errors of the non-paying firms.

The error metric is the AMFE divided by the standardized factor, as described in the previous section:

$$SAMFE_{i,t} = \frac{\left|\frac{\sum_{j=1}^{n}\left(value_{i,j,t} - actual_{i,t}\right)}{n}\right|}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1} \tag{4}$$

In order to investigate if there are any advantages of the dividend paying firms, I regress SAMFE on a dummy (dividend dummy: ddum) which is one if the firm is paying an ordinary dividend that quarter and zero otherwise, and a number of controls. If the SAMFE of the dividend paying firms are smaller than the SAMFE of the non-paying firms, the sign of the coefficient of the dividend dummy will be negative, meaning that the error is smaller, since the absolute error takes only positive values. The controls include the maturity of the forecast, the general experience of the analyst issuing the forecast, the firm specific experience of the analyst, the number of companies the analyst covered at the given quarter, the size decile of the firm, the book-to-market decile of the firm, the coverage of the firm at the given quarter, the difficulty of covering the given firm, the percentage of shares owned by institutions, the variance of earnings, the correlation of earnings and year and industry dummies. Since I am using an average measure of the errors, SAMFE is the mean of analysts' forecast over the firm-quarter, I have to use the average of the maturity of the forecasts of the analysts issuing a forecast for the given firm-quarter, their mean experience at the given quarter, their mean firm specific experience at the given quarter, the mean number of firms they covered during the given quarter and the mean difficulty over the given quarter. More specifically, I estimate the following equation:

$$SAMFE_{i,t} = \alpha_0 + \alpha_1 meanMaturity_{i,t} + \alpha_2 meanExperience_{i,t} + \alpha_3 meanFirmExperience_{i,t} + \alpha_4 meanNumberCompanies_{i,t} + \alpha_5 SizeDecile_{i,t} + \alpha_6 BooktoMarketDecile_{i,t} + \alpha_7 Coverage_{i,t} + \alpha_8 meanDifficulty_{i,t} + \alpha_9 InstitutionalHoldings_{i,t} + \alpha_{10} EarningsVarianceDecile_{i,t} + \alpha_{11} EarningsCorrelationDecile_{i,t} + \alpha_{12} ddum_{i,t} + \alpha_{13} YearEffects + \alpha_{14} IndustryEffects \quad (5)$$

Maturity of the forecast is defined as the difference in days between the forecast's release date and the announcement the actual earnings, i.e. the higher the maturity, the earlier the forecast. I expect that forecasts with higher maturity will have higher forecast errors. The forecast announcement date is from IBES. For the actual announcement, I keep the earlier date between IBES and Compustat, as prescribed by DellaVigna and Pollet (JF, 2009). The experience of an analyst is defined as the difference in years between his first ever forecast and the given forecast. Experience is expected to improve the forecasting performance of the analyst. The firm specific experience is defined as the difference in days between the analyst's first ever forecast for the given firm and his current forecast for the same firm. The number of firms covered is the number of firms for which the analyst has issued forecasts in the given calendar quarter. The size deciles are defined at the beginning of the current year using the market equity at the end of the previous year, using only NYSE firms to define the breakpoints for each decile. Each stock stays at its current size decile for a year. The rationale of the inclusion of size is that bigger firms maybe have different patterns of earnings (e.g. more stable), and this could introduce bias in the results. Book-to-market is defined as the book value of the firm at the end of its fiscal year which happened at the previous calendar year over its market equity at the end of the previous calendar year. As in the case of size, I use deciles which are based on NYSE breakpoints. Coverage measures the number of analysts covering the same firm at the given fiscal quarter. The more extensive the coverage, the lower the forecasting errors of analysts, because of the higher diffusion of information for the given firm. The difficulty is defined as the average number of firms followed by the firm's analysts (Barth, Kasznik and McNichols, Journal of Accounting Research, 1999) and is designed to capture the difficulty of estimating the EPS of the given firm. The notion is that if the coverage of a firm is intrinsically more difficult, then the firm's analysts will cover less firms. The percentage of institutional holdings comes from Thomson Reuters 13F. The higher the percentage, the more and the better information is expected for the given firm. The variance of earnings is calculated as the variance at the last 12 quarters before a given quarter. A number of at least five observations is required. The earnings variance for each firm-quarter enters equation (5) as deciles. The earnings correlation is defined as the first order autocorrelation between earnings at the last 12 quarters before the current one. The earnings correlation also enters the equation (5) as deciles. I have also included year and industry fixed effects. The industry codes used are the two digit SIC of each firm. Table [6] Panel B provides a short description of the above variables.

Summary statistics for the independent variables of equation (5) are reported at Table [7]. Panel A presents the summary statistics for the whole sample, while Panel B the summary statistics for the dividend paying firms. The maturity of the forecasts and the general experience of the analysts is the fairly the same for both categories. The analysts that cover dividend paying firms appear to have higher firm specific experience. The number of companies covered by the analysts covering a given firm is the same for both categories, meaning that an analysts that covers a dividend paying firm on average will cover the same number of firms as an analyst that covers a non-paying firm. As expected, the size of the dividend paying is on average larger that the size of non-paying firms. Book-to-market on the other hand seems to be the same for both categories. Mean coverage is higher for dividend paying firms. However, coverage is highly correlated with size, so a difference in coverage communicates the same message with size up to a certain degree. The remaining variables, difficulty, institutional holdings, variance of earnings and earnings correlations are the same across firm categories.

For the estimation of equation (5), I drop utilities and firms that belong to the financial, agricultural and public sectors. I use forecasts with a maturity of 60 days or less to avoid including stale forecasts. Extension of this condition to 90 days doesn’t alter the results. I use only the last forecast of each analyst for the given firm for the given quarter. I drop analysts who cover less than four or more than forty stocks per quarter: less than four firms may imply an analyst with very limited sources to follow a more typical number of firms by the brokerage industry standards and more than

40 than because the analyst cannot possibly produce reliable forecasts if he follows so many stocks. I also drop forecasts made by teams of analysts and windsorize the results at the 99% of the SAMFE. The standard errors are corrected for heteroskedasticity and clustering by firm and quarter.

The first column of Table [8] presents the coefficients of the multivariate regression of SMAFE on all control variables and the dividend dummy. The R^2 of the model stands at 0.142. The dividend dummy ddum, the focus of this study, is negative and significant indicating improved accuracy for the firms that distribute quarterly dividends. Maturity is positive and significant at the 0.1%, indicating that the later forecasts are more accurate. The general experience of the analysts doesn't seem to have a significant influence on their performance. The firms specific experience is significant at the 10% level and marginally significant at the 5%, but it has the wrong sign: the more experienced is an analyst on a specific firm, the worse his forecasts. Also, the mean number of companies covered by the analysts is not significant. Size and book-to-market are both significant, but with different signs. Size enters the regression with a negative sign, indicating that the accuracy for the bigger firms is improved. On the other hand, the accuracy for high book-to-market firms is lower than the one for low book-to-market firms. Coverage is also significant and with the expected sign: the more analysts cover a particular firm, the more accurate the forecast in aggregate. Difficulty is not significant. Institutional holdings are negative and significant at the 0.1% indicating improved accuracy for higher stakes of holdings, as expected. Earnings variance is positive and highly significant, suggesting that the higher the variance, the larger the errors in the analysts' forecasts. Earnings correlation is approximately zero and non-significant.

B2. Forecast Dispersion

It is relatively intuitive to argue that if all analysts use the same information set, then the conclusions they will reach will have more in common than in the case that the information used is different.

If the information available for dividend paying firms is more broadly available and it is of better quality, I expect that the forecast dispersion should be lower for the dividend paying firms, since abundance of good quality information will lead to less disagreement among analysts. This is because the information they will use to produce their forecasts will have more common elements than the information used to produce forecasts for non-paying firms. In this section I compare the forecast dispersion between paying and non-paying firms. I proxy forecast dispersion by the standard deviation of the errors of the last standing forecasts of each analyst issued 60 days before the release of the actual quarterly earnings to mitigate the effect of stale forecasts:

$$SFD_{i,t} = \frac{\frac{1}{n}\sqrt{\sum_{j=1}^{n}\left(MFE_{i,t} - Error_{i,j,t}\right)^2}}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1} \quad (6)$$

Increasing the limit to 90 days doesn't change the conclusions.

In order to test the hypothesis that the dispersion in earnings forecasts of the dividend paying firms is lower, I regress SFD of equation (6) on the same control variables as in the case of the equation (5).

The estimated regression is the following:

$$SFD_{i,t} = \alpha_0 + \alpha_1 meanMaturity_{i,t} + \alpha_2 meanExperience_{i,t} + \alpha_3 meanFirmExperience_{i,t} + \alpha_4 meanNumberCompanies_{i,t} + \alpha_5 SizeDecile_{i,t} + \alpha_6 BooktoMarketDecile_{i,t} + \alpha_7 Coverage_{i,t} + \alpha_8 meanDifficulty_{i,t} + \alpha_9 InstitutionalHoldings_{i,t} + \alpha_{10} EarningsVarianceDecile_{i,t} + \alpha_{11} EarningsCorrelationDecile_{i,t} + \alpha_{12} ddum_{i,t} + \alpha_{13} YearEffects + \alpha_{14} IndustryEffects \quad (7)$$

For the estimation of equation (7), I winsorize the SFD at the 99% percentile and I require that at least three forecast are outstanding to calculate the standard deviation. The coefficients of the regression are presented at the second column of Table [8]. The R^2 of the regression is 21.9%. The dividend dummy remains negative and highly significant, indicating that the forecast dispersion of the dividend paying is lower than the non-paying ones. This result offers support to the hypothesis that the information for the dividend paying firms is more abundant and of higher quality, leading to a lower level of disagreement among analysts.The mean maturity is significant at the 5% level, implying reduced dispersion for later forecasts. Mean experience, mean firm specific experience and mean number of companies are not statistical significant. Size and book-to-market are again significant and they have opposite signs. Size carries a negative sign, so the bigger the firm, the lower the forecast dispersion. Book-to-market is positive, indicating that dispersion increases for higher book-to-market (value) firms. Coverage is significant and positive, with higher coverage to increase the dispersion. Mean difficulty becomes negative and significant. The percentage of institutional holdings is also negative and significant: the higher the percentage of stock held by institutions, the lower the dispersion. The earnings variance is again positive and very significant, suggesting that the firms with the more volatile earnings exhibit higher dispersion. The correlation among earnings is again non-significant.

B3. Examination with the Use of Payout Deciles

I proceed to investigate the forecast accuracy and forecast dispersion breaking the dividend dummy into ten deciles according to the payout ratio. To that end, I divide the paying firms into ten deciles from 1 to 10 based on the amount of dividend they as a percentage of the quarter earnings:

$$payout_{i,t} = \frac{dividend_{i,t}}{earnings_{i,t}} \tag{8}$$

The stocks which pay no dividend are assigned to decile 0. So, overall there are 11 deciles, from 0 to 10. The decile one of the dividend payout, the one with the smallest payout ratio includes mostly firms with negative earnings (and thus negative payout) that continue to pay dividends.

I modify equations (5) and (7) by removing the dividend dummy and introducing eleven dummies, one for each dividend decile:

$$SAMFE_{i,t} = \alpha_0 + \alpha_1 meanMaturity_{i,t} + \alpha_2 meanExperience_{i,t} + \alpha_3 meanFirmExperience_{i,t} + \alpha_4 meanNumberCompanies_{i,t} + \alpha_5 SizeDecile_{i,t} + \alpha_6 BooktoMarketDecile_{i,t} + \alpha_7 Coverage_{i,t} + \alpha_8 meanDifficulty_{i,t} + \alpha_9 InstitutionalHoldings_{i,t} + \alpha_{10} EarningsVarianceDecile_{i,t} + \alpha_{11} EarningsCorrelationDecile_{i,t} + \alpha_{12} YearEffects + \alpha_{13} IndustryEffects + \sum_{k=1}^{10} \alpha_{13+k} DivDecileDummy_{i,t} \tag{9}$$

$$SFD_{i,t} = \alpha_0 + \alpha_1 meanMaturity_{i,t} + \alpha_2 meanExperience_{i,t} + \alpha_3 meanFirmExperience_{i,t} + \alpha_4 meanNumberCompanies_{i,t} + \alpha_5 SizeDecile_{i,t} + \alpha_6 BooktoMarketDecile_{i,t} + \alpha_7 Coverage_{i,t} + \alpha_8 meanDifficulty_{i,t} + \alpha_9 InstitutionalHoldings_{i,t} + \alpha_{10} EarningsVarianceDecile_{i,t} + \alpha_{11} EarningsCorrelationDecile_{i,t} + \alpha_{12} YearEffects + \alpha_{13} IndustryEffects + \sum_{k=1}^{10} \alpha_{13+k} DivDecileDummy_{i,t} \tag{10}$$

The results of the estimation of the modified equations are presented at Table [9]. The first column contains the results with SAMFE as the dependent variable and the second column the results with the SFD as the dependent variable. For the case of SAMFE, except from the coefficient of first and (to a lesser degree) second decile, all the other coefficients of the dividend deciles are negative and significant. There are some elements of non-linearity. The coefficients decrease but not monotonically up to the ninth decile and then increase at the tenth decile. In general, the coefficients of the deciles 8 to 10 are close to each other. It seems that increasing the dividends after a point doesn't change the situation drastically with respect to the available information.

The same behavior is obtained also for the case of SFD. In this case only the coefficient of the first decile is positive. Again, the coefficients decrease but not monotonically and in general are close to each other.

C. Summary

The results of this section support the hypothesis that the forecast accuracy is higher dividend paying firms. Moreover, the forecast dispersion is lower. These results apply to almost all payout deciles that include firms with positive earnings. The results seem to point to a higher information efficiency for dividend paying firms.

IV. Possible Explanations

Being able to forecast a process A more easily than a similar process B, two effects may be taking place: i) more information for process A, ii) better information (higher quality information) for process A. I investigate these two possibilities with regard to the information asymmetry between paying and non-paying firms.

A. More Information

Quantifying the available information and measuring the flow of information to investors and financial analysts using a direct approach is of course a strenuous task. Moreover, all information is not born equal; some information is useful and other is not, and distinguishing between can make the task even more arduous. For this reason I use an indirect way to proxy for the useful information available to analysts (and indirectly to investors): the number of forecasts issued by analysts during the quarter for a given firm. The logic is that if new information becomes available to an analyst, the analyst will issue a new forecast and will update his previous forecast. This proxy may come with some disadvantages. If it is easy to forecast for a firm, then just one forecast may be enough. Also, if the analysts of a firm are accustomed to issue forecasts relatively later in the quarter, then one forecast may be again enough. Moreover, if more experienced and smarter analysts may have already taken into account all information and these analysts tend to focus for the non-paying firms, then the introduced proxy may be biased. However, despite the above shortcomings, the number of forecasts per analyst is a clear manifestation that something relatively important happened and compelled the analyst to update his or her views.

In order to test the hypothesis that there are more forecasts per analyst for the dividend-paying firms, I run a probit regression of the probability that an analyst will issue an update forecast. In the context of the binary variable is zero if the analyst has issued only one forecast and one if he has issued more than one forecasts:

$$\Pr(ForecastUpdate_{i,t} = 1|\mathbf{X}) = \alpha_0 + \alpha_1 meanMaturity_{i,t} + \alpha_2 meanExperience_{i,t} + \alpha_3 meanFirmExperience_{i,t} + \alpha_4 meanNumberCompanies_{i,t} + \alpha_5 SizeDecile_{i,t} + \alpha_6 BooktoMarketDecile_{i,t} + \alpha_7 Coverage_{i,t} + \alpha_8 meanDifficulty_{i,t} + \alpha_9 InstitutionalHoldings_{i,t} + \alpha_{10} EarningsVarianceDecile_{i,t} + \alpha_{11} EarningsCorrelationDecile_{i,t} + \alpha_{12} ddum_{i,t} \quad (11)$$

Table [10] Panel A reports the results of the probit regression and Panel B reports the marginal effects. The dividend dummy is positive and significant, implying that there is 5.7% more probability that there is an update forecast for dividend paying firms. This result provides support to the hypothesis that there is more information (that can be used by analysts) for dividend-paying firms than for non-paying ones.

B. Higher Quality Information

A firm's financial accounts (cash flow statements, balance sheet, income statement) are of crucial importance to financial analysts, since the data coming from these accounts are used as inputs in their models that predict the future performance of the firm. Inasmuch as the quality of the output of a model is as good as the input used, the quality of the financial reporting is vital to forecasting the quarterly earnings. A proxy of the quality of financial reporting could be the quality of accruals (Dechow and Dichev, TAR 2002). Good quality accruals should facilitate forecasting, while bad quality will deteriorate the accuracy of the earnings forecasts. In order to test the above conjecture, I must define first a measure of the quality of a firm's financial reports and then to use this measure to examine if there are differences between paying and non-paying firms.

The proxy for accrual quality I choose is the one described by Francis, LaFond, Olsson and Schipper (JAE 2005 and JBFA 2007). The measure is based on the paper by Dechow and Dichev (TAR, 2002) with the additional features proposed by McNichols (TAR, 2002). Accruals are mapped to cash flows and the information uncertainty is considered high if the mapping is a poor one. The procedure followed includes the regression of working capital accruals on cash from operations in the current period, the previous period and the next period, on plant and equipment and revenue changes. The unexplained part of the working capital constitutes an inverse measure of quality of earnings. The greater the unexplained portion of working capital, the lower the quality of earnings. The equation to estimate the working capital accruals is the following:

$$TCA_{i,t} = \varphi_0 + \varphi_1 CFO_{i,t-1} + \varphi_2 CFO_{i,t} + \varphi_3 CFO_{i,t+1} + \varphi_4 \Delta Rev_{i,t} + \varphi_5 PPE_{i,t} + u_{i,t} \qquad (12)$$

TCA is the total current accruals, CFO the firm's cash flow from operations, ΔRev is the change in revenues between year t and t-1 and PPE is the value of firm's i property, plant and equipment. Both dependent and independent variables are defined at Table [6]. All variables are divided by total assets.

For the estimation of equation (12). I follow Francis et. al. (JAE 2005 and Journal of Business Finance and Accounting 2007) who estimate it by running for each year a cross sectional regression for each industry. They use Fama-French 48 industries, while I use 25 GIC industries, in order to increase the precision of the estimation within each industry. Similarly to Francis et. al. (JAE, 2005 and JBFA, 2007) I winsorize at the 1 and 99 centiles and I require at least 20 firms at a given year for a given industry. The annual cross section regressions yield firm specific and year specific residuals, which are used to calculate the information uncertainty metric $AQ_{j,t}=\sigma(u_{i,t})$. $AQ_{j,t}$ is the standard deviation of firm's i residuals, $u_{i,t}$, calculated over years t-5 to t, with at least 4 values required for the calculation. Larger standard deviations of residuals indicate poorer accruals quality and greater information uncertainty.

Notice that in order to estimate equation (12) and to calculate AQ, I don' t restraint the sample to the one used to estimate the forecast errors and dispersion. The goal is to measure the information quality of paying and non-paying firms, not only the ones for which there are analysts' forecasts. Thus, I use the Compustat sample from 1960 to 2009, not limiting the observations to the years 1990-2009.

The results for AQ are reported at the first column of Table [11] Panel A. The resulting values are in good agreement with the results by to Francis et. al. (JAE, 2005 and JBFA, 2007).

After having defined and constructed a proxy for the reporting quality, I use this proxy to examine if the dividend-paying firms have lower accrual quality. If the dividend paying firms exhibit higher accrual quality, it could be a sign of enhanced reporting practices. To that end, I estimate the following equation (Francis et. al., JAE 2005) :

$$AQ_{i,t} = \lambda_0 + \lambda_1 Size + \lambda_2 \sigma(CFO)_{i,t} + \lambda_3 \sigma(Sales)_{i,t} + \lambda_4 OperatingCycle_{i,t} + \lambda_5 NegativeEarnings_{i,t} + \lambda_6 ddum_{i,t} \quad (13)$$

where $\sigma(CFO)_{i,t}$ is the standard deviation of firm i's CFO, calculated over the past 5 years, $\sigma(Sales)_{i,t}$ is the standard deviation of firm i's sales calculated over the past 5 years, $OperatingCycle_{i,t}$ is the log of firm i's operating cycle and $NegativeEarnings_{i,t}$ the number of years, out of the past 5 years, that firm I reported net negative earnings before extraordinary items and ddum the dividend dummy. Description of both the dependent and independent variables can be found at Table [6]. Descriptive statistics are provided at Table [11]. Table [11] contains two panels. Panel A presents data for the whole sample, while Panel B only for the subsample of the dividend paying firms. The median accrual quality is better for the dividend paying firms (lower value means lower standard deviation of the residuals from the estimation of equation (12)). Dividend paying firms are bigger, as it evident from the median logarithm of total assets. The median of the standard deviation of sales is larger for the non-paying firms by approximately 17%. The standard deviation of cash flows from operations is lower for dividend paying firms by 20%. The cash flow from operations is also larger for the dividend paying firms by 37%. The operating cycles of both categories are fairly identical.

For the estimation of equation (13) I use Fama-MacBeth regression, correcting the standard errors for time series correlation. The results are presented at Table [12]. The dividend dummy is negative, indicating better accruals quality. The dividend dummy accounts for 17% of the accruals quality difference between paying and non-paying firms. Also, from the 42 coefficients for the dividend dummy calculated for each year, only 11 are positive, with none of them significant at the 5%. From the remaining 31 negative coefficients, 15 are significant at the 5% or better. These results provide evidence that the dividend-paying firms have a better accruals quality, which translates to better input into financial analysts models.

C. More Information: Forecast Clusters

In order to investigate further the information about the payer and non-payer firms, I examine the clustering of analysts' forecasts at each quarter. The idea is that when the forecasts are clustered together, then most probably the news the analysts used to come up with their updated forecasts is public news. Public news doesn't necessarily mean public announcements, but it encompasses every kind of innovation that becomes known to market participants at more or less the same time. On the other hand, when forecasts are not clustered together, then the chances are that the news come from analysts' private sources. The difference between public news and news coming from private sources is that in the first case the news release may be an initiative of the covered firm, in the second comes (most probably) as a result of each analyst's individual efforts. However, the existence of private news means that there are sources that can provide the analysts with the actual information. More private releases may imply more information efficiency, since the frequency of private releases of all analysts is greater than the release of public news, so information reaches the marketplace faster.

I put all forecasts that are released the same day into the same cluster. In order for a forecast to be considered a member of a cluster it must have been released at the same day with the other forecasts. Then, I run the following probit regression:

$$\Pr(Clustered_{i,t} = 1|\mathbf{X}) =$$
$$\alpha_0 + \alpha_1 meanMaturity_{i,t} + \alpha_2 meanExperience_{i,t} + \alpha_3 meanFirmExperience_{i,t} +$$
$$\alpha_4 meanNumberCompanies_{i,t} + \alpha_5 SizeDecile_{i,t} + \alpha_6 BooktoMarketDecile_{i,t} +$$
$$\alpha_7 Coverage_{i,t} + \alpha_8 meanDifficulty_{i,t} + \alpha_9 InstitutionalHoldings_{i,t} +$$
$$\alpha_{10} EarningsVarianceDecile_{i,t} + \alpha_{11} EarningsCorrelationDecile_{i,t} + \alpha_{12} ddum_{i,t} \quad (14)$$

The results of the probit regressions are reported at Table [13] Panel A, while Panel B reports the marginal effects. I keep companies that are covered by more than three analysts, so there is the possibility of forming meaningful clusters. The coefficient of the dividend dummy variable is negative and significant. This means that there is 2.4% less probability that the forecasts will form clusters in the case of dividend paying firms. In turn, this means that the information regarding the dividend payers is more widespread during the quarter. In other words, there are more sources about dividend payers and thus higher information efficiency for the dividend paying firms.

D. Summary

I examined three sources for the higher accuracy of forecasts of dividend-paying firms. First, the flow of information for dividend-paying firms seems to be richer than the one of non-paying firms, as indicated by the average number of forecasts by analysts. The average number of forecasts is used as a proxy for the information flow based on the logic that the more forecasts an analyst releases during the quarter, the more information he has received during the quarter, otherwise there would no reason to release his view. Second, it appears that the accrual quality of the dividend-paying firms is higher than the one of the non-paying ones, suggesting better accounting practices overall, which helps analysts to produce accurate forecasts and investors to evaluate the firm with more precision. Third, the forecasts for dividend paying firms are more evenly distributed across the quarter, while the forecasts for the non-paying firms tend to form clusters. This could imply that there are more information sources for the paying firms than just public information stemming from the firm's management. In the case of public information releases all analysts would tend to update the forecasts as soon as possible, leading to the formation of clusters. When each analyst has also his own sources of information, he will update his forecasts independently of other analysts, so the clusters formation will be lessened.

V. Market Reactions

Section III has provided evidence that the forecasts of the dividend-paying firms are more accurate and have lower dispersion. The evidence at section IV suggested that this may be because of the more and higher quality information available for dividend-paying firms. In this section I examine if the hypothesis of more and better information can find support by investigating the market response of dividend-paying and non-paying firms to forecasts, recommendations releases and earnings announcements.

Forecasts announcements usually mark the arrival of some new information in the market, at least information that it is not available to everybody, or a new interpretation of already available information. If there is an abundance of information in the market for a given firm, it is natural to expect that the reaction to new forecasts to be milder than in the case where almost no information is available prior to the new forecast. This has to do with the incremental value of new information. The arrival of new information to an environment already saturated with information will probably have low impact; it may describe the true situation with even more precision, however the broad picture will be known by then and the investors will have already acted accordingly. Thus, the reaction to new information will be milder. On the other hand, in an environment where information is scarce, the arrival of new information will allow the investors to take action, exhibiting swift reactions. In the framework described above, I expect lower reaction to new information provided by analysts' forecasts for dividend-paying firms.

The above framework may be applied in the case of recommendations as well. Recommendations signal a more long term view of the analysts about a stock. In that way, a recommendation communicates some new information to the market. If there is more information for dividend-paying firms in the market, I expect that the market reactions to recommendations announcements to be milder for dividend-paying firms.

Finally, I use the same logic in the case of quarterly earnings announcements. Earnings announcements give the actual results of a firm for a given quarter, and are eagerly anticipated by investors. If the announcement brings completely new information in the market, the market reaction will be swift. If the information doesn't bring important innovations, the market reaction will be mild. In this context, I expect the market reaction to the earnings announcements by the dividend-paying firms to be milder than the reactions of the non-paying firms.

A. Forecasts

In order to measure the market reaction to forecasts announcements I have first to isolate the forecasts from other news, so the returns surrounding the forecasts announcements are not confounded and second to measure the importance of the information the forecast brings to the market.

In order to have a clean sample I remove all forecast of a given firm that are within 4 trading days distance from earnings announcements of the same firm, management's pre-announcements, recommendations for the same firm and other forecasts from the same or other analysts. However, if a given forecast is announced at the same day with other forecasts, I aggregate all the same day forecasts and treat them as one. The aggregate forecast will be present at the final sample if it is far from earnings announcements, recommendations, pre-announcements and other forecasts.

The measure I use to proxy for the information content of a new forecast is the difference of value between the outstanding mean forecast of the previous forecasts and the current forecast dividend by the standardization factor. So, the update is defined as the difference between the average of the k forecasts released by j analysts for the firm i at the same date t minus the current mean forecast divided by the standardizing factor:

$$Update_{i,j,k,t} = \frac{forecast_{i,j,k,t} - MeanForecast_{i,j,T<t}}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1} \quad (15)$$

Because of the presence of non-linearities, I group the positive updates separately into 10 positive deciles, the negative updates separately into 10 negative quantiles and the zero updates into one zero quantile.

In order to assess the market reactions for dividend-paying and non-paying firms, I run a regression of the cumulative abnormal return around the forecast announcement on a number of control variables and the dividend dummy. The window chosen includes the return of one day before and one day after the announcement [-1, +1]:

$$ExcessReturnReaction(-1,+1)_{i,j,k,t} = \alpha_0 + \alpha_1 UpdateDecile_{i,j,k,t} + \alpha_2 SizeDecile_{i,t} + \alpha_3 BooktoMarketDecile_{i,t} + \alpha_4 Coverage_{i,t} + \alpha_5 Momentum_{i,t} + \alpha_6 Turnover_{i,t} + \alpha_7 InstitutionalHoldings_{i,t} + \alpha_8 EarningsVarianceDecile_{i,,t} + \alpha_9 EarningsCorrelationDecile_{i,t} + \alpha_{10} ddum_{i,t} + \alpha_{11} WeekDayEffects + \alpha_{12} YearEffects + \alpha_{13} IndustryEffects \quad (16)$$

The standard errors are adjusted for heteroskedasticity and clustering by the day of announcement. The update decile is included to control for the amount of information the new forecast brings to the market. The day of the week control is introduced because of the DellaVigna and Pollet (JF 2009) finding that the reactions on Fridays are lower than on other days. The other new variables are the mean turnover and momentum. The mean turnover is defined as the mean monthly share trading volume divided by the average number of shares for the one year before the month of the forecast announcement. Momentum is defined as the cumulative abnormal return over the market return for a period of six months (125 trading days) before the forecast announcement. I winsorize the sample at the 1% and 99% percentiles.

I also examine the volume reaction to the forecast announcements, by running a regression of the mean volume over shares outstanding over the three days window over the same control variables as in equation (16) above:

$$VolumeReaction = \frac{Shares\ Traded}{Shares\ Outstanding} \tag{17}$$

$$\begin{aligned} &VolumeReaction(-1,+1)_{i,j,k,t} = \\ &\alpha_0 + \alpha_1 UpdateDecile_{i,j,k,t} + \alpha_2 SizeDecile_{i,t} + \alpha_3 BooktoMarketDecile_{i,t} + \alpha_4 Coverage_{i,t} + \\ &\alpha_5 Momentum_{i,t} + \alpha_6 Turnover_{i,t} + \alpha_7 InstitutionalHoldings_{i,t} + \\ &\alpha_8 EarningsVarianceDecile_{i,,t} + \alpha_9 EarningsCorrelationDecile_{i,t} + \alpha_{10} ddum_{i,t} + \\ &\alpha_{11} DayEffects + \alpha_{12} YearEffects + \alpha_{13} IndustryEffects \end{aligned} \tag{18}$$

I estimate both equations (16) and (18) separately for positive and negative updates. The results are presented at Table [14]. The focus is on the coefficient of the dividend dummy. The coefficient is negative and significant for the case of return reactions to positive forecast updates. This suggests that the return reactions of dividend-paying firms are more moderate relative to the return reactions of non-paying firms; investors react more to news for non-paying firms. This is also confirmed by the volume reaction at column (3), where the dummy carries a negative sign and it is significant. The coefficient for the case of negative return reactions is literally zero, but the volume reaction is again negative and significant.

B. Recommendations

The same procedure is also followed for recommendations. Because the number of underperform and sell recommendations is very low, and because of anecdotal evidence that the hold recommendation is actually a polished sell recommendation, I combine the hold, underperform and sell recommendations together. The return and volume reactions are now defined around the release of the recommendations.

$$ExcessReturnReaction(-1,+1)_{i,j,t} = \alpha_0 + \alpha_1 SizeDecile_{i,t} + \alpha_2 BooktoMarketDecile_{i,t} + \alpha_3 Coverage_{i,t} + \alpha_4 Momentum_{i,t} + \alpha_5 Turnover_{i,t} + \alpha_6 InstitutionalHoldings_{i,t} + \alpha_7 EarningsVarianceDecile_{i,,t} + \alpha_8 EarningsCorrelationDecile_{i,t} + \alpha_9 ddum_{i,t} + \alpha_{10} WeekDayEffects + \alpha_{11} YearEffects + \alpha_{12} IndustryEffects \quad (19)$$

$$VolumeReaction(-1,+1)_{i,j,t} = \alpha_0 + \alpha_1 SizeDecile_{i,t} + \alpha_2 BooktoMarketDecile_{i,t} + \alpha_3 Coverage_{i,t} + \alpha_4 Momentum_{i,t} + \alpha_5 Turnover_{i,t} + \alpha_6 InstitutionalHoldings_{i,t} + \alpha_7 EarningsVarianceDecile_{i,,t} + \alpha_8 EarningsCorrelationDecile_{i,t} + \alpha_9 ddum_{i,t} + \alpha_{10} WeekDayEffects + \alpha_{11} YearEffects + \alpha_{12} IndustryEffects \quad (20)$$

I estimate both equations (19) and (20) separately for buy and sell recommendations. The results are reported at Table [15]. For buy recommendations, the dividend dummy is negative but not significant, providing only weak evidence for lower return reaction. However, the coefficient is negative and significant for the case of the volume reaction at column (3), indicating lower volume reaction for dividend-paying firms. For the sell recommendations the dividend dummy is positive and significant for the case of return reactions and negative and significant for the case of volume reactions, indicating milder return and volume reactions.

C. Earnings Announcements

In order to measure the market reaction to earnings announcements I again isolate the earnings announcements from other news, so the returns surrounding the earnings announcements are not confounded .

Again, I use the mean forecast of the previous 60 days as a proxy for the investors' expectations The measure I use to proxy for the information content of the earnings announcements is the difference of value between the outstanding mean forecast of the previous forecasts and the actual earnings dividend by the standardization factor. So, the update is defined as the difference between the average of the k forecasts released by j analysts for the firm i at the same date t minus the current mean forecast divided by the standardizing factor:

$$Update_{i,t} = \frac{actual_{i,t} - MeanForecast_{i,j,T<t}}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1} \quad (21)$$

As in the case of forecasts, I group the positive updates separately into 10 positive deciles, the negative updates separately into 10 negative quantiles and the zero updates into one zero quantile.

In order to assess the market reactions for dividend-paying and non-paying firms, I run a regression of the cumulative abnormal return around the forecast announcement on a number of control variables and the dividend dummy. The window chosen includes the return of one day before and one day after the announcement [-1, +1]:

$$ExcessReturnReaction(-1,+1)_{i,j,k,t} = \alpha_0 + \alpha_1 UpdateDecile_{i,j,k,t} + \alpha_2 SizeDecile_{i,t} + \alpha_3 BooktoMarketDecile_{i,t} + \alpha_4 Coverage_{i,t} + \alpha_5 Momentum_{i,t} + \alpha_6 Turnover_{i,t} + \alpha_7 InstitutionalHoldings_{i,t} + \alpha_8 EarningsVarianceDecile_{i,,t} + \alpha_9 EarningsCorrelationDecile_{i,t} + \alpha_{10} ddum_{i,t} + \alpha_{11} WeekDayEffects + \alpha_{12} YearEffects + \alpha_{13} IndustryEffects \quad (22)$$

The variables at equation are the same as in equation (16), but now the update decile refers to the difference between the actual earnings and the mean forecast of the last 60 days.

I also examine the volume reaction to the forecast announcements, using the same framework as in equations (17) and (18), but now the update decile refers to the difference between the actual earnings and the mean forecast of the last 60 days.

$$VolumeReaction(-1,+1)_{i,j,k,t} = \alpha_0 + \alpha_1 UpdateDecile_{i,j,k,t} + \alpha_2 SizeDecile_{i,t} + \alpha_3 BooktoMarketDecile_{i,t} + \alpha_4 Coverage_{i,t} + \alpha_5 Momentum_{i,t} + \alpha_6 Turnover_{i,t} + \alpha_7 InstitutionalHoldings_{i,t} + \alpha_8 EarningsVarianceDecile_{i,,t} + \alpha_9 EarningsCorrelationDecile_{i,t} + \alpha_{10} ddum_{i,t} + \alpha_{11} DayEffects + \alpha_{12} YearEffects + \alpha_{13} IndustryEffects \quad (23)$$

I estimate both equations (22) and (23) separately for positive and negative updates. The results are presented at Table [16]. The focus is on the coefficient of the dividend dummy. The coefficient is negative and significant for the case of return reactions to positive forecast updates. This suggests that the return reactions of dividend-paying firms are more moderate relative to the return reactions of non-paying firms; investors react more to news for non-paying firms. This is also confirmed by the volume reaction at column (3), where the dummy carries a negative sign and it is significant. The coefficient for the case of negative return reactions is literally zero, but the volume reaction is again negative and significant.

D. Summary

The broad picture from the reactions to forecasts updates and recommendations releases points to reduced reaction to news for the dividend paying firms. If the information update is the same for two similar stocks, but their reaction is different, this implies that the information content didn't make much difference for the case of the stock with the smaller reaction. Also, the consistently lower volume reaction suggests lower heterogeneity among investors about dividend paying firms.

VI. Classification by Size and Book-to-Market Deciles

In this section I investigate the effect of paying dividends with respect to the size and the book-to-market deciles classification of firms. The main idea that dividends impose some sort of discipline in the firms' finances and reporting. This means that dividends will influence more firms that have more degrees of freedom regarding their finances and reporting than firms with less discretion. It is expected that firms with more lines of business and a lot of actual growth and growth opportunities will probably enjoy more discretion at reporting their earnings every quarter. More discretion leads to less discipline and less discipline leads to lower information efficiency. So, the effect of dividends will be larger in the cases of firms that enjoy more discretion. I expect that the effects of dividends on analysts' forecast error will be greater between one large payer and one large non-payer than between one small payer and one small non-payer. In other words, paying dividends will influence more the reporting of large firms and low book-to-market firms.

In order to check the above hypothesis, I run regression [5] for each size and book-to-market decile. Table [17] Panel A presents the dividend dummy coefficients for case of the size deciles. Table [17] Panel B presents the results for the case of the book-to-market deciles. In both cases, the results confirm the hypothesis that paying dividends has more influence on large and low book-to-market firms. More specifically, for the case of the size deciles, up to the fifth decile, the dummy coefficient is small and statistically insignificant. However, for the large firms which belong to deciles 5 to 10, the coefficient is negative, large in absolute value and statistically significant. For the case of the book-to-market deciles, for the first two deciles, the dummy coefficient is negative, large in absolute value and statistically significant. It was also significant at the 10% level for the fourth decile. For all the other deciles the coefficient is not significant. Notice that for all deciles, both size and book-to-market, the coefficient is always negative, confirming the results of regression [5].

VII. Addressing Endogeneity

Until now, I have provided some evidence that paying dividends forces a firm to be more information efficient . The initial hypothesis is that dividends impose discipline on a firm and this discipline has as result that the firm becomes more information efficient. It could be however the case that disciplined firms are the ones to distribute dividends. I employ two methods to circumvent the above endogeneity problem. The first uses the 2003 dividends tax cut as a natural experiment. The second uses a matching methodology, matching paying firms with firms with the same characteristics but not paying dividends.

A. The 2003 Tax Cut

The dividend tax reform was first proposed on January 7, 2003 and was signed into law by President G. W. Bush on May 28, 2003. As a result of the cut, there was an increase in dividend payments. Chetty and Saez (AER 2004, AER 2006) provide evidence that the surge in dividend payments is actually because of the change in the tax law. As reported by Chetty and Saez (AER 2006), total dividends stagnated around $25 billion from 1998 to 2002, and then rose to $33 billion by 2005. Most of the increase took place in the last two quarter of 2003. The dividend initiations were less than 10 per quarter since 1998 to the second quarter of 2003, and surged to more than 40 in the third quarter of 2003. However, the firms that initiated dividends share some common traits. The response was the strongest for firms with principals that faced a different tax environment after the enactment of the law, like individual investors or directors with large holdings (Chetty and Saez, AER 2004). Also, firms that had executives with unexercised options but many shares also were likely to initiate dividends.

I will use firms that initiated dividends in the first two quarters after the enactment of the law, namely 2003 quarter 3 and 2003 quarter 4. The number of firms I have in my dataset is relatively low because the number of firms initiating dividends is not that large in any case, while the problem is aggravating because of data issues. Namely, the need to merge CRSP with Compustat, and most importantly the need that the firms are covered by analysts have as result that the available number of firms is 30 for both quarters.

I am using a single time-series difference before and after treatment methodology to investigate if there is a difference in the forecast errors for the firms that initiated dividends. For this purpose I use the regression framework of equation [5] and [7]. The dependent variables are the average SAMFE and average SFD for each firm for one year before and one year after the dividend initiation. The results are presented at Table [18]. The ddum coefficient is negative and significant at the 10% level (and marginally at the 5%) for both SAMFE and SFD, while the magnitude is larger (in absolute value) than the coefficient of ddum at Table [8] for both cases, -0.01311 to -0.0041for the case of SAMFE and -0.03418 to -0.00299 for the case of SFD. This implies that after the dividend initiation the firms became more disciplined, exhibiting smaller forecast errors and lower forecast dispersion.

B. <u>Propensity Matching</u>

The policy intervention of 2003 with respect to the dividend taxation didn't cause many firms to initiate dividends and moreover the firms that initiated dividends may not be a random sub-sample, since they had a large shareholder or an agent with considerable stake in the firm. As a consequence, the results from examining the behavior of these firms that initiated dividends before and after the change in dividend taxation may be biased. For this reason, I employ the methodology by Rosenbaum and Rubin (Biometrica, 1983). The Rosenbaum and Rubin (Biometrica, 1983) methodology uses a propensity score matching procedure as a method to reduce the bias in the estimation of treatment effects. A matching method tries to circumvent the problem of not being able to observe the counterfactual outcomes by identifying objects within the control group similar to the ones in the treatment group. In the framework of firms and dividends, the treatment group are the firms that pay dividends and control group are the firms that don't pay dividends. The idea is that the bias induced by possible confounding factors is reduced by using treated and control subjects that are as similar as possible. A problem with matching is that it is virtually impossible to match a subject from the treatment group and one from the control group if the vector of characteristics to be used at the matching procedure is large. To address this concern, the

Rosenbaum and Rubin (Biometrica, 1983) methodology summarizes the subjects characteristics to one number, the propensity score and then proceeds to match subjects which are close in terms of propensity.

Rosenbaum and Rubin (Biometrica, 1983) define the propensity score as the probability of receiving treatment conditional on the set of variables that characterize each subject:

$$ps(X) = \Pr(d = 1|X) = E(d|X) \quad (24)$$

with d=(0,1) indicates treatment or no treatment (dividend payment) and X the vector of characteristics. The propensity score can be estimated using a probit or a logit regression:

$$ddum_{i,t} = \alpha_0 + \alpha_1 meanMaturity_{i,t} + \alpha_2 meanExperience_{i,t} + \alpha_3 meanFirmExperience_{i,t} + \alpha_4 meanNumberCompanies_{i,t} + \alpha_5 SizeDecile_{i,t} + \alpha_6 BooktoMarketDecile_{i,t} + \alpha_7 Coverage_{i,t} + \alpha_8 meanDifficulty_{i,t} + \alpha_9 InstitutionalHoldings_{i,t} + \alpha_{10} EarningsVarianceDecile_{i,t} + \alpha_{11} EarningsCorrelationDecile_{i,t} \quad (25)$$

Then, the average treatment effect of the treated (ATT) is estimated as follows:

$$ATT = E(Y_{1i} - Y_{0i}|D_i = 1) = E\{E[Y_{1i}|D_i = 1, p(X_i)] - E[Y_{0i}|D_i = 0, p(X_i)]|D_i = 1\} \quad (26)$$

I choose the probit regression (using logit doesn't change the results). The results of the estimation of equation [22] are presented at Table [19] Panel A. The next step is to assign each treated firm to an untreated one. There are various way to perform this step. I choose to match each dividend paying firm to the untreated firm with the closest propensity score. The results are reported at Table [19] Panel B for the case of SAMFE and at Panel C for the case of SFD. The negative and statistically significant results (at ~0.002% for SAMFE and at 10% for SFD) mean that the treated-dividend paying firms exhibit lower forecast errors and lower forecast dispersion than the non-paying firms with the same (on average) characteristics, implying that dividends force a firm to become more disciplined. Using the Kernel matching or the stratification method produces qualitatively the same results. Also, using bootstrap to estimate the standard errors causes almost no change to the results.

VIII. Robustness

In this section I repeat the analysis of section III.B by using AMFE and PSAMFE as dependent variables in order to check the robustness of the conclusion that the analyst forecasts are more accurate for the case of dividend paying firms. The results are presented at Table [20]. The results for both AMFE and PSAMFE for both accuracy and dispersion don't change the qualitative conclusions of section III. In all four regressions the dividend dummy is negative and significant. The t-statistics in the case of PSAMFE are much lower, indicating that dividing accuracy and dispersion by price may have implications on inference.

IX. Conclusions

In this study I presented evidence that dividend paying firms are more information efficient than non-paying ones. The accuracy of forecasts for the non-paying firms was higher relative to the forecast accuracy of the non-paying ones after controlling for a number of factors that influence the forecast accuracy. Moreover, the dispersion in forecasts is lower for the dividend-paying firms. I also explore three factors which may cause the above results. First, there is more information available for dividend paying firms, as testified by the more forecasts per analyst for the dividend paying firms. More forecasts per analyst imply more information, since analysts update their forecasts when they receive new information. A second factor that may contribute to higher information efficiency is the higher accrual quality of the dividend paying firms. Accrual quality has a direct impact on the quality of financial reports used by analysts and investors when they evaluate a certain firm. Third, the forecasts for dividend paying firms are more evenly distributed across the quarter, implying less reliance on publicly available information and more dependence on private sources. Moreover, the market seems to react more mildly to news regarding dividend paying stocks. Dividend paying stocks exhibit lower return reactions with respect to favorable forecasts and hold/sell recommendations. Furthermore, both in favorable and unfavorable forecasts, buy and sell recommendations, they exhibit lower volume reactions. The reduced forecast errors are more pronounced for the cases of large firms and growth firms, which are the firms that have more discretion at reporting their quarterly numbers.

The above results seem to point to an agency explanation of dividends. Easterbrook (AER 1984) argues that dividends are used as a way to monitor a firm's management with the help of financial markets. Insofar market monitoring is effective, it has as result more available information. In that sense, it seems that dividends are successful in playing this role. Another consequence of more available information is that it easier to extract the intrinsic value of a firm. More information makes valuation easier and this is reflected on the lower reactions to news for the dividend paying firms. Easiness of valuation is more important in the case of bigger firms, with more lines of business, whose valuation is more difficult because of their higher complexity. Lower volume reactions indicate that there is lower disagreement among investors of dividend paying firms. This result, coupled with the lower dispersion in forecasts, means that the market can reach a consensus faster and more smoothly when it comes to evaluate the news of dividend firms, than the news of non-paying firms. Easier and faster consensus is a sign that market can evaluate a firm more efficiently.

Table 1. Basic Statistics of the IBES Details File (unadjusted)

Panel A: Yearly statistics

Year	Unique Firms	Forecasts	Analysts	Average # of Companies per analyst	Average # of analysts per firm	mean firm size (ln(Market Value))
1990	1947	21547	781	10.1	3.3	12.5
1991	2181	26683	938	10.1	3.6	12.6
1992	2492	32101	1054	10.7	3.8	12.6
1993	2788	31146	1218	10.5	3.7	12.7
1994	3400	42782	1427	10.8	3.7	12.5
1995	3617	44488	1533	10.6	3.7	12.6
1996	4139	46963	1628	10.3	3.4	12.7
1997	4431	49970	1917	9.5	3.5	12.7
1998	4403	54059	2114	9.2	3.8	12.8
1999	4335	54911	2218	9.0	3.9	12.9
2000	4049	46554	2189	8.5	4.0	13.1
2001	3617	56621	2211	8.9	4.7	13.1
2002	3448	58567	2112	9.1	4.8	13.1
2003	3444	59998	2157	9.1	5.0	13.2
2004	3727	70214	2314	9.6	5.3	13.5
2005	3870	75944	2357	10.0	5.6	13.5
2006	3917	80869	2433	10.3	5.7	13.6
2007	4076	83116	2401	10.6	5.7	13.6
2008	3857	85025	2349	11.2	6.0	13.3
2009	3461	60149	1878	11.8	5.9	13.1

Panel B: Whole sample statistics

Unique firms for the whole sample: 9804

Unique analysts for the whole sample: 8027

The mean number of covered firms per analyst is 9.9 (median 9) with a standard deviation of 5.11.

The average firm is covered on average by 4.5 analysts (median 3) with a standard deviation of 4.4.

Table 1: The table reports descriptive statistics of the data included in the earnings forecasts sample. The data come from the IBES Details unadjusted file for the years 1990-2009. Size is the logarithm of the market equity.

Table 2. Basic statistics of the IBES Recommendations File

year	Sell	Buy	# analysts	Total recs	% of Buys
1992	0	1	1	1	100
1993	6098	8049	1296	14147	56.89545
1994	12268	16637	2000	28905	57.55752
1995	12000	16951	2197	28951	58.55065
1996	10333	18071	2521	28404	63.62132
1997	9369	19003	2866	28372	66.97801
1998	10972	21872	3349	32844	66.59359
1999	10142	23646	3529	33788	69.98343
2000	8615	21230	3418	29845	71.13419
2001	11104	19059	3270	30163	63.18669
2002	22148	22126	3535	44274	49.97515
2003	19536	14356	3300	33892	42.35808
2004	16860	13782	3407	30642	44.97748
2005	15474	13166	3485	28640	45.97067
2006	17072	13498	3485	30570	44.1544
2007	17013	14307	3520	31320	45.68008
2008	19778	14356	3450	34134	42.05777
2009	17273	13006	3242	30279	42.95386

Table 2: The table reports descriptive statistics of the IBES Recommendations file. The strong buy and buy recommendations form the buy category and the hold, underperform and sell categories form the sell category. The years covered are 1993-2009.

Table 3. CRSP firms per decile

size decile	Number of firms
1	3025
2	866
3	525
4	387
5	312
6	265
7	231
8	219
9	196
10	183

Table 3: The table reports the number of the firms per decile for the monthly CRSP dataset for the years 1990-2009. The deciles are formed yearly at the beginning of the year and are based on the market equity at the end of the previous year. The breakpoints for each decile are calculated using only NYSE firms.

Table 4. Number of firms and forecasts for each size decile

Panel A: Whole sample

decile	average # firms	average # forecasts
1	801	4039
2	621	5202
3	436	4614
4	350	4626
5	299	4797
6	252	4740
7	222	5045
8	213	5990
9	190	6748
10	177	8285

Panel B: Dividend paying firms

decile	average # firms	average # forecasts
1	44.55	210.2
2	81.2	562.15
3	76.1	649.15
4	77	859.4
5	76.2	1092.4
6	75.85	1359.4
7	76.35	1767.5
8	82.45	2294.9
9	85.85	3061.7
10	101.9	4725.5

Table 4: The table reports the average number of firms and the average number of forecasts per size decile for the whole sample (Panel A) and the dividend paying firms (Panel B) over the years 1990-2009. The data come from the intersection of IBES Details unadjusted file and the CRSP monthly file for the years 1990-2009. The size deciles are formed yearly at the beginning of the year and are based on the market equity at the end of the previous year. The breakpoints for each decile are calculated using only NYSE firms.

Table 5. Measures comparison

Panel A: Absolute Mean Forecast Error (AMFE)

Price decile	Mean (AMFE)	Median (AMFE)	p75(AMFE)	p95(AMFE)
1	0.124	0.030	0.080	0.395
2	0.092	0.030	0.067	0.264
3	0.072	0.025	0.060	0.240
4	0.069	0.025	0.060	0.220
5	0.064	0.025	0.060	0.220
6	0.066	0.025	0.060	0.220
7	0.069	0.025	0.065	0.230
8	0.072	0.028	0.070	0.250
9	0.080	0.030	0.080	0.290
10	0.326	0.040	0.109	0.462

Panel B: Standardized AMFE (SAMFE)

Price decile	mean(SAMFE)	med(SAMFE)	p75(SAMFE)	p95(SAMFE)
1	0.125	0.030	0.079	0.404
2	0.089	0.029	0.065	0.257
3	0.069	0.024	0.058	0.228
4	0.065	0.023	0.057	0.209
5	0.059	0.023	0.056	0.204
6	0.061	0.023	0.055	0.201
7	0.062	0.023	0.058	0.206
8	0.063	0.024	0.061	0.215
9	0.067	0.026	0.067	0.244
10	0.083	0.030	0.080	0.322

Panel C: AMFE divided by price (PSAMFE)

Price deciles	mean(PSAMFE)	med(PSAMFE)	p75(PSAMFE)	p95(PSAMFE)
1	0.0561	0.0074	0.0227	0.1442
2	0.0118	0.0034	0.0085	0.0348
3	0.0062	0.0022	0.0053	0.0201
4	0.0045	0.0016	0.0039	0.0143
5	0.0033	0.0013	0.0033	0.0113
6	0.0028	0.0011	0.0027	0.0093
7	0.0024	0.0009	0.0023	0.0080
8	0.0020	0.0008	0.0020	0.0070
9	0.0018	0.0007	0.0018	0.0065
10	0.0015	0.0006	0.0015	0.0059

Panel D: Winsorized SAMFE

Price deciles	mean(SAMFE)	med(SAMFE)	p75(SAMFE)	p95(SAMFE)
1	0.0823	0.0296	0.0787	0.4044
2	0.0651	0.0290	0.0652	0.2565
3	0.0579	0.0240	0.0577	0.2285
4	0.0553	0.0235	0.0567	0.2087
5	0.0539	0.0233	0.0561	0.2041
6	0.0535	0.0230	0.0551	0.2011
7	0.0537	0.0226	0.0581	0.2058
8	0.0560	0.0244	0.0608	0.2151
9	0.0617	0.0256	0.0669	0.2440
10	0.0761	0.0296	0.0798	0.3215

Table 5: The table reports means, medians , the 75th and the 90th percentiles of each price decile for three different measures of mean forecast errors. The price used is the price at the end of the second month of each firm's fiscal quarter.

Table 6. List of dependent and independent variables

Panel A: Dependent variables

Standardization factor. The price used is the price at the end of the second month of the firm's fiscal quarter.	$SF = \left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1$
Forecast error for analyst j, for firm i for the fiscal quarter t. $Value_{i,j,t}$ is the value of the EPS forecast and $actual_{i,t}$ is the actual value of the EPS	$Error_{i,j,t} = value_{i,j,t} - actual_{i,t}$
Mean forecast error for firm i for the fiscal quarter t	$MFE_{i,t} = \frac{\sum_{j=1}^{n}(value_{i,j,t} - actual_{i,t})}{n}$
Absolute mean forecast error for firm i, over analysts' j forecasts for fiscal quarter t	$AMFE_{i,t} = \left\lvert\frac{\sum_{j=1}^{n}(value_{i,j,t} - actual_{i,t})}{n}\right\rvert$
Price Standardized absolute mean forecast error. The price used is the price at the end of the second month of the the firm's fiscal quarter.	$PSAMFE_{i,t} = \frac{\left\lvert\frac{\sum_{j=1}^{n}(value_{i,j,t} - actual_{i,t})}{n}\right\rvert}{Price_{i,t}}$
Standardized absolute mean forecast error	$SAMFE_{i,t} = \frac{\left\lvert\frac{\sum_{j=1}^{n}(value_{i,j,t} - actual_{i,t})}{n}\right\rvert}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1}$
Forecast dispersion for firm i, over analysts' j forecasts for fiscal quarter t	$FD_{i,t} = \sqrt{\frac{1}{n}\sum_{j=1}^{n}(MFE_{i,t} - Error_{i,j,t})^2}$
Price Standardized forecast dispersion for firm i, over analysts' j forecasts for fiscal quarter t	$PSFD_{i,t} = \frac{\sqrt{\frac{1}{n}\sum_{j=1}^{n}(MFE_{i,t} - Error_{i,j,t})^2}}{Price_{i,t}}$
Standardized forecast dispersion for firm i, over analysts' j forecasts for fiscal quarter t	$SFD_{i,t} = \frac{\sqrt{\frac{1}{n}\sum_{j=1}^{n}(MFE_{i,t} - Error_{i,j,t})^2}}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1}$
Excess stock return over the market return	The excess return of the cumulative stock return of a given stock minus the cumulative return of the value weighted dividends including CRSP index for the 3 days window between one day before and one day after the event
Volume reaction	The average of the volume over shares outstanding for the 3 days window between one day before and one day after the event
Forecasts per analyst for firm i at quarter t	Average number of forecast per analyst for a given firm for a given fiscal quarter
Total current accruals (TCA) for firm i at year t	It is defined as the the difference in current assets minus the difference in current liabilities minus the change in cash plus the change in debt in current liabilities
Accruals quality (AQ) for firm i at year t	The quality of accruals of firm i for year t

Panel B: Independent variables

Maturity	The difference in days between the announcement of the actual earnings and the forecast
Experience	Experience is defined in years as the difference between analyst's first forecast and his current forecast
Firm Experience	It is defined as the difference in days between the analyst's first ever forecast for the given firm and his current forecast for the same firm
Number of Companies	It is the number of firms the analyst has issued forecasts for in the given calendar quarter
Size decile	The size decile of the firm for the given year. Each firm is assigned to a decile at the beginning of each year based on the market of the firm at the end of the previous year. For the calculation of the breakpoints only NYSE firms are used.
Book-to-market ratio decile	The book-to- market ratio decile is defined as the decile of the ratio of the book equity of the firm to the market equity of the firm. They are both calcuated at the end of the fiscal year t-1. Portfolios are formed at the beginning of each calendar year and each firm stays at its portfolio for the whole calendar year.
Coverage	The number of analysts covering the same firm at the given fiscal quarter
Difficulty	The negative of the average number of firms followed by the firm's analysts
Percentage of institutional holdings	The percentage of the stock held by institutions. The data comes from Thomson Reuters 13F dataset.
Decile of earnings variance	The decile of the variance earnings for the given year. The variance is defined as the variance of diluted quarterly earnings in the previous 3 years (12 quarters). At least 5 non-missing quarters are required for the calculation.
Decile of earnings autocorrelation	The diluted quarterly earnings first order autocorrelation calculated over the last 3 years (12 quarters). At least 5 non-missing quarters are required.
Dividend dummy-ddum	A dummy with value of 1 if the firm paid a ordinary dividend at the given fiscal quarter.
Industry fixed effects	One dummy variable for each of the two digit SIC codes

Panel C: Independent variables for the forecast mean absolute error and forecast dispersion

Mean maturity	The mean maturity of the forecast issued for the a given firm in the current fiscal quarter
Mean experience	The mean experience of the analysts issuing forecasts for a given firm for the current fiscal quarter
Mean firm experience	The mean firm experience of the analysts issuing forecasts for a given firm for the current fiscal quarter
Mean number of companies	The mean number of companies covered by each analyst covering a given firm a given fiscal quarter
Mean difficulty	The mean difficulty of the firms also covered by the analysts who issued forecast for the given firm the given fiscal quarter.

Panel D: Additional independent variables for the forecast update and recommendations reactions

Forecast Update decile	The decile of the update for a given forecast. The update is defined as the difference between the average of the k forecasts released by j analysts for the firm i at the same date t minus the current mean forecast divided by the standardizing factor: $Update_{i,j,k,t} = \frac{forecast_{i,j,k,t} - MeanForecast_{i,j,T<t}}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1}$
Actual Earnings Update decile	The decile of the update for a actual earnings. The update is defined as the difference between the actual earnings announced by firm i at date t minus the current mean forecast divided by the standardizing factor: $Update_{i,t} = \frac{Actual_{i,t} - MeanForecast_{i,j,T<t}}{\left(\frac{Price_{i,t}}{200}\right)^{1.1} + 1}$
Turnover	It is defined as the average monthly share trading volume divided by the average number of shares over the last year.
Momentum	The excess return of a given stock over the value weighted dividends including CRSP index for the previous six months (125 trading days)

Panel E: Variables used for the calculation of accruals quality

Assets	Total assets of a given firm in year t
Total current accruals	The difference in current assets minus the difference in current liabilities minus the change in cash plus the change in debt in current liabilities
Cash flow from operations (CFO)	Cash flow of operations for the given firm in year t.
Income before extraordinary items	Net income before extraordinary items
Change in current assets	Change in current assets for firm i between years t-1 and t
Change in current liabilities	Change in current liabilities for firm i between year t and year t-1
Change in cash	Change in cash for firm i between years t and t-1
Change in debt in current liabilities	Change in debt in current liabilities for firm i between years t and t-1
Depreciation	Depreciation and amortization expense for a given firm at year t
Change in revenue (ΔRev)	Change in revenues for firm i between years t and t-1
Property Plant and equipment (PPE)	Value of property plant and equipment of firm i in year t
Size	The logarithm of total assets in year t
Standard deviation of sales	The standard deviation of yearly sales during the past 5 years
Operating cycle	The length of the operating cycle
Negative earnings	The percentage of years with negative earnings calculated over the previous 5 years.

Table 6: The table reports the description of dependent and independent variables.

Table 7. Summary statistics

Panel A: Whole Sample

	mean Maturity	mean Experience	mean Firm Experience	mean # of Companies	mean Size decile	mean Book-to-market decile	mean Coverage	mean Difficulty	Institutional Holdings Percentage	Variance of earnings decile	Earnings correlation decile
mean	28.97917	4.726265	738.3305	12.04383	4.828917	4.637307	5.630283	12.11849	0.6299124	5.61212	5.653739
sd	13.98948	3.045614	724.4643	5.139782	2.898863	2.829876	4.861059	4.399423	0.284376	2.835507	2.868907
p10	11	1.090411	0	6	1	1	1	7.363636	0.2188789	2	2
p25	19	2.446575	192	8.6	2	2	2	9.285714	0.4022668	3	3
p50	28.02	4.346849	548.5	11.2	4	4	4	11.5	0.6498894	6	6
p75	39	6.476712	1081	14.4	7	7	8	14	0.8868659	8	8
p90	49	8.640182	1689	18.1875	9	9	12	17.33333	1	9	10

Panel B: Dividend paying firms

	mean Maturity	mean Experience	mean Firm Experience	mean # of Companies	mean Size	mean Book-to-market decile	mean Coverage	mean Difficulty	Institutional Holdings Percentage	Variance of earnings decile	Earnings correlation decile
mean	28.4291	4.959933	1024.824	12.19468	6.540752	4.481006	7.127551	12.27085	0.678669	5.830577	5.358441
sd	13.00747	3.115675	835.174	4.404586	2.709932	2.672962	5.353678	3.666247	0.2324536	2.605185	2.754925
p10	12	1.146849	106.5	7	3	1	2	8.222222	0.3572237	2	2
p25	19.4	2.617808	386	9.333333	4	2	3	10	0.5288597	4	3
p50	27.88889	4.641096	875.75	11.66667	7	4	6	11.875	0.6949136	6	5
p75	37	6.767123	1464.5	14.33333	9	7	10	14	0.8550747	8	8
p90	46.66667	8.947946	2093.5	17.5	10	9	14	16.6	1	9	9

Table 7: The table reports the summary statistics of the independent variables used at equations 5 and 7.

Table 8. Coefficients of the estimation of equations 5 and 7

	SAMFE	SFD
mean Maturity	0.00021***	-0.00003*
	(10.0)	(-2.3)
mean Experience	-0.00016	0.00008
	(-1.2)	(0.8)
mean Firm Experience	0.0	-0.0
	(1.9)	(-0.2)
mean Number of Companies	-0.00012	0.00008
	(-1.1)	(0.9)
Size decile	-0.00045**	-0.00024*
	(-2.9)	(-2.6)
Book-to-market decile	0.00326***	0.00207***
	(24.5)	(24.9)
Coverage	-0.00030***	0.00048***
	(-4.0)	(12.2)
mean Difficulty	-0.00005	-0.00051***
	(-0.4)	(-4.6)
Percentage of Institutional Holdings	-0.00567***	-0.00371***
	(-4.4)	(-4.5)
Earnings variance decile	0.00888***	0.00461***
	(70.4)	(63.8)
Earnings correlations decile	0.0	-0.00006
	(0.0)	(-0.9)
ddum	-0.00410***	-0.00299***
	(-5.6)	(-6.7)
Constant	0.37491***	0.13956
	(8.9)	(1.3)
R-squared	0.142	0.219
N	120546	64241

* p<0.05, ** p<0.01, *** p<0.001

Table 8: The table reports the coefficients from the estimation of equations 5 (SAMFE) and 7 (SFD) for the 1990-2009 period. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Price data from CRSP monthly file. The observations are the standardized mean forecast error calculated for each firm's fiscal quarter. Only the last forecast of each analyst was used. Both AMFE and FD used forecasts with maturity of up to 60 days. For the calculation of forecast dispersion at least three forecasts were required. The year and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on firm.

Table 9. Coefficients of the estimation of equations 9 and 10

	SAMFE	SFD
mean Maturity	0.00013***	-0.00001
	(8.0)	(-0.8)
mean Experience	-0.00002	0.00009
	(-0.2)	(1.6)
mean Firm Experience	0.0	-0.0
	(0.6)	(-1.3)
mean Number of Companies	-0.00006	0.00003
	(-1.0)	(1.0)
Size decile	-0.0001	-0.00008
	(-0.6)	(-0.9)
Book-to-market decile	0.00317***	0.00200***
	(24.0)	(24.3)
Coverage	-0.00035***	0.00046***
	(-4.7)	(11.8)
mean Difficulty	-0.00009	-0.00042***
	(-0.9)	(-5.6)
Percentage of Institutional Holdings	-0.00703***	-0.00444***
	(-5.5)	(-5.4)
Earnings variance decile	0.00860***	0.00448***
	(68.4)	(62.4)
Earnings correlations decile	-0.00022	-0.00017*
	(-1.9)	(-2.5)
1st dividend decile	0.05110***	0.02053***
	(16.5)	(12.8)
2nd dividend decile	0.00436**	-0.00086
	(2.6)	(-0.9)
3rd dividend decile	-0.00087	-0.00179*
	(-0.6)	(-2.2)
4th dividend decile	-0.00674***	-0.00406***
	(-5.4)	(-5.7)
5th dividend decile	-0.01144***	-0.00681***
	(-9.5)	(-9.7)
6th dividend decile	-0.01537***	-0.00611***
	(-13.0)	(-8.6)
7th dividend decile	-0.01483***	-0.00714***
	(-12.7)	(-10.3)
8th dividend decile	-0.01406***	-0.00814***
	(-10.6)	(-11.0)
9th dividend decile	-0.01983***	-0.00915***
	(-14.4)	(-11.6)
10th dividend decile	-0.01526***	-0.00617***
	(-8.4)	(-5.9)
Constant	0.38298***	0.12986
	(9.3)	(1.3)

R-squared	0.15	0.228
N	120546	64241

* p<0.05, ** p<0.01, *** p<0.001

Table 9: The table reports the coefficients from the estimation of equations 9 (SAMFE) and 10 (SFD) for the 1990-2009 period. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Price data from CRSP monthly file. The observations are the standardized mean forecast error calculated for each firm's fiscal quarter. Only the last forecast of each analyst was used. Both AMFE and FD used forecasts with maturity of up to 60 days. For the calculation of forecast dispersion at least three forecasts were required. The year and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on firm.

Table 10. Forecasts Update

Panel A: Probit Estimation

	Multiple Forecasts
Size decile	-0.03086***
	(-9.5)
Maturity	-0.00881***
	(-64.1)
Book-to-market decile	0.00439
	(1.9)
Number of companies	0.00954***
	(24.3)
Expereince	-0.00214*
	(-2.4)
Firm Experience	0.00005***
	(14.5)
Coverage	0.04477***
	(29.9)
Difficulty	0.00001
	(0.0)
Perecentage of Institutional Holdings	0.09023***
	(3.7)
Earnings variance decile	0.04341***
	-17.3
Earnings correlation decile	-0.00691***
	(-3.4)
ddum	0.16735***
	(10.5)
Constant	-0.76672***
	(-21.4)
R-squared	0.0756
N	838000

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Marginal Effects

	dy/dx
Size decile	-0.0104***
	(-9.58)
Maturity	-0.002977***
	(-66.37)
Book-to-market decile	0.0014
	(1.86)
Number of companies	0.0032***
	(23.97)
Experience	-0.00072*
	(-2.38)
Firm Experience	0.000018***
	(14.36)
Coverage	0.0151***
	(28.51)
Difficulty	0.00
	(0.00)
Perecentage of Institutional Holdings	0.0305***
	(3.70)
Earnings variance decile	0.0147***
	(17.20)
Earnings correlation decile	-0.0023***
	(-3.43)
ddum	0.057***
	(10.33)

* p<0.05, ** p<0.01, *** p<0.001

Table 10: Panel A reports the coefficients from the probit regression at equation 11 for the 1990-2009 period. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Price data from CRSP monthly file. Panel B presents the marginal effects. Analysts that cover less than three companies are dropped. Numbers in parentheses are clustered z-scores. Clusters are formulated based on firm.

Table 11. Summary statistics

Panel A: Whole sample

	Accrual quality	ln(assets)	Sales Standard deviation	CFO Standard deviation	ln(Operating Cycle)	Percentage of negative earnings	CFO	total assets	Property, plant and equipement
mean	0.04	5.31	0.17	0.09	4.81	0.19	0.04	2136.15	1586.47
sd	0.03	2.14	0.72	0.18	0.71	0.29	0.43	9752.05	8638.24
p10	0.01	2.65	0.04	0.02	3.99	0.00	-0.11	14.13	4.23
p25	0.02	3.75	0.07	0.03	4.44	0.00	0.02	42.64	15.61
p50	0.03	5.16	0.12	0.05	4.86	0.00	0.08	174.73	78.51
p75	0.05	6.77	0.21	0.09	5.24	0.40	0.14	873.64	483.08
p90	0.08	8.17	0.34	0.16	5.58	0.60	0.20	3550.50	2429.73

Panel B: Dividend paying firms

	Accrual quality	ln(assets)	Sales Standard deviation	CFO Standard deviation	ln(Operating Cycle)	Percentage of negative earnings	CFO	total assets	Property, plant and equipement
mean	0.03	6.14	0.14	0.05	4.77	0.05	0.11	2887.76	2147.55
sd	0.02	1.87	0.17	0.04	0.60	0.12	0.08	10993.18	9769.26
p10	0.01	3.77	0.04	0.02	4.01	0.00	0.03	43.31	19.34
p25	0.01	4.78	0.06	0.03	4.47	0.00	0.07	118.87	59.25
p50	0.02	6.05	0.10	0.04	4.83	0.00	0.11	424.63	244.85
p75	0.03	7.43	0.17	0.06	5.15	0.00	0.15	1684.38	1070.30
p90	0.05	8.60	0.27	0.09	5.45	0.20	0.20	5418.08	3831.20

Table 11: The table reports summary statistics of the variables used to calculate the accruals quality (as described according to section IV) and the distribution of the results for the calculated for the accruals quality. The data comes from Compustat for the period 1960-2009.

Table 12. Fama-Macbeth estimation of equation 13

Panel A: Regression results

	Accruals Quality
ln(Total assets)	-0.002385***
	(-5.31)
CFO Standard deviation	0.1200826***
	(6.93)
Sales Standard deviation	0.0209135***
	(4.5)
ln(Operating Cycle)	0.0045434***
	(5.63)
percentage of negative earnings	0.0236809***
	(16.88)
ddum	-0.0017707**
	(-3.19)
constant	0.0116994
	(2.32)
N	59657
time periods	42
avg. R-squared	0.4369

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Summary statistics of coefficients

	Pos	Pos/Sig*	Neg	Neg/Sig*
ln(Total assets)	0	0	42	42
CFO Standard deviation	41	41	1	0
Sales Standard deviation	38	32	4	4
ln(Operating Cycle)	42	34	0	0
percentage of negative earnings	42	41	0	0
ddum	11	0	31	15
constant	31	17	11	1

* p<0.05

Table 12: The table reports the coefficients from Fama-Macbeth estimation of equations 13 for the 1960-2009 period. The dependent and independent variables are described at Table 6. The t-statistics are corrected for autocorrelation using the Newey-West correction.

Table 13. Forecasts clustering

Panel A: Probit Regression

	Clustered
Size decile	-0.03435***
	(-14.0)
Maturity	0.01448***
	(71.8)
Book-to-market decile	-0.00839***
	(-4.2)
Number of companies	-0.00274***
	(-8.2)
Expereince	0.02397***
	(27.9)
Firm Experience	0.00001***
	(3.8)
Coverage	0.06756***
	(45.01)
Difficulty	-0.02732***
	(-18.6)
Perecentage of Institutional Holdings	0.34558***
	(14.2)
Earnings variance decile	0.00453*
	(2.3)
Earnings correlation decile	-0.01010***
	(-6.7)
ddum	-0.06085***
	(-5.0)
Constant	-1.25329***
	(-34.5)
R-squared	0.1427
N	1063591

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Marginal Effects

	dy/dx
Size decile	-0.0137***
	(-13.97)
Maturity	0.005771***
	(71.58)
Book-to-market decile	-0.0033***
	(-4.22)
Number of companies	-0.0011***
	(-8.18)
Experience	0.01***
	(27.91)
Firm Experience	4.78e-06***
	(3.75)
Coverage	0.027***
	(45.25)
Difficulty	-0.011***
	(-18.57)
Perecentage of Institutional Holdings	0.1377***
	(14.15)
Earnings variance decile	0.002*
	(2.34)
Earnings correlation decile	-0.0040***
	(-6.71)
ddum	-0.024***
	(-4.97)

* p<0.05, ** p<0.01, *** p<0.001

Table 13: Panel A reports the coefficients from the probit estimation of equation 14 for the clustering of forecasts for the 1990-2009 period. Panel B reports the marginal effects for each variable. Only firms covered by three analysts or more were included. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Numbers in parentheses are clustered z-scores. Clusters are formulated based on firm.

Table 14. Return and volume reactions to forecast updates

	Return Reaction, Positive Update	Return Reaction, Negative Update	Volume Reaction, Positive Update	Volume Reaction, Negative Update
Update decile	0.00056***	0.00075***	0.00007***	-0.00013***
	(7.73)	(10.78)	(6.73)	(-13.96)
Size Decile	-0.00045***	0.00027**	-0.00008***	-0.00003*
	(-4.21)	(2.76)	(-4.74)	(-2.07)
Earnings variance decile	-0.00037***	-0.00013	0.00004**	0.00002
	(-4.69)	(-1.74)	(2.7)	(1.63)
Earnings autocorrelation decile	0.00012	-0.00013	0.00008***	0.00003***
	(1.68)	(-1.84)	(7.76)	(3.97)
Percentage of Institutional Holdings	0.00021	0.00054	0.00191***	0.00165***
	(0.23)	(0.61)	(9.82)	(14.77)
Mean turnover	0.00001	0.00025	0.00338***	0.00365***
	(0.04)	(1.14)	(23.1)	(75.53)
Coverage	-0.00007	0.00004	0.00002	0.00001
	(-1.28)	(0.75)	(1.79)	(1.23)
Momentum	0.00132	-0.00184*	0.00164***	0.00120***
	(1.85)	(-2.38)	(14.35)	(11.05)
Book-to-market decile	-0.00022*	0.00012	-0.00010***	-0.00011***
	(-2.46)	(1.39)	(-7.47)	(-10.70)
ddum	-0.00121*	0.00015	-0.00089***	-0.00049***
	(-2.40)	(0.32)	(-7.08)	(-7.79)
Constant	0.02811	0.00401	-0.00008	-0.00141***
	(1.59)	(1.67)	(-0.10)	(-4.41)
R-squared	0.006	0.006	0.554	0.535
N	60349	73355	60348	73355

* p<0.05, ** p<0.01, *** p<0.001

Table 14: The table reports the coefficients from the estimation of equations 16 and 18 for the reactions to new forecasts for the 1990-2009 period. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Return and volume data comes from CRSP daily file. Observations are the three day excess return around the forecasts(s) release. The year, day of week and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on the forecast(s) release date.

Table 15. Recommendations Reactions

	Buys return reaction	Sells return reaction	Buys volume reaction	Sells volume reaction
Size Decile	-0.00160***	0.00104***	-0.00025***	-0.00033***
	(-9.3)	5.3	(-8.8)	(-8.4)
Earnings variance decile	0.00012	-0.00033*	0.00011***	0.00022***
	0.9	(-2.3)	(4.4)	(7.2)
Earnings autocorrelation decile	-0.00001	-0.00014	0.00008***	0.00008**
	(-0.1)	(-1.0)	(3.7)	(3.2)
Percentage of Institutional Holdings	-0.00424**	-0.00447*	0.00199***	0.00274***
	(-2.7)	(-2.5)	(6.4)	(7.4)
Mean turnover	-0.00019	-0.00038	0.00423***	0.00397***
	(-0.6)	(-1.1)	(24.1)	(22.6)
Coverage	0.00015	0.00003	0.00001	-0.00001
	(1.8)	(0.3)	(0.5)	(-0.3)
Momentum	-0.00417***	-0.00142	0.00231***	0.00200***
	(-3.8)	(-1.0)	(12.0)	(8.1)
Book-to-market decile	0.00071***	0.00104***	-0.00014***	-0.00025***
	(4.6)	(6.3)	(-5.6)	(-7.9)
ddum	-0.0003	0.00416***	-0.00085***	-0.00120***
	(-0.4)	(4.4)	(-4.5)	(-6.1)
Constant	0.00097	-0.00158	0.00206	0.00709
	(0.1)	(-0.1)	(1.4)	(1.5)
R-squared	0.023	0.015	0.453	0.403
N	37444	32368	37444	32368

* p<0.05, ** p<0.01, *** p<0.001

Table 15: The table reports the coefficients from the estimation of equations 19 and 20 for recommendations reactions for the 1990-2009 period. The dependent and independent variables are described at Table 6. The recommendations data comes from the IBES Recommendations file. Return and volume data comes from CRSP daily file. "Strong buy" and "Buy" recommendations are grouped together as buy recommendations. "Hold", "Underperform" and "Sell" recommendations are grouped together as sell recommendations. The year, day of week and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on the recommendation's release date.

Table 16. Earnings Announcements Reactions

	Return Reaction, Positive Update	Return Reaction, Negative Update	Volume Reaction, Positive Update	Volume Reaction, Negative Update
Update decile	0.00428***	0.00296***	0.00029***	-0.00017***
	(23.84)	(12.94)	(12.97)	(-6.60)
Size Decile	-0.00054*	0.00118***	-0.00022***	-0.00004
	(-2.12)	(3.76)	(-4.84)	(-0.98)
Earnings variance decile	-0.00135***	0.00025	-0.00001	-0.00005
	(-6.66)	(1.04)	(-0.33)	(-1.73)
Earnings autocorrelation decile	0.00019	-0.00013	0.00016***	0.00002
	(1.03)	(-0.58)	(4.91)	(0.6)
Percentage of Institutional Holdings	0.00684***	0.00249	0.00318***	0.00266***
	(-3.33)	(1.05)	(4.89)	(9.03)
Mean turnover	-0.00008	-0.0002	0.00505***	0.00516***
	(-0.16)	(-0.28)	(8.1)	(32.9)
Coverage	-0.00005	-0.00053**	0.00019***	0.00018***
	(-0.34)	(-2.63)	(3.82)	(6.78)
Momentum	-0.00526**	-0.00996***	0.00251***	0.00108***
	(-2.82)	(-4.91)	(10.61)	(3.31)
Book-to-market decile	-0.00021	0.00064*	-0.00023***	-0.00019***
	(-1.02)	(2.56)	(-5.60)	(-6.38)
ddum	-0.00459***	0.0003	-0.00146***	-0.00099***
	(-3.64)	(0.2)	(-3.54)	(-5.36)
Constant	-0.06367***	-0.01199*	-0.00516***	-0.00114
	(-13.56)	(-2.11)	(-7.60)	(-1.70)
R-squared	0.038	0.031	0.579	0.531
N	20930	14088	20930	14088

* p<0.05, ** p<0.01, *** p<0.001

Table 16: The table reports the coefficients from the estimation of equations 22 and 23 for the reactions to earnings announcements for the 1990-2009 period. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Return and volume data comes from CRSP daily file. Observations are the three day excess return around the forecasts(s) release. The year, day of week and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on the forecast(s) release date.

Table 17. Size and Book-to-Market Classification

Panel A: Size Deciles

Size decile	1	2	3	4	5	6	7	8	9	10
	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE
ddum	-0.0035	-0.00265	-0.0041	-0.00059	-0.00256	-0.00942	-0.00849	-0.00308	-0.01667	-0.00503
	(-0.9)	(-1.0)	(-1.7)	(-0.3)	(-1.1)	(-4.1)	(-3.7)	(-1.4)	(-6.7)	(-2.4)
R-squared	0.122	0.133	0.142	0.135	0.167	0.154	0.159	0.18	0.186	0.184
N	12109	15481	13351	12782	11848	10975	10716	11002	10956	11326

Panel B: Book-to-Market Deciles

Book-to-market decile	1	2	3	4	5	6	7	8	9	10
	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE	SAMFE
ddum	-0.00631	-0.00708	-0.0008	-0.00357	-0.00172	-0.00004	-0.00465	-0.00283	-0.00177	-0.00322
	(-5.6)	(-4.5)	(-0.4)	(-1.9)	(-0.7)	(-0.0)	(-1.5)	(-0.8)	(-0.4)	(-0.5)
R-squared	0.101	0.097	0.093	0.094	0.145	0.137	0.134	0.126	0.158	0.206
N	19847	16070	14055	12921	12172	10997	10359	9182	8616	6327

Table 17: The table reports the coefficients of the dividend dummy ddum from the estimation of equation 5 (SAMFE) for the different size (Panel A) and book-to-market (Panel B) deciles. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Price data from CRSP monthly file. The observations are the standardized mean forecast error calculated for each firm's fiscal quarter. Only the last forecast of each analyst was used. Both AMFE and FD used forecasts with maturity of up to 60 days. For the calculation of forecast dispersion at least three forecasts were required. The year and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on firm.

Table 18. SAMFE and SFD before and after the 2003 tax cut

	SAMFE	SFD
mean Maturity	0.0003	-0.00001
	1.5	(-0.0)
mean Experience	-0.00119	-0.00331
	(-0.9)	(-1.5)
mean Firm Experience	0.00001	0.0
	(1.6)	(1.0)
mean Number of Companies	-0.00198	-0.00107
	(-1.8)	(-1.3)
Size decile	0.00820*	0.00583*
	(2.5)	(2.1)
Book-to-market decile	-0.00146	0.00337*
	(-0.8)	(2.4)
Coverage	0.00071	0.00247*
	(0.7)	(2.2)
mean Difficulty	-0.00095	0.00091
	(-0.5)	(0.40)
Percentage of Institutional Holdings	-0.06322*	-0.02491
	(-2.1)	(-1.1)
Earnings variance decile	-0.00181	0.00049
	(-0.7)	(0.4)
Earnings correlations decile	0.00032	0.00437
	(0.2)	(1.8)
ddum	-0.01311	-0.03418*
	(-1.9)	(-2.1)
Constant	0.07197	-0.01161
	(1.9)	(-0.5)
R-squared	0.465	0.418
N	60	48

* p<0.05, ** p<0.01, *** p<0.001

Table 18: The table reports the coefficients from the estimation of equation 5 (SAMFE) and 7 (SFD) for the 2003 tax cut period. The dependent variables are the average SAMFE (first column) and SFD (second column) of the 4 four quarters (1 year) before and after the tax cut of all firms which were covered by analysts both before and after the cut. The independent variables are described at Table 6. For the calculation of forecast dispersion at least three forecasts were required. The analysts data comes from IBES unadjusted Details file. Price data from CRSP monthly file. Only the last forecast of each analyst was used. Only forecasts with maturity of up to 60 days are used. The year and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on firm.

Table 19. Probit estimation for the case of the dividend dummy ddum and estimation of Average effect of Treatment for the Treated (ATT)

Panel A: Probit estimation for the case of the dividend dummy ddum

	ddum
Maturity	0.00295***
	(9.3)
Experience	-0.04967***
	(-26.5)
Firm Experience	0.00039***
	(50.8)
Number of companies	-0.00945***
	(-5.8)
Size decile	0.18216***
	(95.9)
Book-to-market decile	0.00066
	(0.4)
Coverage	-0.02041***
	(-20.0)
Difficulty	-0.01529***
	(-7.8)
Perecentage of Institutional Holdings	0.20374***
	(11.6)
Earnings variance decile	0.00016
	(0.1)
Earnings correlation decile	-0.04460***
	(-29.4)
Constant	-1.11607***
	(-44.4)
N	110854

* p<0.05, ** p<0.01, *** p<0.001

Panel B: Estimation of Average effect of Treatment for the Treated (ATT) for the case of SAMFE

Treatment obs.	ATT	Std. Err.	t
40135	-0.016	0.005	-3.271

Panel C: Estimation of Average effect of Treatment for the Treated (ATT) for the case of SFD

Treatment obs.	ATT	Std. Err.	t
28197	-0.106	0.057	-1.859

Table 19: The table reports the coefficients from the estimation of equation 25 (Panel A) and the estimation of the average effect of the treatment for the treated (Panel B). The independent variables are described at Table 6. The matching with respect to the propensity score is conducted using the control subject with the closest propensity. The analysts data comes from IBES unadjusted Details file. Price data from CRSP monthly file. Only the last forecast of each analyst was used. Only forecasts with maturity of up to 60 days are used. For the calculation of forecast dispersion at least three forecasts were required.

Table 20. Robustness checks

	AMFE	FD	PSAMFE	PSFD
mean Maturity	0.00017***	-0.00001	0.00002***	0.00000**
	(9.0)	(-1.1)	(11.1)	(3.0)
mean Experience	-0.00009	0.00013	-0.00002	0.0
	(-0.7)	(1.8)	(-1.4)	(0.4)
mean Firm Experience	0.0	-0.0	0.00000***	0.00000**
	(1.2)	(-0.5)	(5.9)	(3.1)
mean Number of Companies	-0.00004	-0.00001	0.0	0.0
	(-0.5)	(-0.1)	(0.5)	(1.1)
Size decile	0.00075***	0.00036***	-0.00056***	0.00026***
	(4.1)	(3.3)	(-34.7)	(-31.3)
Book-to-market decile	0.00342***	0.00213***	0.00051***	0.00022***
	(22.6)	(22.4)	30.8	(29.7)
Coverage	-0.00044***	0.00055***	-0.00003***	0.00004***
	(-4.9)	(11.8)	(-4.3)	(11.8)
mean Difficulty	-0.00017	-0.00052***	-0.00002*	-0.00004***
	(-1.5)	(-5.9)	(-2.1)	(-6.4)
Percentage of Institutional Holdings	-0.00621***	-0.00349***	-0.00318***	-0.00138***
	(-4.3)	(-3.7)	(-18.4)	(-17.4)
Earnings variance decile	0.01030***	0.00550***	0.00083***	0.00030***
	70.7	(64.3)	53.9	(47.6)
Earnings correlations decile	-0.00005	-0.0001	0.00012***	0.00003***
	(-0.3)	(-1.3)	8.4	(4.7)
ddum	-0.00376***	-0.00302***	-0.00155***	-0.00050***
	(-4.5)	(-5.9)	(-20.6)	(-14.4)
Constant	0.38776***	-0.00785***	0.02469***	0.01482
	(8.7)	(-3.8)	(10.6)	(1.5)
R-squared	0.14	0.22	0.144	0.196
N	121030	64264	121027	64263

* p<0.05, ** p<0.01, *** p<0.001

Table 20: The table reports the coefficients from the estimation of equations 5 with AMFE and PSAMFE as dependent variables and equation 7 with FD and PSFD as dependent variables for the 1990-2009 period. The dependent and independent variables are described at Table 6. The analysts data comes from IBES unadjusted Details file. Price data comes from CRSP monthly file. Only the last forecast of each analyst was used. Both AMFE, FD PSAMFE and PSFD used forecasts with maturity of up to 60 days.For the calculation of forecast dispersion at least three forecasts were required. The year and industry dummies are not reported. Numbers in parentheses are clustered and heteroscedasticity corrected t-statistics. Clusters are formulated based on firm.

CHAPTER 3

Examining the Extrapolation Hypothesis with the Use of Long-term Forecasts

Abstract

I use the long-term growth forecasts produced by financial analysts to examine the extrapolation hypothesis. The extrapolation hypothesis states that investors are too optimistic about growth and big firms and too pessimistic about value and small firms, extrapolating the firms' recent performance. I find that the errors of the forecasts are higher for the growth firms and larger firms, providing thus support to the extrapolation hypothesis. I proceed to investigate some common factors that may influence the analysts' long-term forecasts. I find that the most important factors are the current GDP growth and the firm age.

I. Introduction

It is a well-established fact that value strategies, buying cheap stocks using book-to-market and price to earnings ratios as measures, earn superior returns over adequately long periods. However, the reason why this is the case is controversial. There are two competing theories which try to come up with explanations which describe the phenomenon. The first theory due to Fama and French (JFE 1992) explains the higher returns of value stocks on the grounds of the higher risk they bear. On the other hand, Lakonishok, Schleifer and Vishny (JF 1994) point to behavioral explanations. More specifically, LSV (JF 1994) propose the hypothesis that investors naively extrapolate the current performance of firms far into the future. But in reality the firms cannot keep up with their previous growth rates and eventually their performance mean reverts; the growth firms slow down and the value firms improve their performance. The stock market realizes the situation with some lag and the returns adjust accordingly. La Porta (JF 1996) finds evidence that buying the stocks with low forecasted growth and selling the ones with high forecasted growth earns superior returns. Also, La Porta, Lakonishok, Shleifer and Vishny (JF 1997) find that the reactions to earnings announcements are more positive for value stocks than for glamour stocks for a period of 5 years after the portfolio formations. On the other hand, Doukas, Kim and Pantzalis (JF 2002) find that the beginning of the year earnings forecasts are actually more optimistic for value and small stocks, contrary to the predictions of the extrapolation hypothesis.

In this study I present evidence that the long-term analysts' forecasts are indeed more optimistic for the growth and large firms, providing thus support to the extrapolation hypothesis. In that sense, the study is close to La Porta (JF 1996) who also uses the analysts long-term growth forecasts. However, La Porta doesn't test the extrapolation hypothesis directly by sorting the firms into book-to-market and size portfolios and then testing their long-term performance, which is the procedure I follow in this study. More specifically, I find that the errors of the forecasted growth are greater for the low to book-to-market firms and large firms. Also, for most cases during the sample period, the forecasting errors are positive, for all categories of book-to-market and size firms. In other words, the analysts overestimate the growth prospects of all firms, but they are particularly more optimistic about the outlook of growth and large firms.

Another property of the long-term forecasts is that the analysts' expectations move together, i.e. they increase and decrease together for all categories of book-to-market and size firms. I postulate that there must be some factors that force the analysts to update the forecasts for all firm categories at the same time. I explore the phenomenon by investigating the correlations of the analysts' expectations with a series of factors that might influence their expectations. I find that the analysts' forecasts are mainly influenced by the concurrent GDP growth rates (especially after 1990) and the firm age. However, they are not particularly influenced (or they are influenced to the wrong direction) by the concurrent overall market returns, the firms' specific returns, the GDP forecasts or by the firms' quarterly earnings. Moreover, their forecasts are not in agreement and are overly optimistic with respect to the corporate profit forecasts produced by the Professional Forecasters of the Survey of Professional Forecasters.

Finally, I examine if there is any evidence of mean reversion in the firms' performance. It is known that profitability is mean reverting (Fama and French, JB 2000, Stigler, 1963), that earnings are mean reverting and that a considerable part of the earnings mean reversion comes from the mean reversion of profitability. I examine a metric of the efficacy of firms with respect to their book-to-market and size categories. As an efficacy metric I use the ratio of sales to the cost of goods sold. The intuition of the metric is clear. A firm uses inputs like labor and raw materials to produce output to sale to its clients. A firm has high efficacy and is more competitive if it can minimize its costs (dollar-wise) and maximize its sales (dollar-wise). So, successful firms will have high sales, low costs and thus high efficacy. The opposite for less competitive firms. The advantage of such a metric is that both its constituents are easily and precisely measured (unlike some productivity measures) and, more importantly, the growth of the ratio is a clear sign that the firm improved its performance compared to its performance last year. As expected, growth firms have higher efficacy at the year after their inclusion to the growth category. However, the value firms increase their efficacy the four years after they are included at the value portfolio, while the growth firms exhibit deteriorating efficacy, as predicted by the mean reversion argument. The paper is organized as follows. Section II describes the data. Section III examines the extrapolations hypothesis. Section IV examines the common movement of expectations and errors. Section V investigates some factors that contribute to the common movement. Section VI investigates what the analysts miss and Section VII concludes.

II. Data

The data comes from IBES, CRSP and Compustat. I use the IBES summary long-term forecasts file form 1981 to 2011, the CRSP monthly and daily file from 1981 to 2011, the CRSP events file from 1955 to 2011 and the Compustat annual fundamentals file from 1981 to 2011. For the analysis related to the long-term forecasts I use the intersection of firms between CRSP monthly file, IBES summary long-term forecasts file and Compustat. For the analysis of the firms' accounting data I use the intersection between CRSP events file and Compustat annual and quarterly fundamentals file. Finally, for the investigation of market's reaction, I use the intersection between IBES summary long-term file and CRSP monthly file.

I create the intersection between the IBES long-term summary file and the CRSP monthly file using the connection table provided by WRDS. I also use the procedure proposed by WRDS to connect CRSP and Compustat. I use the CRSP identifier (permno) as a bridge to connect IBES and Compustat files.

Descriptive statistics for the IBES summary long-term forecasts file (intersection with CRSP) are presented at Figures [1] and [2]. Figure [1] reports the number of firms per year for the 1981-2011 period. Figure [2] presents the number of estimates per year for the period 1981-2011.

The CRSP monthly file includes 21120 firms, from three exchanges (NYSE, AmEx and NASDAQ).The CRSP stocks are assigned to five size quintiles. The quintile breakpoints correspond to NYSE quintiles, and each stock is assigned to each portfolio at the beginning of each year, based on its market equity at the end of the previous year. Each stock stays at the portfolio for a year.

For calculating the book-to-market of each firm I use accounting data from Compustat annual fundamentals file. I calculate the book value as the sum of assets, deferred taxes and investment tax credit and convertible debt minus the preferred stock and total liabilities. I calculate the market value at the end of the current calendar year and then I calculate the book-to-market ratio. I use NYSE breakpoints to calculate the quintile of the book-to-market values each year. The quintile to which a firm belong is the same for the whole next year, e.g. the quintiles calculated at 12/2001 are used for the whole 2002.

Figure [3] presents the number of firms per book-to-market quintile in the intersection between IBES summary long-term forecasts file and CRSP monthly file. Figure [4] presents the same information with respect to the size quintiles.

III. Extrapolation Hypothesis

The extrapolation hypothesis states that the investors' expectations are too high for growth firms (low book-to-market firms) relative to value firms (high book-to-market firms) and also too high for large firms relative to small firms. Moreover, the investors extrapolate recent performance to the future.

Doukas et al. (JF 2002) use analysts' earnings forecasts and find that the extrapolation hypothesis doesn't hold. Specifically, they sort the stocks into book-to-market quintiles and they find that the stocks which belong to the highest book-to-market quintile, the value stocks, exhibit the largest forecast error, while the stocks of the first quintile, the growth (or glamour) stocks, exhibit the smallest forecast error. According to Doukas et al. (JF 2002), this finding provides evidence that the investors are more optimistic about the value stocks (assuming that analysts' forecasts proxy for the investors' expectations), and not the growth stocks, as prescribed by the extrapolation hypothesis. They repeat the sorting procedure with respect to the size of firms. They put the stocks in five size quintiles and they find that the smaller size firms have higher forecast errors than larger firms.

Again, they interpret the finding as that the investors do not overestimate the earnings of larger firms, contrary to what the extrapolation hypothesis implies.

I use analysts' long-term growth forecasts to test the extrapolation hypothesis. An advantage of long-term growth forecasts is that they provide expected growth rates, so I can compare not only analysts' errors but also the expected growth rates per se among firms. The long-term growth forecasts correspond to an average annual increase in operating earnings over the company's next full business cycle. According to IBES, these forecasts refer to a period of between three to five years. I use a value of 4 years as an intermediate value. In order to define the forecast errors, I have to attribute the forecasts to an accounting quantity. I use the operating income before depreciation. In the IBES manual, IBES gives the following description for the long-term forecasts:

"*Long-term growth rate forecasts are received directly from contributing analysts; they are not calculated by Thomson Reuters. While different analysts apply different methodologies, the Long-term Growth Forecast generally represents an expected annual increase in operating earnings over the company's next full business cycle. In general, these forecasts refer to a period of between three to five years*."

According to Compustat, the operating income before depreciation is calculated as Sales (Net) minus Cost of Goods Sold and Selling, General, and Administrative expenses before deducting Depreciation, Depletion and Amortization. The definition takes into consideration both sales and cost of goods sold, so it is a measure close to "operating earnings" suggested by IBES.

I define two types of errors, simple and relative. The simple forecast error is defined as:

$$FE_{i,t} = Forecasted\_OIBDP_{i,t-4} - OIBDP_{i,t}$$

and the relative as

$$RFE_{i,t} = \frac{\left(Forecasted\_OIBDP_{i,t-4} - OIBDP_{i,t}\right)}{OIBDP_{i,t}}$$

with $OIBDP_{i,t}$ the operating income before depreciation for firm i at quarter t and $Forecasted\_OIBDP_{i,t-4}$ the operating income forecasted four year ago for the firm i.

In other words, I check the current quarter's and the quarter's four years away operating income before depreciation. By doing so, I create a time series of forecast errors for every firm.

The relative forecast error is superior since it is independent of the magnitude of the operating income. Since the numbers are not per share, the problem of a very small denominator is largely mitigated.

The choice of operating income as the chosen accounting variable comes with two drawbacks. First, there are some missing values: 157119 out of the 683300 observations are missing in the Compustat Fundamentals file. Second, the measure is too volatile. The problem introduced by high volatility is that, for example, a spike in a given quarter will lead to the erroneous conclusion of better than expected performance. I try to mitigate the first problem by replacing missing values by the average of the quarter before and after the missing one. I increase the sample size by 7344 observations. About the second problem, I use a moving average of the current and the last 4 quarters of a firm's operating income. Figure [5] presents the case of Microsoft's operating income as an example. The employed procedure seems to reduce effectively the intertemporal volatility and also follows the trend of Microsoft's operating income.

III.A. Book-to-Market

In order to test the extrapolation hypothesis for growth and value firms, I sort the stocks in book-to-market quintiles and I examine the median forecast and median forecast error. I use median errors in order to avoid the influence of outliers. Use of medians for long-term growth forecasts is also advised by I/B/E/S. Table [1] presents the results for the simple error, the relative error and the expectations for each quintile for the whole sample. The errors, both absolute and relative are positive for all book-to-market quintiles, pointing to analysts' optimism. However, there is significant dispersion among the different quintiles. At the first quintile, the growth firms, the relative error is 21%. This means that the operating income before depreciation after four years is overestimated by 21%. The overestimation for the high book-to-market firms is only 1.26%, which is negligible compared to the error of the growth stocks. The errors for the three middle quintiles are 14.5%, 6.9% and 3.7%, i.e. the error decreases monotonically for higher book-to-market stocks. Notice also that the expectations for growth stocks are higher than the growth expectations for value firms: 20% is the median growth expectation for growth firms, versus 10.68% for the value firms. The growth expectations also decrease monotonically with the book-to-market quintile.

I follow the procedure by Doukas et al. (JF 2002) and I examine the firms by exchange. The results are presented at Table [2]. For the NYSE firms, the results are the same as above, namely high errors and expectations for the growth firms and low errors and expectations for the value firms.

Both errors and expectations decline monotonically. For the AmEx, the errors for the value firms are higher than the errors of the growth firms but only by 3%. For NASDAQ, the errors are higher for the growth firms than the value firms, the decline in errors is monotonic, and also the errors of the NASDAQ value stocks are negative, meaning that the analysts underestimate the firms' prospects.

A valid criticism is that the forecasts are too far in the future so errors are inevitable. For this reason, even if the argument doesn't address the issue of consistent optimism, I examine the performance of the firms two years after the release of the forecast, using the fact that the forecasts refer to average annual growth. The results are presented at Table [3]. The magnitude of errors is smaller as expected, however the ordering is the same: the errors for the growth firms are higher than the errors of the value firms, 6% versus 0.4%. The errors also decline monotonically. The picture is the same even if I divide the stocks by exchange. The results are presented at Table [4]. For all the three exchanges, the growth firms' forecasts exhibit higher errors than the value firms, and for the case of NYSE and NASDAQ the errors decline monotonically by the book-to-market quintile.

The above results seem to confirm the extrapolation hypothesis. The forecasts for the low book-to-marker firms are more optimistic than the forecasts of the value firms. If the forecasts are used as proxies for the investors' beliefs, then the expectations for the growth firms are overly optimistic.

III.B. Size

I examine now the extrapolation hypothesis with respect to firm size. I sort the stocks in size quintiles and I examine the median forecast and median forecast error. Table [5] presents the results for the simple error, the relative error and the expectations for each quintile for the whole sample. As in the case of the book-to-market sorting, the errors, both simple and relative are positive for all size quintiles, pointing to analysts' optimism. Again, there is significance dispersion among the different quintiles. For the small firms of the first quintile, the relative forecast error is negligible, while for the large firms of the fifth quintile the median relative error is 13%. The growth forecasts are higher for the smaller firms and decrease monotonically by size.

The results remain the same if the firms are examined by exchange. The results are presented at Table [6]. For NYSE, the results mirror the results of the whole sample. For AmEx, qualitatively the results are the same, but the median error of the large firms is at 87%. The expectations for all AmEx firms are the same and around 15%. For NASDAQ, the relative error is marginally negative for smaller firms and positive at 18% for the largest firms. The forecasted growth rates is 17-18% for all NASDAQ firms.

Table [7] examines the firms' performance two years after the release of the forecasts. The picture remains the same. Small and negative errors for smaller firms and larger error for the bigger ones. The conclusions are the same even if I divide the firms by exchange (Table [8]). The relative forecast error is 2% for the smaller NYSE firms and 5% for the largest. For the case of AmEx, it is 1% for the smaller ones and 26% for the bigger ones. For NASDAQ, -1% for the smallest and 5% for the biggest.

The results are again in agreement with the extrapolation hypothesis. The relative errors of the forecasts for the large firms are bigger than the relative errors for the smaller firms.

III.C. Book-to-Market and Size

Finally, I sort stocks by book-to-market and size. The results are presented at Table [9], and confirm the previous results. The small and high book-to-market firms have negative relative errors (-8%), meaning that their prospects are underestimated, while the big growth firms have relative errors of 21%. For all book-to-market quintiles, the largest errors are observed at the fourth size quintile, while for all size quintiles the largest errors are observed at the first book-to-market quintile.

As a conclusion, the results confirm one of the predictions of the extrapolation hypothesis: analysts are optimistic for growth firms and large firms, but the results are quite disappointing. Growth firms miss the forecasts by around 20% and large firms by 13%. On the other hand, value and small firms miss the forecasts by only 1% and 0.6% respectively.

III.D. Comparison with the Results of Doukas et al. (JF 2002)

The results of the previous three subsections regarding the extrapolation hypothesis are in contrast to the results presented by Doukas et al. (JF 2002). In this subsection I investigate the reasons behind this discrepancy.

I turn to the behavioral aspects of the production of earnings forecasts in order to resolve the disagreement between my results and the results of Doukas et al. (JF 2002). Degeorge et al. (JB 1999) provide evidence that management tries to exceed the median forecast by manipulating earnings. Lim (JF 2001) provides evidence that analysts tend to overestimate initially the prospects of the firms in order not to alienate themselves from the management. I try to investigate a combination of the above two ideas. If the analysts do not want to alienate themselves from the management, they may be willing to help the management by issuing forecasts favorable to the firm. The degree of optimism may be related to a threshold. In my case I will examine as a threshold the EPS of the previous FYE. If the conjecture is right and analysts issue forecasts that exceed the previous FYE EPS results, I should be able to produce figures like Figures 5 and 6 in Degeorge et al. (JB 1999).

I define the initial expected earnings growth (IEEG) as the difference between the EPS forecasts issued eight months or earlier than the announcement of the results of the next FYE and the previous FYE's earnings. I produce a histogram for each book-to-market (Figure [6]) and size quintile (Figure [7]). In all cases, it is evident that the number of positive IEEG are much higher than the number of negative IEEG, resembling the Figures 5 and 6 in Degeorge et al. (JB 1999). As a result, there is evidence that the analysts are reluctant to issue forecasts that lead to negative IEEG. It is also interesting to notice that the great majority of forecast produce an IEEG of 5 and 10 cents. It is safe to argue then that the first forecasts issued by analysts at the beginning of each FYE are in many cases produced mechanically: the analyst just adds some cents to the previous FYE's results, usually up to 10.

The above finding implies that the analysts do not try to estimate the prospects of the firms next year, they act mechanically based on the results of the previous FYE. So, the results of Doukas et al. (JF 2002) could be a manifestation of the above phenomenon. The disagreement between the findings by Doukas et al. (JF 2002) and the extrapolation hypothesis may then be the result of the fact that the value and small firms are not performing as well as the growth and big firms and not of the optimism of analysts about value and small firms.

IV. Time Series of relative Errors and common Movement

The tables in section III provided evidence that the extrapolation hypothesis is valid for the 1981-2011 period, based on the financial analysts' long-term growth forecasts. However, the results may apply only to specific years or periods, and not to the whole 1981-2011 period, and through averaging the results extend to the whole period. In this section I address the concern that the above results for book-to-market and size classifications are driven by specific years or periods. I examine first the case of book-to-market classification. In order to present a clear picture free from idiosyncratic spikes, I will use the Hondrick-Prescott filter to the filter the time series of the relative errors (for the four year horizon errors) of every book-to-market quintile. The Hondrick-Prescott filter removes the noise from a time series and what remains is considered to be the trend of the series. In the case under consideration, I have five time series, one for each book-to-market quintile with one data point for each quarter. The results are presented at Figure [8]. The results confirm the conclusions of Tables [1] through [4]. The relative errors for the case of the growth firms are always higher than the errors of the value firms. The errors across quintiles seem to covary and the difference in relative errors between quintile 1 and 5 seem to remain approximately the same at around 20% during the 30 years period. Also, with the exception of the beginning of the sample, the errors decline monotonically by the book-to-market quintile. Notice that the conclusions would be the same if I were to use the original time series without employing the Hondrick-Prescott filter, but the exposition wouldn't be that clear.

I examine also the possibility that the observed behavior of size quintiles simple and relative errors at Table [5] is the result of certain years. I use again the Hondrick-Prescott filter to isolate the trend from noise. The results are presented at Figure [9]. The results confirm the conclusions of Tables [5] through [8]: the relative errors of the bigger firms are always higher than the relative errors of the smallest firms for the whole period. The errors also seem to covary, as in the case of sorting the firms by book-to-market. In many periods, the errors of the firms of the fourth quintile are higher than the errors of the firms of the fifth quintile. The conclusions are the same even if I don't use the Hondrick-Prescott filter.

Next, I employ the above methodology to investigate if the common trends of errors have counterparts at the forecasted growth rates. If the same trends are found also at the expectations, it would mean that the errors of the forecasts are not driven only by unforecastable subsequent developments that influenced certain firms in certain ways, e.g. the NASDAQ crash and the recession that followed hit hard the fragile high tech firms with no clear record of earnings and not many tangible assets that could guarantee continuing financing.

The results for the book-to-market quintiles are presented at Figure [10]. It is evident that there is strong covariance among the forecasts of various quintiles. They all start increasing at the beginning of 90s, they peak around 2000 and then drop. The correlation of the forecasts is reported at Table [10] Panel A. They all are above 0.8. The conclusions don't change with the use of the original data. The correlations of relative errors among the book-to-market quintiles are reported at Table [10] Panel B. They are all positive and economically significant. The correlations of expectations and relative errors for each book-to-market quintile are presented at Table [10] Panel C. With the exception of the second quintile which is negative but insignificant, the other correlations are positive and highly significant.

I repeat the above procedure for the case of the size quintiles. The results for the expectations (after the use of Hondrick-Prescott filter) are presented at Figure [11]. The correlations among the expectations (Table [11] Panel A) of the size quintiles are all above 0.9, implying that all rise and fall together. The correlations between relative errors and expectations are presented at Table [11] Panel B and are economically significant. The correlations between the expectations and relative errors for the size quintiles are presented at Table [11] Panel C. With the exception of the second size quintile, the other correlations are significant at the 10% significance level.

As a conclusion, Figures [8] and [9] suggest that the extrapolation hypothesis applies to the whole period 1981-2011. Moreover, they suggest that the relative errors for the different book-to-market and size quintiles covary, rising and falling together. Figures [10] and [11] provide evidence that the common movement of relative errors is because of the common movement in analysts' forecasts.

V. Possible Factors explaining the common Movement

The previous two sections established that there is evidence that the extrapolation hypothesis is valid (with respect the long-term analysts' forecasts) and also it is valid for the whole 1981-2011 period. Moreover, the relative errors and expectations of the various book-to-market and size quintiles move together. In this section I examine some factors that might contribute to the common movement of the firms' expectations, in order to shed light to the factors that influence analysts and lead them to overestimate the future performance of growth and big firms.

V.A. Market-wide Returns

The rationale behind examining market returns is that high or low (especially sustained) market returns may influence financial analysts' forecasts. This may happen in two ways. First, by taking into consideration that markets are forward looking, high market returns may signal improved prospects for the economy, so improved prospects for firms. Second, high market returns may create euphoria among analysts who will believe that the market and the economy as a whole will continue having sustainable growth. This euphoria could translate into higher expectation for the growth of firms. This explanation could be seen as a macro extrapolation hypothesis.

In order to check this hypothesis, I examine the change in growth forecasts and market returns in a quarterly level. As market returns I use the cumulative market return for the three months of each quarter. I check the relation between market returns and growth forecasts in two ways. First, examining the correlation between the cumulative market return during the given quarter and the change in median forecast of the current quarter and the median growth forecast of the previous quarter. Second, I examine the behavior of the growth forecast during periods of the most extreme market returns.

Table [12] Panel A presents the results of the correlation between the change in growth estimates and quarterly market return for all firms. The correlation coefficient is statistically significant but its magnitude is very small, only 2%. Using a non-parametric setting, I examine the change in quarters the market had positive returns or negative returns. For negative returns, the mean difference is -0.39% and for positive quarter returns the change is -0.18%.

Table [13] Panel A reports the correlations between the cumulative three months market returns and the corresponding change in the mean of expected growth for each book-to-market quintile. The correlations are small (even if some of them are significant), and provide evidence that the market performance is not an important factor in determining the high forecasted expected growth. Moreover, the coefficient of the regression of the change of the mean forecasted growth for all book-to-market quintile on the market return is around 0.005 (t=3.29). Given that market returns over a quarter have an average of around 3%, it means that the change in forecasted growth is miniscule and doesn't seem able to explain the growth in expected returns. As a final step, I check the change of expected growth rates for each book-to-market quintile during periods of sustained positive or negative market performance. I define a market return as very positive if the cumulative market return during the quarter is more than 10% and as very negative if it is less than -10%. The results show that the change of expectations is again very small: -0.12% for the first quintile and -0.326% for the fifth for the case of <-10% and 0.1694% and 0.127% for the case of >10%.

Table [14] repeats the same procedure for the case of size quintiles. The correlations between the change in expected growth for each size quintile and the market returns are also very weak, as in the case of book-to-market quintiles. The coefficient of the regression of the change in growth expectations on market returns has a coefficient of around 0.00806 (t=4.86), which again is relatively small. Also, as it is evident in Panel B and Panel C, during periods of particularly high or low returns of the overall market, the expected growth rates change very little. For the case of returns lower or equal to -10%, the change is -0.12% for the first quintile and -0.326% for the case of the fifth quintile. For the case of returns equal or higher than 10%, the change is -0.0756 for the first quintile and 0.1303 for the last one.

The conclusion is that the hypothesis that analysts change their forecast of long-term growth based on the current market returns doesn't seem plausible. The correlation between change in expected growth rates and market returns is very low, both in the level of individual firms and also based on portfolios formed on the basis of book-to-market and size.

V.B Firm Returns

Another possible explanation of the synchronized change in expected growth rates is that the analysts become optimistic for some firms, and then they carry this optimism to all other firms, creating in such a way the synchronized moves in the forecasted growth across all firms.

I use firm market excess returns over a quarter. The correlation between the firm excess return and the change in the forecasted growth, using the data for all firms, is 5%. This correlation, even if it is statistically significant (p-value=0), economically doesn't point to a firm's market performance as a source of analysts' forecasted growth rates. Moreover, running the regression of the increase or decrease of forecasted growth on the excess return during the quarter, has a coefficient of 0.007 (t=31.07), which even if it is significant, is very small to generate any significant variation in the forecasted growth rates. Even if I run the regressions by book-to-market quintile or size quintile, the results remain qualitatively the same.

I examine also the case of extreme firms returns. Again, I focus on cases of more or less of 10% return over the quarter. In cases of an excess firm return of -10% or less, the mean change in forecasted growth rates has an average of -0.63%, which is statistically significant but economically meager. In the case of a positive firm excess return of 10% or more, the change in expected growth rate is -0.027%, which is statistically indistinguishable from 0. In the case I require at least two extreme excess returns quarters in a row, the results change slightly. Table [15] Panel A presents the results for the case of more than one quarters of extreme negative returns. For two quarters in a row, the decline in expected growth rates is relatively small, only -1.11%. For 3 quarters in a row, it is -2.39% which is more significant. The decline is more remarkable for more quarters in a row, for example -8.388% for the case of 7 quarters in a row. The opposite case with extreme positive returns is presented at Table [15] Panel B. The effects on expected growth are more moderate for persistent positive performance. For two quarters of positive returns, the change in expected growth rates is -0.087%. In order to have an increase of more than 2%, it is required to have more than 5 quarters of continuing excess returns of 10% or more.

In general, the results are not supportive of the hypothesis that the analysts rise the expected growth forecasts taking into consideration the market performance of the firms. The correlation between market returns and forecasted long-term growth is small. Even the case of persistent positive or negative returns cannot adequately explain the phenomenon: the cases are very few and the changes in the persistent positive returns case are relatively small.

V.C. GDP Growth

Another factor that might contribute to common movement of forecasted growth rates is the GDP growth. The rationale is that the expected growth rates move together because of positive or negative GDP growth, which is a factor that influences the whole economy.

First, I check the correlations between the GDP growth and the long-term expectations for each book-to-market quintile. I use the Hondrick-Prescott filter to smooth both the long-term expectations and the GDP and then I calculate the GDP growth based on this smoothed series. The results are reported at Table [16]. Figure [12] presents plots of every book-to-market quintile with the smoothed GDP growth. For the whole sample the correlations are positive, significant and economically important for the first two quintiles, at the range of 0.4, positive (0.039) but insignificant both statistically and economically for the third, and negative (around -0.2), statistically significant and economically relatively important for the fourth and the fifth quintile. However, if I constraint the correlations calculation after 1990, then the correlations for all book-to-market quintiles turn positive, significant and economically important ranging from 0.88 for the first quintile to 0.36 for the fifth. For the sample before 1990, the correlations are positive, statistically significant and economically important for the three first quintiles, while they are negative, significant and economically important for the fourth and fifth quintiles.

I repeat the above procedure also for the case of size quintiles. The results are presented at Table [17]. For the first and second quintile the correlation is positive, statically significant and economically important. The correlation is positive also for the third and fourth quintile, but not statistically significant, and negative and insignificant for the fifth quintile. As in the case of the book to market, if I restrict the sample to quarters after 1990, the correlations for all quintiles turn positive, statistically significant and economically important. For the sample before 1990, the first three quintiles exhibit negative correlations, which are significant and economically important, while the fourth and fifth quintiles are positive, significant and economically important. Figure [13] provides graphical representation of the above findings.

The results for both book-to-market and size sorts show that the GDP growth seems to be an important factor to explain the expected growth rates. The correlations are statistically and economically significant for all cases of the sample. However, for small and value firms the correlations have different signs at the two parts. Another potential problem with GDP growth is the fact that it is relatively hard to explain the high expected growth rates. The GDP growth over the 30 years of the sample is relatively low and stable (the Great Moderation period), so it is hard to argue that the analysts were not aware of it, even if behavioral arguments are employed; growing 25% per year for four years while the overall economy grows by around 3% the same period is a difficult task for most firms, even if they are considered to be growth firms. A possible explanation is that this is an ex post stability and the expectations of GDP growth were different, that there were forecasts predicting the end of this stable period, contrary to the perception of stability established by the consecutive years of stability. In any case, the influence of the concurrent GDP growth seems to be an important factor influencing the long-term growth forecasts after 1990. All correlations for both book-to-market and size classifications are highly significant both statistically and economically, so it is safe to assume that the current GDP growth is a factor that influences the financial estimates. Notice that financial analysts didn't have access to the actual GDP growth of the quarter the announced their estimates; the results for each quarter are finalized one quarter later than any given quarter. So, the signal they used was noisy.

VI. D. GDP Forecasts

I turn now to the examination of the relation between the GDP forecasts and the long-term expectations. The aim is to investigate if the GDP forecasts may provide an explanation for the high expected growth rates forecasted by analysts. The hypothesis is that the high expected growth rates were based on high expected GDP growth.

The GDP growth forecasts come from the Survey of Professional Forecasters conducted every quarter by the Philadelphia FED. I use the four quarters ahead and ten years ahead forecasts. The one year ahead forecasts are used to investigate the short term projections about GDP growth, while the ten years ahead forecasts to examine if there are any expected hindrances to long-term growth. I use the mean forecast of both series, and for every quarter I have a forecast of the average growth for the next 4 quarters and the average projected annual growth for 10 years ahead (the current one included), building in such a way a time-series of quarterly frequency. Again, I use the Hondrick-Prescott filter to smooth the series. For the four quarters ahead forecast, the smoothed series of GDP growth mean forecasts has a mean of 1.6%. The standard deviation of the mean forecast is lower than the standard deviation of the actual GDP growth:. 0.005 versus 0.01. Figure [14] provides some graphical evidence about the relationship between the actual and the forecasted GDP growth for the non-smoothed case. For the 10 years ahead forecast, the average yearly forecasted growth rate is 2.85%.

I proceed with the examination of the correlations between the four quarters GDP growth forecasts and the long-term growth forecasts for the book-to-market quintiles. The results are presented at Table [18]. All correlations are negative, significant and economically important. However, if the sample is broken before and after 1990, the results change substantially. For the period after 1990, the correlation for the first book-to-market quintile is positive, even if not significant. The correlations for the second and fifth quintiles are still negative, but they are neither significant nor economically important. For the period before 1990, for the first three quintiles the correlations are positive, while they are negative for the last two.

The results for the case of the size quintiles are reported at Table[19]. For the whole sample, the correlations are negative, significant and economically important as in the case of the book-to-market quintiles. For the sub-sample after 1990, only the correlation with respect to the fifth quintile remains negative and significant. The situation is reversed for the period before 1990, where the fourth and fifth quintiles exhibit positive, significant and economically important, while for the first three quintiles the correlations are negative, significant and economically important.

Table [20] presents the correlations between the book-to-market quintiles and the 10 years ahead GDP growth forecasts. For the whole sample, the correlations of the first two quintiles are negative, insignificant and economically trivial, while for the last three are positive, significant and economically important. Since the 10 years ahead forecasts are available only after 1990, it is not possible to examine the periods before 1990.

Table [21] presents the results for the case of size quintiles. All correlations are positive, but only the correlations for the fourth and fifth quintiles are significant and economically important.

The above results seem to point to other factors than the expectations about the macroeconomic conditions as the reason why the analysts' long-term growth forecasts are too optimistic about firms' prospects and the optimism about growth and large firms. The GDP growth forecasts are reasonably accurate and in any case they don't draw an overly rosy prospect for the economy. Moreover, the correlations between the GDP forecasts and the firm forecasts are not always positively correlated, and in many cases the correlation is or weak or economically trivial to be accounted as a reason for the optimistic forecasts of financial analysts. More specifically, the negative or statistically zero correlations imply that the firms are projected to perform well, while the GDP will increase only sluggishly or even decrease. It is not easy to try to reconcile the negative correlations (as in most cases of book-to-market and size quintiles) between GDP forecasts and operating income; it means that the majority of firms will do well in a tough macroeconomic environment. At least for the period after 1990, financial analysts seem more influenced by the current macroeconomic condition and not the forecasted GDP growth.

V. E. Profit Forecasts

The Survey of Professional Forecasters by Philadelphia FED includes also a questionnaire where the participants are asked to forecast the general profit level of the firm within the economy. The responses could be useful, because they offer another view on the performance of corporations. It is true that in the current study I use the operating income and not profits as performance measure, and also the SPR doesn't include forecasts on individual firms, nor distinguishes the firms in low and high book-to-market or small and big. However, something can be said if the focus of the analysis is the growth of profits from quarter to quarter, which can be compared to the growth in operating performance forecasted by financial analysts.

For this dataset, the average quarter growth of profits is 1.9% (median 1.5%), with a standard deviation of 1.4%. Figure [15] presents the time series of profits growth of the original series and also the smoothed series from the Hondrick –Prescott filter.

Table [22] presents the correlations between the book to markets quintiles and the smoothed profit forecasts. For the whole sample, all correlations are negative, significant and economically important at the range of -0.35. For the period after 1990, only the first three quintiles remain negative and significant. The fourth quintile has an insignificant correlation and the fifth becomes positive and insignificant. For the period before 1990, the picture is the opposite one, the first two quintiles exhibit positive, significant and economically correlations, the third positive and non-significant, while the last two negative, significant and economically important.

Table [23] presents the correlations between the size quintiles and the smoothed profit forecasts. For the whole sample, all correlations are negative and significant. The correlations of the first four quintiles are also economically important. For the period after 1990, all correlations remain negative, but the correlations for the first and the fifth quintile are not significant any more. For the period before 1990, the correlations for the first three quintiles are negative again, highly significant and economically important. For the fourth and fifth quintiles the correlations are positive, significant and economically important.

The conclusions from using the profit forecasts are that the financial analysts seem to be excessively optimistic about the firms they cover, at least in comparison to the forecasters surveyed by the Philadelphia FED. For example, for the firms of the first book-to-market quintile (growth) firms the forecasted growth is consistently above 20% per year for the whole period since 1981. In quarterly terms this means an average growth of around 5% per quarter. This is 2.5 times the forecasted profits growth of all firms. For the value firms, the average is around 11% per year, which is around 2.75% quarterly growth, which in turn is 40% more than the average 1.9% at the SPF. The optimism is exemplified in the after 1990 period, where with the exception of the second book-to-market quintile, the vast majority of the analysts' estimates is above the forecasts by the SPF. For the case of the size quintiles, the smallest firms (first quintile) have an time series average of 18.86% per year, which in quarterly terms is 4.72%, which is around 2.5 times the average 1.9% by the SPF. For the biggest firms, the average is a 3.125% quarter growth, which is 50% more than the average of SPF. What is more worth-mentioning however is the negative correlations during the 90s, where the estimates by the financial analysts were increasing, while the ones of the SPF were in decline. This points to the fact that the two groups focus to different facts in order to come up with their estimates. It is true that the SPF has profits as focus and the financial analysts estimates the operating income, however the differences are still high enough and also it is difficult to reconcile the negative correlation during 90s, which implies that operating income will go up, while profits will go down for all firm categories.

V. F. Firm Age

Another factor that could contribute to the co-movement of the growth forecasts is the average firm age. It is possible that analysts are excited for the prospects of a new company, while at the same time they discount the prospects of old and established firms. Figure [16] provides some evidence that this might be the case. The figure reports the median of the median of all firms of the given age that have a long-term growth estimate. The younger the firm, the higher the estimates, which then decline by age. This is also the case for all book-to-market and size quintiles. Figure [17] presents the book-to-market quintiles and Figure [18] the size quintiles. The pattern is the same for all book-to-market and size quintiles. The estimates are high when the firm is young, no matter its classification. For the book-to-market case, for the first quintile (growth firms), the average initial estimates are 32.5% annual increase, 26% annual increase for the next two quintiles and 22.5% for the last two. After 150 quarters, the average is around 12% for all quintiles. For the case of size quintiles, the first quintile (small firms) kicks in with 26% annual increase in operating income, for the next three the initial estimates are 26% and for the large firms of the fifth size quintile 18%. After 150 quarters the numbers are 12.5% for the first four quintiles and around 11% for the fifth quintile. The above plots point to the fact that the long-term analysts' forecasts about the firm are strongly influenced by the firm's age, independently of its classification.

If firm age is a factor that could explain the behavior of long-term forecasts, then the median long-term forecast of the firms of each book-to-market and size quintile should vary with age. In other words, when the average age of the firms in each book-to-market and size quintiles change, the long-term growth forecasts should change as well. Figure [19] plots the average age and the median long-term estimate for each book-to-market quintile for the whole sample period and Figure [20] plots the average age and median long-term estimate for each size quintile for the whole sample period. Both for book-to-market and size quintiles the growth estimates increase while the mean age decreases and vice versa for the case of increasing age.

Table [24] examines the correlations between the forecasted long-term growth for each of the book-to-market quintiles and the average age of the firms of each quintile. Both the average expectations and age are smoothed using the Hondrick-Prescott filter. For the whole sample, the correlations are negative, significant and economically important. The maximum (in absolute value) correlations appears at the fourth quintile with -0.967 and the minimum (in absolute terms) at the fifth with -0.879. For the sample after 1990, all correlations are at the range of -0.92 and are significant. For the period before 1990, the correlation for the first quintile is negative but insignificant, positive and significant for the second quintile and negative and significant for the last three quintiles.

Table [25] examines the correlations between the forecasted long-term growth for each of the size quintiles and the average age of the firms of each quintile. Both the average expectations and age are smoothed using the Hondrick-Prescott filter. For the whole sample, the correlations are negative, significant and economically important. The maximum (in absolute value) correlations appears at the fourth quintile with a correlation of -0.94 and the minimum at the fifth with a correlation of -0.65. The picture remain the same for the sample after 1990, with a maximum correlation at -0.92 at the fourth quintile and minimum at the second with -0.68. For the period before 1990, the correlations for all quintiles are again negative, significant and economically important.

The conclusion is that the when the mean age of the firms decreases, the forecasted long-term growth increases. This effect is independent of the book-to-market and size of the firms. This fact points to a behavioral explanation about the high forecasted growth rates and also the co-movement of these expectations for all quintiles: more young firms enter the market, the analysts get excited and bid up the forecasted growth rates. This explanation can also accommodate the timing of the spike in expectations in the late 90’s, where the last big IPO wave took place.

V. G. Interactions with quarterly Results

In this sub-section I examine the interaction between the quarterly results and the change in the long-term forecasts. The idea is that quarterly results that far exceed expectation, may have as result that analysts increase their long-term forecasts. The same applies also to results that fall short of expectations. As a measure of expectations I use the mean forecast of analysts for the given quarter as an expectations measure. The sample refers to the 1990-2010 period.

I test the above hypothesis by examining the response of the long-term forecasts to extreme forecast errors, with forecast error defined as the actual value announced after the end of the quarter minus the mean forecast for the given quarter. I define the extreme as the 10% of highest and 10% of the lowest forecast errors. High forecast error means that the analysts were too pessimistic about the firm’s quarter results. Low forecast errors mean that the analysts were too optimistic about the firm’s quarter results. Because missing or exceeding the analysts’ mean forecast by a large amount may mean that the firm is taking a deep bath or some other transitory anomaly (i.e. because of management change), I also examine the inverse hypothesis, namely how good or bad are the quarter results in cases of extreme changes of the long-term forecasts.

Table [26] Panel A presents the summary statistics of the forecast error. The 10% and 90% are -0.0667 and 0.09 respectively. I define the change in the long-term forecasts as the change in the next quarter's mean long-term forecast minus the mean long-term forecast of the quarter of the large (in absolute value) forecast error. I also examine a more long-term perspective by calculating the difference in the mean long-term forecast between the same quarter next year minus the current quarter. For the case of the high forecast errors, the mean difference between the current and the next quarter is -0.11%(Panel C). For the case of low (negative) forecast errors, the mean difference is -0.2497% (Panel D). The differences are not economically important, and what is more, they are not significantly different. For the case of the one year difference, for the high forecast errors the mean difference is -0.6367%, while for the low forecast errors is -0.86%. Again, they are not significantly different from each other.

I examine the inverse hypothesis, how big are the forecast errors in the case of an extreme change in the long-term forecasts. The summary statistics of the change in long-term forecasts are presented at Table [26] Panel B. For the case of an excessive (above 90%) increase in the long-term forecasts in the period of one quarter, the mean forecast error is -0.0008615. For the case of an excessive decline (below 10%), the mean forecast error is 0.0017785. The difference between the two isn't statistically significant.

As a result, it seems that the short term forecast error is not a crucial factor in determining the long-term forecasts. In other words, the analysts don't get optimistic or pessimistic because of extraordinary short term results. Also, when they increase (or decrease) their long-term forecasts, they are not influenced by short term results of the covered firm.

V. H. Conclusion

The conclusion from the above analysis is that the analyst long-term forecasts are mostly influenced by the current state of the economy and the age of the covered firms. They are not much influenced by the market returns or the returns of the covered firm, by the expectations about the GDP growth, they are not in agreement with profit forecasts issued by the forecasters of the SPF, and finally are not influenced by short term forecast errors. These facts, coupled with the non-zero forecast errors of the long-term forecasts, point to behavioral explanations for the behavior of the long-term forecasts: they analysts don't take into consideration other forward looking data (market and firm specific returns, GDP forecasts, profit forecasts), while they take into account the current status of the economy (the GDP growth) and the age of the firm.

VI. What do the Analysts miss?

The previous sections have provided evidence that analysts systematically overestimate the prospects of all firms and especially the prospects of growth and big firms. The analysts are optimistic about their prospects, extrapolating their current performance to the future. However, the corporate profits tend to mean revert (Fama and French, JB 2000). Thus, it seems possible that analysts don't take into consideration the mean reversion in firm performance. This section examines the performance of firms in different book-to-market and size quintiles. I examine two metrics of firm performance, the change in ratio of sales to cost of goods sold and the growth in assets. The first is considered to be a proxy for the effectiveness/efficacy of a firm: if it can increase its sales faster than its costs, it means that the firm becomes increasingly effective and competitive in using its inputs and it competitiveness increases. The second mirrors the history of the firm while it increases or decreases its assets. Using these two measures I investigate if there is any mean reversion in the corporate performance.

Table [27] Panel A reports the median ratio of sales to cost of goods sold for the each book-to-market and size quintile. For all size quintiles, the growth firms have a higher ratio, meaning they are more effective than the value firms of the same size quintiles. However, the small growth firms are less competent than the big growth firms. This is not true for the other book-to-market quintiles, where the smaller firms are more competent than the big firms of the same book-to-market quintile. Table [27] Panel B presents the change in efficacy during the next four years. With the exception of the big value firms, the growth in efficacy of the value firms is positive and larger than the growth of efficacy of the growth firms, which is negative. With respect to the book-to-market quintiles, the efficacy growth of the big firms of the first and second quintile is bigger than the growth of the small firms. On the other hand, for the last three quintiles the efficacy gains are larger for the small firms.

Table [27] Panel C presents the four year growth in assets. The growth firms increase their assets very fast (increase of 70% for the small growth firms), while the value firms have the lowest growth rates. Also, the smaller firms of all book-to-market quintiles increase their assets faster than the large firms.

Overall, the small growth firms seem to increase their assets and decrease their efficacy while they are growing. At the same time, the small and growth firms seem to be more competent. These two facts point to a mean reversion of efficacy of the growth firms and small firms, which is not picked up by the analysts. The firms that have good growth opportunities become less competent while they grow. This doesn't mean that the value firms become more competent than the growth firms, but it means that the growth firms see their efficacy decrease, while the value firms improve their performance.

VII. Conclusion

I have examined the performance of the long-term analysts' growth forecast. Analysts tend to overestimate the growth potential of most firms for most of the period from 1981 to 2011. The overestimation is prevalent among growth and large firms, while the overestimation for the case of value and small firms is much more moderate, allowing for periods of underestimation. The errors associated with growth firms are always higher for growth firms than value firms and also higher for large firms than for small firms, providing support for the extrapolation hypothesis. Another aspect of the analysts' long-term forecasts is that they move together for all firm categories, even if they stay at different levels. I identify two common factor behind this co-movement: the concurrent GDP growth and the age of the firms. On the other hand, the forecasts don't seem to be influenced by more forward-looking factors like the GDP growth forecasts. Finally, even if the low book-to-market firms are more efficient, they tend to decrease in efficiency after they are included in the low book-to-market portfolio, while the value firms that exhibit initially low efficiency tend to increase their efficiency in the following years.

Overall, the results point to fact that analysts are overly optimistic and that they don't take into consideration the mean reversion inherited in the performance of firms in competitive markets; they seem to extrapolate the recent results of the firms into the future. If the analysts' forecasts are to be taken as a proxy for the investors' expectations and forecasts, then also the investors are prone to naïve extrapolation. However, analysts are known for their optimism, stemming both from their need to keep in touch with a firm's management and because of conflicts of interest.

Table 1. Expectations and expectation errors for the four years horizon for each book-to-market quintiles

Book-to-market Quintile	Simple Error	Relative Error	Long-Term Growth Forecast
1	5.824758	0.215747	20
2	3.920853	0.145143	15
3	2.126846	0.069286	12.5
4	1.434441	0.037311	11
5	1.021879	0.012685	10.68

Table 1: The table reports the median simple error, the median relative error and the median growth forecast for each book-to-market quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. I use four years as an average between three and five years. The simple error is defined as the four years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income four years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 2. Book-to-market quintiles expectations and expectation errors by exchange for the four years horizon

Book-to-market Quintile		Exchange NYSE	AmEx	NASDAQ
1	Relative Error	0.23213	0.155448	0.201603
	Growth forecast (%)	15	21.125	25
2	Relative Error	0.181665	0.197138	0.086733
	Growth forecast (%)	13	15	17.5
3	Relative Error	0.099229	0.02513	0.026477
	Growth forecast (%)	11	13	15
4	Relative Error	0.051952	0.081121	-0.01567
	Growth forecast (%)	9.5	15	14.5
5	Relative Error	0.024055	0.183801	-0.08591
	Growth forecast (%)	8.695	14.15	15

Table 2: The table reports the median relative error and the median growth forecast for each book-to-market quintile and each stock market. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. I use four years as an average between three and five years. The simple error is defined as the four years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income four years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 3. Book-to-market quintiles expectations and expectation errors for the two years horizon

Book-to-market Quintile	Simple Error	Relative Error	Long-Term Growth Forecast
1	1.40394	0.06655	20
2	1.188509	0.050976	15
3	0.8018498	0.031007	12.5
4	0.4819975	0.012345	11
5	0.3237357	0.004301	10.68

Table 3: The table reports the median simple error, the median relative error and the median growth forecast for each book-to-market quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The simple error is defined as the two years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income two years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 4. Book-to-market quintiles expectations and expectation errors by exchange for the two years horizon

Book-to-market decile		Exchange NYSE	AmEx	NASDAQ
1	Relative Error	0.087617	0.067423	0.045952
	Growth forecast (%)	15	21.125	25
2	Relative Error	0.078291	0.088837	0.018012
	Growth forecast (%)	13	15	17.5
3	Relative Error	0.05663	0.037138	-0.00129
	Growth forecast (%)	11	13	15
4	Relative Error	0.020328	0.029178	-0.01227
	Growth forecast (%)	9.5	15	14.5
5	Relative Error	0.009566	0.017342	-0.01993
	Growth forecast (%)	8.695	14.15	15

Table 4: The table reports the median simple error, the median relative error and the median growth forecast for each book-to-market quintile and by stock market. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The simple error is defined as the two years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income two years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 5. Size quintiles expectations and expectation errors for the four years horizon

Size Quintile	Simple Error	Relative Error	Long-Term Growth Forecast
1	0.394376	0.006722	16.5
2	2.020374	0.075275	15
3	4.683392	0.117076	14
4	12.9744	0.154531	12
5	45.19731	0.130472	11

Table 5: The table reports the median simple error, the median relative error and the median growth forecast for each size quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. I use four years as an average between three and five years. The simple error is defined as the four years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income four years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 6. Size quintiles expectations and expectation errors by exchange for the four years horizon

		Exchange		
Size Quintile		NYSE	AmEx	NASDAQ
1	Relative Error	0.028861	0.047041	-0.00035
	Growth forecast (%)	12.9	15	18
2	Relative Error	0.041634	0.098232	0.103612
	Growth forecast (%)	13	15	18
3	Relative Error	0.113054	0.141435	0.12095
	Growth forecast (%)	12	15	17
4	Relative Error	0.148535	0.241926	0.161241
	Growth forecast (%)	11	15	17.5
5	Relative Error	0.121245	0.87553	0.187674
	Growth forecast (%)	10	14.125	18

Table 6: The table reports the median relative error and the median growth forecast for each size quintile and each stock market. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. I use four years as an average between three and five years. The simple error is defined as the four years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income four years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 7. Size quintiles expectations and expectation errors for the two years horizon

Size Quintile	Simple Error	Relative Error	Long-Term Growth Forecast
1	0.082824	-0.008	16.5
2	0.604317	0.019336	15
3	1.781837	0.047455	14
4	4.71273	0.05938	12
5	17.17621	0.053816	11

Table 7: The table reports the median simple error, the median relative error and the median growth forecast for each size quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The simple error is defined as the two years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income two years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 8. Size quintiles expectations and expectation errors by exchange for the two years horizon

Size Quintile		Exchange NYSE	AmEx	NASDAQ
1	Relative Error	0.021354	0.013657	-0.01476
	Growth forecast	12.9	15	18
2	Relative Error	0.015252	0.048453	0.02219
	Growth forecast	13	15	18
3	Relative Error	0.051914	0.053795	0.038259
	Growth forecast	12	15	17
4	Relative Error	0.063393	0.110109	0.036387
	Growth forecast	11	15	17.5
5	Relative Error	0.053286	0.263204	0.052463
	Growth forecast	10	14.125	18

Table 8: The table reports the median simple error, the median relative error and the median growth forecast for each size quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The simple error is defined as the two years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income two years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 9. Size and book-to-market quintiles relative errors for the four years horizon

	Book-to-market quintile				
	1	2	3	4	5
size quintile					
1	0.1073413	0.0345812	0.0360601	-0.02088	-0.0808132
2	0.2253785	0.1015829	0.0289075	0.0155379	0.0089975
3	0.2334118	0.1870988	0.0349756	0.0470354	0.0493386
4	0.2495524	0.1860047	0.1574714	0.0683645	0.0526462
5	0.210604	0.165409	0.1174748	0.060166	0.0135154

Table 9: The table reports the median relative error for each book-to-market and size quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. I use four years as an average between three and five years. The simple error is defined as the four years ahead forecasted operating income minus the actual operating income four years later. The relative error is defined as the simple error but is divided by the actual operating income four years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 10. Long term growth forecast and error correlations among book-to-market quintiles

Panel A: Long term growth forecast correlations

Book-to-market Quintile	1	2	3	4	5
1	1				
2	0.9269	1			
3	0.8687	0.9401	1		
4	0.8458	0.909	0.9899	1	
5	0.8491	0.8767	0.9612	0.9761	1

Panel B: Relative error correlations

Book-to-market Quintile	1	2	3	4	5
1	1				
2	0.7275	1			
3	0.7304	0.816	1		
4	0.7513	0.8075	0.8655	1	
5	0.8477	0.6686	0.4937	0.7562	1

Panel C: Correlations between the relative error and the expectations for each book-to-market quintile (p-values in parentheses)

		Long-term growth forecast				
	Book-to-market Quintile	1	2	3	4	5
	1	0.40 (0.0)				
	2		-0.1346 (0.1773)			
Relative Error	3			0.5784 (0.0)		
	4				0.4242(0.0)	
	5					0.5735 (0.0)

Table 10: The table reports the correlations between each two book-to-market quintiles for the case of long-term forecasts (Panel A) and relative errors (Panel B) and between relative errors and long-term forecasts (Panel C) for each book-to-market quintile for the period 1981-2011 . The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. I use four years as an average between three and five years. The relative error is defined as the simple error but is divided by the actual operating income four years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 11. Long term growth forecast and error correlations among size quintiles

Panel A: Long term growth forecast correlations for size quintiles

Size	1	2	3	4	5
1	1				
2	0.9285	1			
3	0.981	0.9239	1		
4	0.9577	0.9197	0.9675	1	
5	0.9845	0.9289	0.9819	0.9846	1

Panel B: Relative error correlations

Size	1	2	3	4	5
1	1				
2	0.6841	1			
3	0.5946	0.9043	1		
4	0.7297	0.9659	0.919	1	
5	0.4824	0.8963	0.9051	0.9212	1

Panel C: Correlations between the relative error and the expectations for each size quintile (p-values in parentheses)

				Long term growth forecast		
	Size Quintile	1	2	3	4	5
	1	-0.176 (0.0765)				
	2		-0.027 (0.7858)			
Relative Error	3			0.2455 (0.0129)		
	4				0.187 (0.0596)	
	5					0.556 (0.0)

Table 11: The table reports the correlations between each two size quintiles for the case of long-term forecasts (Panel A) and relative errors (Panel B) and between relative errors and long-term forecasts (Panel C) for each size quintile for the period 1981-2011 . The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. I use four years as an average between three and five years. The relative error is defined as the simple error but is divided by the actual operating income four years later. The long-term growth forecasts are the forecasted annual growth rate in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Table 12. Market returns and long-term growth forecasts

Panel A: Correlation between cumulative quarterly market returns and the long term growth forecasts for all firms

Correlation (p-value): 0.0209 (0.0)

Panel B: Change in the long-term growth forecasts for the case of positive quarterly market returns

Percentile	10	25	50	75	90	Mean	St. Dev.
	-2	-0.4	0	0.12	1.34	-0.18	4.17

Panel C: Change in the long-term growth forecasts for the case of negative quarterly market returns

Percentile	10	25	50	75	90	Mean	St. Dev.
	-2.5	-0.54	0	0.07	1.33	-0.39	4.74

Table 12: The table reports the correlation between cumulative market return over each calendar quarter and the long-term forecasts (Panel A), summary statistics of the long-term growth forecasts for the case of positive cumulative market returns (Panel B) and summary statistics of the long-term growth forecasts for the case of negative cumulative market returns (Panel C). The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 13. Correlation between quarterly market returns and the book-to-market quintiles

Panel A: Correlation between mean long term-growth forecast and the quarterly market return

Book-to-market Quintile	Correlation
1	0.2406 (0.0087)
2	0.096 (0.3013)
3	0.164 (0.07519)
4	0.1055 (0.255)
5	0.1378 (0.1366)

Panel B: Change in the mean long-term forecast of each book-to-market quintile for the case of quarterly market returns of equal or less than 10%

Book-to-market Quintile	Change in the mean forecast
1	-0.12779
2	-0.17492
3	-0.1738
4	-0.1884
5	-0.326

Panel C: Change in the mean long-term forecast of each book-to-market quintile for the case of quarterly market returns of equal or more than 10%

Book-to-market Quintile	Change in the mean forecast
1	0.1694
2	-0.095
3	0.2037
4	0.054
5	0.1267

Table 13: The table reports the correlation between cumulative market return over each calendar quarter and the long-term forecasts (Panel A), the change in long-term growth forecasts for the case of market returns of less than -10%(Panel B) and the change in long-term growth forecasts for the case of market returns of more than 10% (Panel C) for each book-to-market quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 14. Correlation between quarterly market returns and the size quintiles

Panel A: Correlation between mean long term-growth forecast and the quarterly market return

Size Quintile	Correlation
1	0.112 (0.2272)
2	0.202 (0.0283)
3	0.1621 (0.0795)
4	0.0993 (0.2849)
5	0.1880 (0.0415)

Panel B: Change in the mean long-term forecast of each size quintile for the case of quarterly market returns of equal or less than 10%

Size Quintile	Change in the mean forecast
1	-0.12779
2	-0.17492
3	-0.1738
4	-0.1884
5	-0.326

Panel C: Change in the mean long-term forecast of each size quintile for the case of quarterly market returns of equal or more than 10%

Size Quintile	Change in the mean forecast
1	-0.0756
2	0.21499
3	0.2228
4	-0.0257
5	0.1303

Table 14: The table reports the correlation between cumulative market return over each calendar quarter and the long-term forecasts (Panel A), the change in long-term growth forecasts for the case of market returns of less than -10%(Panel B) and the change in long-term growth forecasts for the case of market returns of more than 10% (Panel C) for each size quintile. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 15. Correlation between firm returns and long-term growth forecasts

Panel A: Change in the mean long-term forecast of each book-to-market quintile for the case of quarterly market returns of equal or less than -10%

Number of quarters in a row with return of equal or less than -10%	Mean change (%)	Median change (%)	Number of cases
1	-0.37861	0	17,127
2	-1.11005	-0.15	4,683
3	-2.39732	-1.08	1,501
4	-3.43498	-2	440
5	-4.2232	-3.33	169
6	-4.82069	-3.25	58
7	-8.388	-3.42	20
8	-10.771	-8.375	10
9	-6.17	-6.17	2
10	-11.125	-11.125	2

Panel B: Change in the mean long-term forecast of each book-to-market quintile for the case of quarterly market returns of equal or greater than 10%

Number of quarters in a row with return of equal or greater than 10%	Mean change(%)	Median change (%)	Number of cases
1	-0.10321	0	17,656
2	-0.08758	0	4,400
3	0.377031	0	1,209
4	0.919756	0.25	369
5	1.246471	1	119
6	2.955102	2.5	49
7	7.864286	2	7
8	9.846666	8.83	3
9	6.25	6.25	1

Table 15: The table reports the mean and median change of long-term forecasts in the case of a series of quarters of negative firm returns of equal or less than -10% (Panel A) and in the case of a series of quarters of positive firm returns of equal or more than 10% (Panel B). The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 16. Correlations between GDP growth and long-term growth forecasts of book-to-market quintiles

Panel A: Whole sample 1981-2011

Book-to-market Quintile	Correlation (p-value)
1	0.4601 (0.0)
2	0.4225 (0.0)
3	0.039 (0.675)
4	-0.2218 (0.0158)
5	-0.2312 (0.0118)

Panel B: 1990-2011 period

Book-to-market Quintile	Correlation (p-value)
1	0.8854 (0.0)
2	0.7582 (0.0)
3	0.5347 (0.0)
4	0.3109 (0.0)
5	0.3638 (0.0)

Panel C: 1981-1989 period

Book-to-market Quintile	Correlation (p-value)
1	0.6614 (0.0)
2	0.9449 (0.0)
3	0.5069 (0.0)
4	-0.8494 (0.0)
5	-0.9852 (0.0)

Table 16: The table reports the correlations between the long-term growth forecasts of each book-to-market quintile and the GDP growth for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 (Panel C). In all Panels the data comes in quarterly frequency. Both the GDP growth series and the series of the long-term forecasts of each book-to-market quintile are smoothed by using the Hodrick-Prescott filter.The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 17. Correlations between GDP growth and long-term growth forecasts of size quintiles

Panel A: Whole sample 1981-2011

Size Quintile	Correlation (p-value)
1	0.3537 (0.0)
2	0.166 (0.0714)
3	0.1322 (0.1356)
4	0.1285 (0.1656)
5	-0.0175 (0.8511)

Panel B: 1990-2011 period

Size Quintile	Correlation (p-value)
1	0.817 (0.0)
2	0.7498 (0.0)
3	0.6951 (0.0)
4	0.5274 (0.0)
5	0.3467 (0.011)

Panel C: 1981-1989 period

Size Quintile	Correlation (p-value)
1	-0.6070 (0.0002)
2	-0.7466 (0.0)
3	-0.9645 (0.0)
4	0.9130 (0.0)
5	0.7473 (0.0)

Table 17: The table reports the correlations between the long-term growth forecasts of each size quintile and the GDP growth for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 (Panel C). In all Panels the data comes in quarterly frequency. Both GDP growth series and the series of the long-term forecasts of each size quintile are smoothed by using the Hodrick-Prescott filter. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 18. Correlations between four quarter ahead forecasted average GDP growth and long-term growth forecasts of book-to-market quintiles

<u>Panel A:</u> Whole sample 1981-2011

Book-to-market Quinitile	Correlation (p-value)
1	-0.2362 (0.0097)
2	-0.2103 (0.0217)
3	-0.5577 (0.0)
4	-0.707 (0.0)
5	-0.6955 (0.0)

<u>Panel B:</u> 1990-2011

Book-to-market Quintile	Correlation (p-value)
1	0.1502 (0.1676)
2	-0.0474 (0.6648)
3	-0.2108 (0.0514)
4	-0.321 (0.0026)
5	-0.1117 (0.3057)

<u>Panel C:</u> 1981-1989

Book-to-market Quintiles	Correlation (p-value)
1	0.4384 (0.0107)
2	0.9907 (0.0)
3	0.2857 (0.107)
4	-0.7656 (0.0)
5	-0.9331 (0.0)

Table 18: The table reports the correlations between the long-term growth forecasts of each book-to-market quintile and the four quarters ahead average GDP forecasts for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 period (Panel C). In all Panels the data comes in quarterly frequency. Both the four quarters ahead average GDP forecasts series and the series of the long-term forecasts of each book-to-market quintile are smoothed by using the Hodrick-Prescott filter. The GDP forecasts come from the Survey of Professional Forecasters. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 19. Correlations between four quarter ahead forecasted average GDP growth and long-term growth forecasts of size quintiles

<u>Panel A:</u> Whole sample 1981-2011

Size Quintile	Correlation (p-value)
1	-0.3164 (0.0005)
2	-0.5067 (0.0)
3	-0.5192 (0.0)
4	-0.4151 (0.0)
5	-0.4619 (0.0)

<u>Panel B:</u> 1990-2011

Size Quintile	Correlation (p-value)
1	0.2131 (0.0489)
2	0.0568 (0.6035)
3	-0.0208 (0.8493)
4	-0.1550 (0.1542)
5	-0.2388 (0.0268)

<u>Panel C:</u> 1981-1989

Size Quintile	Correlation (p-value)
1	-0.7594 (0.0)
2	-0.8566 (0.0)
3	-0.9964 (0.0)
4	0.9738 (0.0)
5	0.8634 (0.0)

Table 19: The table reports the correlations between the long-term growth forecasts of each size quintile and the four quarters ahead average GDP forecasts for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 period (Panel C). In all Panels the data comes in quarterly frequency. Both the four quarters ahead average GDP forecasts series and the series of the long-term forecasts of each size quintile are smoothed by using the Hodrick-Prescott filter. The GDP forecasts come from the Survey of Professional Forecasters. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 20. Correlations between ten years ahead forecasted average GDP growth and long-term growth forecasts of book-to-market quintiles

Book-to-market Quintile	Correlation (p-value)
1	-0.0829 (0.4705)
2	-0.0425 (0.7118)
3	0.2583 (0.0224)
4	0.5044 (0.0)
5	0.5598 (0.0)

Table 20: The table reports the correlations between the long-term growth forecasts of each book-to-market quintile and the ten years ahead average GDP forecasts for the 1990-2011 period. The data comes in quarterly frequency. Both the ten years ahead average GDP forecasts series and the series of the long-term forecasts of each book-to-market quintile are smoothed by using the Hodrick-Prescott filter. The GDP forecasts come from the Survey of Professional Forecasters. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 21. Correlations between ten years ahead forecasted average GDP growth and long-term growth forecasts of size quintiles

Size Quintile	Correlation (p-value)
1	0.1507 (0.1877)
2	0.1012 (0.378)
3	0.1107 (0.3348)
4	0.3128 (0.0053)
5	0.4623 (0.0)

Table 21: The table reports the correlations between the long-term growth forecasts of each size quintile and the ten years ahead average GDP forecasts for the 1990-2011 period. The data comes in quarterly frequency. Both the ten years ahead average GDP forecasts series and the series of the long-term forecasts of each size quintile are smoothed by using the Hodrick-Prescott filter. The GDP forecasts come from the Survey of Professional Forecasters. The forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 22. Correlations between four quarters ahead corporate profits growth forecasts and long-term growth forecasts of book-to-market quintiles

<u>Panel A:</u> Whole sample 1981-2011

Book-to-market Quintiles	Correlation (p-value)
1	-0.3101 (0.0)
2	-0.152 (0.099)
3	-0.3471 (0.0)
4	-0.3801 (0.0)
5	-0.3981 (0.0)

<u>Panel B:</u> 1990-2010

Book-to-market Quintiles	Correlation (p-value)
1	-0.3372 (0.0015)
2	-0.3972 (0.0002)
3	-0.2878 (0.0072)
4	-0.1545 (0.1556)
5	0.0136 (0.9011)

<u>Panel C:</u> 1981-1989

Book-to-market Quintiles	Correlation (p-value)
1	0.3804 (0.029)
2	0.9986 (0.0)
3	0.1846 (0.304)
4	-0.6892 (0.0)
5	-0.8941 (0.0)

Table 22: The table reports the correlations between the long-term growth forecasts of each book-to-market quintile and the corporate profits forecasts for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 period (Panel C). In all Panels the data comes in quarterly frequency. Both the corporate profits forecasts series and the series of the long-term forecasts of each book-to-market quintile are smoothed by using the Hodrick-Prescott filter. The corporate profits forecasts come from the Survey of Professional Forecasters. The long-term forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 23. Correlations between four quarters ahead corporate profits growth forecasts and long-term growth forecasts of size quintiles

Panel A: Whole sample 1981-2011

Size Quintile	Correlation (p-value)
1	-0.3468 (0.0001)
2	-0.4573 (0.0)
3	-0.4527 (0.0)
4	-0.2039 (0.0261)
5	-0.1802 (0.0499)

Panel B: 1990-2011

Size Quintile	Correlation (p-value)
1	-0.1678 (0.1225)
2	-0.2559 (0.0174)
3	-0.3132 (0.0033)
4	-0.2236 (0.0385)
5	-0.1555 (0.1528)

Panel C: 1981-1989

Size Quintile	Correlation (p-value)
1	-0.8025 (0.0)
2	-0.8839 (0.0)
3	-0.9963 (0.0)
4	0.9881 (0.0)
5	0.8970 (0.0)

Table 23: The table reports the correlations between the long-term growth forecasts of each size quintile and the corporate profits forecasts for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 period (Panel C). In all Panels the data comes in quarterly frequency. Both the corporate profits forecasts series and the series of the long-term forecasts of each size quintile are smoothed by using the Hodrick-Prescott filter. The corporate profits forecasts come from the Survey of Professional Forecasters. The long-term forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 24. Correlations between age and long-term growth forecasts for each book-to-market quintiles

Panel A: Whole sample 1981-2010

Book-to-market Quintile	Correlation (p-value)
1	-0.7963 (0.0)
2	-0.7836 (0.0)
3	-0.7938 (0.0)
4	-0.6991 (0.0)
5	-0.7876 (0.0)

Panel B: 1990-2010

Book-to-market Quintile	Correlation (p-value)
1	-0.8398 (0.0)
2	-0.8171 (0.0)
3	-0.7447 (0.0)
4	-0.6028 (0.0)
5	-0.5734 (0.0)

Panel C: 1981-1989

Book-to-market Quintile	Correlation (p-value)
1	0.0095 (0.9583)
2	0.7730 (0.0)
3	0.6014 (0.0002)
4	-0.7981 (0.0)
5	-0.9655 (0.0)

Table 24: The table reports the correlations between the long-term growth forecasts of each book-to-market quintile and each quintile's mean firm age for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 period (Panel C). In all Panels the data comes in quarterly frequency. Both each quintile's mean firm age series and the series of the long-term forecasts of each book-to-market quintile are smoothed by using the Hodrick-Prescott filter. The long-term forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 25. Correlations between age and long-term growth forecasts for each size quintiles

Panel A: Whole sample 1981-2010

Size Quintile	Correlation (p-value)
1	-0.6848 (0.0)
2	-0.7689 (0.0)
3	-0.8932 (0.0)
4	-0.9430 (0.0)
5	-0.6599 (0.0)

Panel B: 1990-2010

Size Quintile	Correlation (p-value)
1	-0.6860 (0.0)
2	-0.6801(0.0)
3	-0.8764 (0.0)
4	-0.9249 (0.0)
5	-0.8863 (0.0)

Panel C: 1981-1989

Size Quintile	Correlation (p-value)
1	-0.8020 (0.0)
2	-0.6445 (0.0)
3	0.8390 (0.0)
4	-0.9939 (0.0)
5	-0.8603 (0.0)

Table 25: The table reports the correlations between the long-term growth forecasts of each size quintile and each quintile's mean firm age for the 1981-2011 period (Panel A), the 1990-2011 period (Panel B) and 1981-1989 period (Panel C). In all Panels the data comes in quarterly frequency. Both each quintile's mean firm age series and the series of the long-term forecasts of each size quintile are smoothed by using the Hodrick-Prescott filter. The long-term forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term forecasts come from IBES.

Table 26. Interaction between quarterly forecasts and long-term growth forecasts

Panel A: Summary statistics of the quarterly forecast errors

	10	25	50	75	90	Mean	St. Dev.
Percentile	-0.066	-0.01	0.01	0.036	0.09	0.001	0.4012

Panel B: Summary statistics of the long-term growth forecasts changes between two subsequent quarters

	10	25	50	75	90	Mean	St. Dev.
Percentile	-2.5	-0.5	0	0	1.5	-0.26	3.98

Panel C: Summary statistics of long-term growth forecast changes between the current and the next quarter in the case of quarterly forecast error of less than -0.066 dollars

	10	25	50	75	90	Mean	St. Dev.
Percentile	-2.5	-0.5	0	0	1.5	-0.2497	5.31

Panel D: Summary statistics of long-term growth forecast changes between the current and the next quarter in the case of quarterly forecast error of more than 0.09 dollars

	10	25	50	75	90	Mean	St. Dev.
Percentile	-2	-0.25	0	0	2	-0.1158	4.38

Panel E: Summary statistics of long-term growth forecast changes between the current and the same quarter of next year in the case of quarterly forecast error of less than -0.066 dollars

	10	25	50	75	90	Mean	St. Dev.
Percentile	-5	-2	0	0.5	2.5	-0.864	5.66

Panel F: Summary statistics of long-term growth forecast changes between the current and the same quarter of next year in the case of quarterly forecast error of more than 0.09 cents

	10	25	50	75	90	Mean	St. Dev.
Percentile	-5	-1.5	0	1	3	-0.6367	6.03

Panel G: Summary statistics of quarterly forecast error in the case of a change in long-term growth forecast between subsequent quarters smaller than -2.5%

	10	25	50	75	90	Mean	St. Dev.
Percentile	-0.07	-0.012	0.01	0.035	0.09	0.00177	0.2234

Panel H: Summary statistics of quarterly forecast error in the case of a change in long-term growth forecast between subsequent quarters greater than 1.5%

	10	25	50	75	90	Mean	St. Dev.
Percentile	-0.07	-0.01	0.01	0.0333	0.0862	-0.00086	0.4987

Table 26: The table reports summary statistics of the quarterly forecast error defined as the actual ESP minus the forecast (Panel A), summary statistics of long-term growth forecasts changes between two subsequent quarters (Panel B), summary statistics of the long-term growth forecast changes between the current and the next quarter in the case the quarterly forecast error belongs to the lowest decile of quarterly forecast errors (Panel C), summary statistics of the long-term growth forecast changes between the current and the next quarter in the case the quarterly forecast error belongs to the top decile of quarterly forecast errors (Panel D), summary statistics of long-term growth forecast changes between the current and the same quarter of next year in the case the quarterly forecast error belongs to the lowest decile of quarterly forecast error (Panel E), summary statistics of long-term growth forecast changes between the current and the same quarter of next year in the case the quarterly forecast error belongs to the top decile of quarterly forecast error (Panel F), summary statistics of quarterly forecast error in the case the change in long-term growth forecast between subsequent quarters belongs to the lowest decile of changes in long-term growth forecasts (Panel G) and summary statistics of quarterly forecast error in the case the change in long-term growth forecast between subsequent quarters belongs to the top decile of changes in long-term growth forecasts (Panel H).The long-term forecasts were issued by analysts for the period 1981-2011 and are long-term forecasts estimating an average annual growth of operating income for the next three to five years. The long-term growth forecasts are the forecasted annual growth rate in percent. Market returns data comes from CRSP. The long-term and quarterly forecasts come from IBES.

Table 27. Efficacy of book-to-market and size quintiles

Panel A: Efficacy of book-to-market and size quintiles

		Size Quintile				
		1	2	3	4	5
Book-to-market quintile	1	1.587518	1.699177	1.736093	1.760395	1.836937
	2	1.520543	1.529182	1.540839	1.494808	1.502213
	3	1.468685	1.460724	1.420812	1.419075	1.402716
	4	1.423275	1.402302	1.375877	1.365854	1.364105
	5	1.357724	1.312062	1.300159	1.31074	1.302348

Panel B: Growth in efficacyof book-to-market and size quintiles

		Size Quintile				
		1	2	3	4	5
Book-to-market quintile	1	-0.00375	-0.01123	-0.01111	-0.00469	0.001743
	2	-0.00412	-0.00521	-0.00248	-0.00058	0.001017
	3	-0.00411	-0.00258	9.77E-05	0.00071	-0.00466
	4	-3.6E-05	0.000661	0.000178	-0.00102	-0.00504
	5	0.007208	0.004169	0.004776	0.009404	-0.0062

Panel C: Growth in assets of book-to-market and size quintiles

		Size Quintile				
		1	2	3	4	5
Book-to-market quintile	1	0.704284	0.674553	0.649736	0.635414	0.546363
	2	0.491381	0.501883	0.468922	0.403061	0.375754
	3	0.387256	0.357736	0.368105	0.315917	0.310617
	4	0.308277	0.287771	0.317596	0.303627	0.304279
	5	0.198513	0.163678	0.204313	0.213145	0.162445

Table 27: The table reports the efficacy of the firms at each book-to-market and size quintile for the 1981-2011 period (Panel A), the growth in efficacy in the next four years at each book-to-market and size quintile for the 1981-2011 period (Panel B) and the growth in assets in the next four years at each book-to-market and size quintile for the 1981-2011 period (Panel C) . In all Panels the data comes in quarterly frequency. Efficacy is defined as the ratio of sales to cost of goods sold. The accounting data comes from Compustat. Stock data comes from CRSP.

Figure 1. Number of firms at the long-term growth forecasts IBES summary file

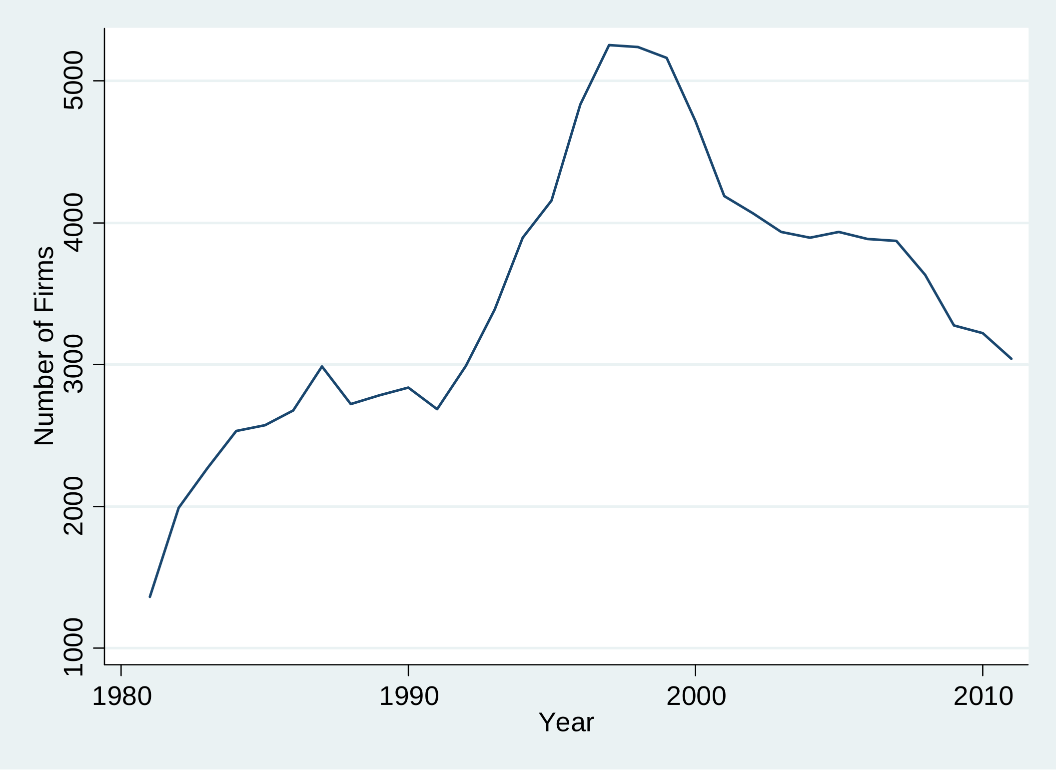


Figure 1: The figure presents the number of firms present at IBES every year.

Figure 2. Number of long-term growth forecasts at the IBES Details file

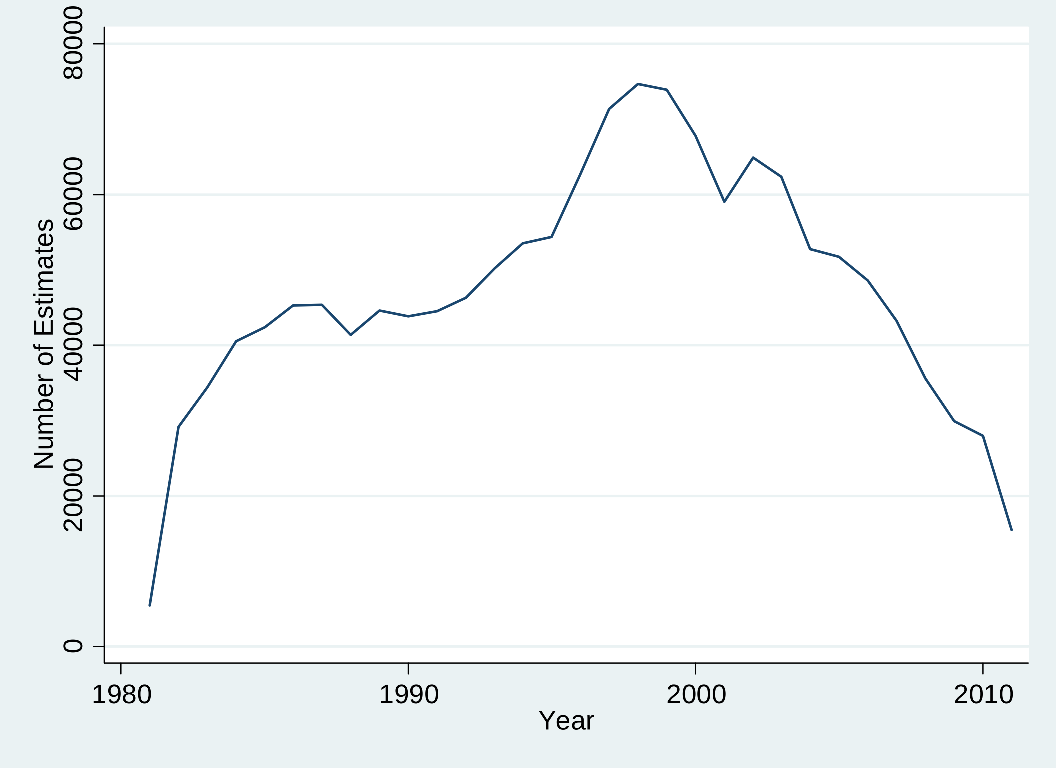


Figure 2: The figure presents the number of long-term forecasts per year in the IBES Details file.

Figure 3. Number of firms in each book-to-market quintile

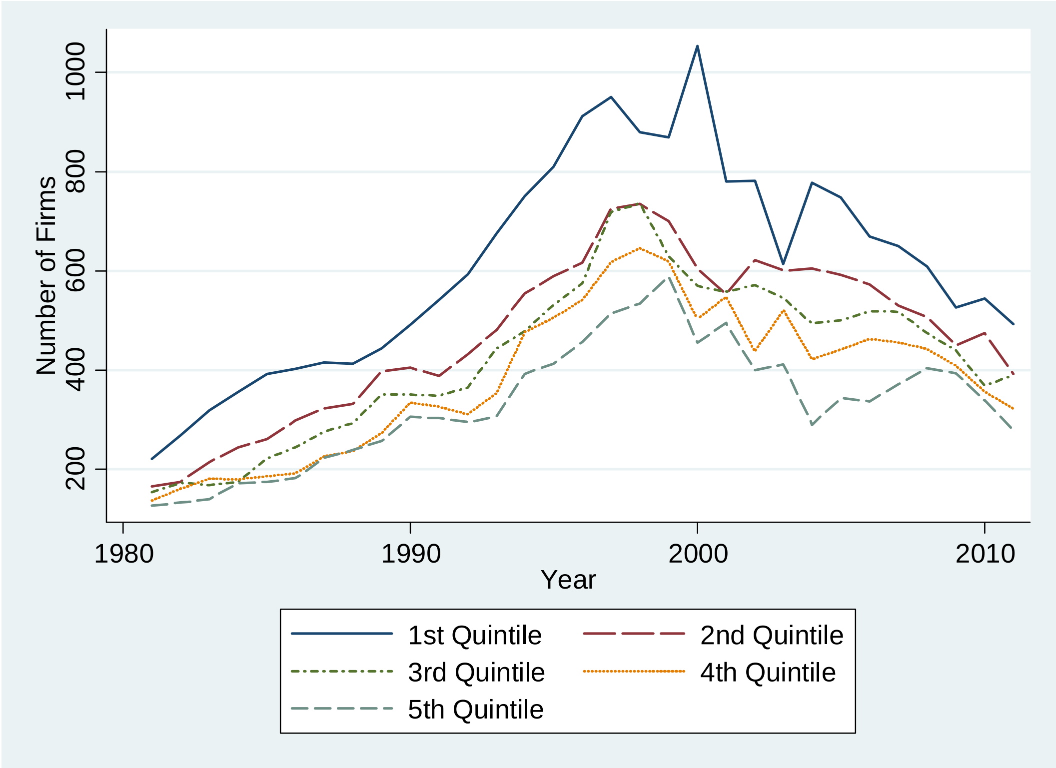


Figure 3: The figure presents the number of firms in each book-to-market quintile for which long-term forecasts are available at the IBES Details file. The accounting data comes from Compustat and the stock prices data comes from CRSP.

Figure 4. Number of firms in each size quintile

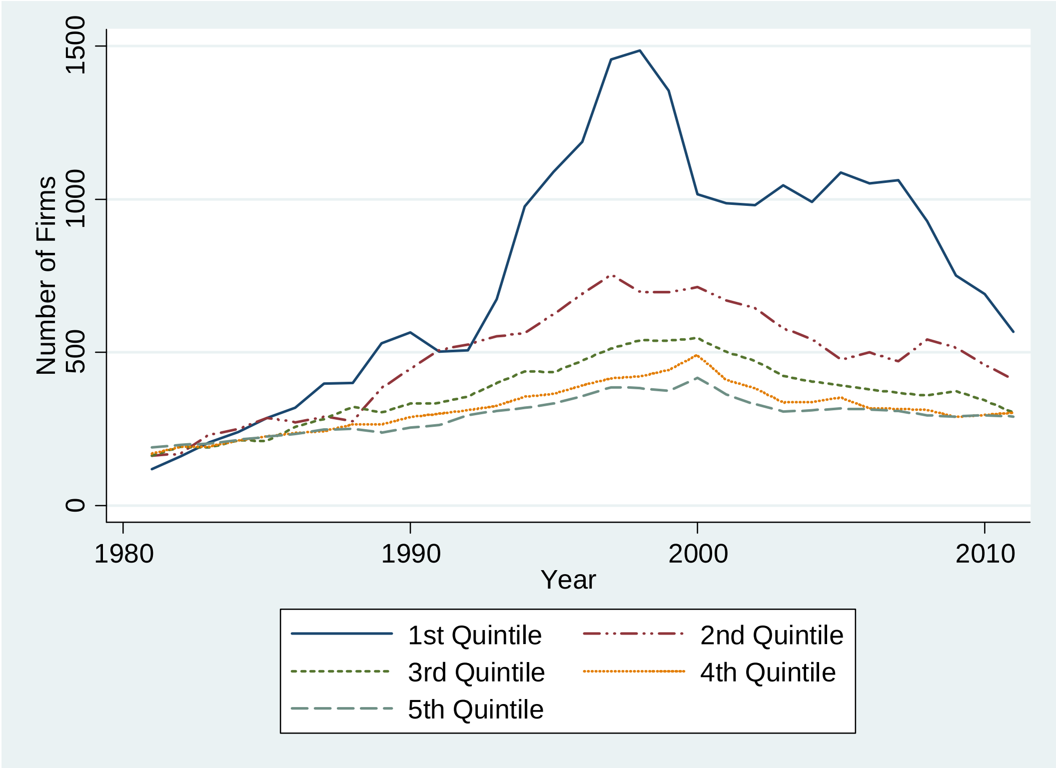


Figure 4: The figure presents the number of firms in each size quintile for which long-term forecasts are available at the IBES Details file. The stock prices data comes from CRSP.

Figure 5.Operating income for Microsoft

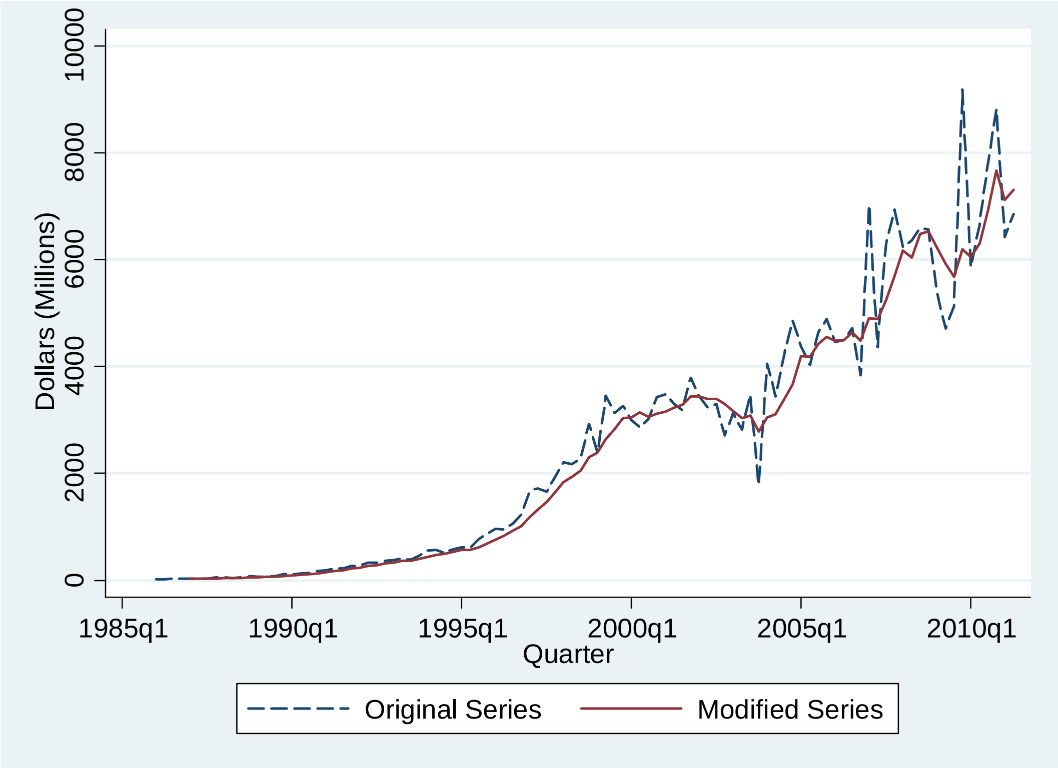
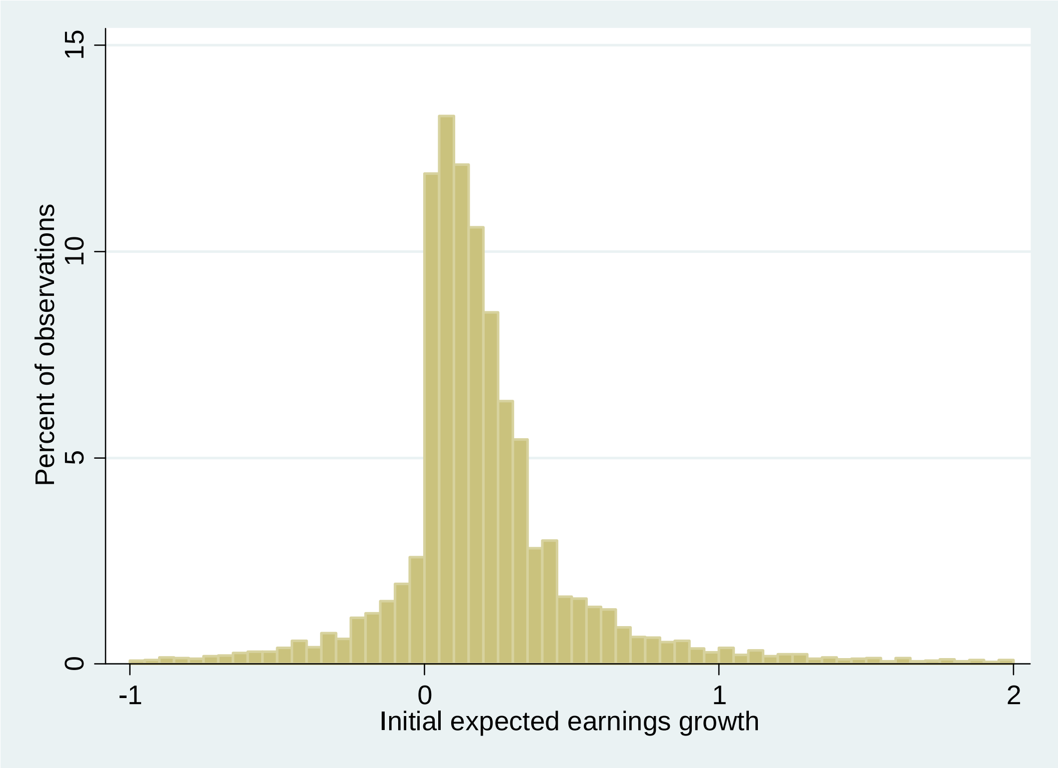


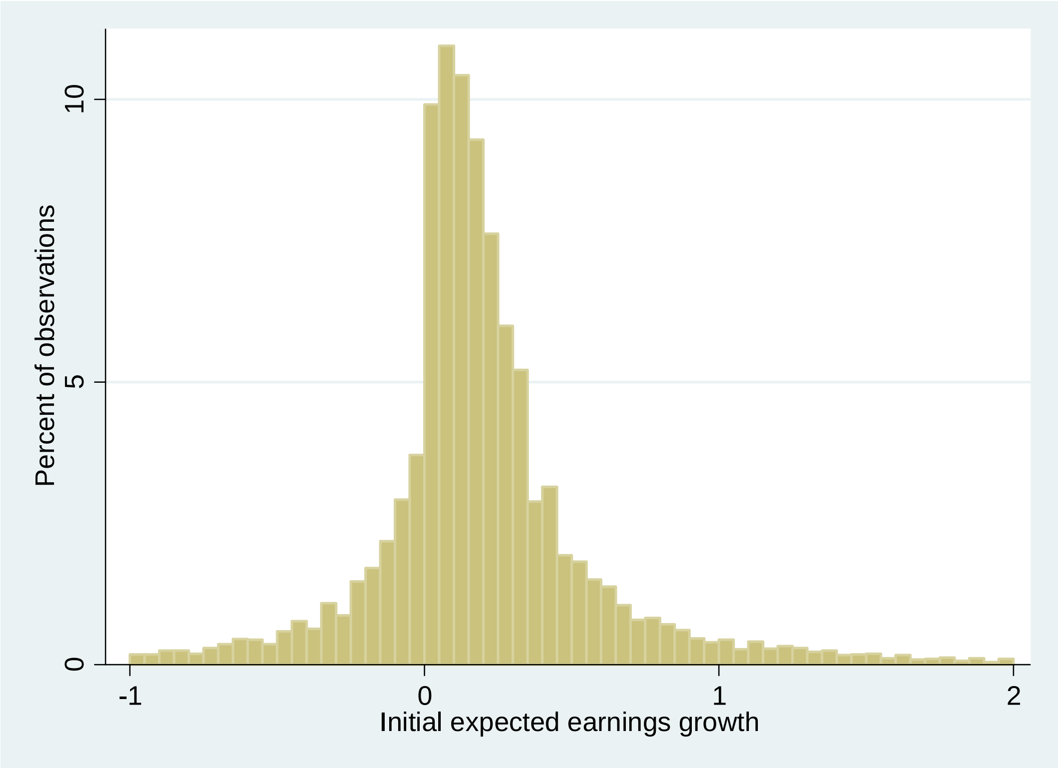
Figure 5: The figure presents the original and the smoothed series of operating income for the case of Microsoft. The original data was smoothed by using a moving average of the current and the last 4 quarters of a firm's operating income. The accounting data comes from Compustat.

Figure 6. Distribution of initial expected earnings growth for book-to-market quintiles

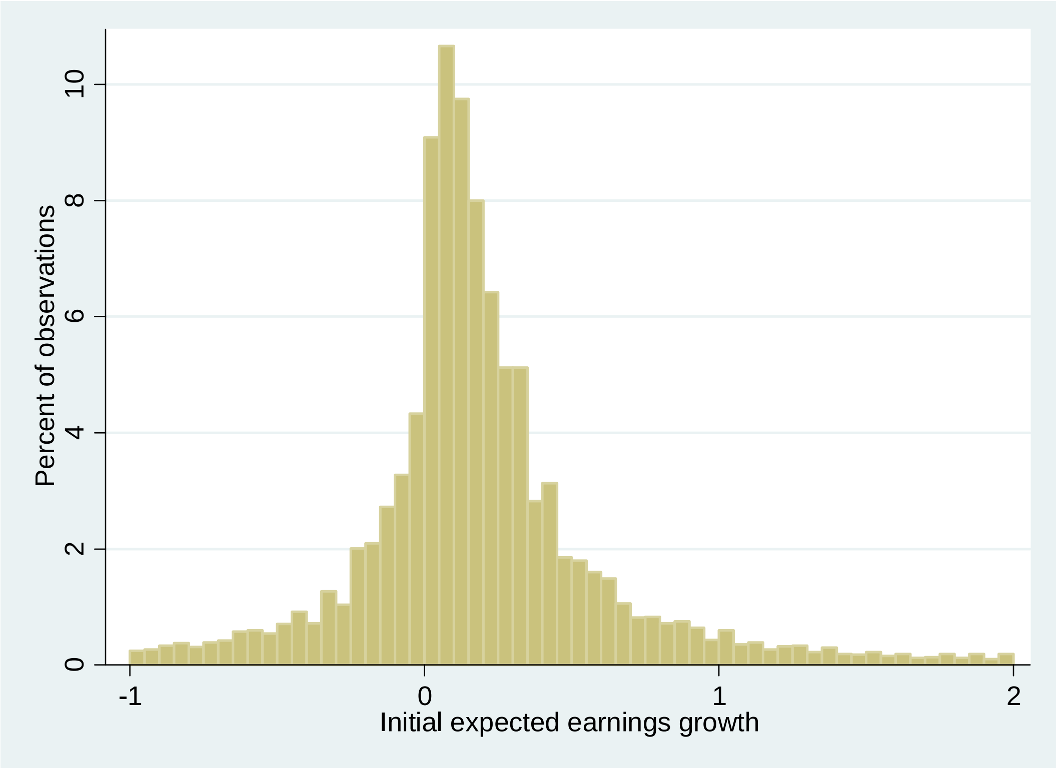
Panel A: 1st book-to-market quintile



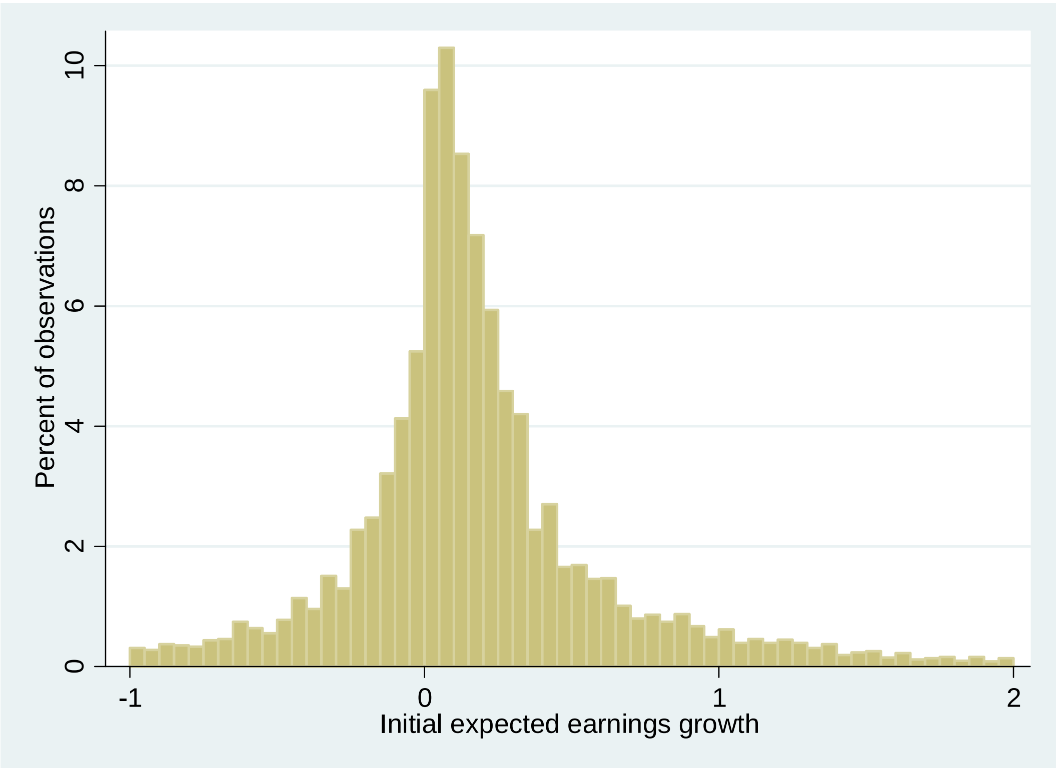
Panel B: 2nd book-to-market quintile



Panel C: 3rd book-to-market quintile



Panel D: 4th book-to-market quintile



Panel E: 5th book-to-market quintile

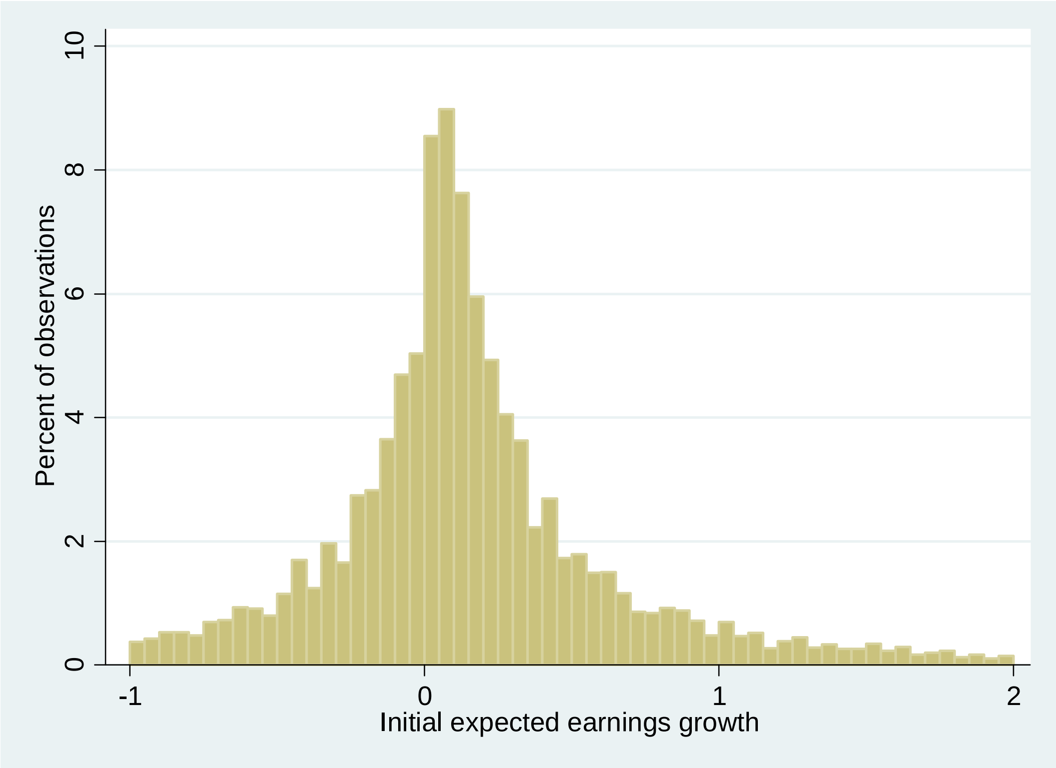
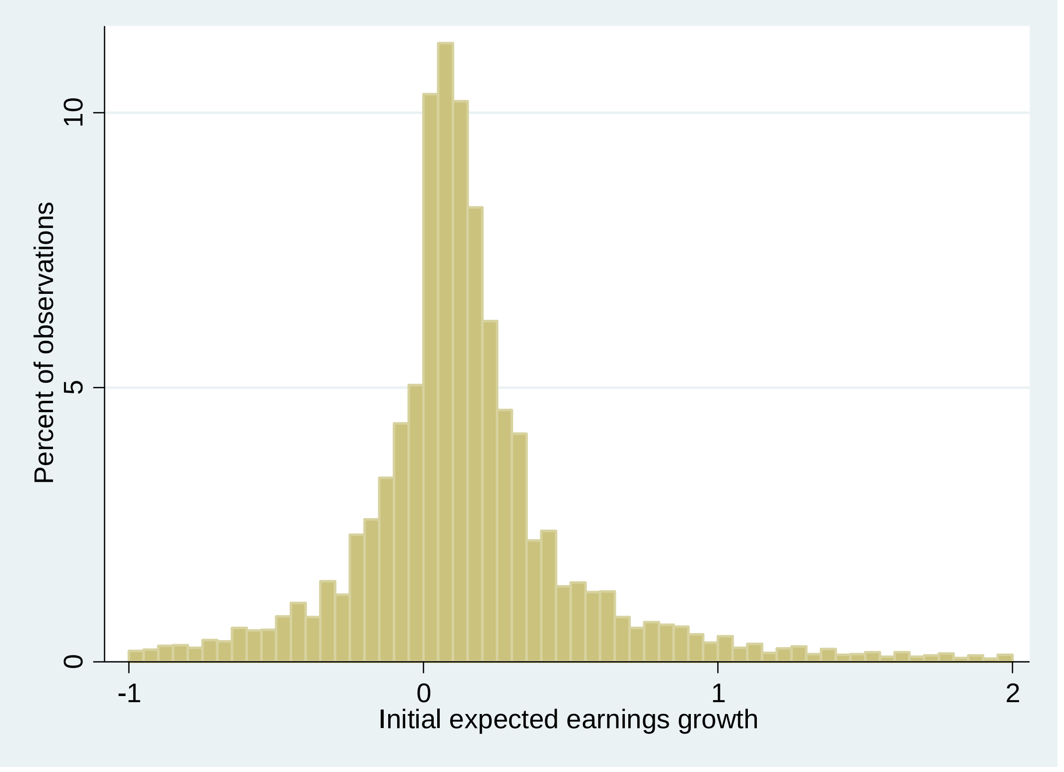


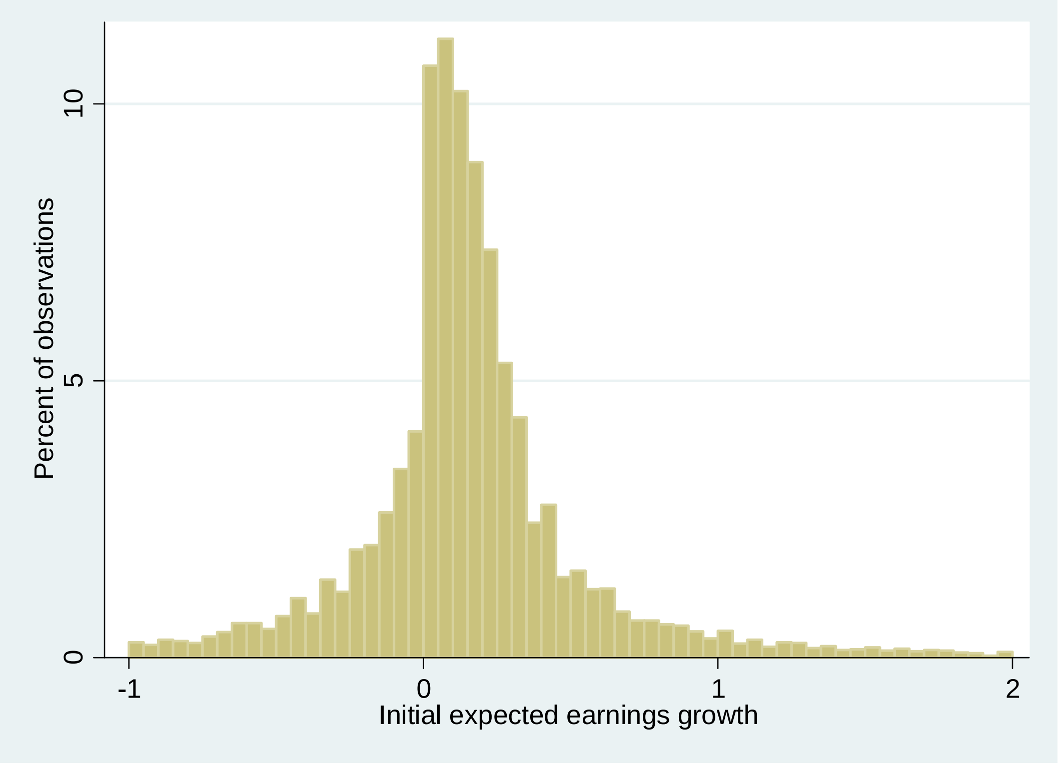
Figure 6: The figure presents the distribution of the initial expected earnings growth for each book-to-market quintile for the 1981-2011 period. The initial expected earnings growth is the difference between the EPS forecasts issued eight months or earlier than the announcement of the results of the next FYE and the previous FYE's EPS. Each bin corresponds to five cents. Both forecasts and actual results come from IBES.

Figure 7. Distribution of initial expected earnings growth for size quintiles

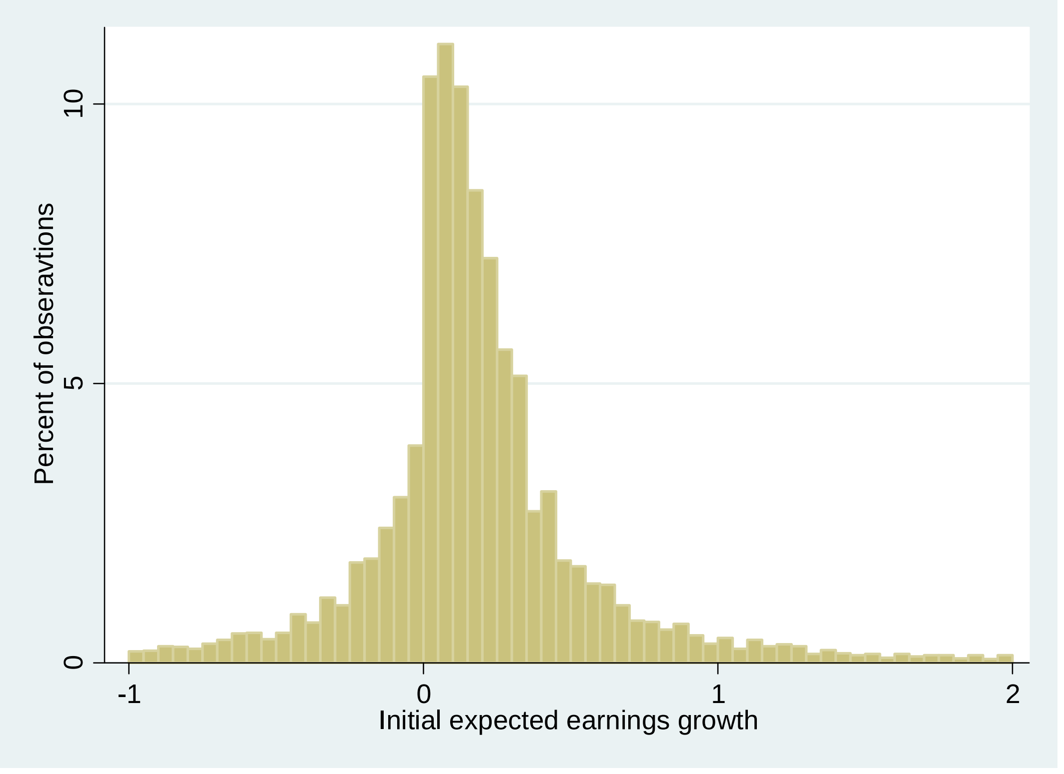
Panel A: 1st size quintile



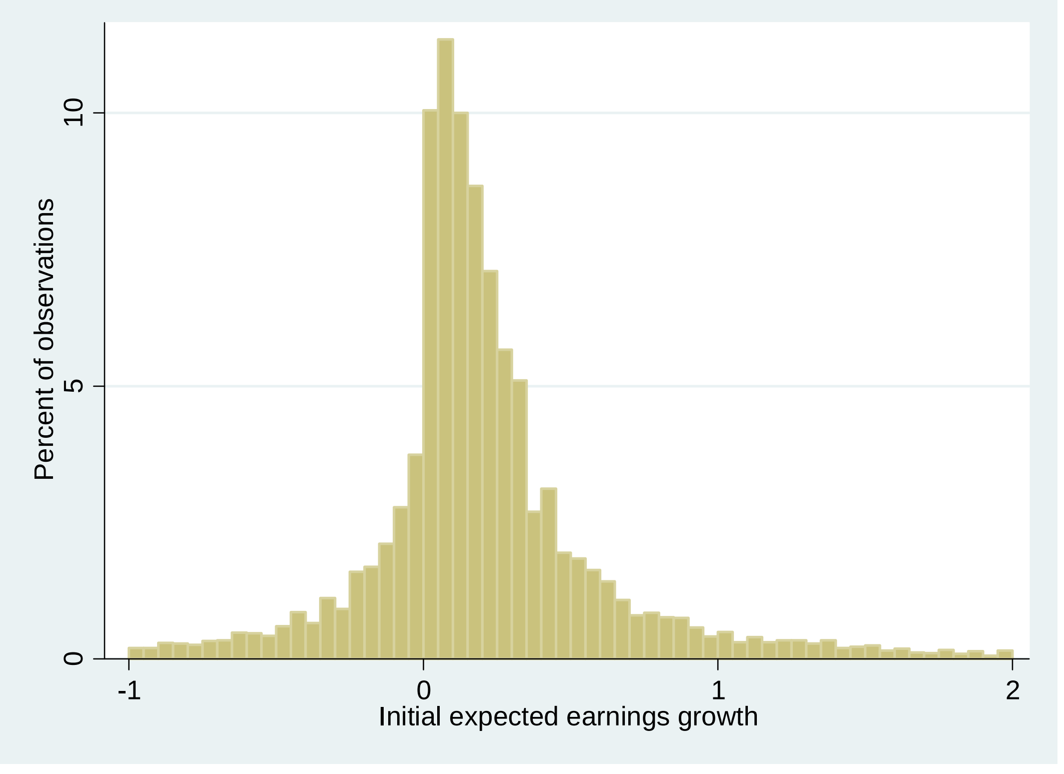
Panel B: 2nd size quintile



Panel C: 3rd size quintile



Panel D: 4th size quintile



Panel E: 5th size quintile

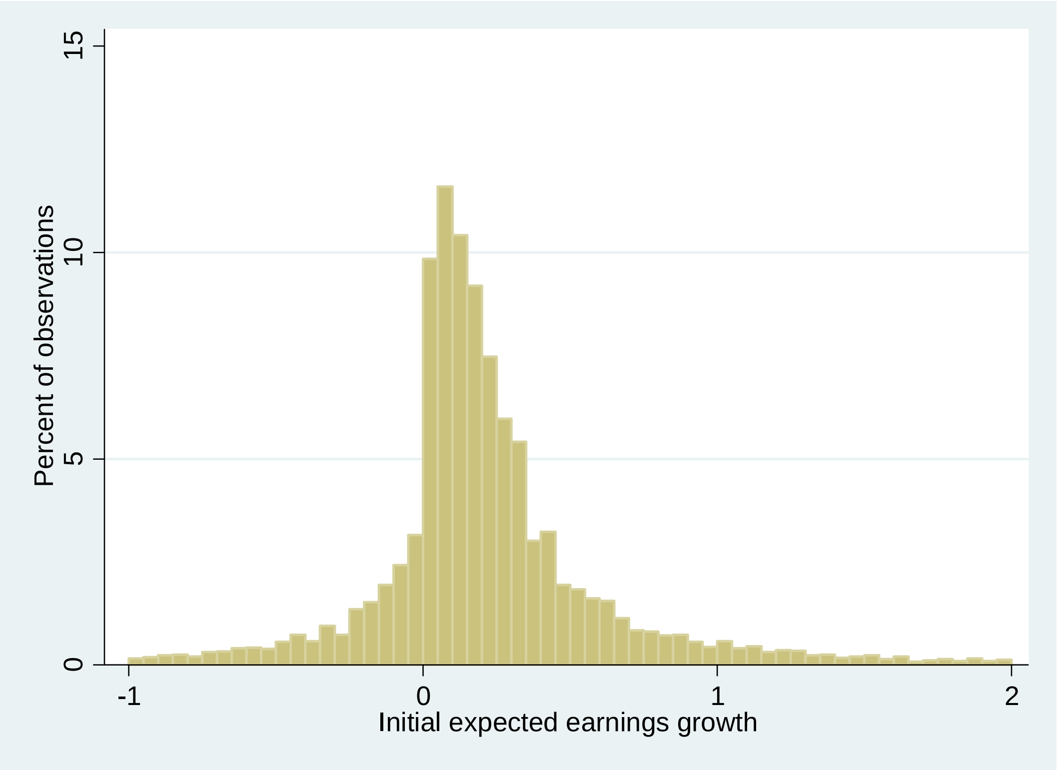


Figure 7: The figure presents the distribution of the initial expected earnings growth for each size quintile for the 1981-2011 period. The initial expected earnings growth is the difference between the EPS forecasts issued eight months or earlier than the announcement of the results of the next FYE and the previous FYE's EPS. Each bon corresponds to five cents. Both forecasts and actual results come from IBES.

Figure 8. Relative errors for each book-to-market quintile

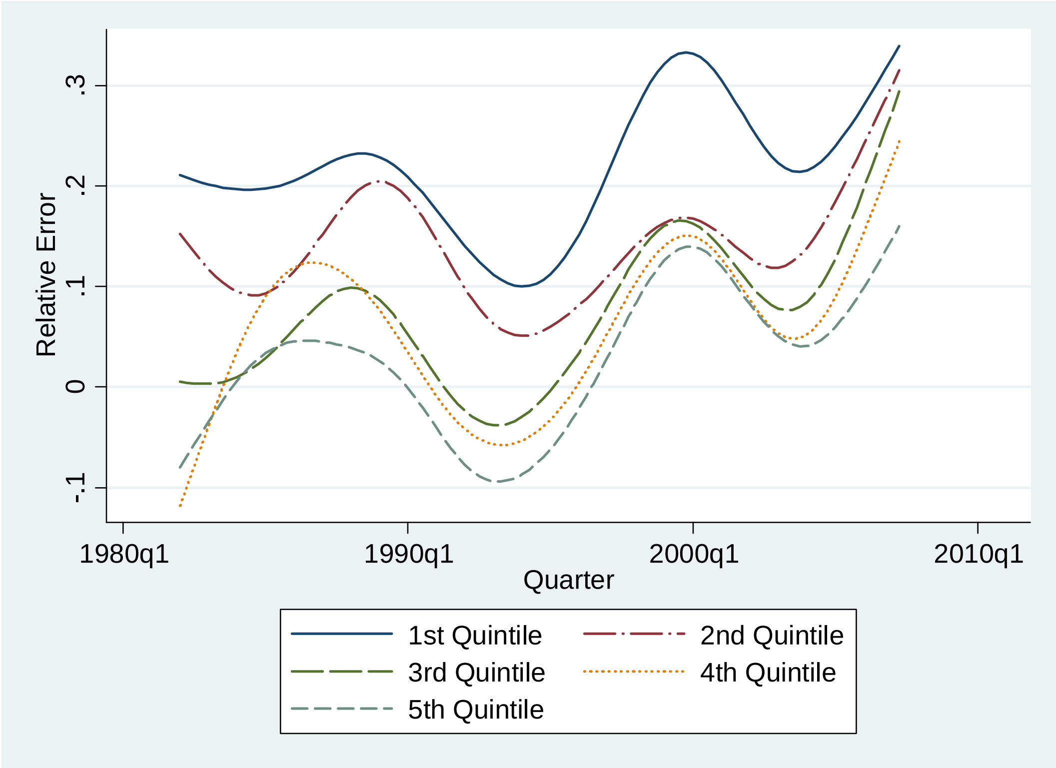


Figure 8: The figure presents the relative errors for each book-to-market quintile. The relative error is defined as the four years ahead forecasted operating income minus the actual operating income four years later divided by the actual operating income four years later. The original series are smoothed by the use of Hodrick-Prescott filter. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Figure 9. Relative errors for each size quintile

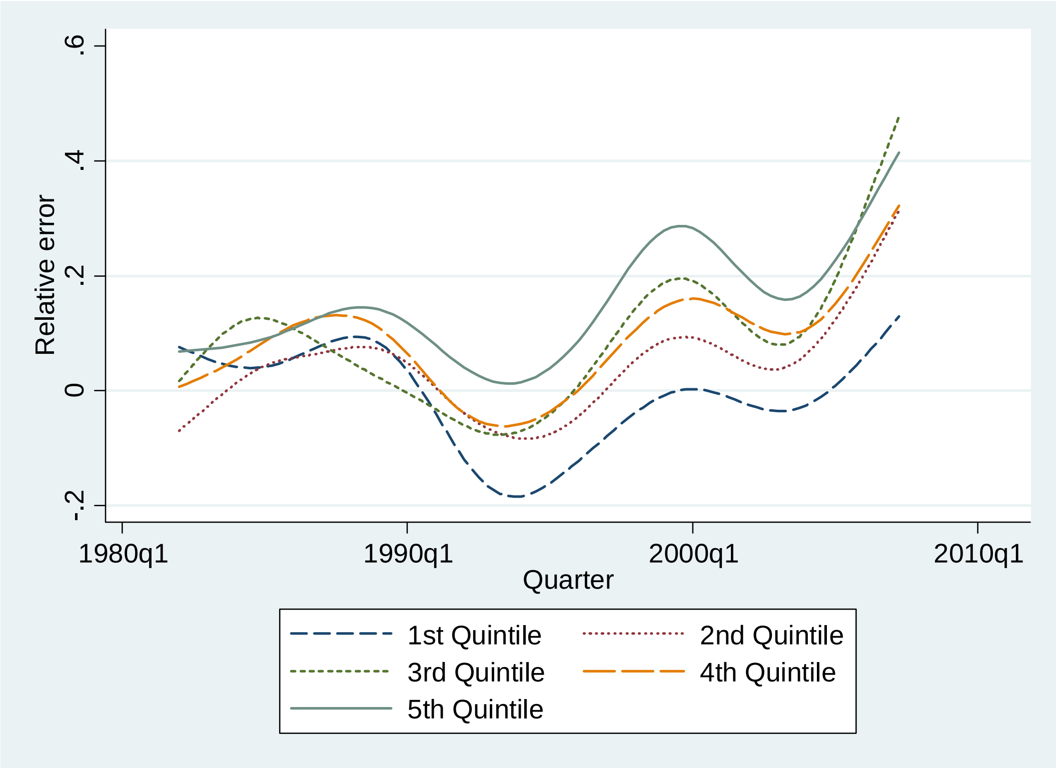


Figure 9: The figure presents the relative errors for each size quintile. The relative error is defined as the four years ahead forecasted operating income minus the actual operating income four years later divided by the actual operating income four years later. The original series are smoothed by the use of Hodrick-Prescott filter. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Figure 10. Long-term growth forecasts for each book-to-market quintile

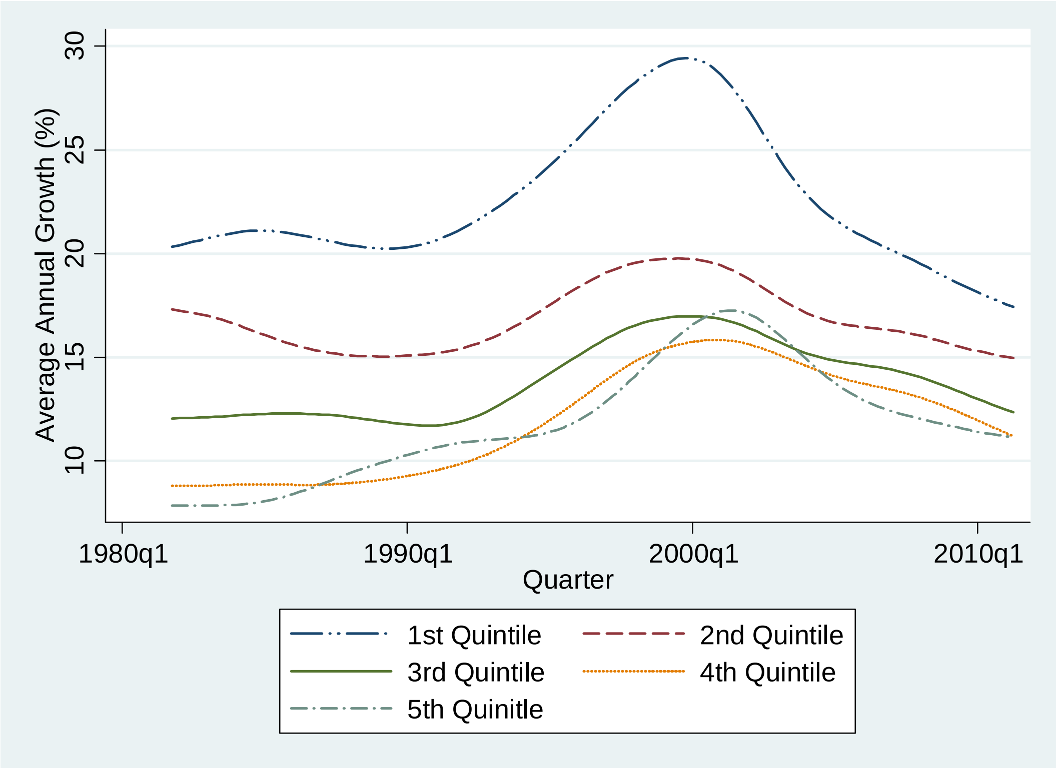


Figure 10: The figure presents the long-term forecasts for each book-to-market quintile. The original series are smoothed by the use of Hodrick-Prescott filter. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Figure 11. Long-term growth forecasts by size quintile

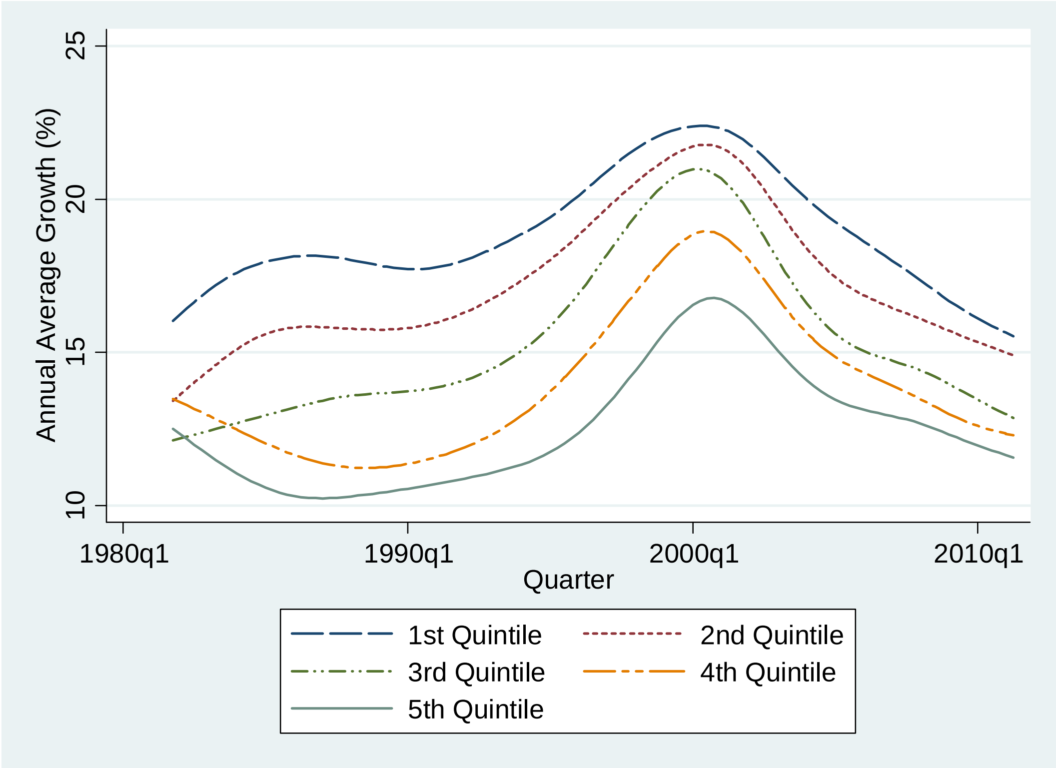


Figure 11: The figure presents the long-term forecasts for each size quintile. The original series are smoothed by the use of Hodrick-Prescott filter. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Figure 12. GDP growth and long-term growth forecasts for book-to-market quintiles

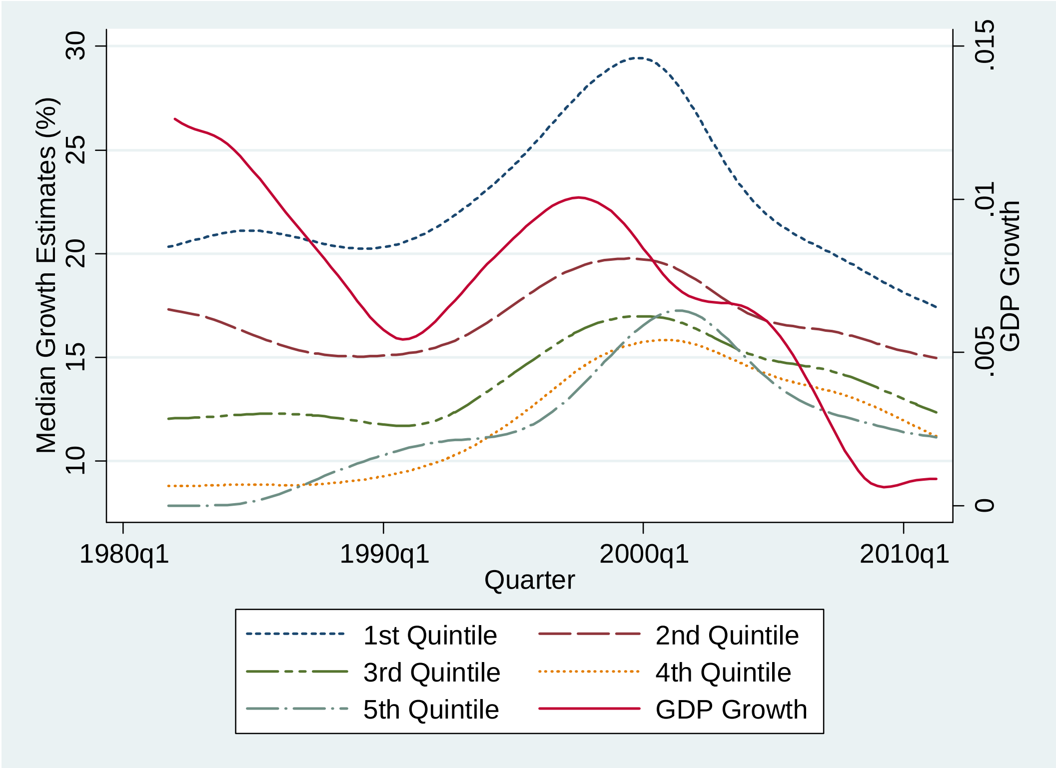


Figure 12: The figure presents the long-term forecasts for each book-to-market quintile and the GDP growth . The original series are smoothed by the use of Hodrick-Prescott filter. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Figure 13. GDP growth and long-term growth forecasts for size quintiles

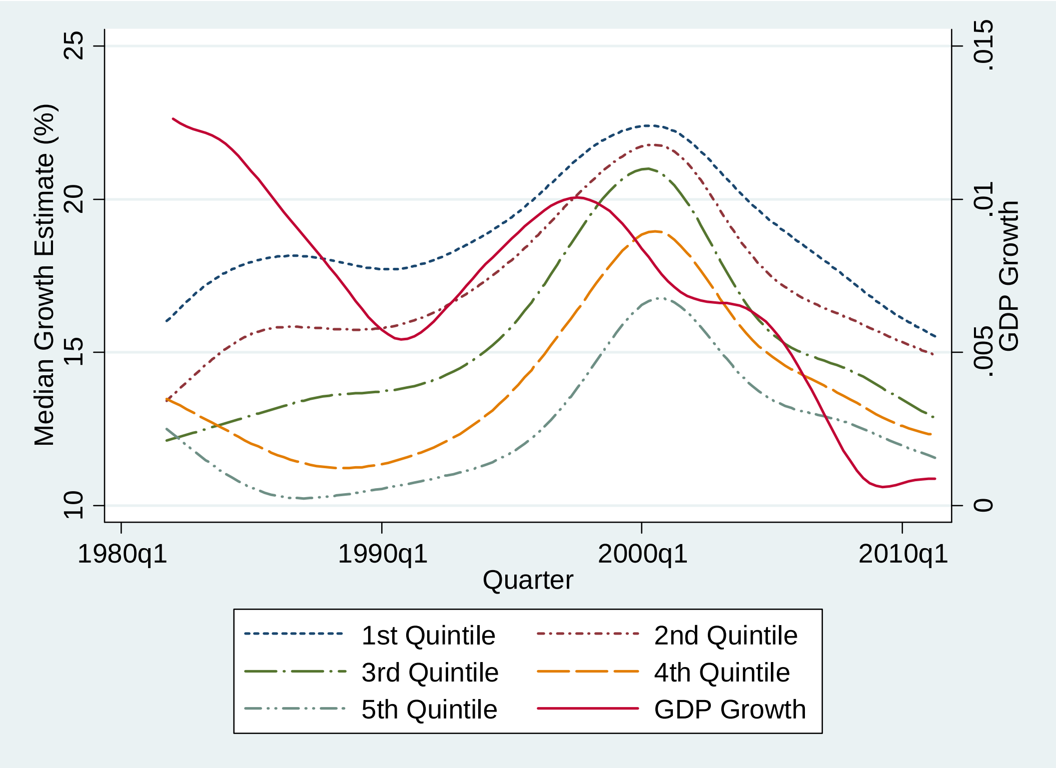


Figure 13: The figure presents the long-term forecasts for each size quintile and the GDP growth . The original series are smoothed by the use of Hodrick-Prescott filter. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. The accounting data comes from Compustat. Stock data comes from CRSP. The long-term forecasts come from IBES.

Figure 14. Forecasted and realized average quarterly GDP growth (one year ahead forecasts)

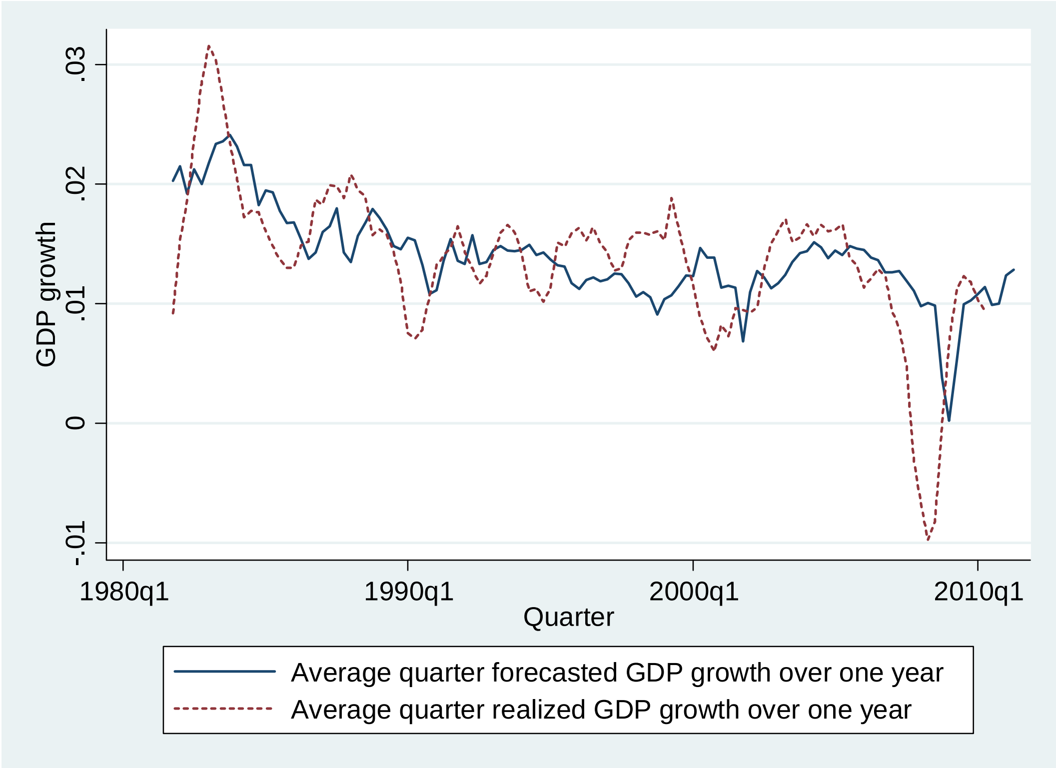


Figure 14: The figure presents the one year ahead forecasted and realized average quarterly GDP growth. The GDP forecasts come from the Survey of Professional Forecasters.

Figure 15. Original and smoothed series of the four quarters ahead corporate profits growth forecasts

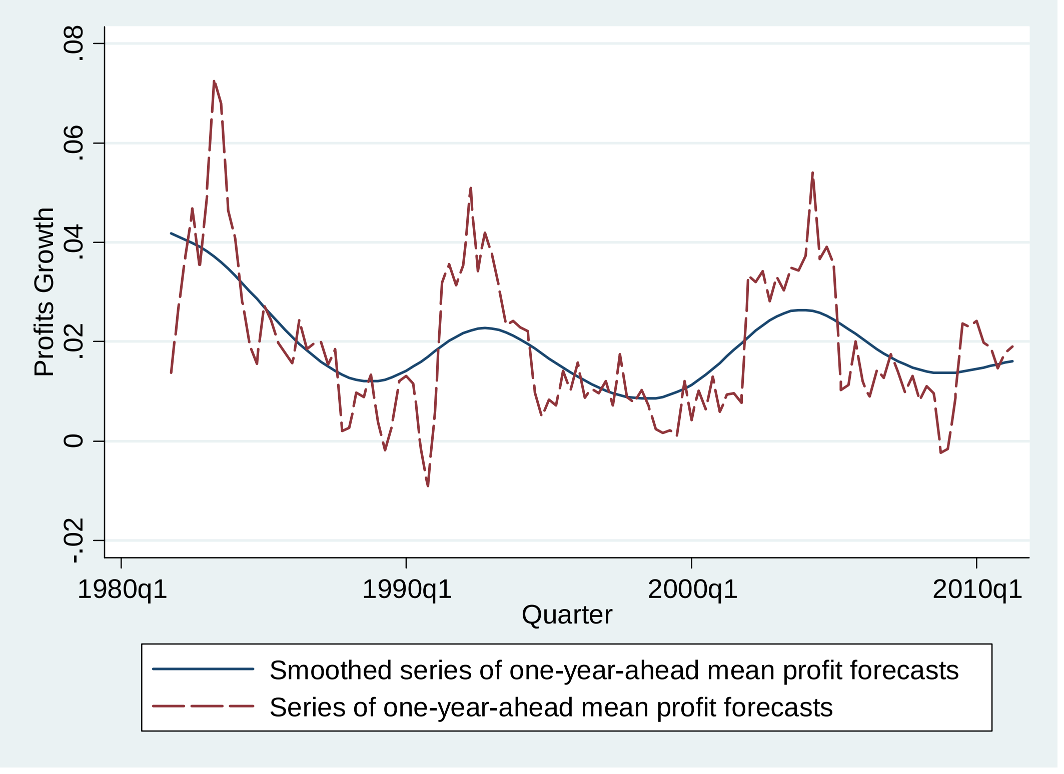


Figure 15: The figure presents the original and smoothed series of the four quarters ahead corporate profits growth forecasts. The original series was smoothed by the use of the Hodrick-Prescott filter. The corporate profits forecasts come from the Survey of Professional Forecasters.

Figure 16. Relation between age and median long-term growth forecast

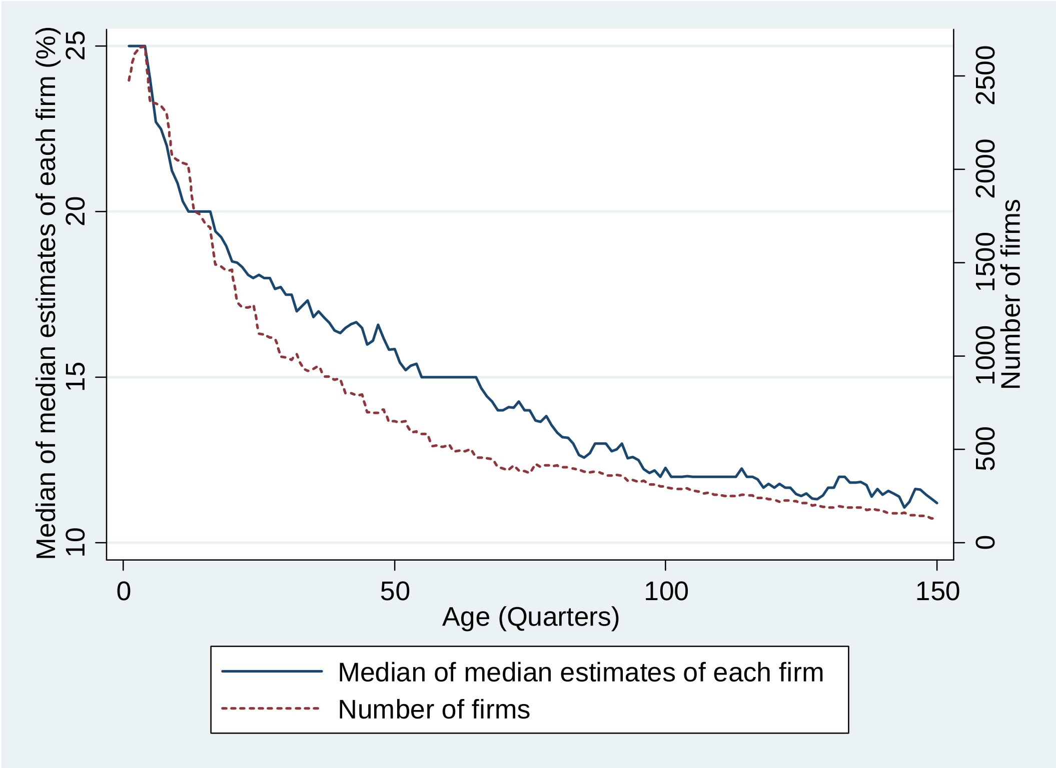


Figure 16: The figure presents the relation between firm age and median long-term growth forecast. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. The long-term forecasts come from IBES.

Figure 17. Relation between the median long-term growth forecasts of each book-to-market quintile and the firm age

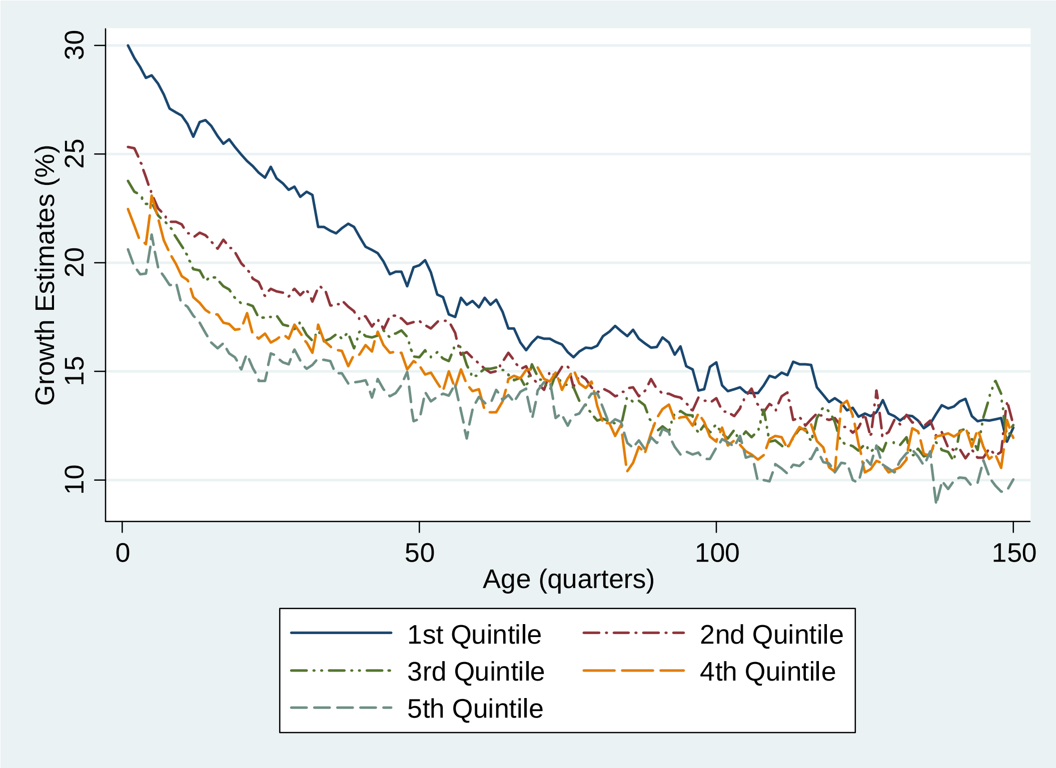


Figure 17: The figure presents the relation between firm age and median long-term growth forecast for each book-to-market qunitile. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. Accounting data comes from Compustat. The long-term forecasts come from IBES.

Figure 18. Relation between the median long-term growth forecasts of each size quintile and the firm age

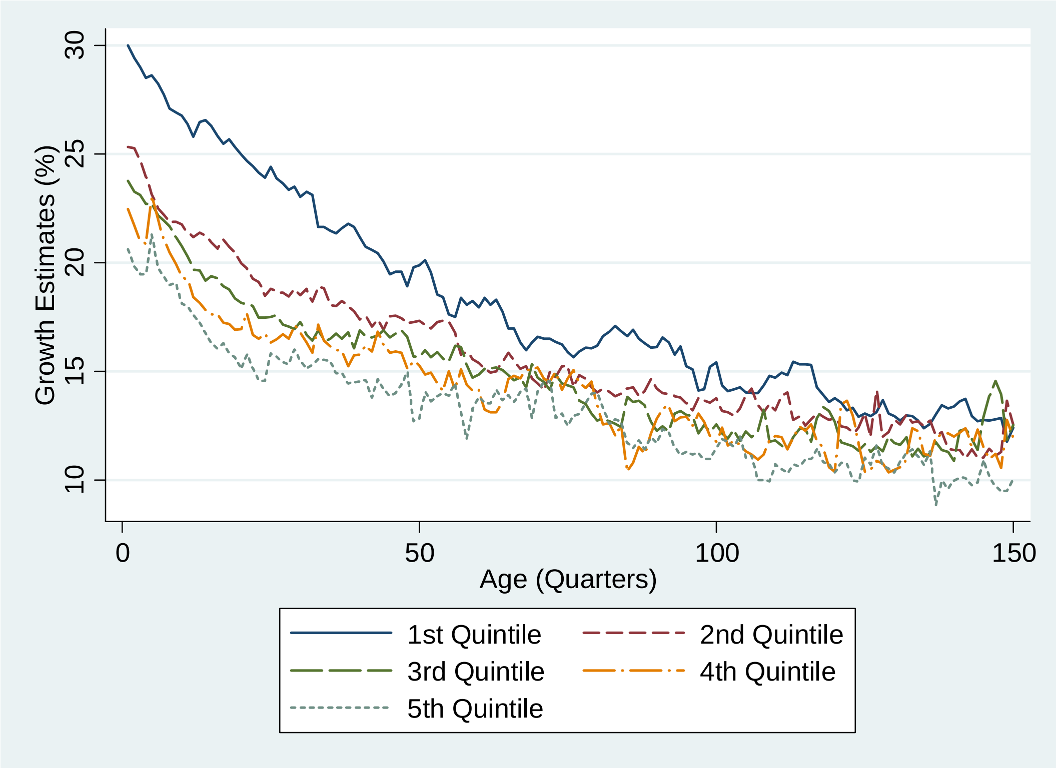
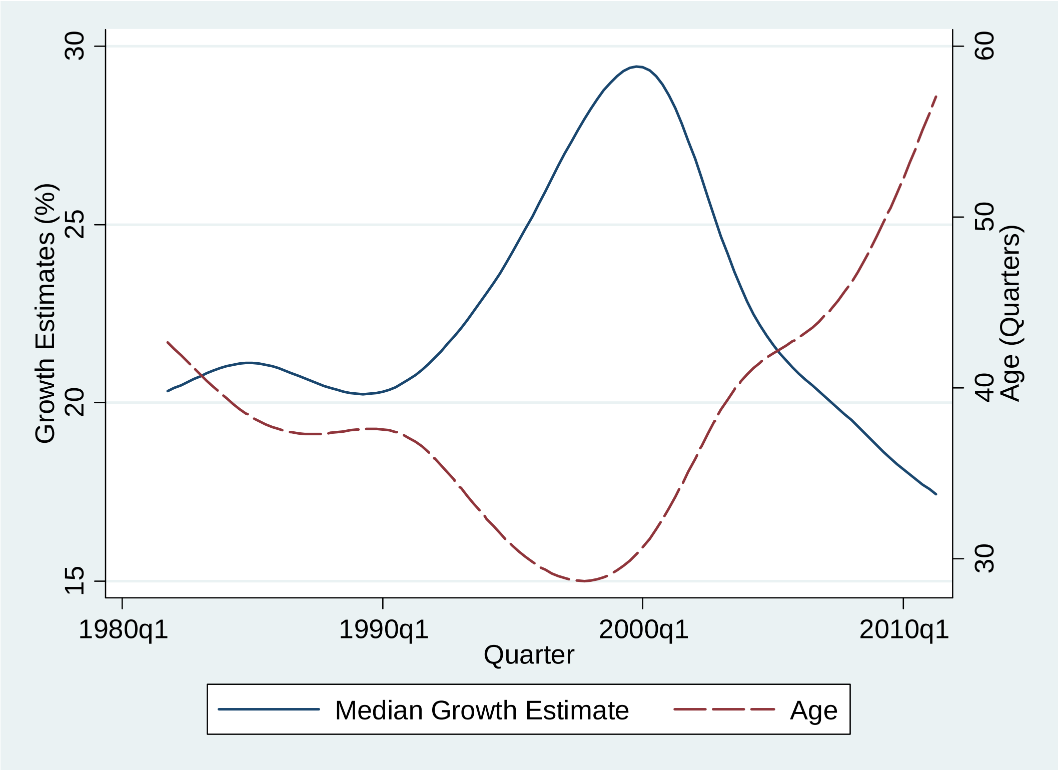


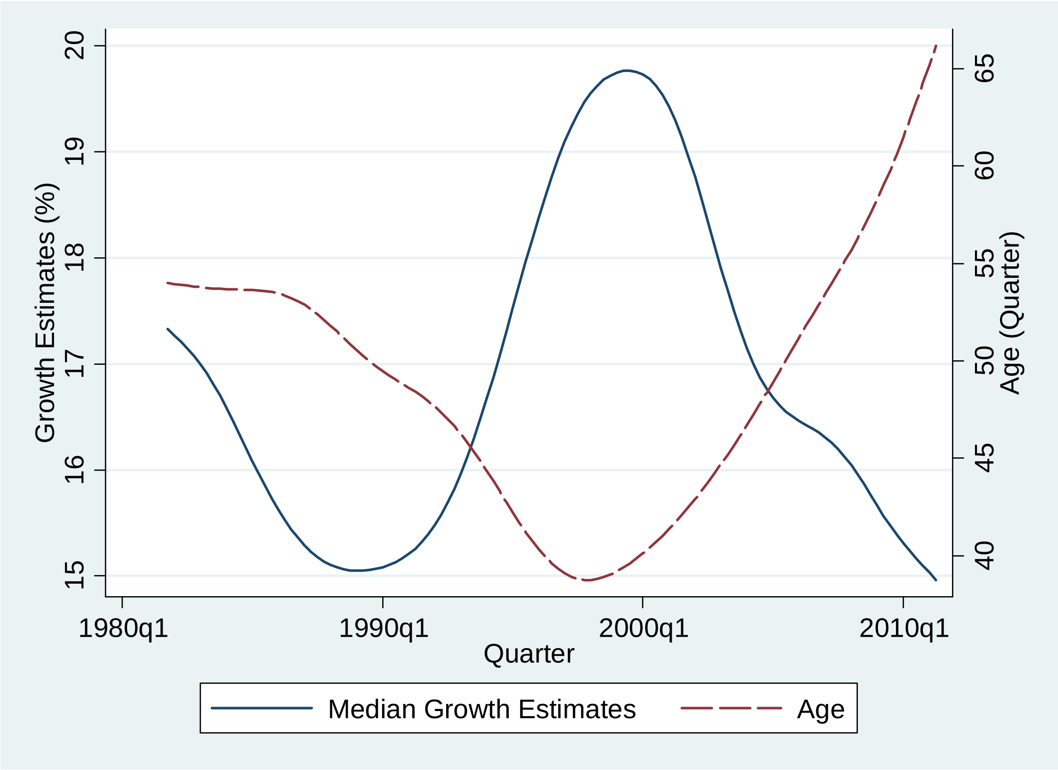
Figure 18: The figure presents the relation between firm age and median long-term growth forecast for each size qunitile. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. Accounting data comes from Compustat. The long-term forecasts come from IBES.

Figure 19. Average age and the long-term growth forecasts of each book-to-market quintile

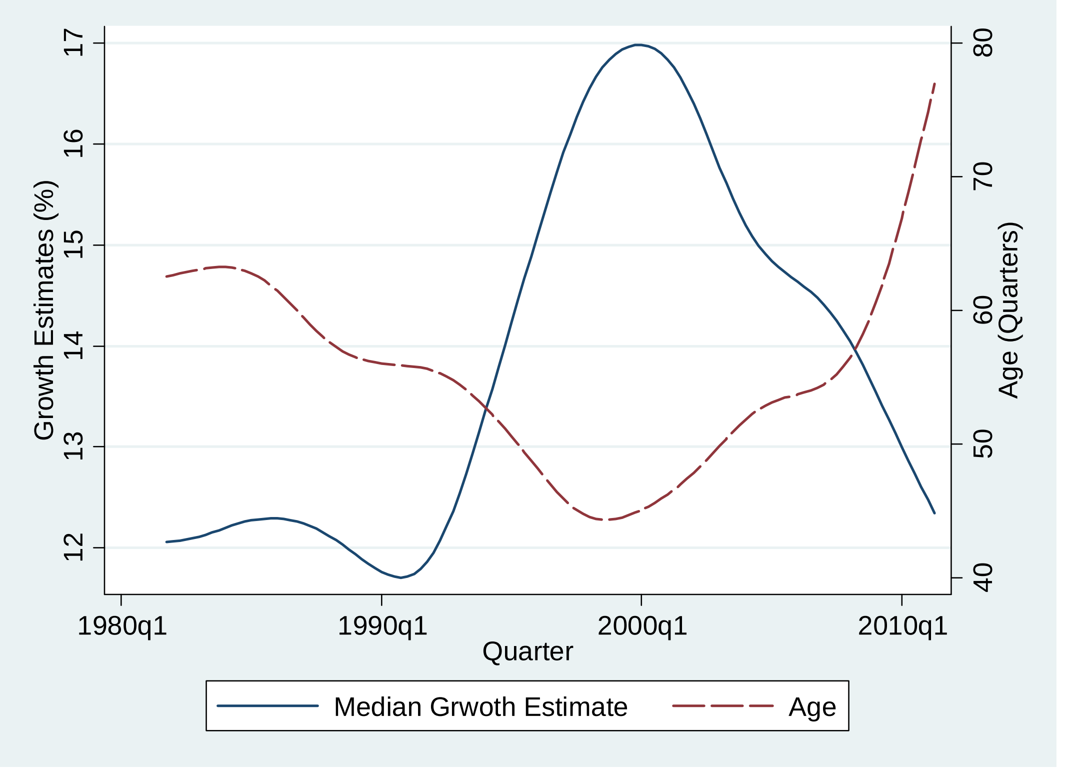
Panel A: 1st book-to-market quintile



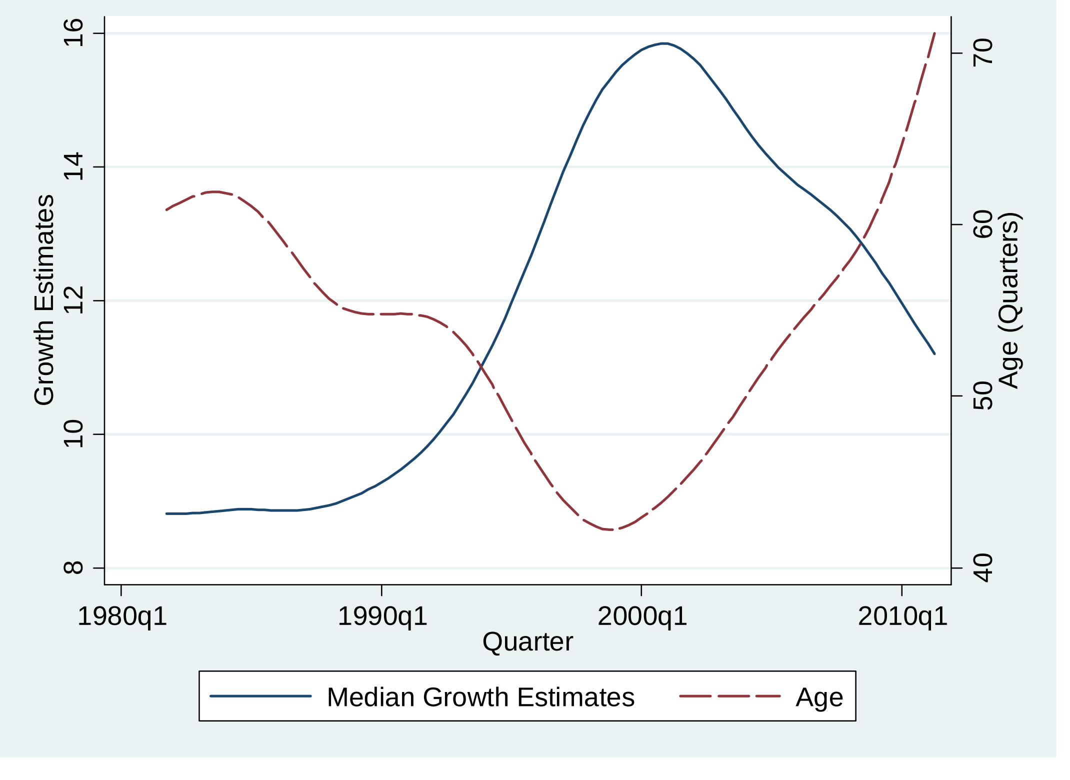
Panel B: 2nd book-to-market quintile



<u>Panel C:</u> 3rd book-to-market quintile



<u>Panel D:</u> 4th book-to-market quintile



Panel E: 5th book-to-market quintile

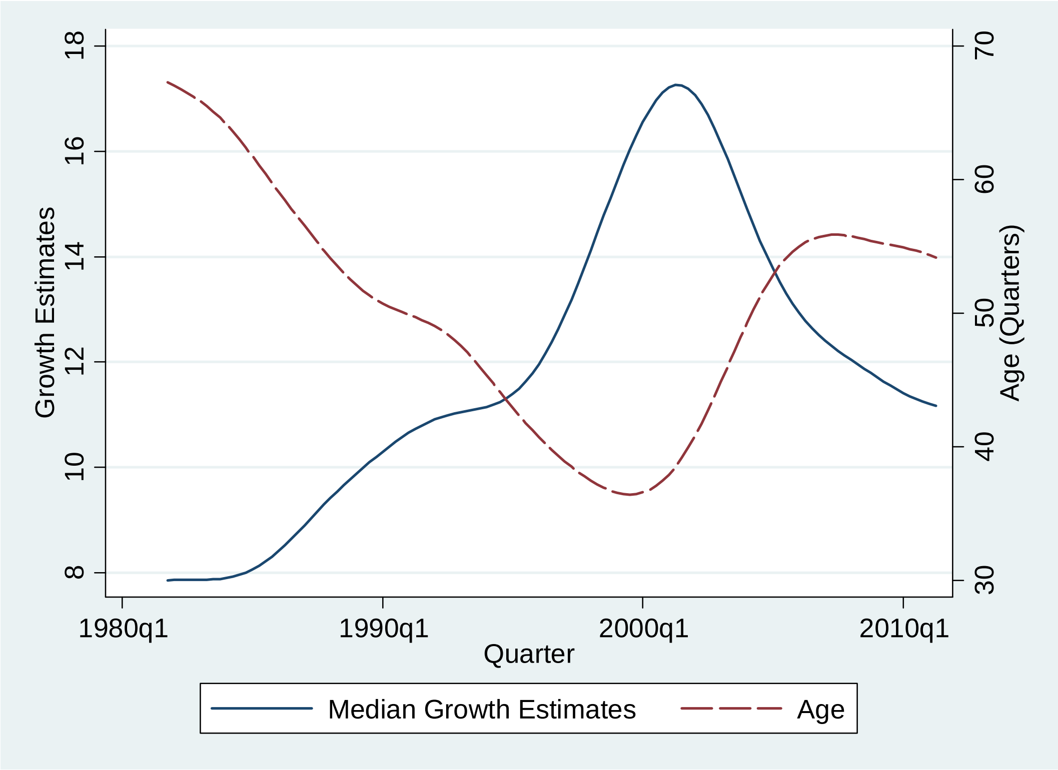
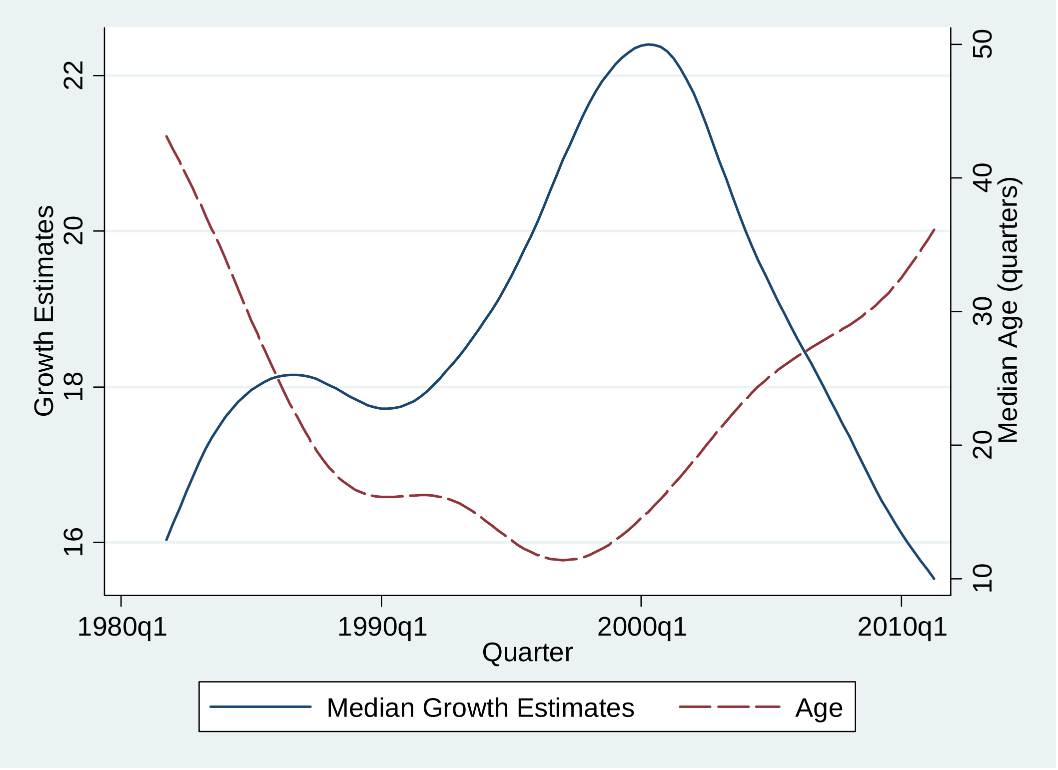


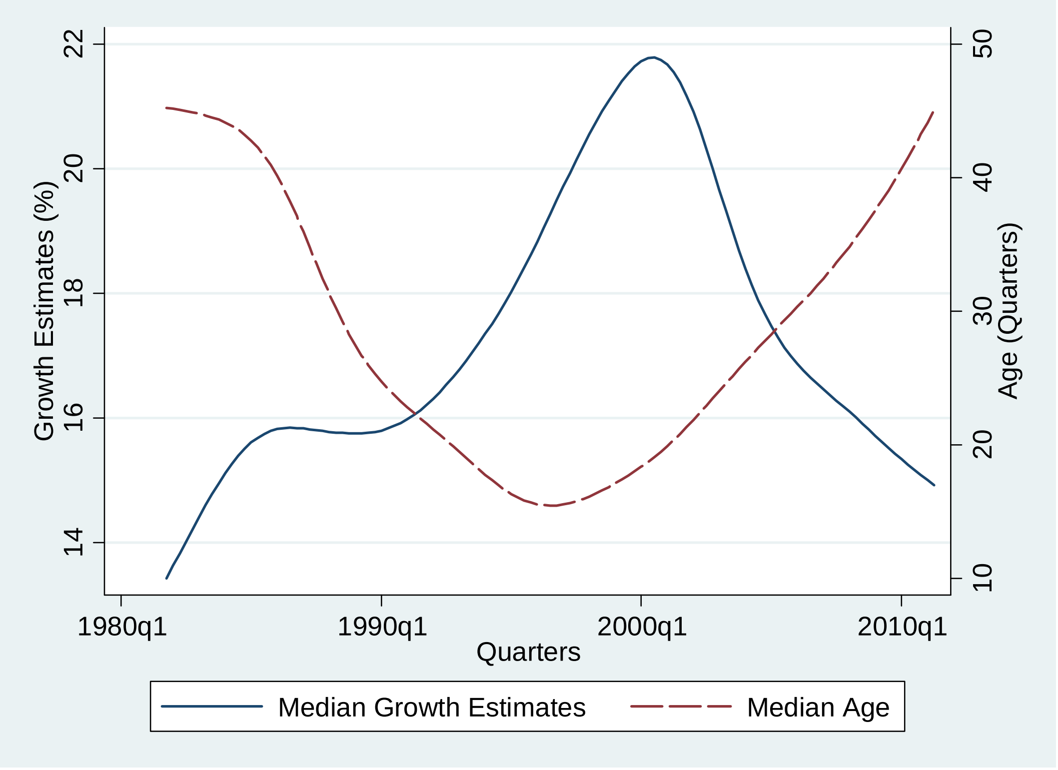
Figure 19: The figure presents the relation between the median firm age and median long-term growth forecast for each book-to-market quintile for the 1981-2011 period. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. Accounting data comes from Compustat. The long-term forecasts come from IBES.

Figure 20. Correlations between the average age and the long-term growth forecasts of each size quintile

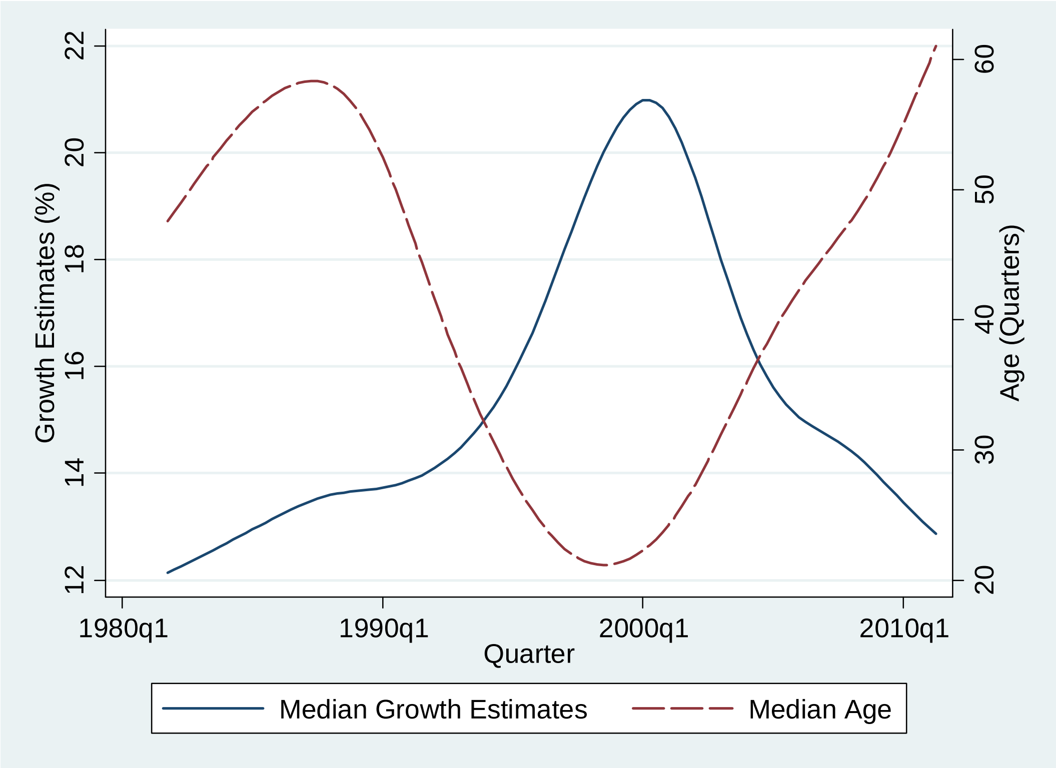
<u>Panel A:</u> 1st size quintile



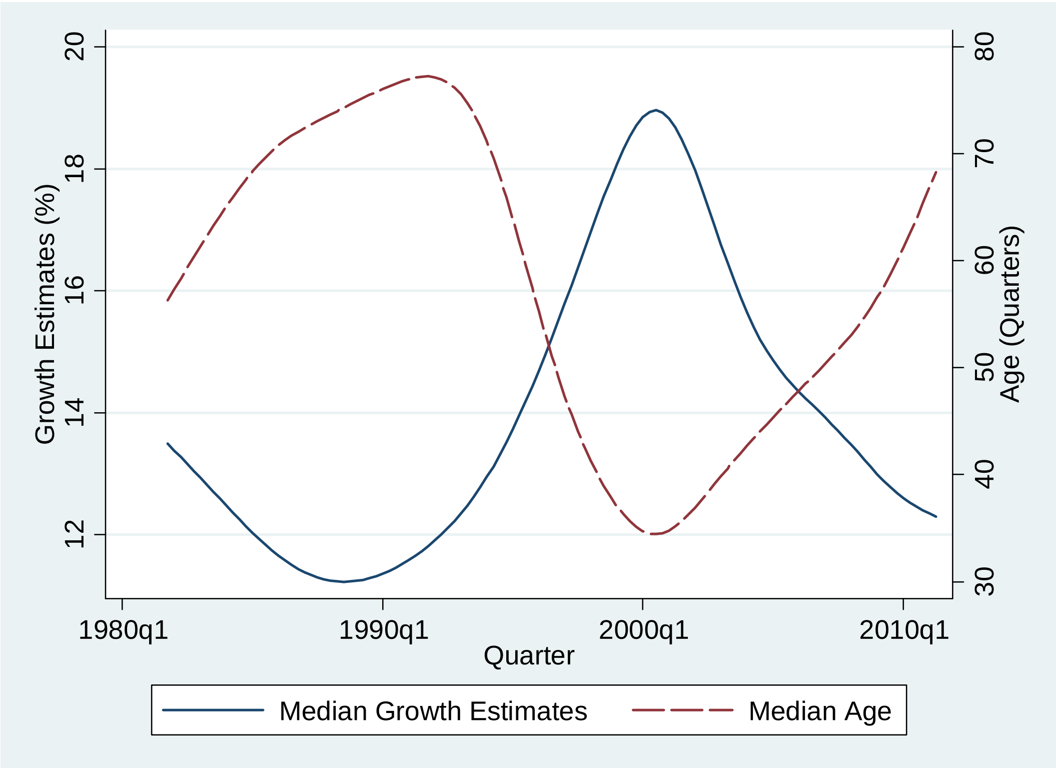
<u>Panel B:</u> 2nd size quintile



<u>Panel C:</u> 3rd size quintile



<u>Panel D:</u> 4th size quintile



Panel E: 5th size quintile

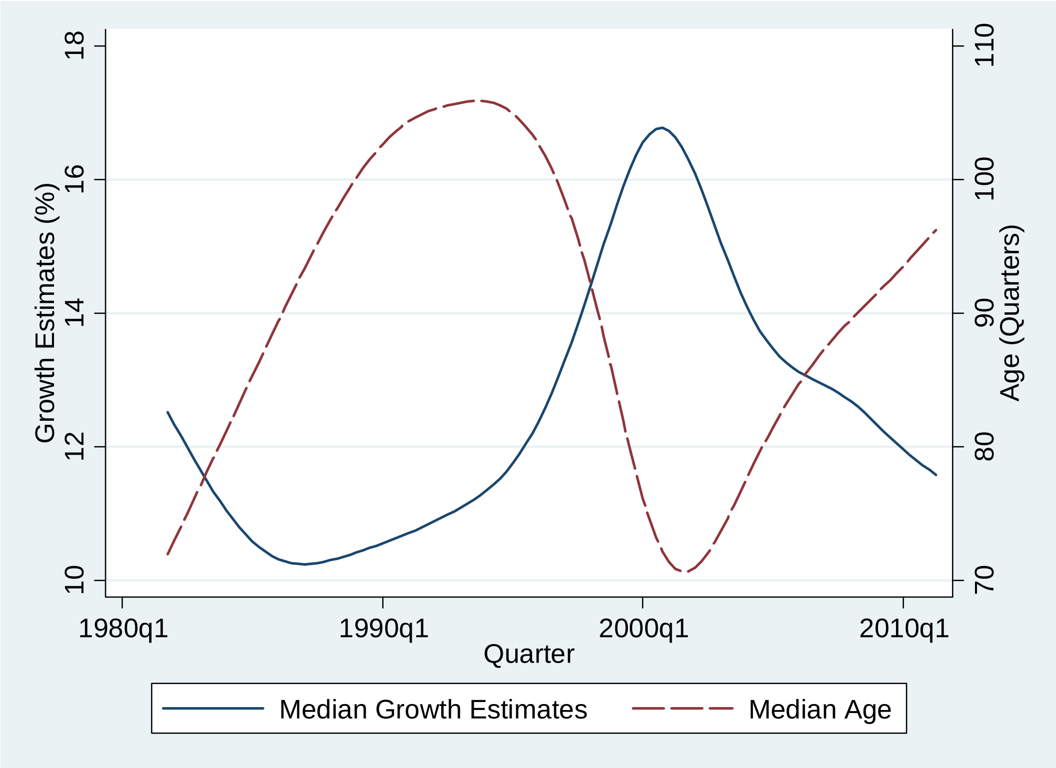


Figure 20: The figure presents the relation between the median firm age and median long-term growth forecast for each size quintile for the 1981-2011 period. The long-term growth forecasts are the forecasted annual growth rate of operating income in percent. Accounting data comes from Compustat. The long-term forecasts come from IBES.

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