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TESIS DOCTORAL

Managerial Incentives for Attracting Attention and Firm Investor Base

Autor:

Nino Papiashvili

Director/es:

Josep A. Tribó

María Gutiérrez

DEPARTAMENTO DE ECONOMÍA DE LA EMPRESA

Getafe, Octubre de 2013

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María Gutiérrez

Firma del Tribunal Calificador:

Firma

Presidente:

Vocal:

Secretario:

Calificación:

Getafe, de de

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Acknowledgements

I would like to express my sincere gratitude to my advisors Josep A. Tribó and María Gutiérrez for their continuous support, enthusiasm, patience and immense contribution in writing of this thesis. I could not have asked for better mentors for my PhD thesis.

My genuine thanks go to Andrés Almazán. First of all, for inspiring me with the initial idea of my thesis during his visit at UC3M and later, for offering me an opportunity to visit the University of Texas and get access to all its people, facilities and databases which have been an invaluable contribution to my research.

I thank the participants of the Foro de Finanzas (Granada, 2011) and European Finance Management Association Conference (Barcelona, 2012) for valuable comments. Financial support of the Comunidad de Madrid (Grant # 2009/00138/001 and 2011/00099/001) and Ministry of Science and Innovation (Grant # ECO2009-10796, ECO2009-08308, and Consolider Grant # CSD2006-16) is gratefully acknowledged.

I am grateful to my fellow students and professors from the Business Department at the Universidad Carlos III de Madrid for their encouragement and insightful comments.

I would like to thank my family: my parents and best supporters throughout my life and my husband for his love and encouragement during my odyssey in the world of research.

Abstract

This thesis studies how managerial incentives relate to strategic transmission of soft information from managers to investors in order to attract attention of financial markets. Additionally, I study trading reaction of different investors (large sophisticated vs. small individual) to CEO voluntary announcements and how their trading is affected when managerial incentives are taken into account. I use large panel data and several alternative proxies for soft information together with intraday trading data to distinguish between the types of investors. The findings suggest that an increase in the proportion of managerial variable compensation is correlated with the increased use of attention attracting mechanisms like stock split announcements, CEO annual EPS forecasts and firm media coverage. Remarkably, such an increase in attention is not for free given that the probability of CEO turnover increases if managers fail to obtain positive stock returns. Further, I examine investors' trading reaction to managerial voluntary disclosures (EPS forecasts) and find that small investors follow simple trading strategy and buy on positive CEO announcements, whereas large investors react in a contrarian way. In addition, I find that both types of investors take into account managerial incentives while trading, though in opposite ways. Small investors see managerial variable compensation as an incentive to lure them into more buying to optimistic announcements. Large investors, on the other hand, look at managerial pay-for-performance incentives as a mechanism of aligning managers' and shareholders' interests.

CHAPTER 1

Introduction

Managers have superior information about their firms and disclosing this information will possibly have an effect on firms' market value. CEOs make voluntary disclosures in order to align investors' expectations about the firm with their own (Ajinkya and Gift, 1984), alleviate information asymmetry between shareholders and managers (Diamond and Verrecchia, 1991), reduce the cost of capital for the firm (Botosan, 1997) and increase analyst following and thus attract attention in order to correct stock valuation problems (Healy et al., 1999; Almazan et al., 2008). The objective of this thesis is to study what are the mechanisms that incentivize CEOs to credibly transmit soft unverifiable information to the market. A typical managerial contract provides both explicit and implicit incentives for managers to care about stocks' market value. Explicit incentives are provided through stock-related compensation packages, whereas implicit incentives include the threat of dismissal that may follow bad stock market performance (Coates and Kraakman, 2006; Jenter and Kanaan, 2006; Kaplan and Minton, 2012).

Managers enjoy large discretion over the disclosure of soft information and they can use it in a strategic way in order to pursue their own interests (Aboody and Kasznik, 2000; Rogers and Stocken, 2005). The risk of playing the market is high as s*oft* information cannot be easily verified, unlike *hard* information (e.g. sales volume, book values of different assets etc.). This raises the issue of its credibility when disclosed. One way to obtain credibility is through the use of costly signals about firm value such as leverage and dividends (Spence, 1973; Brealey, Leland and Pyle, 1977; Ross, 1977).

In this thesis, however, I concentrate on “cheap talk” signals i.e. the measures that attract analysts' and investors’ attention without any apparent costs for the firm. A credible way to communicate soft information to the market involves the following conditions: managers should have incentives to disclose soft information truthfully to investors and attracting attention must be costly for CEOs (Bhattacharya and Dittmar, 2008; Almazan et al., 2008). The first part of this thesis is dedicated to an empirical study of how managerial incentives determine the strategic transmission of soft information from managers to investors through the use of “cheap talk” that attracts attention and the effect such transmission may have on managerial survival and compensation. The sample used consists of a large panel data of 3,333 US firms for the 1992-2011 period. The three different proxies of “cheap talk” to be used are: stock split announcements, CEO annual voluntary EPS forecasts and firm media coverage. The results found indicate that, first, an increase in the proportion of CEOs' variable compensation that is directly linked to stock market prices, induces managers to use “cheap talk” strategies. In particular, it turns out that an increase in the proportion of stock and stock option awards in CEOs' remuneration packages is correlated with an increase in (i) the probability of stock splits, (ii) the frequency of CEO EPS forecasts and (iii) the level of firm media coverage. Second, the use of these measures serves to attract attention as they are associated with an increase in the analysts’ attention, both in terms of number of analysts issuing EPS reports and revising the estimates upwards. Finally, the evidence is consistent with the idea that “cheap talk” works as a credible signal because it is costly for the CEOs i.e. they are punished for an improper use of it. In particular, the results indicate that a decrease in returns following cheap talk is correlated with an increase in the probability of CEO turnover and/or a decrease in his/her total compensation in the subsequent year.

The degree to which voluntary managerial announcements successfully and credibly align the expectations of investors with their own depends, on the one hand, on executives' ex ante motivation to disclose truthful information and, on the other hand, on the investors ability to understand and verify the supplied information and scrutinize incentives of the manager. Now that the connection between CEO incentives and cheap talk has been set up in the first part of the thesis, I want to study the trading reaction of investors to managerial voluntary announcements (EPS forecasts) depending on their level of sophistication (i.e. knowledge, skills and means to analyze supplied information). In the second part of the thesis, I particularly want to check if different types of investors take into account CEO incentives for disclosures and in what direction do managerial incentives affect their trading strategies.

I use a sample of 1085 CEO voluntary earnings announcements for the period 2002-2010 and, by employing an intraday trading information from NYSE TAQ (trades and quotes) database, study the net buying behavior of large and small investors on the informational content of the announcements (forecast errors) and investors' evaluation of managerial incentives as a factor in the truthful disclosures. First, I find that small investors are the ones driving up prices after positive earnings surprises, while large investors play a contrarian strategy, they sell when the CEOs are too optimistic. Second, both small and large investors understand the influence of managerial incentives on voluntary announcements but react in opposite directions depending on the credibility they lend to the announcing CEOs. Small investors consider the information from the managers with higher pay-for-performance sensitive compensation packages as untruthful and thus they sell, large investors look at the incentives as the means of aligning managers' and shareholders' interests and consider the announcements more credible, so they buy. Finally, I also find that, anticipating this different behavior of

large and small investors, CEOs take into account the investor base of the firm when designing their disclosure policy. Voluntary earnings announcements are more likely and more optimistic in companies with a larger proportion of small investors.

Lastly, since the first part of the thesis employs stock split announcements as one of the measures of cheap talk, I find it interesting to investigate more deeply the informational value of the event in part three. Previous research has identified two widely accepted reasons behind stock splits: i) the *trading range hypothesis:* returning previously elevated stock prices to the optimal trading range and thus enhance liquidity and ii) the *signaling hypothesis:* splits convey favorable information about the future performance of companies (prices and earnings will keep going up further) to investors. Both hypotheses have been tested with numerous alternative measures and mixed results have been found up to date.

My goal is to contribute to the signaling role of stock splits and overtake an empirical exercise to see what type of investors trade around stock split announcements. My expectation is that if stock splits serve as signals of future performance of the firm than large investors should take advantage of the information and trade on it.

I use intraday trading data from NYSE TAQ (trades and quotes) database to construct net abnormal buying of different investor categories based on their trade sizes as a proxy for their level of sophistication. The empirical tests show that solely small investors exert positive and significant net buying behavior on stock split announcements. However, I have found that large investors are buying abnormally more when splits are exceptionally large (more than two-for-one splits). Thus, although stock splits per se do not seem to serve as signals, the size of the split does.

Further, I find that the probability of splits increases with higher proportion of trades initiated from large investors and vise versa for small traders. I conclude that managers want to change firm investor base by attracting smaller investors through lower prices achieved after stock splits. Lastly, CEOs also take into account firm investor base when they are deciding on the size of the splits. I find that the proportion of large (small) investors is positively (negatively) correlated with the size of stock splits.

The rest of the thesis is structured in the following way. Chapter 2 presents the study of CEO incentives for attracting attention. Chapter 3 studies the reaction of different investors to CEO voluntary announcements. Chapter 4 proposes an empirical test of informational value of stock splits to different types of investors and Chapter 5 provides final remarks.

CHAPTER 2[1]

Managerial Incentives for Attracting Attention

2.1. Introduction

The corporate finance literature, starting with Modigliani and Miller, studies how managerial decisions can increase firm value. However, separation of ownership and control gives rise to an agency problem between shareholders and managers: the shareholders want the manager to maximize share value, but the manager wants to maximize his own utility. This problem can be partially solved by making the manager's utility depend on the stock market value. A typical managerial contract provides both explicit and implicit incentives for managers to care about stocks' market value. Explicit incentives are provided through stock-related compensation packages, whereas implicit incentives include both the threat of dismissal and the reputational loss that may follow bad stock market performance (Coates and Kraakman, 2006; Jenter and Kanaan, 2006; Kaplan and Minton, 2012).

Interestingly, these incentives will alter managers' disclosure policy because the information transmitted to investors will affect stock prices and, in turn, this will have consequences for managerial remuneration and reputation (Almazan et al., 2008). In particular managers will have to make decisions about two different types of information that is generated inside the firm and must be communicated to the outside investors: hard and soft information. On the one hand, there are pieces of information

[1] This chapter is written together with Josep A. Tribó and María Gutiérrez.

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about the company that can be codified in a systematic way and that can be verified by the receivers of this information: this is the, so-called *hard information*, such as sales volume or board appointments. On the other hand, there is *soft information* related to intangibles like CEO's ability, firm's strategy, employee morale, which cannot be verified. This soft information is even more important than the hard one for investors to monitor (Cornelli and Ljungqvist, 2013). Remarkably, managers enjoy large discretion over the disclosure of soft information and they can use it in a strategic way in order to pursue their own interests. Because of this, the issue of the credibility of such information is particularly important.

Credibility can either be obtained through the use of costly signals about firm value, such as leverage and dividends. However, in order for "cheap talk" - or doing anything that will attract analysts' and investors' attention - to work as a credible way to communicate soft information to the market, two conditions must hold. First, managers should have incentives to disclose soft information truthfully to investors. The manager should only raise flags when he thinks that the firm is undervalued. Second, attracting attention must be costly for CEOs. After attracting attention, investors revise and upgrade their expectations about the firm. In case they do not find the firm to be undervalued, and thus there is no increase in the market value of the firm, then the CEO will be punished with lower compensation or removal from the firm (Bhattacharya and Dittmar, 2008; Almazan et al., 2008).

In this paper we study empirically how managerial incentives determine the strategic transmission of soft information from managers to investors through the use of "cheap talk" that attract attention and the effect that such transmission may have on managerial survival and compensation. We use a sample of 3,333 US firms for the 1992-2011 period, and analyze three different measures of "cheap talk": stock split

announcements, CEO annual voluntary EPS forecasts and firm media coverage. First, we show that an increase in the proportion of CEOs' variable compensation, which is directly linked to stock market prices, induces managers to use “cheap talk” strategies. In particular, it turns out that an increase in the proportion of stocks and stock option awards in CEOs' remuneration packages is correlated with an increase in (i) the probability of stock splits, (ii) the frequency of CEO EPS forecasts and (iii) the level of firm media coverage. Second, our results also show that the use of these measures serves to attract attention as we find that they are associated with an increase in the analysts’ attention, both in terms of number of analysts issuing EPS reports and revising the estimates upwards. Finally, we find evidence consistent with the idea that “cheap talk” works as a credible signal because it is costly for the CEOs i.e. they are punished for an improper use of cheap talk. In particular, we observe that a decrease in returns following cheap talk is correlated with an increase in the probability of CEO turnover and/or a decrease in his/her total compensation in the subsequent year.

The rest of the chapter is organized as follows. Section 2 covers the related theoretical and empirical literature. Section 3 discusses data and methodological issues. Section 4 presents the main results and Section 5 is devoted to the robustness checks. Section 6 concludes.

2.2. Related Literature and Contribution

The disclosure policy of a firm will determine how much and how fast information about the firm reaches the market. A firm will be considered more

transparent (opaque) when it delivers more (less) information or more (less) frequent information to the market.

Managers can credibly transmit positive soft information to the market by using signals. In an asymmetric information world where the amount of bad projects exceeds the amount of good ones, the role for signaling is critical for an efficient functioning of the stock markets. The topic of costly signaling has been addressed extensively in the past, starting with the seminal contributions of Spence (1973), Brealey, Leland and Pyle (1977) and Ross (1977).

The signaling literature is based on the idea that signals are credible because they are costly. However some recent theory papers have also discussed the potential credibility and informational content of apparently costless announcements ("cheap talk"). Bhattacharya and Dittmar (2008) build a theoretical model where costless announcements convey valuable information to the market. The intuition behind this result is that good firms can attract attention of analysts and speculators by making apparently costless announcements and bad firms will not mimic them for the fear of being discovered and suffer from the consequent price drop. Therefore, what may seem like costless announcements are not costless after all. Their cost comes from the danger of attracting attention of informed parties that can update their valuation of the firm positively or negatively. These authors state the conditions under which firms choose between costly vs. costless signals. They claim that only the more undervalued and more ignored firms will use "costless signals" given that these are the only firms that speculators will find attractive enough to investigate, given the higher benefits that can be obtained from discovering new information about them. On the contrary, those other firms that are less undervalued and less ignored by speculators will have to use costly signals to separate themselves from their counterparts.

Almazan et al. (2008) discuss cheap talk in the context of an agency problem between managers and shareholders. They present a model where managers who have positive information about their firms can use cheap talk in order to attract attention of analysts and speculators who, in turn, investigate the firm and produce new information. If this information is positive there will be buying pressure on the stock, which will increase firm value. The authors prove that the optimal managerial contract in this setting includes both a bonus for stock price increases following "cheap talk" and the threat of managerial dismissal if the stock price does not increase following "cheap talk". This contract ensures the credibility of "costless" announcements, since they are costly for the manager. In this paper we test the empirical predictions of this model and confirm that managerial incentives are an important driver for the use of cheap talk strategies to transmit information to the market.

On the empirical front there is ample evidence that markets react favorably to seemingly costless announcements such as stock splits, stock dividends, media appearances and voluntary announcements. However there is no agreement on whether these announcements are really costless; and there are few studies evaluating the cost that they may have for the managers who initiate them.

There is a large empirical literature on the market reaction to stock splits and stock dividend announcements. Grinblatt et al. (1984) show that stock splits and stock dividend announcements are usually followed by favorable changes in stock prices. Lakonishok and Lev (1987) also document a 3 to 5% positive abnormal return around the dates of stock split announcements. Ikenberry et al. (1996) find that share repurchase announcements have indeed a favorable effect on stock prices but only if the firm is undervalued and needs analysts' attention to increase stock value. These authors

also document a positive short-term market reaction to stock splits, which is even higher when they look in the long run (one to three year periods).

These results have been explained in two different ways. On the one hand, some authors argue that because of transaction costs there is an optimal price range for a stock. As pointed by Ball, Brown and Finn (1977, 106-107) *share splits sometimes are regarded as means of altering market prices of shares to bring them into a more "popular" price level and so to "broaden" the market for the share, which presumably implies a higher price.*[2] Muscarella and Vetsuypens (1996) also present evidence consistent with this idea. On the other hand, other authors argue that the main role of stock splits is to convey information, and that they are credible because they are costly for the investors. Brennan and Copeland (1988) argue that splits are credible signals because of the increased transaction costs in trading for lower-priced shares. Brennan and Hughes (1991) present a model that explains the informational content of stock splits given that only managers with good earnings forecasts will conduct stock splits. They argue that stock splits will be considered a credible way of attracting attention of financial analysts working for brokerage houses, because commissions are decreasing in stock price. Therefore, only companies that have good information to convey to the market will be willing to incur higher trading costs. Conroy and Harris (1999) address the informational content of stock split announcements as well. They find that larger split sizes lead to superior analysts' earnings forecasts, which according to them is a direct confirmation of informational context of stock split announcements. However, all of these papers only consider the benefits or costs of stock splits from the shareholders' point of view and they do not take into account the specific incentives of managers who initiate these operations. Therefore, we contribute to the literature on stock splits by

[2] Baker and Gallagher (1980), who surveyed executives of firms that split their shares, report that 94% of the interviewees indicated that stock splits moved the share price into an "optimal trading range".

providing empirical evidence showing that an alternative explanation for the positive market reaction to stock splits is their use by managers who want to attract attention.

The literature on media coverage also documents positive market reactions to increased media attention. Nofsinger (2001) finds that longer articles in the Wall Street Journal induce individual investors to trade more. Chan (2003) analyzes the issue of media attention and finds that investors underreact to bad news and that, a portfolio of firms that receive media attention (for which good or bad news are reported) outperforms the portfolio of firms with no news. Therefore it would seem that attracting media attention is a strategy that pays off. Dyck and Zingales (2003) find that stock prices are more reactive to the earnings that are emphasized by the press. Barber and Odean (2007) study and confirm that individual investors are net buyers of attention grabbing stocks i.e. stocks in news. Peress (2008) finds that announcements with more media coverage (measured by the number of articles in the Wall Street Journal) generate higher prices and trading reactions. Kim and Meschke (2011) discover significant abnormal returns surrounding CEO interviews broadcasted on CNBS. Although to some degree media coverage is predetermined by the variables that managers cannot control (such as firm's size, industry and macroeconomic events) there is evidence that managers can attract media attention and increase the number of times the firm appears on the news. In particular, Bushee and Miller (2005) show that firms set up investor relations (IR) departments and hire IR consultants with the aim of becoming more visible. And after setting up these departments both firm initiated disclosures and overall firm media coverage increases significantly. To the extent that managers can increase attention that media devotes to their firms, they can attract public attention in a cheap way. Our paper contributes to the literature on media attention by showing that positive market reactions to increased media attention is consistent with a signaling

model in which CEOs have incentives to attract attention and drive prices up, but will be punished with a lower salary or a shorter tenure if their strategy fails.

Finally, regarding voluntary announcements, management earnings guidance has also been proven to be a credible way of disclosing information to the market. Managers can use voluntary earnings forecasts to guide investors and analysts through the firm's coming earnings and general performance. Recent financial research has examined the informational content of CEOs' voluntary earnings forecasts (Anilowski et al., 2007; Atiase and Tse, 2010; Das et al., 2012) and found that they have a positive impact on stock prices (Patell, 1976; Penman, 1982; Pownall et al., 1993), they reduce information asymmetry (Coller and Yohn, 1997; Francis et al., 1997) and affect analyst forecast revisions (Baginski and Hassell, 1990; Francis et al., 1997). In this paper we use voluntary earnings forecast as one of our measures of cheap talk and document the relationship between CEO's variable compensation and their propensity to make voluntary earnings forecasts. Moreover, we also show that CEOs that make voluntary announcements are more likely to see their compensation reduced after bad performance. Thus, our evidence is consistent with the idea of earnings forecasts being credible because they are costly for the manager.

To sum it all up, the empirical literature on the effects of "cheap talk" proves that many types of voluntary actions, like stock splits, CEO voluntary forecasts or firm media coverage, convey valuable information to the market and that they have significant effects. Theoretically, unverifiable soft information may be credible for two reasons: (i) either they are costly for the firm (e.g. stock splits could lead to higher trading costs for the investors) and therefore only "good" firms will make these decisions and/or (ii) these are costly for the CEOs because it helps attract analysts' attention leading to reassessment of stock value, which will result in a change in both

expected CEO compensation and tenure. In this paper we provide evidence consistent with the second possibility.

Our testable hypotheses are based on the theoretical model of “cheap talk” in Almazan et al. (2008). Managers who have positive information about their firms can use different actions in order to attract analysts' and/or investors' attention who, in turn, investigate the firm, produce new information and correct potential undervaluation problems. The actions of the managers are credible because they are costly for them: CEO variable compensation can increase if the announcements result in higher stock prices, but they may face an increased possibility of dismissal or lower future compensation if stock prices decrease following the announcements.

The empirical literature on signaling has mainly concentrated on traditional signals with clear costs, such as leverage and dividends, but, to prove our point, we will not use these signals for two reasons. First, although these decisions may attract attention, they have a direct impact on the cash flows of the firm, so for these types of signals it is difficult to measure which part of the impact may be due to the change in expectations. Second, the causality between these measures and managerial incentives is more difficult to disentangle. Therefore we prefer to use “cheap talk” actions, and concentrate on stock splits, CEO annual voluntary EPS forecasts and firm media coverage for which we have a large number of observations. We believe that, although stock splits may have an indirect effect on company's finances because of the change in the transaction costs for investors, their other important objective is to attract attention. Besides, we assume that managerial incentives could be considered as predetermined with respect to stock splits, voluntary EPS forecasts and media coverage.

Therefore, using the mentioned proxies for cheap talk we test three different theoretical predictions from the Almazan et al., (2008) model. First, we test whether different managerial remuneration schemes and risk of dismissal are associated with more or less "cheap talk" from the part of CEOs. In particular we would expect that CEOs with more variable compensation tied to stock market prices would be more likely to attract attention through stock splits, EPS forecasts and media coverage. This is the first hypothesis to be contrasted:

Hypothesis 1: CEOs with larger share of variable compensation in their pay packages (through either bonuses, shares or stock options) are more likely to be associated with increased "cheap talk" by announcing stock splits, issuing voluntary EPS forecasts and/or attracting media coverage.

Second, once the CEO makes the announcement, there are two types of agents that will react to it and exercise upward or downward pressure on stock market prices. First, professional analysts, whose attention has been attracted by the cheap talk (Brennan and Hughes, 1991; Conroy and Harris, 1999). Second, investors who react either directly to the announcements or indirectly, by following analysts' recommendations. Thus the second hypothesis that we will test is that:

Hypothesis 2: Financial analysts following a given firm are more likely to upgrade their estimates for the firm announcing a stock split, issuing a voluntary EPS forecast and/or attracting media coverage.

Finally, for these announcements to be credible it is necessary that managers cannot play the market, i.e. attracting attention is not a free lunch for CEOs. Thus a negative market reaction following an announcement should more likely be correlated with a higher probability of dismissal or lower subsequent compensation for the CEO. This leads us to our third testable hypothesis:

Hypothesis 3: The probability of a CEO turnover or lower total compensation is higher for those CEOs that fail to obtain a positive market reaction after attention attracting announcements.

2.3. Data and Variables

We gather data from different datasets. First, we borrow information on CEOs' pay contracts that are central to the study from EXECUCOMP. The period to be analyzed covers 1992-2011. We filter executive data using the flag CEO that indicates that the person served as an executive for all or most of the fiscal year. We obtain information for 6,806 CEOs serving for 3,333 firms. The total firm-year panel adds up to 33,830 observations. Second, we extract market and accounting information from COMPUSTAT. We also employ I/B/E/S database for analyst estimates. We obtain data on stock split announcements from CRSP. We get information about CEO annual EPS forecasts from Thomson First Call database - Company Issued Guidelines (CIG), and finally, we obtain media coverage data form Factiva database.

2.3.1. Cheap Talk Variables

Stock Splits

Our first proxy for cheap talk is *Stock Splits,* which we construct as a dummy variable that takes on the value of one whenever the company announces a stock split in a given fiscal year. We have 2,406 stock split announcements in total. A total of 1,439 firms out of 3,333 announce a stock split at least once throughout the sample period. Out of the splitting firms 58% announce it *only* once in our 20 year sample period. Annual distribution of stock splits (see Figure 1) shows a clear time pattern with most of the splits happening before year 2001 and declining afterwards.

[Insert Figure 1 about Here]

CEO annual EPS forecasts

We use Thomson First Call database - Company Issued Guidelines (CIG) to construct our second proxy for managerial cheap talk. In particular, we employ CEO annual earnings forecasts, often referred to as "earnings guidance" issued in firm's press releases within the year until the actual earnings are released. The variable we construct is *the number of times* CEO issues annual EPS forecasts in a given fiscal year i.e. the number of times a manager issues voluntary forecasts that may attract analysts' and investors' attention. Figure 2 shows the distribution of EPS forecasts across years. Forecasts have become much more common after 2001. This might be related to the issuance of a new regulatory rule - Regulation on Fair Disclosure (Reg FD) - by the SEC at the end of 2000, which forbid selective disclosures to large investors and analysts. The new rule required the placement of most company announcements in press releases to be accessible by the general public.

In order to make sure that the forecasts are voluntary in nature we have computed that only 57% (1,913) of the firms in the sample make EPS forecasts. Out of the forecasting firms only 49% have announced EPS forecasts in more than 4 years. Finally, 25 % of the announcing firms issue one forecast per year and 14% of firms issue more than six forecasts per year (See annual frequency of forecasts on figure 2). Thus we can conclude that not every firm forecasts EPS and, more importantly, announcing firms may modify their policies over time.

[Insert Figure 2 about Here]

Interestingly, there has been a growing interest in this database due to its instant availability for research purposes. Chuk et al. (2012) assess the methods of identifying management forecasts in the First Call database as compared to a randomly selected

sample of hand collected CEO forecasts from press releases. They find that 30% of the data is not available on the CIG database or, if they are available, a big part is mistakenly reported in a date not falling within the 5 day window around the true announcement date. This raises some concerns regarding the reliability of the database. However, we are only interested in the number of announcements and not the exact date of the announcements. Moreover, Chuk et al. (2012) do not report a bias in the missing data, and, in the worst case the lack of data would probably work against our expectations.

Firm Media Coverage

We construct our third measure of cheap talk by employing the Factiva database – a business and information research tool containing numerous sources of news (newspapers, journals, newswires etc.). Our research design gears towards collecting all the articles within Factiva that have been written about a specific firm during a given fiscal period (our main filter for the search is that the firm's name should have been mentioned in the headline or the main paragraph of the given article). The *number* of articles is taken as the measure of firm media coverage. We understand that the measure has many limitations. First and foremost, it fails to perfectly account for managerial efforts to attract attention but rather it concentrates on the actions taken by the media. Second, the variable does not distinguish between good vs. bad news and thus limits our understanding of the content. On the other hand, we had an option to further filter our search by only allowing press release wires (the main tool through which firms communicate to media) as the sole source of information. It would have picked up CEOs' efforts to exercise "cheap talk" more precisely, though this approach would also have had its limitations - it does not provide the strength of the "cheap talk" i.e. how does the media pick up the initial dissemination of the news which is ultimately what is

the goal of attracting attention. So for this research we stick to the general media coverage of firms.

We were able to collect over 18,800 observations for 2,303 firms for the 1998-2011 period. Mean media coverage for the whole sample is 359 articles per fiscal year. The distribution of average annual media coverage across years is provided in Figure 3, which shows average media coverage increasing over the years. Figure 3 also presents media coverage divided by size deciles. The median indicates that 50% of the firms appear in less than 142 articles per fiscal year. The maximum number for media coverage in the sample is 23,531 articles for one company in one year. As expected, media coverage shows wide dispersion, and in order to get rid of the outliers we trim the variable at 2.5% from below and above (i.e. we get rid of media coverage less than 1 and more that 2500, though the results do not change radically if we include them).

[Insert Figure 3 about Here]

2.3.2. CEO Specific Variables

We define *Variable Compensation* as the ratio of variable compensation to the total compensation in CEOs' remuneration packages. Total compensation and its components are retrieved from the EXECUCOMP database. The variable part of the total remuneration is constructed by adding up the most recently granted bonuses, options and stocks to CEOs in a given fiscal year.[3] The final variable used in the paper is the *share* of the variable part in CEO's total compensation. We decided to focus on the most recent grants of stocks and options because they provide the longest term pay-

[3] We use BONUS+ OPTION_AWARDS_BLK_VALUE (Total Value of Stock Options Granted-using Black-Scholes) + RSTKGNT (Value of Restricted Stock Granted) as variable compensation for 1992-2005 and – BONUS+ OPTION_AWARDS_FV (Grant-Date Fair Value of Option Awards) + STOCK_AWARDS_FV (Grant-Date Fair Value of Stock Awards) - in 2006-2011 observations, as stated in the definition of TDC1 variable.

for-performance incentives for the CEOs. We also tried other alternative measures of variable compensation consisting of the mix of previously granted exercisable and unexercisable options and vested and unvested stocks, and the results do not differ significantly.

As an alternative measure of pay-for-performance sensitivities we also compute the CEO's stock and option *delta* i.e. the change of the portfolio value of stocks and options for a 1% change in the stock price. The measure is extensively used in the managerial compensation literature and is calculated as a partial derivative of the Black and Scholes (1973) option value with respect to stock price. We follow Core and Guay (2002) method for calculating the variable.

Figure 4 depicts the composition of CEO variable compensation. The share of bonuses in the total variable compensation decreased substantially over these 20 years, whereas the share of stocks granted to the CEOs increased more than 6 times, from 9% in 1992 to 59% in 2011. The average share of options in CEO compensation packages did not change dramatically in the past years, though certain cyclicality is noticeable given that there is an increase in this ratio at the beginning of the period and then a decrease from 2002 on.

[Insert Figure 4 about Here]

CEO variable compensation and compensation delta across years are provided in Figure 5. Variable compensation shows a steady increase until 2004 and drops since then. Compensation delta seems to be more cyclical with no apparent trend. Average delta is 0.18 throughout the sample indicating that a 1 % change in stock price leads to an average change of $180,000 in the value of the CEO's portfolio of stocks and options.

[Insert Figure 5 about Here]

Other than pay-for-performance sensitive compensation, we also employ inflation adjusted total CEO compensation in our analysis.

CEO Turnover measures CEO replacements. Given the difficulties in distinguishing between voluntary and forced removals we take all CEO replacements as forceful, though in order to account for possible retirements we are censoring the variable by age<60 (Coates and Kraakman, 2006; Kanaan, 2008). We identify 1,840 CEO replacements in the sample (with age <60). We also find that 52% of the replacing firms change their CEOs only once in the 20 year period.

There are two other CEO specific variables – *CEO age* and *CEO tenure* - in the sample, both of which are retrieved from EXECUCOMP database. Tenure is calculated as the current year minus the year the person became CEO.

2.3.3. Firm Specific Variables

The main sources of firm specific data are COMPUSTAT and CRSP databases. The choice of the variables was mainly inspired by CEO compensation and turnover literature, as well as theoretical papers on information disclosure.

Leverage ratio, defined as total debt of the firm divided by its total equity, is often used as one of the explanatory firm specific variables while studying CEO remuneration contracts and turnover (Brick et al., 2006; Coates and Kraakman, 2006; Garvey and Milbourn, 2006; Kaplan and Minton, 2012).

Market to book ratio – defined as total market value of a firm (share market price multiplied by total shares outstanding) divided by the book value of firm's equity. This variable is a measure of firm overvaluation, which is also very commonly used in

the literature (Lakonishok et al., 1994; Ikenberry et al., 1996; Bhattacharya and Dittmar, 2008).

Total assets (in logs) are used as a proxy for firms' size (Coates and Kraakman, 2006). Data are extracted from COMPUSTAT.

Firm *returns* are annual returns (stock price changes) at the end of each fiscal year.

A*nalyst following* is extracted from I/B/E/S (DATASTREAM) database and measures the number of analysts issuing earnings forecasts of a firm in a given fiscal year. In addition, we are going to employ the cumulative annual number of estimates that have been lowered and increased, since we believe that capturing the change in the value of issued firm EPS may represent a more qualitative measure of analyst following than the total number of analysts that have been following the firm.

Detailed summary statistics of all variables are given in Table 1. We drop the outliers before continuing with the analysis (leverage and market-to-book ratios that have values less than 0 or more than 100, also returns greater than 200% or lower than -100% are dropped from the sample).

[Insert Table 1 about Here]

Table 2 reports the comparative statistics when we separate the sample into two groups depending on their use of cheap talk measures in a given year. Companies announcing a stock split, making voluntary earnings forecasts and receiving substantial media attention are classified as trying to attract attention. The tests of mean differences in the variables of the cheap talking years and the rest of the sample show that cheap talking firms tend to be larger, more overvalued, better performing, have more analyst

following and pay their CEOs more generous compensation packages with higher pay-for-performance sensitivities.

[Insert Table 2 about Here]

2.4. Research Design and Results

2.4.1. CEO Remuneration and Cheap Talk

Our first testable hypothesis is that the CEOs who receive more variable compensation are more likely to attract attention through cheap talk i.e. stock splits, EPS forecast announcements and firm media coverage.

In order to test this hypothesis we first estimate the following logistic model for the probability that a firm makes a stock split announcement.

$$\begin{aligned} \boldsymbol{Splits_{i,t}} = \; & \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Variable\_Comp_{i,t-1}} + \boldsymbol{\beta_2} * \boldsymbol{Log(Assets)_{i,t-1}} + \boldsymbol{\beta_3} * \\ & \boldsymbol{Leverage_{i,t-1}} + \boldsymbol{\beta_4} * \boldsymbol{MarketToBook_{i,t-1}} + \boldsymbol{\beta_5} * \boldsymbol{Returns_{i,t-1}} + \\ & \boldsymbol{\beta_6} * \boldsymbol{CEO\_Tenure_{i,t-1}} + \boldsymbol{\beta_7} * \boldsymbol{CEO\_Age_{i,t-1}} + \boldsymbol{\mu_{i,t}} + \boldsymbol{\vartheta_{i,t}} \end{aligned} \quad (1)$$

Where,

$$\boldsymbol{Pr(Splits_{i,t} = 1 \mid X_{1,t-1}, X_{2,t-1} \ldots X_{k,t-1})} = \frac{\mathbf{1}}{\mathbf{1} + \mathbf{e}^{-(\mathbf{a} + \sum \boldsymbol{\beta_j} * \mathbf{X_j})}}$$

The left hand side of the equation (1) states the probability of a stock split announcement conditionally on *X*s - the vector of explanatory variables. These explanatory variables include our main independent variable - CEO *Variable Compensation* and other lagged control variables for the firm. $\boldsymbol{\mu_{i,t}}$ stands for fixed

effects - firm-specific time-invariant characteristics. The regression also includes year dummies.

We also conduct two separate fixed effects OLS estimations which alternatively use the number of *CEO annual EPS forecasts* and *Firm Media Coverage* as proxies for our dependent variable, cheap talk. Our main explanatory control in these models is CEO *Variable Compensation*.

$$\begin{aligned} \boldsymbol{Cheap\_Talk_{i,t}} = \; & \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Variable\_Comp_{i,t-1}} + \boldsymbol{\beta_2} * \boldsymbol{Log(Assets)_{i,t-1}} + \boldsymbol{\beta_3} \\ & * \; \boldsymbol{Leverage_{i,t-1}} + \boldsymbol{\beta_4} * \boldsymbol{MarketToBook_{i,t-1}} + \boldsymbol{\beta_5} * \boldsymbol{Returns_{i,t-1}} \\ & + \; \boldsymbol{\beta_6} * \boldsymbol{CEO\_Tenure_{i,t-1}} + \boldsymbol{\beta_7} * \boldsymbol{CEO\_Age_{i,t-1}} + \boldsymbol{\mu_{i,t}} + \boldsymbol{\vartheta_{i,t}} \end{aligned} \tag{2}$$

Equation (2) is a OLS regression where the dependent variable is alternatively measured as the number of *CEO annual EPS forecasts* and *Firm Media Coverage.* All the explanatory variables, including CEO *Variable Compensation*, are lagged one period and considered as predetermined, implying that the type and characteristics of a firm today affects its future decisions. $\boldsymbol{\mu_{i,t}}$ stands for fixed effects - firm-specific time-invariant characteristics. The regressions also include year dummies.

The results of the estimations are provided in Table 3 which shows that CEO pay-for-performance sensitivities, both in terms of the proportion of variable compensation and compensation delta, are associated with positive and significant values for all our measures of cheap talk.

Other CEO characteristics are also noteworthy. The effect of CEOs' age on the probability of cheap talk is negative and statistically significant, probably due to the fact that older CEOs might have less career concerns. CEO tenure is positively correlated with the probability of splits (but not with EPS forecasts and media coverage), which

can be explained by the possibility that entrenched CEOs might have more incentives (or need) to attract attention compared to the newcomers who already attract some kind of attention by joining the firm.

[Insert Table 3 about Here]

Regarding other firm characteristics, the impact of size is positive and significant. Bigger firms might have higher pressure for providing better disclosure. Returns are positive only in the case of stock split which is intuitive as better performing CEOs will have to split increased share prices at some point in the future. Leverage and market to book ratios are mainly inconclusive.

2.4.2 Cheap Talk and Analysts Following

Before testing the hypothesis on the consequences of attracting attention, we study whether there is a middle stage connecting cheap talk to changes in market prices. In particular, whether the transfer of soft information to the market is channeled through specialists like financial analysts i.e. we are testing Hypothesis 2. In order to check whether this intermediate chain of action works in practice, we test whether cheap talk measures attract analysts' attention, estimating the following three models:

$$\boldsymbol{Analyst\_Following_{i,t}} = \boldsymbol{\alpha} + \boldsymbol{\beta_1} * \boldsymbol{Cheap\_talk_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t-1}} + \boldsymbol{\mu_{i,t}} + \boldsymbol{\vartheta_{i,t}} \quad (3)$$

$$\boldsymbol{Analysts\_UP_{i,t}} = \boldsymbol{\alpha} + \boldsymbol{\beta_1} * \boldsymbol{Cheap\_talk_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t-1}} + \boldsymbol{\mu_{i,t}} + \boldsymbol{\vartheta_{i,t}} \quad (4)$$

$$\boldsymbol{Analysts\_DOWN_{i,t}} = \boldsymbol{\alpha} + \boldsymbol{\beta_1} * \boldsymbol{Cheap\_talk_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t-1}} + \boldsymbol{\mu_{i,t}} + \boldsymbol{\vartheta_{i,t}} \quad (5)$$

Where, *Analyst Following* stands for the number of analysts issuing EPS estimates for a specific firm in a given fiscal year. *Analyst Following UPs* and *Analyst Following DOWNs* measure respectively the annual number of EPS estimates that have been increased and lowered by the analysts in a given year. *Cheap-talk* is the means of attracting attention (i.e. stock split announcements, number of EPS forecasts and media coverage). X*i* represents the vector of other lagged explanatory variables also used earlier in the study. $\boldsymbol{\mu_{i,t}}$ stands for fixed effects - firm-specific time-invariant characteristics. The regressions also include year dummies.

The results of these regressions are provided in Table 4 which indicates that all the proxies of cheap talk: stock splits, EPS forecasts and firm media coverage serve to attract analysts following. When we look at the number of analysts upgrading their EPS estimates we also see that all our measures of cheap talk are positively and significantly related to the number of upgrades. Interestingly when we look at downgrades, we observe that more splits and media attention lead to both more upgrades and also to more downgrades. Though what we would expect to see is the decrease in the number of downgrades following cheap talk like in the case of CEO EPS forecasts.

[Insert Table 4 about Here]

2.4.3 CEO Turnover and Compensation Following Cheap Talk

Our third hypothesis refers to the costs that the CEO will face if he cheats when using cheap talk, i.e. when he tries to attract attention and drive prices up in the short run even though there is no positive information to communicate, and thus prices are going to drop in the long run. To test Hypothesis 3, we use the same type of estimation methods as we did for Hypothesis 1. In particular, we estimate the following models:

$$\boldsymbol{Turnover_{i,t}} = \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Cheap\_talk_{i,t-1}} + \boldsymbol{\beta_2} * \boldsymbol{Cheap\_talk_{i,t-1}} * \boldsymbol{Returns_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t-1}} + \boldsymbol{\mu_{i,t}} + \boldsymbol{\vartheta_{i,t}} \quad (6)$$

Where,

$$\boldsymbol{Pr(Firings_{i,t} = 1 \mid X_{1,t-1}, X_{2,t-1} \ldots X_{k,t-1})} = \frac{\mathbf{1}}{\mathbf{1} + \mathbf{e}^{-(a+\sum \beta_j * X_i)}}$$

And,

$$\boldsymbol{Total\_Compensation_{i,t}} = \boldsymbol{\alpha} + \boldsymbol{\beta_1} * \boldsymbol{Cheap\_talk_{i,t-1}} + \boldsymbol{\beta_2} * \boldsymbol{Cheap\_talk_{i,t-1}} * \boldsymbol{Returns_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t-1}} + \boldsymbol{\mu_{i,t}} + \boldsymbol{\vartheta_{i,t}} \quad (7)$$

Where, equation (6) is a logistic model stating the probability of CEO turnover conditionally on control variables (also used in previous models). Equation (7) represents OLS regression for estimating the changes in CEOs' total compensation following cheap talk. $\boldsymbol{\mu_{i,t}}$ stands for fixed effects - firm-specific time-invariant characteristics. The regressions also include year dummies. Both regressions are estimated separately for all proxies of cheap talk (Splits, Forecasts and Media Coverage). Our controls of interest is an interaction terms between cheap talk and firm performance ($\boldsymbol{\beta_2's}$).

In order to accurately test Hypothesis 3 we have to identify the effect of cheap talk on CEO turnover through bad stock performance. Therefore, since we have exact dates for stock split announcements, we measure abnormal returns around the announcements and include them in the regression as control variables together with stock splits. When we use CEO EPS forecasts and media coverage as measures of cheap talk we include the interaction term between these variables and returns. According to

Hypothesis 3 we expect this interaction term to be significant: low market returns are more likely to be punished with higher probability of turnovers for those CEOs who engage in cheap talk in order to attract market's attention.

For computing abnormal returns around stock split announcements, we conduct a conventional event study analysis (MacKinlay, 1997). We first estimate normal stock return performance for each firm during 200 days before the announcements using market model. Specifically, we estimate normal stock returns for a window of 230 days to 30 days before the announcements. Then, we take actual stock returns in an event window of 2 days before and after split announcement days (i.e. 5 days event window). We finally calculate abnormal returns as actual returns (in an event window) minus predicted normal returns for the same period (using the previous 200 days performance). By adding up the values for the five event days (-2,-1,0,+1,+2) we get cumulative abnormal returns (CARs). In addition, we calculate t-statistics for each of the abnormal returns for testing their significance.

We get 2,257 CAR values for 2406 stock split announcements. After filtering the values by their significance at the 5% level (i.e. keeping only the values with more than 1.96 or less than -1.96 of t-statistics), we end up with only 235 significant CARs. The average significant CAR is 3%.

We also include control variables taken from the existing empirical literature on CEO replacements (Coates and Kraakman, 2006; Jenter and Kanaan, 2006; Kaplan and Minton, 2012).

The results of the estimation of the probability of CEO turnover and changes in total compensation are shown in Table 5 for all our measures of cheap talk. The first

columns present estimation results for model 6 and the second columns for model 7. The outcomes are in accordance with Hypothesis 3 for selected measures of cheap talk.

First we look at the effects of using cheap talk on posterior CEO turnover. In the case of stock splits we find that the higher the abnormal returns following stock split announcements the lower the probability of a CEO change and vice versa. Executives who experience negative market reactions face an increased probability of separation from the firms. Interestingly, stock split announcements by themselves seem to have a negative effect on the probability of CEOs being replaced. We connect this relationship to the aforementioned explanation on liquidity: stock splits' primary goal is to decrease previously inflated stock prices to the efficient range in order to boost liquidity. Such liquidity increase reduces the likelihood of CEO Turnover. The coefficient on the interaction terms between performance and our alternative measures of cheap talk, EPS forecasts and media coverage, are also negative, though insignificant.

Second, when we look at the impact of cheap talk on posterior changes in total CEO compensation we see that the interaction term between performance and our three cheap talk measures is positive and significant. This indicates that using cheap talk makes CEOs' compensation more sensible to stock market performance. Thus we conclude that using cheap talk is not cheap for the CEO, since it may lead to decreases in his total compensation when cheap talk is not followed by good stock market performance.

It is also interesting to analyze other control variables. Consistent with previous studies we find that managers that receive compensation with higher pay-for performance sensitivities are less likely to face turnover (Coates and Kraakman, 2006). Also, as expected stock returns are negatively associated with turnover and positively

correlated with higher subsequent CEO compensation (except for media coverage). Leverage and market-to-book ratios are mainly inconclusive. The size of the firm is an important determinant both for CEO turnover and total compensation: in all cases the effect of the size is positive. Bigger firms might be under more pressure and scrutiny to act "appropriately" when CEOs underperform, at the same time larger firms have highly remunerated managers. CEO age is negatively related to both turnover and compensation. Tenure seems to be negatively related to turnover and positively related to total compensation, which is an indicator of CEO entrenchment.

[Insert Table 5 about Here]

2.5. Robustness Checks

One of the issues that we address in the robustness analysis is the composition of CEO variable compensation. A large number of researchers agree that stock and stock option ownerships provide the largest CEO performance incentives. Murphy (1999) claims that “pay-performance sensitivities are driven primarily by stock options and stock ownership and not through other forms of compensation”. Tables 6 and 7 show the results of the hypotheses (1) and (3) by decomposing *Variable Compensation* in its three components – bonuses, stock ownerships and stock options. Table 6 shows that the effect all three measures of CEO variable compensation (bonuses, options and stocks) are significantly positively associated with split announcements. Bonuses and option holdings are the ones that are positively correlated with CEO earnings forecasts and stocks and options seem to be more effective for firm media coverage. Other researchers also find evidence of how managerial pay incentives can affect their motivation to disclose information. Aboody and Kasznik (2000) find that CEO forecasts

may be attempted to depress stock price just before option grants to take advantage of the lowering strike price of the granted options. Rogers and Stocken (2005) find that managers might be provided with incentives to issue optimistic forecasts in an attempt to dispose of their options at a higher price.

[Insert Table 6 about Here]

In addition, options and bonuses represent the significant parts of remuneration associated with a lower probability of CEO turnover i.e. better performing CEOs (high bonuses) make them more secure at their posts.

[Insert Table 7 about Here]

For further analysis we divide the sample in two subsamples: first period covers 1992-2001 and the second - 2002-2011. The rationale behind this break up is mainly empirical - end of 2000 marks the enactment of Regulation FD by SEC which promoted more transparent information dissemination practices which is very relevant to our study. CEO EPS forecasts are shown to be less frequently presented in the beginning of the sample (see Figure 2). On the contrary, stock split announcements have been more frequent before 2001 (see Figure 1). Finally, if we take a look at Figure 1 we can see that market returns have almost always been positive before 2001 and it shows more ups and downs after 2001. The results of testing Hypothesis 1 are provided in Table 8. We find that the effect of CEO incentives have been more powerful for stock splits in the "expansive" period (1992-2001) rather than in the "recessive" one (2002-2011). CEO EPS forecasts seem to be more affected by the variable compensation in the later period. (We skip firm media coverage for this test since we start collecting it starting in 1998).

[Insert Table 8 about Here]

2.6. Summary and Conclusions

The problem that CEOs' and shareholders' interests are not aligned has long been analyzed in agency theory literature. Different measures have been suggested to alleviate the problem. One of the most popular ones is to link CEOs' compensation to market returns (e.g. offering managers a proportion of their compensation in stock-related instruments like shares or stock options).

Remarkably, managers can affect, at least in the short term, market performance by transferring relevant firm information to stock markets. So shareholders should take into consideration the effect of information disclosure when designing/offering managerial compensation packages.

This paper addresses the mentioned issue and studies whether the design of CEO compensation contracts affects the transfer of unverifiable firm-specific information to the markets by attracting attention of analysts/investors. These analysts/investors, in turn, monitor the firm and produce new information that eventually increases firm value and corrects potential undervaluation problems. In order to trigger this process managers have to receive correct incentives (i.e. contracts with a significant proportion of variable compensation). More specifically, managers whose compensation packages are significantly related to stock market performance will have more incentives to attract investors' attention by implementing cheap talk initiatives like stock splits, CEO EPS forecasts or media coverage. We find strong results that an increase in CEO variable compensation is correlated with the increase in the probability of stock split announcements, the frequency of issuing voluntary EPS forecasts and firm media coverage.

However, for these actions to be credible and effective in attracting investors' attention, they must have some cost for the manager. This cost relies on the fact that a CEO who is attracting market's attention is expected to be penalized to a larger extent when she/he underperforms the market. In order to test accurately such contention we have distinguished between stock split announcements that have generated significant positive abnormal returns from those that have not. Also, we employ interaction term of firm returns and CEO cheap talk to check their joint effects. Once we use CEO turnover as proxy for managerial punishment we find out that better firm performance following cheap talk are associated with the decrease in the probability of CEO replacements. In addition, cheap talking and better performing CEOs seem also to have higher total compensations the following year.

CHAPTER 3

Managerial Incentives for Disclosure and Firm Investor Base

3.1. Introduction

Many managers routinely make voluntary earnings forecasts that guide investors and analysts through the firm's coming earnings and general performance. Recent financial research has shown that these voluntary earnings forecasts are a valuable tool for disclosing information to the market. Different authors have examined the informational content of CEO voluntary earnings forecasts (Anilowski et al., 2007; Atiase and Tse, 2010; Das et al., 2012) and found that they affect stock prices (Patell, 1976; Penman, 1980; Pownall et al., 1993), information asymmetry (Coller and Yohn, 1997; Francis et al., 1997) and analysts' forecasts (Baginski and Hassell, 1990; Francis et al., 1997).

Managers can make voluntary disclosures in order to align investors' expectations about the firm with their own (Ajinkya and Gift, 1984). In fact, voluntary disclosures are believed to alleviate information asymmetry between shareholders and managers (Diamond and Verrecchia, 1991), reduce the cost of capital for the firm (Botosan, 1997), increase analyst following and thus attract attention in order to correct stock valuation problems (Healy et al.,1999; Almazan et al., 2008), reduce managers' expected litigation (Skinner, 1994; Kaznik and Lev, 1995) and firing risks (Lee et al., 2010) and preserve or improve their reputation and credibility (Gibbins et al., 1990, Hutton and Stocken, 2009, Graham et al., 2012). However managers may also use voluntary disclosures to alter stock market prices in ways that can make their option packages more profitable (Aboody and Kasznik, 2000; Rogers and Stocken, 2005).

Therefore, the degree to which voluntary managerial disclosures, successfully and credibly, align the expectations of investors with their own depends, on the one hand, on executives' ex ante motivation to disclose truthful information and, on the other hand, on the investors ability to understand and verify the supplied information and scrutinize the incentives of the manager. When the manager makes a voluntary disclosure of a good piece of news (i.e., a higher than expected earnings forecasts), investors will revise their expectations and drive prices upwards, but only if they can verify the information or if they believe that the manager is providing truthful information. Therefore, the credibility of the manager will depend on his incentives affected by his remuneration package and on whether investors believe this package leads the manager to make truthful revelations or induces him to try to alter artificially stock prices.

In this paper I study the complex relationship between voluntary earning announcements, CEO compensation and investors' reaction to these announcements. I do this by studying the different trading behavior of small and large investors around voluntary earnings announcements taking into consideration that they have different levels of sophistication (i.e. skills to analyze supplied information). Thus I expect their ability to verify the announcements and the credibility they lend to these announcements, depending on managerial remuneration contracts, to be different. Accordingly, I expect that small and large investors will react differently to the voluntary announcements depending on their information sets and their different level of analysis of managerial incentives. Moreover, I also expect that, by anticipating different reaction of small and large investors, managers will choose different disclosure policies depending on their investor base.

To test these hypotheses I use a sample of 1085 voluntary earnings announcements for the period 2002-2010 and study the trading behavior of large and small investors around announcement dates, depending on the informational content of the announcements and the investors' evaluation of the incentives provided in the CEOs' remuneration packages.

Consistent with previous findings by other authors, I find that small and large investors react differently to voluntary earnings announcements. In particular, my first finding is that small investors are the ones driving up prices after a positive announcement (announcements higher than previous forecasts) through abnormal net buying activities, while large investors play a contrarian strategy, exhibiting net abnormal sales when announcements are too optimistic (announcements higher than ex-post realized earnings). The first finding confirms that large investors are more sophisticated. While small investors always buy after positive announcements, large investors have their own earnings estimation and follow a contrarian strategy when managerial announcements are too optimistic. Thus large investors can take advantage of the anticipated behavior of small investors.

However, I also find that, although small investors lack information and follow a simple trading strategy, they are not naïve; they understand the influence of managerial incentives on voluntary announcements. Specifically, I find that small investors react less to managerial announcements when the CEO's compensation package has higher-pay-for-performance sensitivity, which could give the manager incentives to manipulate market prices. However, large investors are more sophisticated than small ones. They treat managerial variable compensation packages more as a means of alignment of interests between managers and shareholders which makes managerial announcements more credible. In addition, large investors reveal even more level of sophistication when

they distinguish between long-term awards of stocks and options to CEOs from the portfolios of vested stocks and exercisable options that could induce managers to temporarily move prices to take advantage of these short term incentives.

Finally, I find that, anticipating this different behavior of large and small investors, CEOs take into account their investor base when designing disclosure policies. Voluntary earnings announcements are more likely and more optimistic in companies with a larger share of small investors.

The rest of the chapter is organized as follows. Section 2 reviews the existing literature and presents the hypotheses. Section 3 describes the data and variables. Section 4 presents the results and Section 5 concludes the paper.

3.2. Related Literature and Contribution

There are several strands of the financial literature that are relevant to this paper and to which I intend to contribute.

The first strand of the literature that is relevant for this study is the literature on the differences between small and large investors. Researchers distinguish between large informed and small uninformed investor based on their levels of sophistication in processing information. Sophisticated investors (like institutions, large shareholders etc.) may have better financial education and more dedication to concentrate on investing decisions, thus they may have superior abilities to evaluate the relevant factors related to disclosed information and may arrive at more profitable trading decisions. Moreover, they are able of computing fundamental values of different financial assets in order to compare their own assessments with those provided by other agents like CEOs or financial analysts. On the contrary, small and unsophisticated investors have no skills

for computing fundamental values of different financial assets like firms' stocks, so they could be misled by CEOs or financial analysts' forecasts into suboptimal investment choices.

The first papers on this literature concentrated on explaining why large investors differ from small ones. Large investors may have more experience with forecasts (Yunker and Krehbiel, 1988; Potter, 1992) or might have followed a larger number of stocks (Barber and Odean, 2000). Besides, the costs of acquiring information, like the access to databases, might be lower for big and experienced investors (Wilson, 1975; Lev, 1988).

More recent papers on this literature have confirmed that large and small investors react differently to new information and announcements made by firms. Bartov et al. (2000) take institutional holdings (IH) as a measure of investor sophistication and find that stock price reactions to announcements of the firms with low IH exhibit the pattern more attributable to unsophisticated investors (returns follow random walk). Whereas, stock returns of the firms with high IH follow a Brown-Rozeff process, which is consistent with the expectations of sophisticated investors. Battalio and Mendenhall (2005) address this issue in their research about earnings expectations and investor clientele. They find that small traders hold earnings expectations that resemble a seasonal random walk forecasts (SRW - which assumes that current quarter earnings will be the same as the last year's relevant quarters'), and their biased beliefs are causing the post earnings announcement drift. They also find that large investors' buying behavior is in line with the analysts' forecast errors. Allee et al. (2007) find that only less sophisticated investors respond to announcements of pro-forma earnings and their placement in press releases. Bhattacharya et al. (2007) also explore the characteristics of traders on CEO pro forma earnings announcements. These

announcements are considered by many as an opportunistic attempt to mislead investors since they are suspected to omit some non-cash items to overstate real earnings. The authors find the highest abnormal net buying activities around such announcements are initiated from unsophisticated investors. Mikhail et al. (2007) also try to shed some light on the trading skills of different investor types. The authors find that small traders seem to trade more in response to all forecasts and recommendations of the analysts (downgrade or upgrade, sell or buy), whereas large investors react only to the downgrade/sell recommendations. This latter result is in accordance with the advanced level of information processing skills of large investors given the assumption that analyst forecasts are upward biased. Malmendier and Shanthikumar (2009) find that large and sophisticated investors are capable of filtering relevant information whereas small investors fail to do so. In particular, the authors find that small and unsophisticated traders respond with a buying strategy to all kinds of forecast updates from analysts, whereas informed investors respond to the direction of announcements - positive vs. negative. The authors conclude that analysts communicate in "different tongues" while addressing to different audiences - sophisticated vs. unsophisticated – and, in turn, these two classes of investors respond according to their expectations.

My first aim in this paper is to confirm the results of the discussed literature in the specific case of voluntary earnings announcements. I hypothesize that the key element that distinguishes sophisticated versus non-sophisticated investors and explains their different trading behavior is the capacity of the former to make their own assessments of fundamental firm values. Small investors, that do not have any private information about future earnings, will follow a simple strategy based on the available public information at the time of the announcement (previous forecasts by managers and financial analysts). However, large investors will compare their own assessment with

the CEOs' and the financial analysts' forecasts. And, anticipating the behavior of small investors, they will adopt a contrarian trading strategy. Thus, I state the first hypothesis as follows:

H1: After a voluntary earnings announcement by the manager, small investors will follow a simple trading strategy based on publicly available information at the time of the announcement. Large investors will be able to anticipate the behavior of the small investors and will follow a contrarian trading strategy when the earnings announcement includes a large forecast error.

The second strand of literature that is closely related to this research is the literature that analyzes the relationship between managerial incentives and disclosure policy. Some authors claim that managerial payment incentives can bias disclosed information. In particular, Aboody and Kasznik (2000) find that CEO forecasts may be attempted to depress stock prices just before option grants in order to take advantage of the lowering strike prices of the granted options. Rogers and Stocken (2005) find that managers might issue optimistic forecasts in an attempt to dispose of their stocks and options at a higher price. But other authors stress that well designed managerial incentives can lead to truthful revelation. For example, unless the manager meets or beats forecasted earnings, his reputation might be damaged (Graham et al., 2012) or he may be exposed to litigation (Skinner, 1994; Kaznik and Lev, 1995) and firing risks (Lee et al., 2010). Almazan at al. (2008) present a model where managers, who have private information about the value of their firms, can use cheap talk in order to attract attention of analysts and/or investors who, in turn, investigate the firm, produce new information and correct potential undervaluation problems. These actions are credible because they are costly for managers - their compensation will increase if the announcements result in higher stock prices, but they may face a dismissal if stock

prices decrease following the announcements. In the first part of the thesis I presented an evidence that confirms that CEOs who receive more pay-for-performance compensation will be more likely to use cheap talk (such as stock splits, media coverage and voluntary announcements) as a means of attracting attention, but also managers are more likely to face dismissal or see their total pay reduced if these actions are not positively viewed by the market.

My second objective in this paper is to determine whether investors take into account managerial incentives when they make voluntary announcements. I hypothesize that investors' reaction to an announcement depends on the incentives managers have that motivates them to make such announcements truthfully. However, as we have seen, there is no agreement on the literature on whether more pay-for-performance sensitivity is related to more or less credible announcements. So there is no clear guide to tell us whether investors will lend more or less credibility to managers with high pay-for-performance sensitivities. Nevertheless, there is an agreement that short-term incentives are more likely to bias the information contained in voluntary announcements, while compensation linked to long-term performance will tend to better align the incentives of managers and the investors and thus makes voluntary announcements more credible. Therefore I present the second hypothesis as follows:

H2: Small and large investors will take into account managerial incentives for disclosing truthful information in the form of voluntary earnings announcements. Therefore, their reaction to the announcements will be different depending on the pay-for-performance sensitivity of the managers' remuneration contracts. Moreover, the reaction may depend on the time structure of the pay contract, since short term incentives may undermine managerial credibility, while long term incentives may increase it.

The third and final strand of literature related to this research is the one studying the relationship between managerial disclosure policy and the investor base of a firm. As we have seen there is ample evidence that small and large investors react differently to managerial announcements. These systematic differences are so informational that the manger may alter his disclosure policy depending on the relative importance of small and large investors for the company. Therefore, the frequency of voluntary announcements and their positive or negative bias may depend on the investor base of the company. Along these lines, Bushee et al. (2003) test whether managerial incentives for providing conference calls are related to firms' composition of investor base and find that the presence of non-professional small shareholders is an important factor inducing managers to provide open conference calls. Ajinkya et al. (2005) find that CEOs of firms with more institutional ownership are more likely to issue forecasts more frequently and convey more specific, accurate and less optimistically biased information.

However, if we want to isolate the impact of the investors' base on disclosure policy it is very important to control for managerial remuneration, since several papers show that managerial remuneration may depend on investor base. In particular some authors claim that the presence of small uninformed investors will lead to higher pay-for-performance sensitivities, while others claim the opposite.

Among the first group of researchers the idea is that the stock market plays a monitoring role for managerial actions through stock prices that incorporate information about CEO performance. Thus whatever affects prices, like investors reactions, also affects CEO incentives. Holmstrom and Tirole (1993) model managerial incentives as a function of informed trade on the firm's stock. Their main claim is that short term investors (liquidity traders) who buy and sell shares enhance liquidity of the stock. This

increased liquidity makes it easier for the informed traders to make use of their sophistication and benefit from making good assessments of the fundamental values of financial assets. Kang and Liu (2008) empirically demonstrate that informed trading enhances managerial pay performance sensitivities i.e. CEO compensation schemes work better in more informative market microstructure. Employing total compensation and pay performance sensitivity measures and the probability of informed trading (PIN), they find out a positive and significant relationship between the two.

Among the second group of researchers the argument is that the presence of small investors allows managers to pay themselves higher salaries. Li and Subrahmanyam (2009) try to set up a link between the recent increase in pay-for-performance executive compensations and investor clientele of firms. In particular, they claim that as trading costs have decreased over time (due to increased online trading, among others), the average degree of sophistication of the investor base has decreased as more small traders are attracted to take active part on the stock markets. Thus, managers might attempt to benefit at the expense of uninformed shareholders, who will find it hard to comprehend complex CEO compensation packages, especially the parts related to long term remuneration and retirement plans. The authors provide empirical evidence showing that indirect CEO compensation is positively related to small trade volume and negatively to institutional holdings.

Moreover, some papers have also found a relationship between CEO pay and its effect on managerial disclosures. Nagar et al. (2003) argue that more frequent forecasts from CEOs are closely related to their equity based compensation. The extent to which information can be correctly interpreted by the investors and incorporated into the stock price through trading matters a lot to pay-performance relations and the effectiveness of

incentive schemes (Kang and Liu, 2008). Finally, Zamora (2009) finds that high compensation is associated with managers' superior forecasting abilities.

All of this is relevant for the third hypothesis in the paper, which investigates the link between firms' investor base and CEOs' policies regarding voluntary earnings announcements. I expect that, ceteris paribus, managers facing investor base with a higher proportion of small investors may be more likely to make voluntary earnings announcements and, also, these announcements are likely to be more optimistic. However, we have seen that the design of CEOs' remuneration packages may depend on the investor base in unexpected ways. Therefore, in order to test the direct impact of the investor base on the managers' disclosure policies we will have to control for the remuneration policy. So I write the third hypothesis as follows:

H3: Managers compensated with a remuneration package of a given pay-for-performance sensitivity will be more likely to make more and more optimistic voluntary earnings announcements when small investors have a higher share in the total trading volume of the firm.

3.3. Data and Variables

I use Thomson First Call database (Company Issued Guidelines (CIG)) to identify managerial voluntary disclosures for the years 2002 through 2010. In particular, I employ CEO annual earnings forecasts, often referred to as "earnings guidance" issued by firms within current fiscal year until the actual earnings are released.[4] I start with

[4] Chuk et al. (2012) assess the methods of identifying management forecasts in the First Call database as compared to a randomly selected sample of hand collected CEO forecasts from press releases. They find that 30% of the data is not available on CIG database or if they are available a big part is mistakenly reported on a date not falling within 5 day window around its true announcement day. This raises some concerns regarding the reliability of the database. However, the authors identify that the probability of the presented forecast dates to be correct increases when the forecasted item category is EPS (compared to cash, EBIT etc.), is for a specific dollar amount and if it is not issued together with actual earnings announcements (all of which satisfy my research design). Besides, the authors claim that coverage of the forecasts increases importantly after 1997 and that firms with

identifying annual EPS forecasts from First Call database and arrive at the final sample by conducting the following procedures: (i) I concentrate on firms for which information about executive compensation was found in EXECUCOMP database; (ii) I eliminate annual earnings forecasts when there are other announcements on the same dates. So I drop all EPS forecasts which fall within 5 trading days of *actual* earnings announcements or other firm event dates from CRSP database (like stock splits, dividend etc. announcements); (iii) when there are more than one EPS forecast within a year (for a specific year-end earnings), I take the most recent one since the closer the forecasted EPS is in time to the actual one, the more precise and informative it is believed to be (Chuk et al., 2012); (iv) erroneous or irrelevant entries (e.g. forecasts that date 365 days before or any day after the relevant actual year-end EPS) are dropped from the sample. After applying the mentioned filters I am left with 1085 observations.[5]

3.3.1. Net Abnormal Buying

Once I have the dates of the voluntary annual EPS forecasts I need to identify the types of investors that trade around these announcements based on their levels of sophistication. To do so, I follow the established research design proposed by Lee and Ready (1991). By using NYSE intraday trades and quotes (TAQ) database we are able to identify the direction (buy or sell) of each trade on a particular stock around each forecast announcement window (3 days around the announcements). The typical procedure is as follows - there is a file of per second information on every bid and offer for a specific stock in a given day, there is also have a file of actual trades. The database does not provide direct identifiers of which trades are buys and which are sells so we

lower analyst following and poor previous performance are less likely to be included in the database. Taking into consideration the abovementioned corrections and the fact that the sample covers 2002-2010 period, I feel confident with using the database.

[5]Whenever a forecast is presented as a range (upper and lower values) I use a midpoint of the range as a measure of CEO EPS forecast.

need to infer the initiator of each transaction using the Lee and Ready method. A trade for which the stock price is *lower (higher)* than the midpoint of bid and ask of the nearest previous quote should be qualified as a *sell (buy)*. If price is equal to the midpoint I compare it to the previous price and if the current price is *higher (lower)* than the previous one the trade is qualified as *buy (sell)*; or if the transaction is still unqualified I repeat the same for one more lag-price. If I do not come to a conclusion about the direction of the trade it is qualified as unidentifiable and is not included in the final calculation of buys or sells (Lee and Ready, 1991; Odders-White, 2000). The database also gives information on the size and the volume of each trade in order to distinguish between large (sophisticated investors) and small (individual unsophisticated investors) trades. I take a cutoff threshold for each transaction with values up to $7,000 and assign it to the category of small size investors, $7,000 - $50,000 to medium size investors and above $50,000 to large investors (Bhattacharya et al., 2007). [6] Later, I construct abnormal trading volumes - I compare trading volumes 3 days around forecast announcement dates to the average daily trading volumes two weeks before the announcements (the non-event days are also checked not to fall within 5 days of other types of firm announcements to avoid possible biases). Finally, I construct the main dependent variable - *Net Abnormal Buys (NAB)* - as the difference in differences between trading volumes identified as buys and sells in announcement and non-announcement windows normalized by average daily total trading volume in a non announcement window for each stock (Bhattacharya et al., 2007). More specifically, I calculate Net Abnormal Buys around EPS forecasts as:

$$\boldsymbol{Nab_{i,t}} = [(\boldsymbol{Buy_{i,t}} - \boldsymbol{Sell_{i,t}}) - (\boldsymbol{Buy_{i,t-1}} - \boldsymbol{Sell_{i,t-1}})]/\boldsymbol{AvgTradingVol_{t-1}}$$

[6] I also take alternative threshold of $10,000 for small investors. The results are not materially different from the reported ones.

Where, *Buy/Sell* stands for the total daily value of transactions identified as buys or sells for each stock. *i* stands for individual stock. *t* is the EPS forecast announcement window (days [-1,0,+1], separately). *(t-1)* is a non-announcement window (10 trading days two weeks before the actual forecast date), where buys and sells as well as total trading volume are taken as average daily values to be comparable to the daily values around event dates. I calculate *NABs* for each investor category (small, medium, large) separately.

3.3.2. EPS Forecast Errors

In order to study how managerial forecasts are analyzed by investors depending on their levels of sophistication I have to first set up variables measuring surprise elements in CEO forecasts. The literature uses the following measures to evaluate CEO forecasts. Actual forecast error - *FE-Actual* - is the difference between CEO EPS forecasts and the actual GAAP earnings at quarter end. News caught by forecast errors - *FE-Analyst* - is the difference between CEO EPS forecasts and mean analyst EPS forecasts (for the same fiscal year); In addition, I calculate the change in managerial sentiment about the firm - *FE-Forecast* - the difference between the current CEO EPS forecast and the one right before this announcement. I scale these differences by relevant stock closing prices five days before earnings forecast dates (Bhattacharya et al., 2007). The positive forecast errors (*FE*s) convey surprise, news and/or optimism from managers' perspective. For example, positive *FE-Analyst* implies that the CEO is more optimistic about the coming earnings compared to the analysts and vice versa. Actual earnings for each year come from Compustat database as diluted fiscal year-end GAAP earnings excluding extraordinary items. Mean analyst forecasts come from I/B/E/S database. I take mean analyst forecasts that have been issued right before the

relevant CEO EPS forecasts to catch the more recent *news* conveyed in the CEO forecasts.

3.3.3. CEO Compensation

Data on CEO compensation comes from EXECUCOMP. I construct *Compensation Delta* measuring the sensitivity of CEO's portfolio of stocks and options to the underlying stock prices. In particular, *delta* measures dollar change of the value of a portfolio of financial assets for 1% change in the stock price. The measure is extensively used in managerial compensation literature and is calculated as a partial derivative of the Black and Scholes (1973) formula for option valuation with respect to stock price. I follow Core and Guay (2002) method for calculating the variable. Compensation deltas cover all firm related assets in managerial portfolios - current options and stock grants, previously granted exercisable and un-exercisable options together with previously granted vested and unvested stocks. Thus, it captures the total CEO wealth exposure to stock prices.

For the main analyses I closely follow the empirical design proposed in Bhattacharya et al. (2007) and include daily total market trading volume on NYSE/AMEX/NASDAQ (normalized by the traded number of shares) in all event days to capture the influence of prevailing general macroeconomic factors. In addition, I consider other firm specific characteristics as controls such as firm size (total assets), market-to-book ratio, leverage (total debt to equity), stock returns (annual percent price changes) and stock return volatilities (standard deviation of monthly returns in the past 60 months). Data comes from Compustat and CRSP.

3.3.4. Basic Descriptives

Table 9 shows the distribution of trade sizes (as a share in total trade volumes) in the three trading days around forecast dates among three investor categories (small, medium, large) and across years. As we can see, on average trades are equally distributed across investor categories (each of them occupy around one third of the total - presented at the bottom of the table) but it is also worthwhile to mention that small trades constituted a smaller part of the whole trading volume at the beginning of the sample period (in 2002 they represented only 15 % compared to 47% of large trades) and increased by more than three times by the end of 2010, mostly at the expense of decreasing large trade sizes. One of the explanations of this tendency could be related to the issuance of a new regulatory rule - Regulation Fair Disclosure (Reg FD) by the US SEC at the end of 2000. This rule forced the companies to refrain from selective disclosures to only large investors and analysts. The new rule required the placement of the most important company announcements in press releases. Thus firm related information started to be widely available for small audiences from the beginning of 2001 and it must have increased more and more with the passage of time. Also, as trading costs decreased over time (due, to a large extent, to increased online trading), the participation rates of small investors increased (Li and Subrahmanyam, 2009). Table 9 shows more detailed information about trade sizes. In particular we can explore trade categories (buys vs. sells) across all investor sizes. On average, buys seem to be marginally more prevalent than sells for all investors around forecast announcements and buys decreased more than sells for large investors across years.

[Insert Table 9 about Here]

Panel A of Figure 6 shows the behavior of 3 day cumulative NABs around forecast dates across investor categories in the whole sample and in two different periods 2002-2005 and 2006-2010 (roughly before and after the financial crisis). Small NABs seem to be steadier in all periods whereas large NABs (and partly medium ones as well) show a radically different behavior in the two sample periods - large investors seem to be buying abnormally high in 2002-2005 and much less in 2006-2010. Once we take a closer look at daily NABs on Panel B which covers the whole sample period, we discover that, on average, net buying activities have been concentrated mostly on days 0 and 1 for all investors. Large investors seem to be net sellers on day -1.

[Insert Figure 6 about Here]

We can see the evolution of the forecast errors over the years in Table 10. If we look at the differences in CEO forecasts relative to mean analyst forecasts - *FE-Analyst* - we can see that CEOs have been forecasting earnings that are very close to the mean analyst values with marginally more pessimistic/prudent numbers (negative *FE Analyst* indicates that, on average, CEO forecasts have been lower than analysts'). The difference between CEO forecasts and actual year-end EPS numbers - *FE-Actual* – imply that CEOs tend to be optimistic. This difference may also be due to the discrepancy between what CEOs include in their calculations of forecasted EPS's and the GAAP requirements for actual EPS calculations at the end of fiscal year. *FE-Forecast* shows that the magnitude by which the current CEO EPS forecasts differ from the previous ones (for the same actual year end EPS) is almost always negative indicating that, the closer the CEOs get to the actual EPS announcement dates, the more conservative they tend to become in forecasting EPS numbers.

[Insert Table 10 about Here]

Detailed descriptive statistics of all variables are provided in Table 11. Compensation delta is represented in thousands of dollars and short term incentives as a ratio (of vested stocks and exercisable options over total annual compensation). To exclude outliers I filter the data for positive leverage and market-to-book ratios. I also censor the sample from observations for which CEO forecasts are 10 times or more lower or higher than the corresponding EPS metrics to avoid extreme errors.

[Insert Table 11 about Here]

3.4. Research Design and Results

3.4.1. Forecast Errors and Investor Reaction

I employ the following pooled OLS regressions to test Hypotheses 1 and 2, i.e. whether large and small investors react differently to the announcements and whether these reactions take into account CEO incentives. In particular I estimate:

$$Nab_{i,t} = a + \beta_1 * FE_{\left\{\substack{Analyst \\ Actual \\ Forecast}\right\}_{i,t}} + \beta_2 * Comp_{i,t} + \beta_3 * FE_{\left\{\substack{Analyst \\ Actual \\ Forecast}\right\}_{i,t}} * Comp_{i,t} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t} \quad (8)$$

In this equation *NAB* stands for Net Abnormal Buys, *FE-Actual* stands for the difference between CEO forecasts and actual earnings at year end, *FE-Analyst* - for the difference between CEO and analyst forecasts and *FE-Forecast* for the difference between the current CEO forecast and the previous EPS forecast values. *COMP* is CEO compensation delta and *X* - the vector of other controls, *i* stands for specific firm and t for time. All regressions include industry and year dummies. I run these regressions for all three types of investors (small, medium, large) separately.

With regard to the first hypothesis, by assumption, unsophisticated investors cannot filter supplied information; therefore, if they react to the announcements, I expect them to follow an automatic strategy of buying (selling) in response to good (bad) news. Therefore, I expect to see higher and more significant net abnormal buying reactions when CEOs make more positive announcements, i.e. small net buys will be positively correlated to the forecast errors. On the contrary, sophisticated investors can scrutinize supplied information and detect optimistic biases, so their reaction to forecast errors should be less NABs (less buys or more sells) than those of the uninformed ones; thus, I expect a positive and higher β_1_small in comparison to β_1_large, in which the latter can be negative or insignificant.

Additionally, the second hypothesis is that investors will take into account CEO incentives when they observe a voluntary announcement, but I do not have an a-priory expectation of whether higher pay-for-performance will make the CEO more or less credible. I only expect significant an opposite values of β_3_small and β_3_large.

Medium investors are generally associated with large and sophisticated traders, so I expect them to show similar trading patterns as the large ones. Nevertheless, the threshold between small and medium investors is arbitrary and mixed results are expected.

The primary results are presented in Table 12a. Each column corresponds to the indicated investor group. As we can see, the relationship between the buying behaviors across different investor categories and forecast errors is in line with the expectations. In particular, the higher the CEO forecasts relative to the analysts' and the previous CEO forecasts (i.e. the manager has become more optimistic about the future of the firm), the more will small unsophisticated investors buy around the announcement window. It is

worth emphasizing that such result only appears in models 1 and 3 but not in model 2. This result is consistent with the fact that small investors are not able to make their own forecasts. They only take actions based on the provided CEO forecasts and other information publicly available at the time of the announcement (i.e. financial analysts forecasts in model 1 and previous CEO forecasts in model 3).

For large investors, the result is the opposite; they adopt a contrarian trading strategy to CEO forecasts in model 2 which compares their assessment of fundamental values of financial assets with the announcement of the manager. Large investors seem to make a good job at detecting overly optimistic announcements and following a contrarian strategy to take advantage of the small investors' positive reaction to good news. This set of results confirms to the first part of Hypothesis 1 and is also partly in line with the findings of Bhattacharya et al. (2007) - the closest reference to this study. The authors look at the trading behavior of investors around pro-forma earnings announcements and find a significant positive net buying of small investors on analyst forecast errors (difference between pro-forma and analyst EPSs), though they receive insignificant results about the trading behavior of large investors. Overall, their results suggest that market reaction is almost exclusively attributable to less sophisticated investors and large investors mainly refrain themselves from buying.

3.4.2. Forecast Errors, Investor Reaction and Managerial Incentives

In order to check whether investors analyze CEO incentives and their effect on the credibility of voluntary announcements, we have to look at the interaction terms between the forecast errors and CEO compensation. Here we see that for small investors, as well as for large ones, higher managerial incentives (high pay-for-performance compensation) tend to moderate their initial reactions to the

announcements. This confirms hypothesis 2, indicating that investors internalize the information portrayed in executive compensation and smooth out their initial buying/selling decisions following CEO forecasts.

In the case of small investors CEOs with high pay-for-performance sensitivities are less credible. Small investors, which tend to buy on forecast errors, buy less when optimistic announcements are made by CEOs with high pay-for-performance compensation. Thus we can say that although small investors lack information they are not naïve, they understand that CEOs may have incentives to make announcements that increase the value of their compensation package and, therefore, lend less credibility to managers with more pay-for-performance sensitivity.

The behavior of large investors is more difficult to analyze. They are less likely to sell when they observe optimistic announcements from CEOs with high pay-for-performance sensitivities. This can be interpreted as a sign that they think that high pay-for-performance incentives aligns managers' interests with investors' and makes CEOs more credible. But, since large investors are using a contrarian strategy, it could also indicate that they are simply anticipating a less sanguine reaction from the small investors when an optimistic announcement is being made by a CEO whose remuneration package contains lots of stocks and options.

[Insert Table 12a about Here]

In order to shed more light on this issue, I repeat the previous analysis by distinguishing between the short-term and the long-term incentives of the managers. So far the analysis has used all stocks and options at CEOs' disposal as proxy for managerial incentives. Now I take only the part of stocks and options in executives' portfolios that have been vested and are exercisable (standardized by total direct current

compensation) to proxy for short-term incentives. These assets constitute to only the part of managerial stock and option portfolio that can be disposed of at any moment at present. The intuition is that CEOs with more short-term incentives might be focused on more short-term results and thus be more likely to mislead investors (Aboody and Kasznik, 2000; Rogers and Stocken, 2005).

The results of this analysis are displayed in Table 12b. The variables of interest are the interaction terms between CEO compensation and the size of forecast errors. Large investors are more likely to sell when they observe an optimistic announcement by the CEO with high short-term pay-for-performance sensitivity, while small investors do not seem to react to the term structure of the compensation. In this sense, there is an extra element of sophistication ascribed to large investors, since only they can distinguish between the different incentives provided by short-term and long-term oriented compensation packages.

[Insert Table 12b about Here]

3.4.3. Forecast Error Size and Firm Investor Base

Finally, I test hypothesis 3 on whether CEOs adjust their disclosure policy to the characteristics of the investor base. The underlying assumption is that CEOs are informed agents and they know ex ante the types of investors who are going to trade once they issue forecasts. The first test of the hypothesis looks at whether the size of CEO forecast errors depends on firms' investor base. More specifically, I am going to estimate the following OLS regressions:

$$FE_{\begin{Bmatrix} Analyst \\ Actual \\ Forecast \end{Bmatrix}_{i,t}} = \alpha + \beta_1 * Trade\_Size_{\begin{Bmatrix} Small \\ Medium \\ Lage \end{Bmatrix}_{i,t}} + \beta_2 * Comp_{i,t} + \beta_3 * Trade\_Size_{\begin{Bmatrix} Small \\ Medium \\ Lage \end{Bmatrix}_{i,t}} * Comp_{i,t} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t} \quad (9)$$

Where, the left hand side of the equation stands for the indicated forecast errors i.e. how much manager's announced forecasts differ from other EPSs (*Analyst, Actual, and Forecast (t-1)*). *Trade-Size* is the explanatory variable which measures the proportion of different trade sizes in the total trading volume (i.e. *Small-Trades/Total-Trade-Volume*) for each investor category around the announcement dates; *COMP* stands for CEO compensation delta; and *X* are other firm specific controls. *i* stands for a specific firm and t for time. The regression includes industry and year dummies. The regression is estimated for three different types of investors - *Small, Med and Large* and three measures of EPS forecast errors separately.

The results of the estimation are provided in Table 13. We find a weak evidence of the link between the size of forecast errors and firm investor base. Only according to model 3 the higher the share of small investors, the higher the error in CEO's forecasted EPS. Conversely, having more trades initiated from large investors is associated with lower errors in CEO's announced forecasts (Models 1 and 3). Thus, I argue that CEOs act differently considering the characteristics of the investor base. They internalize the pressure from sophisticated (large) investors and avoid strategic (contrarian) behavior related to forecast errors. When we look at the interaction term of CEO incentives and large trade sizes we see a positive coefficient, implying that CEO incentives affect positively the size of issued forecasts when they are addressing to large investors, supposedly on an assumption that the announcements will be accepted as more credible.

[Insert Table 13 about Here]

3.4.4. Probability of Forecasts and Firm Investor Base

Hypothesis 3 also states that the probability that a CEO makes a voluntary announcement at all also depends on the investor base. To test this we have to identify matching non-forecasting pairs for each of the forecasting firms. The matching is done based on 4-digit industry and the size of firms' total assets (I pick out the closest match in size within 4 digit industry among the non-forecasting firms). I was able to get information on 315 pairs (i.e. sample of 630 firms) for the 2004-2010 period. In order to explore the differences between the treatment (announcing) and matched firms I first conduct a test of mean differences. Table 14 shows that the matched firms are not statistically different from the treatment group in terms of returns, leverage, market-to-book, total assets, return or return volatility. Remarkably, forecasting firms show much higher and significant net abnormal buying behavior compared to the matched ones in all investor categories. Around announcement days, the trading volumes coming from large investors are higher for forecasting firms in comparison to the matched ones, whereas small investors seem to be represented by slightly less trading. When we look at the non-event period, however, we do not see any statistically different behavior of different investors of announcing and non-announcing firms.

[Insert Table 14 About Here]

Now I can test the other part of Hypothesis 3 by estimating the probability of EPS forecast contingent on firms' investor base two weeks before announcements. To estimate the probability of EPS forecast I estimate the following logistic regression:

$$\boldsymbol{Forecasts_{i,t}} = \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Trade\_Size}_{\left\{\substack{Small \\ Medium \\ Lage}\right\}_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t}} + \boldsymbol{\varepsilon_{i,t}} \qquad (10)$$

Where,

$$Pr(Forecasts_{i,t} = 1 \mid X_{1,t-1}, X_{2,t} \ldots X_{k,t}) = \frac{1}{1 + e^{-(a+\sum \beta_j * X_i)}}$$

Where, the left hand side of the equation is a dummy variable stating the probability of forecasts (the firm issues a forecast) taking value of 1 conditionally on Xs (firm specific control variables, including industry and year dummies). *Trade-Size* stands for the average proportion of different investors in total trading volume throughout 10 trading days two weeks before forecast announcement days; *i* stands for a specific firm, t for event window and (t-1) for the non-event window. I estimate the regression for different types of investors - *Small, Med and Large* - separately. The coefficient of interest is β_1. A positive value for this coefficient implies that the probability that the CEO issues a voluntary EPS forecast increases with the proportion of trade share of the corresponding investor category.

The results of the estimation are provided in Table 15. They indicate that the larger the share of small investors in the total trading volume, the larger the probability of the CEOs issuing voluntary EPS forecast. However, the significance level of the coefficient is marginal at 10% confidence level.

[Insert Table 15 about Here]

3.5. Summary and Conclusions

Management voluntary earnings announcements are targeted at all investors on the market. However, the skills for evaluating the information supplied by the CEO through these announcements might vary greatly across interested parties. Large institutional buyers possess greater abilities and means in terms of experience, financial education or access to research tools compared to small individual investors. Moreover,

large and small investors may differ in their ability to “second guess” the CEO's intentions when making these voluntary announcements, since CEOs that get rewarded when market prices are high may have incentives to report too optimistic earnings forecasts.

In this paper I study the complex relationship between voluntary earning announcements, CEO compensation and investors' reaction to these announcements. The initial hypothesis that I test is that small and large investors will react differently to the voluntary announcements depending on their information sets and their different level of analysis of managerial incentives. Moreover, anticipating the different behavior of small and large investors to voluntary earnings announcements, managers will choose different disclosure policies depending on their investor base.

The results show that small and large investors react differently to voluntary earnings announcements. Small investors always buy after positive announcements (when the new forecast is more optimistic than the previous forecasts by analysts and the managers themselves). However, only large investors have skills of computing their own estimations of actual earnings and follow a contrarian strategy when they see overly optimistic announcements. They sell when CEOs make large forecasting errors, and take advantage of the anticipated behavior of small investors.

The results also indicate that small investors react less to managerial announcements when the CEO compensation packages have higher-pay-for-performance sensitivity, which could give them the incentives to manipulate market prices. Small investors find CEOs with high pay-for-performance compensation packages less credible, thus they are not naive while making trading decisions. On the other hand, large investors look at CEO incentives as the means of aligning manager's

and investors' interests, which makes the announcements more credible to them. In addition, large investors are even more sophisticated in the way that they can distinguish between short-term and long-term CEO incentives and find CEOs, whose compensation packages have higher proportions of vested stocks and exercisable stock options disposable at present, less credible.

Finally, I also find that, anticipating this different behavior of large and small investors, CEOs take into account investor base of their firms when designing disclosure policy. Voluntary earnings announcements are more likely and more optimistic in companies with a larger share of small investors.

CHAPTER 4

Who Trades Around Stock Splits?

4.1. Introduction

Stock splits are long observed phenomena in equity markets with the first recorded one dating back to at least 17th century in the East India Company. Even though numerous studies have been done since then to understand the event, it still stays a controversial puzzle. Theoretically stock splits correspond to slicing a pie into thinner pieces and thus should not be associated with the change in the value of firm's equity. Therefore, stock splits are considered cosmetic measures that only increase the number of shares outstanding and do not affect the generation of cash flows by the company. However, several empirical findings show that market reacts favorably to split announcements.

Two most widely accepted explanations of splits have been proposed in the past. One is the *trading range hypothesis*, implying that there exists an optimal range of market prices that are more appealing to investors and, thus, managers strive to get stock prices within this range in order to improve stock liquidity. Even though this assumption is partly in conflict with increased transaction costs associated with smaller share prices, statistics show that despite inflation the average nominal share prices have been constant during the past half century in almost all capital markets around the world. The optimal trading range hypothesis is strongly supported by several empirical research (Lakonishok and Lev, 1987; Muscarella and Vetsuypens, 1996; Conroy and Harris, 1999; Anshuman and Kalay, 2002; Dyl and Elliott, 2006; Baker et al., 2009). In addition, as a survey revealed, executives name trading range hypothesis as the main

motivation for splitting stocks (Baker and Gallagher, 1980). However, there is another strand of literature that challenges the hypothesis by showing that liquidity decreases after stock splits. In particular, Copeland (1979), Conroy et al. (1990), Gray et al. (2003) and Kadapakkam et al. (2005) find that bid-ask spreads increase after stock splits and Copeland (1979) documents that trading volumes decrease after the event.

The other motivation for splitting stocks is *signaling* i.e. when the management is confident that earnings will continue growing, pushing prices further up, they are more willing to split stocks to attract investors' attention. However, when tested, this hypothesis resulted in mixed findings as well. On the one hand, the discovery that favorable abnormal market reactions take place around splits serves as an evidence of positive investor sentiment towards stock splits (Fama et al., 1969; Grinblatt et al., 1984; Lakonishok and Lev, 1987; Brennan and Copeland, 1988; Asquith et al., 1989; Brennan and Hughes, 1990; McNichols and Dravid, 1990; Ikenberry et al., 1996; Desai and Jain, 1997; Conroy and Harris, 1999). On the other hand, when examined in the long run, the performance of splitting firms showed no significant difference from their counterparts (Muscarella and Vetsuypens, 1996; Byun and Rozeff, 2003; Huang et al., 2006).

Decrease in informational asymmetries between managers and shareholders following stock splits is considered a complement to signaling hypothesis; increase in analyst following (Brennan and Hughes, 1991) and change in analyst earnings forecasts after splits (McNichols and Dravid, 1990; Conroy and Harris, 1999) contribute to the signaling role of the announcements.

In this study I further examine the signaling role of stock splits by exploring whether the informational value of splits is contingent on the type of investors. My expectation is that if stock splits act as signals of future superior performance of the

announcing firms, large informed investors should take advantage of this information and trade around announcements.

The preference of managers to maintain stock prices low is connected to the specific investor base that they wish to attract. Managerial surveys show that low stock prices attract small investors (Baker and Gallagher, 1980). The main reason for this preference is often proposed to be increased liquidity - enlarging investor base by allowing small investors to trade. Previous studies that tried to distinguish between trading behaviors of small and large investors around stock splits have found mixed results. Some researchers provide evidence of increasing investor base after stock splits at the expense of institutional owners (Maloney and Mulherin, 1992; Powell and Baker, 1993). In this line, other studies showed that stock splits attract small uninformed traders (Muscarella and Vetsuypens, 1996; Stulz, 2000; Kryzanowski and Zhang, 1996; Easley et al., 2001; Kadapakkam et al., 2005; Dyl and Elliott, 2006). However, other studies, using the fact that short interest/short selling is often associated with traders' sophistication skills, show that there is no change in short interest after splits contrary to signaling hypothesis (Kadiyala and Vetsuypens, 2002). This latter result has been questioned recently by Perez and Tang (2012) who show that short interest permanently declines after splits.

Most of the studies in search of identifying small vs. large traders' activities around splits focus on testing the trading range hypothesis i.e. whether new lower prices after the splits actually promote small traders' activities. Even though the previously discussed two hypotheses are not mutually exclusive, it is very difficult to disentangle the effects of the two. In this paper, I try to separate the two hypotheses by focusing on the reaction of different investors at the moment of announcement (not when the splits are realized). In this way, it is possible to partly abstract from the influence of optimal

trading range hypothesis, the effect of which should be more visible at the moment of stock split realization (actual splits usually happen 2 months after the announcements).

This chapter is structured as follows. Section 2 reviews existing literature on stock splits. Section 3 discusses data and methodologies for testing the hypotheses. Section 4 provides results and Section 5 concludes the findings.

4.2. Related Literature and Contribution

There is no consensus either in theory or empirics on the reasons and/or incentives behind stock splits. However, two dominant theories have been proposed by academics and practitioners both of which have been tested empirically many times with no unanimous results. The first, *trading range hypothesis* implies that there exists an optimal range of stock prices which is more appealing to investors and thus managers strive to get firm's stock prices within this range to improve stock liquidity. The second, *signaling hypothesis* assumes that when managers are confident that earnings will continue growing, pushing prices further up, they are more willing to split stocks and attract investors' attention.

There is a large empirical literature on the favorable market reaction to stock split announcements. Fama et al. (1969) show evidence that market interprets split announcements as a sign of expected dividend increases. Grinblatt et al. (1984) show that stock splits and stock dividend announcements are usually followed by favorable changes in stock returns. Lakonishok and Lev (1987) find 3 to 4% positive abnormal returns around stock split announcements implying improved performance prospects. Asquith, Healy and Palepu (1989) propose that stock split announcements are interpreted by investors as the increased probability of future earnings. Ikenberry et al. (1996) find that stock split announcements have indeed a favorable effect on returns but

only if the firm is undervalued and needs analyst attention to increase stock value. The valuation effect of splits is even higher when they look in the long run (one to three year periods). Desai and Jain (1997) check the long term abnormal returns surrounding stock splits and find evidence of 7% and 12% growth in 1 and 3 years, respectively.

These results have been explained in two different ways:

(i) *Trading range hypothesis*. Some authors argue that there is an optimal price range for a stock and splits is a mechanism to bring prices to such a range so to "broaden" the market for these securities. Baker and Gallagher (1980), who surveyed corporate managers, report that 94% of the interviewees indicated moving share prices into an "optimal trading range" as their major motivation for splitting stocks. Lakonishok and Lev (1987) study the characteristics of stock prices by following the firms years before and after splits and find evidence confirming the trading range hypothesis. Muscarella and Vetsuypens (1996) check market behavior around ADR split announcements. The authors contrast the signaling hypothesis by comparing the liquidity changes after sponsored and unsponsored ADR stock splits (no signaling is involved in the latter type of ADRs thus they serve as a control group). They find that daily transactions of small and medium traders increase after splits independently of the type of ADR, thus, supporting liquidity (trading range hypothesis) incentives for stock splits. Conroy and Harris (1999) claim that there is a liquidity argument behind splitting stocks, which is to move the prices down to a reasonable trading range. Anshuman and Kalay (2002) propose a model and show that there exists an optimal price for a stock under certain parametric values. Baker et al. (2009) provide strong evidence that when investors place high valuation on low-price stocks, managers respond by supplying shares at demanded low prices. Finally, Dyl and Elliott (2006) research whether firms select a specific trading range for their stock based on the size of investors and by

computing the propensity to split, the authors show that firms whose share prices are above their predicted trading range (computed based on the assumption that firms owned by small investors prefer low prices) are more likely to split stocks in the coming 4 years.

(ii) *Signaling hypothesis.* Some authors argue that the main role of stock splits is to convey positive information to the market and it will be credible, because splits are costly. For example, Brennan and Copeland (1998) show that splits are credible signals because of the increased transaction costs involved in trading for lower-priced stocks and Conroy et al. (1990) refer to the increased liquidity costs (higher bid-ask spreads) following stock splits (in addition to other administrative monetary costs associated with splitting stocks (McGough, 1993)). Ikenberry et al. (1996) support the signaling value of splits by showing abnormal returns around the announcements. Brennan and Hughes (1990) present a model that explains the informational content of stock splits given that only managers with good earnings forecasts address to stock splits. They argue that stock splits will be considered a credible way of attracting attention of financial analysts working for brokerage houses because commissions are decreasing in stock prices. Thus, such analysts will be more interested in firms' economic situation and only the companies that have good information to convey to the market will be willing to split stocks. McNichols and Dravid (1990) proxy managers' private information on earnings by analysts' forecast errors. These authors analyze the connection between the size of the split and the forecast errors before and after split. They find a positive relationship between the two and interpret it as a proof of signaling value of stock splits. In this line, Brennan and Hughes (1991) propose that stock splits serve as signals to attract analysts' attention and document that the number of analyst following a firm is positively related to the split size. Conroy and Harris (1999) address

the informational content of stock split announcements as well. They find that larger split factors lead to superior analyst earnings forecasts, which according to them is a direct confirmation of informational context of stock split announcements.

(iii) *Counterfactual hypotheses.*

On the trading range hypothesis; There is another strand of literature claiming that stock splits actually decrease liquidity rather than increase as the trading range hypothesis states. Copeland (1979), Conroy et al. (1990), Gray et al. (2003) and Kadapakkam et al. (2005) find that bid-ask spreads increase and Copeland (1979) finds that trading volumes decrease after stock splits.

On the signaling hypothesis; There is evidence that splitting firms do not show abnormal returns in the long run implying that signaling might not be a valid hypothesis (Muscarella and Vetsuypens, 1996; Byun and Rozeff, 2003; Huang et al., 2006).

Taking into account the previous non-conclusive evidence, in this paper I advance in the analysis of the informational content of stock splits by separating investors' reaction according to their levels of sophistication: large versus small. The objective is, thus, to conduct a test of the signaling value of stock splits contingent on the types of investors. I expect to see higher abnormal buying initiated from large investors around stock splits if they serve as credible signals of future firm performance.

On the *intensive trading activity of small investors* around stock splits. The *clientele effect* following stock splits suggests that executives are more targeted at small shareholders when making the decision to split (Baker and Gallagher, 1980). If the reduction in prices allows small investors to trade, then such investors should show a larger reaction to stock splits. Muscarella and Vetsuypens (1996) show that frequency and volume of small trades increase after stock splits. Stulz (2000) checks buy orders initiated from small investors in different periods around stock splits and finds that

number of small trades is significantly high following stock splits and stays high after 3 months of the announcements. Using intraday trade data Kryzanowski and Zhang (1996) investigate the trading behavior of small and large investors around stock split ex dates and find that trading volumes coming from small (large) traders increases (decreases) following splits and the direction of trades changes (does not change) from sell to buy. Easley, O'Hara and Saar (2001) also employ intraday trade data and, by using the probability of informed trading (PIN), find that stock splits attract small (uninformed) traders. Kadapakkam et al. (2005) find the evidence of increased number of small trades after splits (the frequency of individual trades almost doubles).

On the *intensity trading activity of large investors around stock splits.* Maloney and Mulherin (1992) show that number of shareholders increase after stock splits and in particular, the percentage of institutional shareholders increases between the two fiscal years before and after splits. The increase in shareholder base is associated mainly with the ease of diversifying portfolios without completely divesting from the firm (small shareholders can sell part of their split shares). These new shares are soaked up by institutional investors whose interest has grown with the increase in the value of the firm after stock splits.

Taking into consideration the previous set of results I want to re-examine the trading reactions of different investors (sophisticated versus non sophisticated), but NOT when stock splits are realized, which is where the majority of the studies focus on, but when they are announced. This will allow me to analyze the informational content of stock splits contingent on the type of investors.

4.3. Data and Variables

I identify all stock splits from CRSP database with event distribution code 5523. The period covered is 1993-2011. The goal - to concentrate more on signaling role of splits - justifies the choice of announcement days rather than actual split or ex-date events. Announcements usually happen 2 months before the actual splits take place, in this way I am partly abstracting from the effects of the previously proposed trading range hypothesis i.e. increased liquidity due to the fact that smaller share prices allow small investors more flexibility to trade right after actual splits but not around simple announcements.

In order to get the final sample I eliminate any other firm related announcements (often mandatory) around the same days as split announcements not to bias the results. So I drop all stock splits that fall within 5 trading days of other significant firm events (like earnings, dividend and other recorded announcements on CRSP database). I end up with 790 splits of 618 firms with split size greater or equal to 0.25.

4.3.1. Net Abnormal Buying

After getting announcement dates of stock splits we need to identify types of investors trading around these announcements based on their levels of sophistication. To do so, I follow the similar strategy established in our previous paper following the Lee and Ready (1991) method. I use NYSE intraday trades and quotes (TAQ) database to identify the direction (buy or sell) of each trade on a particular stock around each announcement window (3 days around the announcements). First, I conduct a *quote* test: I compare trade price to the midpoint of Bid and Ask of the immediate previous quote and if the price is *lower (higher)* than the midpoint, I qualify the trade as *seller (buyer)* initiated. If the two numbers are equal I use the *tick* test, where trade price is

compared to the previous price, if the current price is *lower (higher)* than the previous one, the trade is qualified as *seller (buyer)* initiated and/or the procedure goes on back to one more lag. If the transaction is still unqualified I leave it out from the future calculations of buys and sells (Lee and Ready, 1991; Odders-White, 2000). The database also gives us information on the size and the volume of each trade in order to distinguish between large (sophisticated) and small (individual unsophisticated) traders. I take a cutoff threshold for each transaction with values up to $7,000 and assign it to the category of small size investors, $7,000-$50,000 to medium size investors and above $50,000 to large investors (Bhattacharya et al., 2007).[7] Later, I construct abnormal trading volumes - I compare trading volumes in 3 days around split announcement dates to the average daily trading volumes two weeks before the announcements (the non-event days are also checked not to fall within 5 days of other types of firm announcements to avoid possible biases). Finally, I construct the main dependent variable - *Net Abnormal Buys (NABs)* - as the difference in differences between buys and sells in announcement and non-announcement windows normalized by average daily non-announcement total trading volume for each stock (Bhattacharya et al., 2007). I calculate Net Abnormal Buys around split announcements as:

$$\boldsymbol{Nab_{i,t}} = [(\boldsymbol{Buy_{i,t}} - \boldsymbol{Sell_{i,t}}) - (\boldsymbol{Buy_{i,t-1}} - \boldsymbol{Sell_{i,t-1}})]/\boldsymbol{AvgTradingVol_{t-1}}$$

Where, *Buy/Sell* stands for the total daily value of transactions identified as buys or sells for each stock. *i* stands for individual stock. *t* is the stock split announcement window (days [-1,0,+1]). *(t-1)* is a non-announcement window (10 trading days two weeks before the announcement day), where buys and sells as well as total trading volume is taken as average daily values to be comparable to the daily values around

[7] I also take alternative threshold of $10,000 for small investors. The results are not materially different from the reported ones.

event dates. I calculate *NABs* for each investor category (small, medium, large) separately.

Statistical features of *Net Abnormal Buys* are presented in Table 16. Average NAB is 0.019 for small and 0.003 for large investors. At one glance this indicates that, on average, small investors are more net buyers than large ones around stock split announcements. Medium investors show the highest net buying activities, though it is difficult to qualify which types of investors belong to this category. Some studies propose that medium sized trades might belong to large investors who purposely split up their transactions in smaller pieces for several reasons (Bhattacharya et al., 2007). However, we cannot be sure of that and especially cannot confidently draw conclusions. Also, Table 16 shows that there are much less splits in the later periods of the sample rather than at the beginning (either due to the financial crises or decreased popularity of splits - see Minnick and Raman (2013) for detailed review of the reasons behind declining splits). Also, average small NABs become more negative for small investors after 2003 (before this date they were *always* positive). Large NABs show very mixed results, they are negative almost half of the time, on average, while medium NABs are always positive throughout the whole sample.

[Insert Table 16 about Here]

The per day (-1;0;+1) split up of *Net Abnormal Buys* look as follows (Figure 7): Day 0 marks positive net buying activities for all categories of investors. Day 1 is positive only for small and medium investors.

[Insert Figure 7 about Here]

As frequently mentioned in the previous literature on signaling role of splits, manager's choice of split factors (size) reflects his private information about the future performance of the firm, thus I distinguish NABs between different split sizes (split

factor). The hypothesis states that the higher the splitting factor (i.e. the more shares investors are going to get in exchange for the existing ones) the higher the signaling value of splits (McNichols and Dravid, 1990; Brennan and Hughes, 1991; Conroy and Harris, 1999). Figure 8 shows that small and medium investors are net abnormal buyers to all sizes of split factors, whereas large investors are net buyers only to the split factors higher than 1 (two for one splits). By looking at the numbers we can say that large investors are only responsive as buyers to the more "informative" splits.

[Insert Figure 8 about Here]

Concerning the intensity of trading around stock splits we look at the proportion of trading volumes (as well as buys and sells separately) of each investor category in the total trading volume (see Table 17). On average, the proportion of small investors is the smallest and constitutes only 6.5 % of the total trading compared to the 58.8 % representation of large ones in the total trading. However, we can notice gradual increase (decrease) in the participation rates of small (large) investors over time, especially since 2001. We can also notice that buying activities are usually higher than selling for all investor categories (however, it is worth mentioning that these numbers are not *abnormal* trading activities unlike NABs presented in Table 16).

[Insert Table 17 about Here]

4.3.2. Other Control Variables

In order to further disentangle the effects of trading range hypothesis from those of the signaling associated with stock splits, I am going to control for the liquidity of stocks during 12 months leading split announcements as one of the main motivations for splitting stocks. I am using a measure of stock illiquidity proposed by Amihud (2002) and commonly used in literature. He defines stock *illiquidity* in a particular day as the

ratio of absolute value of daily returns over daily trading volume and quantifies it as a percentage price change per dollar of daily trading volume i.e. price change to excess demand for trading. The higher the variation in prices to accommodate excess trading the less liquid the asset is. The illiquidity ratio over a specific period looks as follows:

$$\boldsymbol{ILLIQ_{iy}} = {}^{\mathbf{1}}\!/_{\boldsymbol{D_{iy}}} * \sum_{\boldsymbol{t=1}}^{\boldsymbol{Diy}} |\boldsymbol{R_{iyd}}| \Big/ \boldsymbol{VOLD_{ivyd}}$$

Where, $\boldsymbol{D_{iy}}$ is the number of trading days for stock *i* in the named period (12 months). $\boldsymbol{R_{iyd}}$ is daily returns of a stock in a particular day of the year and $\boldsymbol{VOLD_{ivyd}}$ stands for dollar trading volume each trading day. I measure average illiquidity of stocks during 12 months before split announcement days.

I also control for stock performance before splits by computing daily stock returns and return volatilities (standard deviation of daily returns) during 365 days prior to split announcements. This takes care of the fact that greatly increased prices (returns) call for split measures. Further, I compute abnormal returns around stock split announcements by conducting a conventional event study analysis (following MacKinlay, 1997) using the market model for calculating stock returns. I first estimate normal stock return performance for each firm during 200 trading days 30 days before stock split announcements. Then, I calculate abnormal returns by taking actual returns recorded 3 days around announcement days and subtract from them previously estimated predicted returns for the same period. By summing up the values for the three event days (-1,0,+1) I get cumulative abnormal returns (CARs). Average CARs for the whole sample is 1.4%. This suggests a positive short-term stock reaction to stock splits as also found in the previous studies.

In addition, I consider other firm specific characteristics frequently used in stock split literature such as firm size (total assets) and market-to-book ratio. Data comes from Compustat and CRSP. Descriptive statistics of the variables are presented in Table 18. Medium investors are represented by the highest net abnormal buying around three days of stock split announcements and large investor by the lowest buying.

[Insert Table 18 about Here]

4.4. Research Design and Results

4.4.1. Net Abnormal Buying and Split Size

In order to check the signaling value of stock split announcements I am going to measure the effects of stock split sizes on net abnormal buying behaviors of different investors. I estimate the following equation using OLS estimation method.

$$\boldsymbol{Nab_{i,t}} = \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Small\_Split_{i,t}} + \boldsymbol{\beta_2} * \boldsymbol{Large\_Split_{i,t}} + \sum \boldsymbol{\beta_j} * \boldsymbol{X_{i,t}} + \boldsymbol{\varepsilon_{i,t}} \quad (11)$$

Where, *NAB* stands for cumulative net abnormal buying of relevant investor category (Small/Med/Large). I distinguish between the size of splits where *Small/Large Splits* represent dummy variables equal to 1 (two-for-one splits) if the split factor is less/more than 1 and zero otherwise, respectively. The reference category is medium splits (the ones with size equal to 1). *X* stands for other control variables - firm size (total assets), market-to-book ratio, stock illiquidity, returns and volatilities prior to splits, together with industry and year dummies. The assumption is that the higher the split factor the more positive news it is believed to convey to the market.

The results of estimation are provided in Table 19, which shows that small investors cannot distinguish between large and small splits when defining their trading

strategies. Remarkably, large investors show net buying behavior on only large splits which are believed to convey more positive signals about the future performance of the companies.

[Insert Table 19 about Here]

4.4.2. Split Size and Firm Investor Base

To further investigate this finding I check if investor base affects managers' decision on the size of the split. So I estimate the following OLS regression:

$$\boldsymbol{Split\_Size_{i,t}} = \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Trade\_Size}_{\left\{\substack{Small \\ Medium \\ Lage}\right\}_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t}} + \boldsymbol{\varepsilon_{i,t}} \qquad (12)$$

Where, the left hand side of the equation is the size of the split. *Trade-Size* stands for the average proportion of different investors in total trading volume throughout 10 trading days two weeks before the day of the split. *i* stands for a specific firm, t for event window and (t-1) for non-event window. The coefficient of interest is β_1. Depending on my previous finding from model (1), I would expect this coefficient to be positive for large investors i.e. the higher the proportion of large investors in total, the higher will be the size of the announced split if managers want to communicate the positive information to their existing audience.

The results of the estimation are presented in Table 20, where as expected, we see that the higher the proportion of large investors in investor base the higher the size of the consequent stock split and vice versa for small investors. Thus, I conclude that managers' take into account the investor base of the firm when they are deciding on the size of the split.

[Insert Table 20 about Here]

To advance in the examination of the signaling role of stock splits I conduct a matched pair analysis. I identify matching non-splitting firms for each of the splitting one in the sample. The matching is done based on 4 digit industry and the size of firms' total assets (for each of the splitting firms I pick out the closest match among the non-splitting ones in terms of asset size within 4 digit industry) also done in Powell and Baker (1993). I identify 421 pairs (i.e. sample of 842 firms) in period 1993-2011. In order to explore the differences between the treatment (splitting) and matched firms, I conduct t-tests of the differences in means of paired two samples. The results are presented in Table 21. I find that large investors of splitting and matched firms show no statistically different buying behavior around event days. However, small (and medium) investors of splitting firms show much higher and significant net abnormal buying behavior compared to the matched ones. Trading volumes are also interesting to examine - we observe much smaller (larger) proportion of small (large) investors for forecasting firms. Looking at other characteristic controls, we observe that illiquidity has been lower for splitting firms which is contrary to the expectations. Returns, on the other hand, have been significantly high during the year leading up to split announcements, as expected. On top of that, cumulative abnormal returns are higher around split announcement days for treatment group. Market-to-book ratio (measure of overvaluation) is also high for splitting firms which could be considered as contrary to the intuition but otherwise quite frequently observed in the literature (Ikenberry et al., 1995).

[Insert Table 21 about Here]

Daily distribution of NABs across treatment and control groups are provided in Table 22. The table shows that small investors of splitting firms are significantly more

net buyers around Days 0 and 1 compared to matching ones. Large investors do not show any statistically different behavior between the two groups.

[Insert Table 22 about Here]

4.4.3. Net Abnormal Buying in Matched Sample

To check the empirical differences in trading behaviors for splitting and non-splitting firms I estimate the following OLS regression:

$$\boldsymbol{Nab_{i,t}} = \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Splitting_{i,t}} + \sum \boldsymbol{\beta_j} * \boldsymbol{X_{i,t}} + \boldsymbol{\varepsilon_{i,t}} \qquad (13)$$

Where, again *NAB* is the net abnormal buying of relevant investor category (Small/Med/Large). *Splitting* stands for a dummy variable equaling 1 if the firm announces a split and 0 otherwise. *X* stands for other control variables also used in equation (11). The data used is one to one matched sample, where each splitting firm is matched with one similar sized non-splitting firm from the same industry. In case splits possess signaling values we expect to see a positive trading behavior of large investors contingent on the announcement of splits i.e. positive β_1-s for large NABs.

The results from Table 23 show that small traders are the ones that are represented by positive net buying activities to split announcements. Large investors do not seem to be buying abnormally on splits, which goes against the signaling value of stock split announcements. Remarkably, large investors trade more on illiquid stocks, probably taking advantage of market opportunities.

[Insert Table 23 about Here]

4.4.4. Probability of Stock Splits and Firm Investor Base

To further utilize the obtained information, I will examine whether the composition of firms investor base affects the probability of announcing stock splits. To estimate the probability of splitting stock I estimate the following logistic regression:

$$\boldsymbol{Splits_{i,t}} = \boldsymbol{a} + \boldsymbol{\beta_1} * \boldsymbol{Trade\_Size}_{\left\{\substack{Small \\ Medium \\ Lage}\right\}_{i,t-1}} + \sum \boldsymbol{\beta_j X_{i,t}} + \boldsymbol{\varepsilon_{i,t}} \qquad (14)$$

Where,

$$\boldsymbol{Pr}(\boldsymbol{Splits_{i,t}} = 1 \mid \boldsymbol{X_{1,t-1}}, \boldsymbol{X_{2,t}} \ldots \boldsymbol{X_{k,t}}) = \frac{1}{1 + e^{-(a+\sum \beta_j * X_i)}}$$

Where, the left hand side of the equation is a dummy variable stating the probability of splits (i.e. the variable is equal to one if firm has announced a split) conditionally on Xs (firm specific control variables, including industry and year dummies). *Trade-Size* stands for the average proportion of different investors' trade sizes in total trading volume throughout 10 trading days two weeks before the day of the split. *i* stands for a specific firm, t for event window and (t-1) for non-event window. Separate regressions are estimated for different types of investors - *Small, Med and Large*. The coefficient of interest is β_1 - the positive value signifies that more the trades initiated from the relevant investor category (i.e. investor base of a firm) the higher the probability of announcing splits. The data utilized in a one to one matched sample of splitting and non-splitting firms.

The results of the estimation are provided in Table 24. The larger the share of large (small) investors the more (less) the probability of announcing stock splits. This could be explained by the assumption that companies that choose to announce splits are more in need of and target at attracting small individual investors. On the other hand,

when they already have higher proportion of small investors trading on their stocks, they probably have less need to further attract individual traders.

[Insert Table 24 about Here]

4.5. Summary and Conclusions

Previous research has been heavily invested in identifying reasons and incentives behind stock splits. The two widely known hypotheses that has been emerged up to date are: i) the *trading range hypothesis:* splits are tailored to returning previously elevated stock prices to the optimal trading range and thus enhance liquidity and ii) the *signaling hypothesis:* splits convey favorable information about the future performance of companies (prices and earnings will keep going up further) to investors. Both hypotheses have been tested with numerous alternative measures and mixed results have been found up to date.

I want to further shed some light on signaling value of stock splits and overtake an empirical exercise to see what type of investors trade around stock split announcements. The previous findings show mixed results in this regard. Some claim that managers aim at increasing small investor base by making smaller priced stocks easily available to them, others show that large institutional investors are the ones who tend to trade on positive information. My choice to concentrate on split announcements rather than splits themselves is intentional to abstract from the possible effect of increased liquidity following splits and focus more on signaling value of the announcement rather than the optimal trading range hypothesis. My expectation is that if stock splits serve as signals of future performance of the firm than large investors should take advantage of the information and trade on it.

I employ intraday trading data from NYSE TAQ (trades and quotes) database to construct net abnormal buying of different investor categories based on their trade sizes as a proxy for their level of sophistication. Further, I gather matching firms for each splitting firm in order to check whether trading behavior of investors differ on similar stocks contingent on the announcement of stock splits.

The empirical tests show that large investors do not seem to be trading abnormally differently around stock split announcements in the sample of splitting and matching firms, whereas small investors exert positive and significant net buying behavior. This goes against the informational content of stock splits. However, I have found that large investors, unlike small ones, are buying abnormally more when splits are exceptionally large (more than two-for-one splits). Thus, although stock splits do not seem to serve as signals, the size of the split does.

Further, I also check whether firm investor base affects the probability of announcing splits and the size of the splits, if any. By taking the proportion of large, medium and small trades in the total trading volumes among splitting and non-splitting matching firms I find that the probability of splits increases with the trades initiated by large investors (more than $50,000 per transaction) and vise versa for small traders (less than $7,000). I conclude that managers want to change firm investor base by attracting smaller investors through lower prices achieved after stock splits. Further, CEOs also take into account firm investor base when they are deciding on the size of the splits. I find that the proportion of large (small) investors is positively (negatively) correlated with the size of stock splits.

CHAPTER 5

Final Remarks

The agency problem of misalignment of interests between managers and shareholders has been a long standing issue in the corporate world and the need to alleviate the problem is still active. Managerial pay incentives have been promoted in the past as one of the ways to make CEOs' wealth depend on firm value which would induce them to act more in shareholders' best interests. An interesting test would be to check if effective managerial contracts incentivize them to address certain actions that could be beneficial for shareholders.

I start by assuming that costless CEO voluntary actions that attract market's attention serve to decrease undervaluation problems in firms and thus could be considered as desirable in some circumstances. Having this is mind, I tried to set up a link between managerial variable compensation and its role in the consequent managerial actions towards attracting attention. The evidence found indicates that the more variable CEOs' compensations are the more the probability that they will attract market's attention by using "cheap talk" measures.

The policy implication of this finding is noteworthy for firm shareholders: When designing CEO compensation contracts, they need to take into consideration the provided incentives' possible effect on CEO disclosure policies. It is especially important as I also find evidence that CEO pay-for-performance incentives that are correlated with their disclosure policies also have an effect on investors' trading reaction to these disclosures.

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Figure 1. Stock Splits and Market Returns

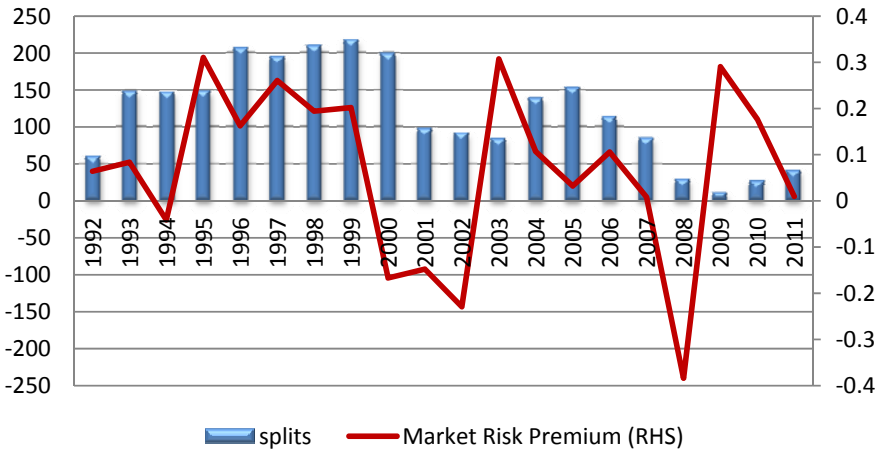

Figure 2. CEO EPS Forecasts

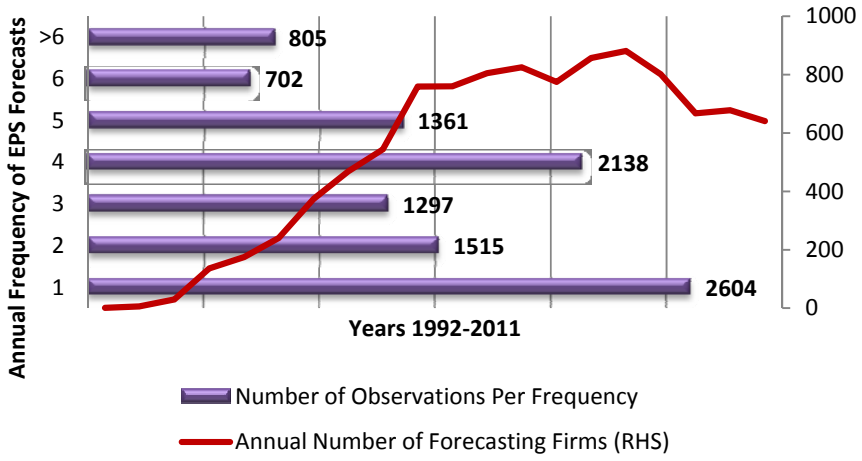

Figure 3. Firm Media Coverage

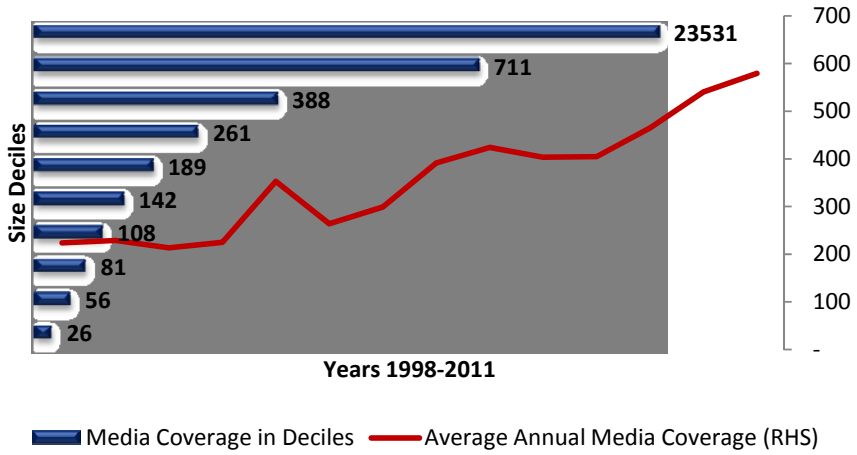

Figure 4. Composition of CEO Variable Compensation

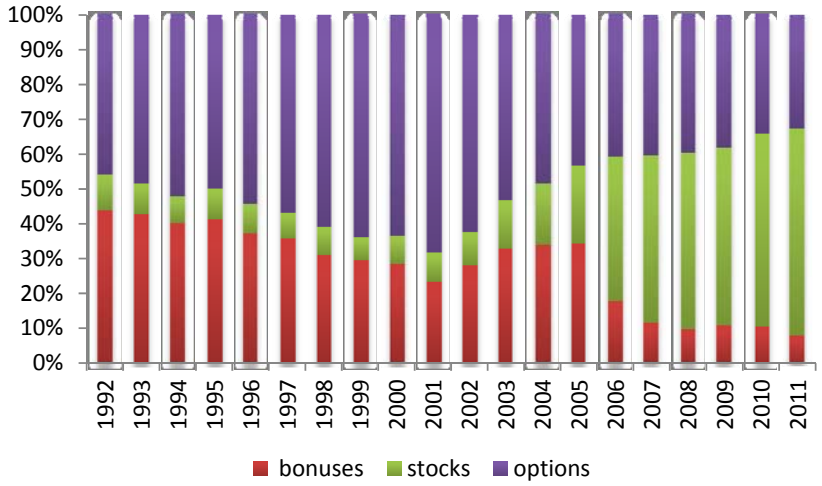

Figure 5. CEO Variable Compensation and Compensation Delta

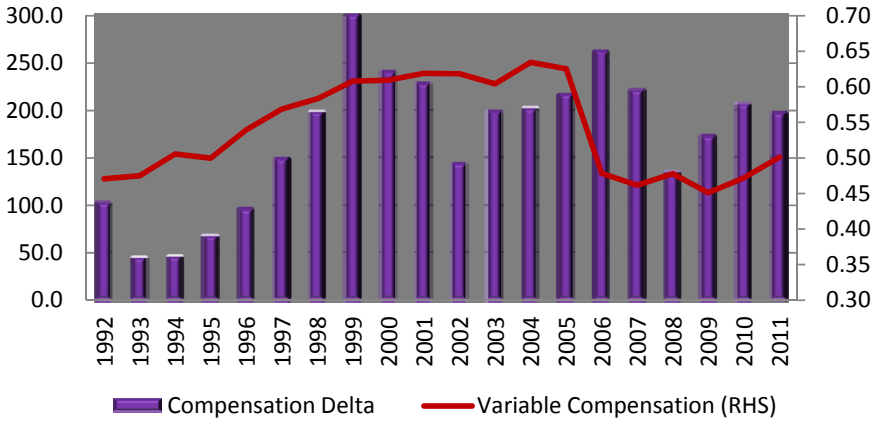

Figure 6. Net Abnormal Buys Around EPS Forecast Announcements

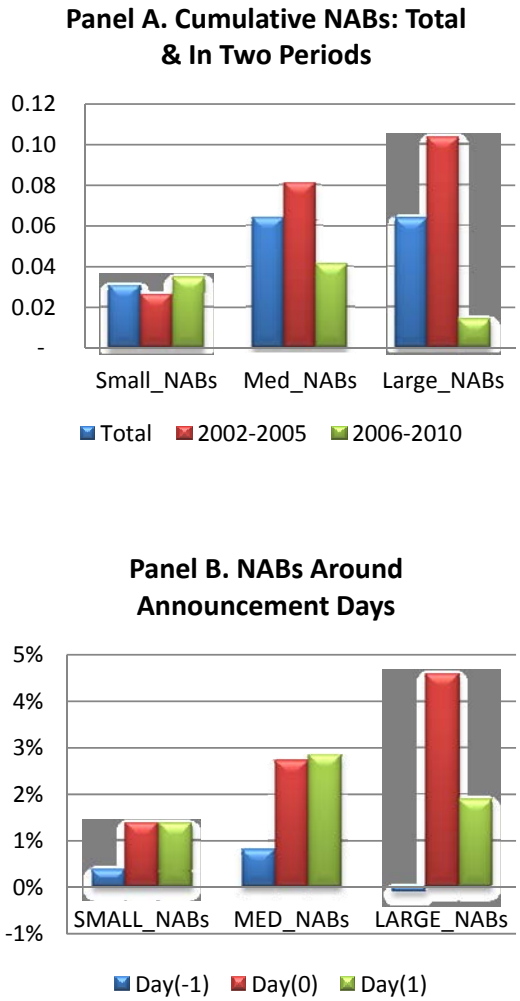

Figure 7. Daily Net Abnormal Buys Around 3 Days of Split Announcements

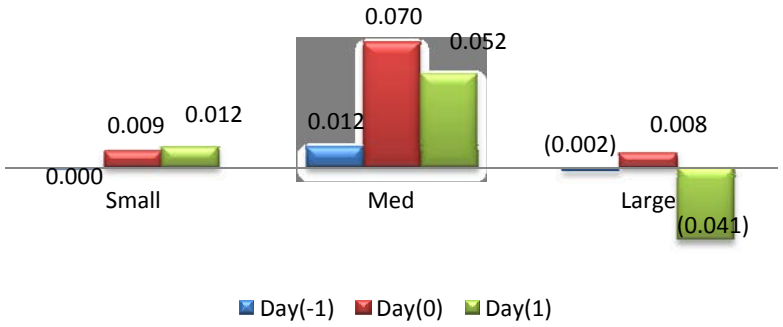

Figure 8. Cumulative Net Abnormal Buys Across Different Split Factors/Sizes

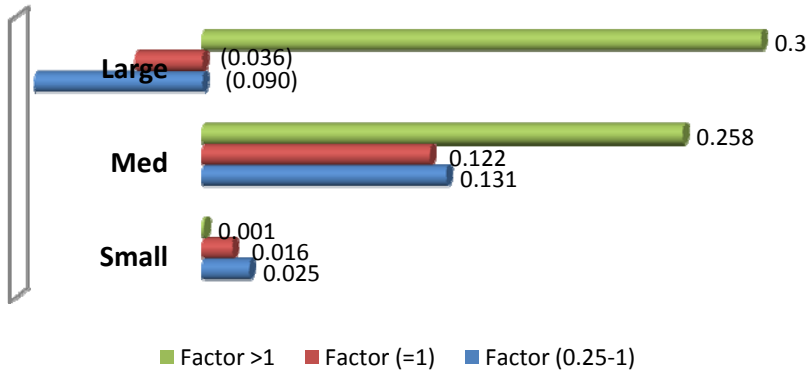

Table 1. Summary Statistics

Variables	Mean	Median	Max	Min	St. Dev.
Leverage	2.69	1.27	99.5	0	4.84
Market-to-Book	3.20	2.15	99.4	0	4.48
Total Assets ($mln)	13	1.6	3222	0	76.6
Stock Returns	0.15	0.07	6.33	-0.97	0.73
CARs (significant)	0.03	0.05	0.50	-0.22	0.10
Analyst Following	79	50	579	0	93
Analyst Ups	14.5	5	312	0	23
Analyst Downs	14	4	308	0	22.5
Compensation Delta ($mln)	0.18	0.04	51	0	0.72
Total Compensation ($mln)	4.5	2.3	645	0	9.4
Variable Compensation	0.54	0.59	1.21	0	0.28
Bonuses	0.14	0.09	1	0	0.17
Stocks	0.13	0	1	0	0.20
Stock Options	0.27	0.22	1	0	0.28
CEO Age	56	55	95	28	7.5
CEO Tenure	7	5	60	0	7.3
CEO Forecasts	1.06	0	18	0	2.0
Media Coverage	359	142	23 531	0	883

Table 2. Comparative Statistics

The table reports one year lagged mean values for several variables for firms trying to attract attention through stock splits, EPS forecast or media coverage in a given year, and compare them to the mean values of the rest of the sample. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Control Variables	Stock Splits		EPS Forecasts		Media Coverage	
	Yes (Obs=2405)	No (Obs=31424)	Yes (Obs=10422)	No (Obs=23408)	Top 50 pct (Obs=9380)	Bottom 50 pct (Obs=9432)
Leverage (t-1)	2.6	2.7	2.4	2.8***	2.9	2.5***
Market-to-Book (t-1)	4.7	3.1***	3.5	3.1***	3.4	3.0***
Log Assets (t-1)	7.40	7.52***	7.8	7.4***	8.4	6.9***
Stock Returns (t-1)	0.50	0.12***	0.16	0.14**	0.16	0.15
Analyst Following (t-1)	88	79***	101	70***	114	58***
Analyst Following Ups (t-1)	19	15***	19	13***	23	10***
Analyst Following Downs (t-1)	11	14***	15	13***	22	10***
Log Delta (t-1)	4.41	3.99***	4.49	3.82***	4.8	3.7***
Total Compensation (t-1)	5046	4483***	5693	4002***	7097	3073***
Variable Compensation (t-1)	0.60	0.54***	0.58	0.52***	0.59	0.52***
Bonuses (t-1)	0.20	0.14***	0.13	0.15***	0.12	0.15***
Stocks (t-1)	0.08	0.13***	0.15	0.11***	0.18	0.10***
Options (t-1)	0.31	0.27***	0.30	0.26***	0.30	0.27***
CEO Age	55	56	55	56**	56	56
CEO Tenure	8.7	7.0***	6.8	7.3***	6.9	7.7***

Table 3. CEO Variable Compensation and Cheap Talk

The table reports estimation results for Hypothesis 1 of Chapter 2. Dependent variables are the three measures of cheap talk (stock splits, CEO voluntary EPS forecasts and firm media coverage). All independent variables are one year lagged variables except for CEO Age and CEO Tenure. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Cheap Talk	**Splits (1)**	**Splits (2)**	**Forecasts (3)**	**Forecasts (4)**	**Media (5)**	**Media (6)**
Variable Compensation (t-1)	**0.477*** (3.60)**	-	**0.122*** (2.86)**	-	**27.1*** (3.74)**	-
Log (Compensation Delta) (t-1)	-	**0.133*** (4.96)**	-	**0.045*** (5.95)**	-	**3.70*** (3.14)**
Age	-0.026*** (-3.43)	-0.031*** (-3.49)	-0.005** (-2.19)	-0.009*** (-3.08)	-0.406 (-0.96)	-0.629 (-1.28)
Tenure	0.038*** (4.92)	0.040*** (4.46)	0.001 (0.27)	0.000 (-0.05)	-0.005 (-0.01)	0.004 (0.01)
Leverage (t-1)	-0.000 (-0.39)	0.000 (-0.09)	0.000 (0.81)	0.000 (1.25)	-0.714*** (-3.44)	-0.693*** (-3.07)
Market-To-Book (t-1)	0.000 (0.17)	0.000 (-0.16)	0.000 (-0.50)	-0.000 (-0.94)	0.571*** (3.40)	0.548*** (3.01)
Log Assets (t-1)	0.064* (1.93)	0.022 (0.58)	0.038*** (3.35)	0.023* (1.78)	14.9*** (7.07)	15.7*** (6.56)
Returns (t-1)	0.522*** (11.58)	0.493*** (9.83)	0.019 (1.45)	0.008 (0.53)	-2.932 (-0.05)	-3.34 (-1.48)
Constant	-	-	-0.124 (-0.70)	0.003 (0.01)	45.36* (1.67)	43.16 (1.39)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES
No. Obs	13810	11029	26658	22745	15270	13391
R^2	-	-	0.14	0.14	0.11	0.11
Prob > chi2	0.000	0.000	-	-	-	-

Table 4. Cheap Talk and Analyst Following

The table reports estimation results of Hypothesis 2 of Chapter 2, using as dependent variables the total number of analysis following the firm (All) and changes (Ups or Downs) in the number of EPS estimates issued by analysts for a given firm in a given year. All independent variables are lagged one period. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10%(*), respectively.

Analyst Following	**Stock Splits**			**CEO Forecasts**			**Log (Media Coverage)**		
	Analyst # of Estimates			Analyst # of Estimates			Analyst # of Estimates		
	All (1)	Ups (2)	Downs (3)	All (1)	Ups (2)	Downs (3)	All (1)	Ups (2)	Downs (3)
Cheap Talk (t-1)	**6.28*** (5.67)**	**0.680* (1.91)**	**1.443*** (3.62)**	**0.678*** (3.72)**	**0.205*** (3.50)**	**-0.171*** (-2.60)**	**3.585*** (7.36)**	**0.700*** (3.65)**	**0.663*** (3.09)**
Leverage (t-1)	-0.010 (-1.03)	0.000 (0.00)	-0.004 (-1.18)	-0.009 (-1.05)	0.000 (-0.01)	-0.004 (-1.20)	-0.135*** (-2.94)	-0.011 (-0.61)	-0.067*** (-3.31)
Market-To-Book (t-1)	0.005 (0.43)	0.000 (0.08)	0.004* (1.08)	0.005 (0.46)	0.000 (0.08)	0.004 (1.12)	0.103*** (2.75)	0.008 (0.55)	0.055*** (3.34)
Log Assets (t-1)	5.97*** (17.94)	1.125*** (10.51)	1.612*** (13.46)	5.802*** (17.35)	1.084*** (10.08)	1.630*** (13.56)	3.925*** (7.21)	0.296 (1.38)	1.782*** (7.45)
Returns (t-1)	-0.849** (-2.07)	1.109*** (8.39)	-1.751*** (-11.84)	-0.547 (-1.34)	1.146*** (8.73)	-1.693*** (-11.53)	-1.075** (-2.40)	0.976*** (5.55)	-1.587*** (-8.07)
Constant	17.03*** (5.31)	-1.665 (-1.61)	-1.05 (-0.91)	17.80*** (5.55)	-1.560 (-1.51)	-0.927 (-0.80)	18.42*** (3.24)	4.68** (2.09)	-6.42*** (-2.57)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
No. Obs	30166	30166	30166	30166	30166	30166	13855	13855	13855
R^2	0.12	0.13	0.11	0.12	0.13	0.11	0.15	0.08	0.12

Table 5. The Effect of Cheap Talk on CEO Punishment

The table reports estimation results for Hypothesis 3 of Chapter 2. Dependent variables represent CEO Turnover and CEO total compensation (TC) for all three measures of cheap talk. All independent variables with sign (t-1) represent one year lagged values. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

CEO Punishment	**Stock Splits**		**CEO Forecasts**		**Log (Media Coverage)**	
	Turnover (1)	**TC** (2)	**Turnover** (1)	**TC** (2)	**Turnover** (1)	**TC** (2)
Cheap Talk (t-1)	-2.666*** (-5.32)	1108*** (3.99)	-0.053*** (-2.79)	108.9** (2.40)	0.075 (1.42)	18.99 (0.15)
CARs	**-26.812*** (-2.63)**	**67703*** (8.50)**	-	-	-	-
Cheap Talk *Returns (t-1)	-	-	**-0.051 (-1.30)**	**127.7* (1.73)**	**-0.017 (-0.21)**	**245** (2.18)**
Variable Compensation (t-1)	-0.874*** (-6.58)	-	-0.871*** (-6.70)	-	-1.058*** (-5.06)	-
Total Compensation (t-1)	-	0.076*** (10.33)	-	0.077*** (10.40)	-	-0.017** (-1.99)
Returns (t-1)	-0.121* (-1.91)	631.9*** (6.16)	-0.082 (-1.23)	644.24*** (5.91)	-0.055 (-0.14)	-650 (-0.15)
Leverage (t-1)	0.000 (0.15)	-0.509 (-0.30)	0.000 (0.11)	-0.545 (-0.32)	-0.002 (-0.46)	-16.00 (-1.43)
Market-To-Book (t-1)	-0.007** (-2.11)	1.092 (0.53)	-0.007** (-2.06)	1.177 (0.57)	0.000 (-0.11)	12.93 (1.42)
Log Assets (t-1)	0.070* (1.43)	275*** (3.38)	0.086*** (3.03)	245*** (2.98)	0.083 (1.62)	237* (1.77)
Age	-0.019* (-1.92)	-44.39* (-1.77)	-0.018* (-1.94)	-48.03* (-1.91)	-0.008 (-0.45)	27.01 (0.73)
Tenure	-0.376*** (-20.83)	94.4*** (3.87)	-0.389*** (-21.77)	100.8*** (4.13)	-0.357*** (-12.66)	59.33* (1.68)
Constant	-	3665** (2.35)	-	3813** (2.44)	-	-229 (-0.10)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES
No. Obs	9422	19180	9784	19180	3490	9048
R^2	-	0.09	-	0.08	-	0.02
Prob>chi2	0.000	-	0.000	-	0.000	-

Table 6. Components of CEO Variable Compensation and Cheap Talk

The table reports estimation results of testing the hypothesis 1 of Chapter 2 for breakdown of CEO variable compensation into bonuses, stocks and options. Dependent variables represent cheap talk proxies, as indicated. All independent variables with sign (t-1) represent one year lagged values. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Cheap Talk	Stock Splits	CEO Forecasts	Media Coverage
Bonuses (t-1)	1.195*** (5.54)	0.200*** (2.72)	19.0 (1.51)
Stocks (t-1)	0.624*** (3.01)	0.074 (1.20)	41.5*** (4.17)
Options (t-1)	0.360*** (2.56)	0.127*** (2.71)	21.5*** (2.65)
Age	-0.027*** (-3.52)	-0.005** (-2.21)	-0.397 (-0.94)
Tenure	0.038*** (4.91)	0.000 (0.20)	0.035 (0.08)
Leverage (t-1)	-0.000 (-0.45)	0.000 (0.80)	-0.719*** (-3.47)
Market-To-Book (t-1)	0.000 (0.26)	0.000 (-0.48)	0.575*** (3.42)
Log Assets (t-1)	0.064* (1.89)	0.040*** (3.48)	14.3*** (6.77)
Returns (t-1)	0.494 (10.97)	0.017 (1.29)	-2.766 (-1.34)
Constant	-	-0.126 (-0.71)	51.13* (1.88)
Firm Fixed Effects	YES	YES	YES
Year Dummies	YES	YES	YES
No. Obs	13810	26658	15270
R^2	-	0.14	0.11
Prob>chi2	0.000	-	-

Table 7. Components of Variable Compensation and CEO Turnover

The table reports estimation results of testing hypothesis 3 of Chapter 2 for breakdown of CEO variable compensation. Dependent variable represents CEO turnover for all three measures of cheap talk, as indicated. All independent variables with sign (t-1) represent one year lagged values. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

CEO Turnover	Stock Splits	CEO Forecasts	Log (Media Coverage)
Cheap Talk (t-1)	-2.658*** (-5.32)	-0.055*** (-2.87)	0.080 (1.44)
CARs (t-1)	-26.49** (-2.64)	-	-
Cheap Talk *Returns (t-1)	-	-0.048 (-1.23)	-0.055 (-0.70)
Bonuses (t-1)	-1.288*** (-4.92)	-1.257*** (-4.97)	-1.772*** (-4.25)
Stocks (t-1)	-0.242 (-1.28)	-0.225 (-1.21)	-0.334 (-1.15)
Options (t-1)	-1.083*** (-7.21)	-1.079*** (-7.40)	-1.281*** (-5.26)
Returns (t-1)	-0.097 (-1.52)	-0.063 (-0.95)	0.171 (0.44)
Leverage (t-1)	0.000 (0.18)	0.000 (0.15)	-0.004 (-0.79)
Market-To-Book (t-1)	-0.007** (-2.11)	-0.007** (-2.03)	0.001 (0.09)
Log Assets (t-1)	0.044 (1.51)	0.059** (2.06)	0.066 (1.25)
Age	-0.018* (-1.88)	-0.018* (-1.89)	-0.012 (-0.73)
Tenure	-0.369*** (-20.53)	-0.382*** (-21.44)	-0.340*** (-12.08)
Firm Fixed Effects	YES	YES	YES
Year Dummies	YES	YES	YES
No. Obs	9422	9784	3379
Prob>chi2	0.000	0.000	0.000

Table 8. CEO Incentives in Two Sample Periods

The table reports estimation results for hypothesis 1 of Chapter 2, where the sample is divided into two subsamples 1992-2001 and 2002-2011, respectively. Dependent variables represent the three cheap talk proxies, as indicated. CEO incentives is represented by their variable compensation and compensation deltas. All independent variables with sign (t-1) represent one year lagged values. T statistics are provided in parentheses. Stars indicate significance at levels1% (***), 5 %(**) and 10 %(*), respectively.

Cheap Talk	**1992-2001**				**2002-2011**			
	Stock Splits		**CEO Forecasts**		**Stock Splits**		**CEO Forecasts**	
Variable Compensation (t-1)	**0.406** (2.24)**	-	**-0.014 (-0.35)**	-	**0.066 (0.29)**	-	**0.036 (0.61)**	-
Compensation Delta (t-1)	-	**0.005 (0.13)**		**0.017*** (2.67)**	-	**0.063 (1.48)**	-	**0.021* (1.83)**
Age	-0.025** (-2.02)	-0.028** (-1.96)	0.004 (1.53)	0.004 (1.29)	-0.012 (-0.72)	-0.025 (-1.21)	-0.006* (-1.40)	-0.007 (-1.56)
Tenure	0.031*** (2.45)	0.028** (1.97)	-0.009*** (3.34)	-0.011*** (-3.61)	0.020 (1.24)	0.026 (1.26)	0.006 (1.56)	0.005 (1.12)
Leverage (t-1)	-0.004 (-0.75)	-0.002 (-0.28)	0.000 (-0.33)	0.000 (0.30)	-0.009 (-1.47)	-0.008 (-1.28)	-0.001 (-0.62)	0.000 (-0.04)
Market-To-Book (t-1)	0.005 (0.58)	0.007 (0.64)	0.003*** (2.49)	0.006*** (3.39)	0.036** (2.43)	0.031** (2.02)	0.001 (0.55)	0.000 (-0.05)
Log Assets (t-1)	0.110*** (2.45)	0.121** (2.28)	0.010 (0.98)	0.003 (0.26)	0.087 (1.29)	0.092 (1.22)	-0.003 (-0.20)	-0.010 (-0.52)
Returns (t-1)	0.823*** (11.26)	0.893*** (10.23)	0.051*** (3.58)	0.049*** (2.75)	0.117*** (2.73)	0.128*** (2.48)	-0.003*** (-0.16)	-0.015 (-0.80)
Constant	-	-	-0.234 (-1.29)	-0.249 (-1.11)	-	-	0.092 (0.31)	0.075 (0.25)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES
No. Obs	5014	3820	11142	9010	4130	3394	15516	13735
R^2	-	-	0.13	0.15	-	-	0.02	0.02
Prob>chi2	0.000	0.000	-		0.000	0.000	-	-

Table 9. Average Proportion of Trades in Total Trading Volume Around EPS Forecast Dates

Trade Proportions	Small Investors			Medium Investors			Large Investors		
	All	Buys	Sells	All	Buys	Sells	All	Buys	Sells
2002	0.15	0.08	0.07	0.36	0.19	0.17	0.47	0.25	0.21
2003	0.19	0.10	0.09	0.38	0.20	0.17	0.41	0.22	0.19
2004	0.22	0.11	0.10	0.38	0.21	0.17	0.37	0.21	0.17
2005	0.21	0.11	0.10	0.39	0.21	0.18	0.37	0.20	0.17
2006	0.24	0.12	0.12	0.41	0.22	0.20	0.31	0.17	0.15
2007	0.36	0.18	0.18	0.39	0.20	0.19	0.20	0.11	0.09
2008	0.54	0.27	0.27	0.29	0.15	0.14	0.13	0.06	0.07
2009	0.56	0.28	0.28	0.27	0.14	0.14	0.12	0.06	0.06
2010	0.48	0.24	0.24	0.33	0.17	0.16	0.13	0.06	0.07
Average	**0.30**	**0.15**	**0.15**	**0.36**	**0.19**	**0.17**	**0.3**	**0.16**	**0.14**

Table 10. CEO Forecast Errors Across Years

The Table presents the difference between CEO forecasts and other EPS forecasts issued by analysts, CEOs themselves previous to the current ones and the actual year-end GAAP earnings.

Forecast Errors	FE-Analyst	FE-Actual	FE-Forecast
2002	-0.003	0.023	-0.003
2003	-0.003	0.027	-0.002
2004	-0.001	0.010	-0.001
2005	-0.001	0.006	-0.001
2006	-0.001	0.004	-0.001
2007	-0.002	0.009	-0.002
2008	-0.003	0.052	-0.003
2009	-0.001	0.019	-0.002
2010	-0.001	-0.003	0.001
Average	**-0.002**	**0.017**	**-0.002**

Table 11. Descriptive Statistics of Variables from Chapter 4

Descriptive Statistics	Mean	St. Dev	Min	Max
Small NABs (cumulative)	0.03	0.26	-1.42	6.18
Medium NABs (cumulative)	0.06	0.31	-1.20	2.90
Large NABs (cumulative)	0.06	0.712	-7.50	5.82
Small NABs_(-1)	0.00	0.07	-0.61	0.57
Small NABs_(0)	0.01	0.15	-0.64	3.86
Small NABs_(1)	0.01	0.13	-1.09	1.97
Med NABs_(-1)	0.01	0.12	-0.95	1.84
Med NABs_(0)	0.03	0.16	-0.81	1.61
Med NABs_(1)	0.03	0.16	-0.91	1.89
Large NABs (-1)	0.00	0.22	-1.49	1.88
Large NABs (0)	0.04	0.38	-2.52	3.95
Large NABs_(1)	0.02	0.50	-7.68	5.67
Small trades	0.30	0.23	0.00	0.89
Medium trades	0.36	0.14	0.05	0.95
Large trades	0.30	0.20	0.00	0.87
FE Forecast	0.00	0.01	-0.23	0.14
FE Analysts	0.00	0.01	-0.15	0.03
FE Actual	0.02	0.08	-0.32	1.21
Compensation Delta (thsnd)	335	906	0.00	19614
Vested Stocks & Exercisable options (ratio)	2.55	6.41	0.00	121
Returns	0.09	0.48	-0.93	4.49
Return Volatility	0.38	0.16	0.11	1.39
Leverage	2.5	19.7	-146	602
Market-to-Book	3.3	12.4	-78.5	369
Total Assets ($ Mln)	17.1	66.9	0.026	798

Table 12a. Net Abnormal Buys of Different Investor Categories Around CEO EPS Forecast Dates

The table reports estimation results for hypotheses 1 and 2 of Chapter 3. Dependent variable represents Net Abnormal Buys around CEO EPS forecasts for each investor category in three different columns. Main control variables are forecast errors and the interaction terms between CEO compensation delta and forecast errors. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Net Abnormal Buying (NAB)	**Small Investors**	**Medium Investors**	**Large Investors**
Model 1: $Nab_{i,t} = a + \beta_1 * FE\_Analyst_{i,t} + \beta_2 * Comp_{i,t-1} + \beta_3 * FE\_Analyst_{i,t} * Comp_{i,t-1} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t}$			
FE-Analyst	**5.221****	**11.558*****	**7.294**
	(2.33)	**(3.46)**	**(0.86)**
Log (Compensation-Delta)	-0.001	0.012*	0.004
	(-0.10)	(1.75)	(0.22)
*FE-Analyst*Log (Comp-Delta)*	**-1.149****	**-2.247*****	**-1.836**
	(-2.44)	**(-3.21)**	**(-1.03)**
Market Volume	0.000	-0.000	0.000
	(0.15)	(-0.03)	(0.37)
Log Assets	-0.012**	-0.025***	-0.040**
	(-2.42)	(-3.31)	(-2.07)
Market-To-Book	-0.002	-0.008**	-0.006
	(-0.93)	(-2.03)	(-0.57)
Leverage	0.002	0.004	0.005
	(0.77)	(1.20)	(0.65)
Returns	0.040**	0.040	0.116
	(1.99)	(1.32)	(1.51)
Volatility of Returns	-0.164***	-0.242***	0.009
	(-3.31)	(-3.28)	(0.05)
Constant	0.238**	0.627***	0.302
	(2.12)	(3.75)	(0.71)
Year Dummies	YES	YES	YES
Industry Dummies	YES	YES	YES
No Obs	674	674	673
Adj. R^2.	0.012	0.037	0.011
Model 2: $Nab_{i,t} = a + \beta_1 * FE\_Actual_{i,t} + \beta_2 * Comp_{i,t-1} + \beta_3 * FE\_Actual_{i,t} * Comp_{i,t-1} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t}$			
FE-Actual	**-0.105**	**-0.986*****	**-2.235*****
	(-0.46)	**(-2.89)**	**(-2.82)**
Log(Compensation-Delta)	0.002	0.009	0.001
	(0.37)	(1.24)	(0.02)
*FE-Actual*Log(Comp-Delta)*	**0.011**	**0.185****	**0.428****
	(0.23)	**(2.53)**	**(2.52)**
Market Volume	0.000	0.000	0.000
	(0.28)	(0.25)	(0.99)
Log Assets	-0.008	-0.023***	-0.023
	(-1.55)	(-2.85)	(-1.23)
Market-To-Book	-0.002	-0.008**	-0.005
	(-0.88)	(-2.05)	(-0.56)
Leverage	0.001	0.003	0.007
	(0.34)	(0.89)	(0.77)
Returns	0.046**	0.060*	0.086
	(2.17)	(1.90)	(1.17)
Volatility of Returns	-0.106**	-0.183**	0.016
	(-2.04)	(-2.33)	(0.09)
Volatility	0.142	0.515***	0.253
	(1.21)	(2.92)	(0.62)

Year Dummies	YES	YES	YES
Industry Dummies	YES	YES	YES
No Obs	698	698	696
Adj. R^2.	0.003	0.024	0.027
Model 3: $Nab_{i,t} = a + \beta_1 * FE\_Forecast_{i,t} + \beta_2 * Comp_{i,t-1} + \beta_3 * FE\_Firecast_{i,t} * Comp_{i,t-1} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t}$			
FE-Forecast	**3.376****	**1.100**	**7.144**
	(2.46)	**(0.56)**	**(1.42)**
Log(Compensation-Delta)	0.001	0.014**	0.010
	(0.24)	(2.20)	(0.59)
*FE-Forecast*Log(Comp-Delta)*	**-0.679****	**-0.150**	**-1.800**
	(-2.24)	**(-0.35)**	**(-1.62)**
Market Volume	0.000	0.000	0.000
	(0.11)	(0.06)	(1.00)
Log Assets	-0.008	-0.019***	-0.036*
	(-1.57)	(-2.49)	(-1.85)
Market-To-Book	-0.003	-0.008**	-0.004
	(-1.06)	(2.10)	(-0.37)
Leverage	0.002	0.004	0.003
	(0.67)	(1.18)	(0.41)
Returns	0.031	0.052*	0.066
	(1.55)	(1.80)	(0.90)
Volatility of Returns	-0.102**	-0.170**	0.021
	(-1.98)	(-2.32)	(0.11)
Constant	0.136	0.342**	-0.054
	(1.19)	(2.11)	(-0.13)
Year Dummies	YES	YES	YES
Industry Dummies	YES	YES	YES
No Obs	662	662	661
Adj. R^2.	0.00	0.015	0.012

Table 12b. Short Term Incentives and NABs around CEO EPS Forecast Dates

The table reports estimation results for CEO short term incentives from Chapter 3. Dependent variable represents Net Abnormal Buys around CEO EPS forecasts for each investor category in three different columns. Main control variables are forecast errors and the interaction terms between CEO short term incentives and forecast errors. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Net Abnormal Buying (NAB)	Small Investors	Medium Investors	Large Investors
Model 1: $Nab_{i,t} = a + \beta_1 * FE\_Analyst_{i,t} + \beta_2 * Comp_{i,t-1} + \beta_3 * FE\_Analyst_{i,t} * Comp_{i,t-1} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t}$			
FE-Analyst	**0.185**	**1.585**	**0.443**
	(0.17)	**(0.96)**	**(0.10)**
Vested-Stocks&Exercisable-Options	-0.002	-0.010***	-0.019***
	(-0.42)	(-4.72)	(-3.33)
FE-Analyst Vested-Stocks&Exercisable-Options*	**-0.753**	**-1.369***	**-4.273****
	(-1.53)	**(-1.84)**	**(-2.20)**
Market Volume	0.000	0.000	-0.000
	(1.42)	(0.15)	(-0.42)
Log Assets	-0.012***	-0.017***	-0.048***
	(-2.69)	(-2.58)	(-2.71)
Market-To-Book	-0.003	-0.006	-0.005
	(-1.20)	(-1.58)	(-0.55)
Leverage	0.003	0.004	0.010
	(1.06)	(0.99)	(0.87)
Returns	0.018	0.029	0.115
	(0.89)	(0.95)	(1.44)
Volatility of Returns	-0.107**	-0.212***	-0.165
	(-2.28)	(-2.98)	(-0.89)
Constant	0.157	0.549***	0.693
	(1.36)	(3.17)	(1.60)
Year Dummies	YES	YES	YES
Industry Dummies	YES	YES	YES
No Obs	674	674	673
Adj. R^2.	-0.001	0.043	0.041
Model 2: $Nab_{i,t} = a + \beta_1 * FE\_Actual_{i,t} + \beta_2 * Comp_{i,t-1} + \beta_3 * FE\_Actual_{i,t} * Comp_{i,t-1} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t}$			
FE-Actual	**-0.114**	**-0.009**	**0.025**
	(-1.35)	**(-0.07)**	**(0.08)**
Vested-Stocks&Exercisable-Options	-0.000	-0.005	-0.012
	(-0.02)	(-1.50)	(-1.54)
FE-Actual Vested-Stocks&Exercisable-Options*	**-0.038**	**-0.204*****	**-0.172**
	(-0.85)	**(-3.04)**	**(-0.98)**
Market Volume	0.000*	0.000	-0.000
	(1.71)	(0.50)	(-0.01)
Log Assets	-0.008	-0.018**	-0.044**
	(-1.63)	(-1.54)	(-2.31)
Market-To-Book	-0.003	-0.009**	-0.012
	(-1.20)	(-2.33)	(-1.17)
Leverage	0.002	0.009	0.024*
	(0.60)	(1.64)	(1.65)
Returns	0.009	0.023	0.083
	(0.45)	(0.75)	(1.02)
Volatility of Returns	-0.010	-0.147**	-0.213
	(-0.21)	(-1.97)	(-1.09)
Constant	0.009	0.338**	0.445
	(0.07)	(1.96)	(0.99)

Year Dummies	YES	YES	YES
Industry Dummies	YES	YES	YES
No Obs	703	703	700
Adj. R^2.	-0.001	0.036	0.030
Model 3: $Nab_{i,t} = a + \beta_1 * FE\_Forecast_{i,t} + \beta_2 * Comp_{i,t-1} + \beta_3 * FE\_Forecast_{i,t} * Comp_{i,t-1} + \sum \beta_j * X_{i,t} + \varepsilon_{i,t}$			
FE-Forecast	**0.969** **(1.36)**	**0.080** **(0.08)**	**3.573** **(1.30)**
Vested-Stocks &Exercisable-Options	-0.003* (-1.74)	-0.010*** (-4.56)	-0.024*** (-3.97)
FE-Forecast Vested-Stocks&Exercisable-Options*	**-0.417** **(-1.32)**	**-0.394** **(-0.87)**	**-4.104***** **(-3.39)**
Market Volume	0.000 (1.30)	0.000 (0.33)	0.000 (0.29)
Log Assets	-0.009* (-1.90)	-0.001 (-1.48)	-0.040** (-2.24)
Market-To-Book	-0.003 (-1.20)	-0.006 (-1.61)	-0.003 (-0.29)
Leverage	0.004 (1.40)	0.006 (1.41)	0.009 (0.79)
Returns	0.007 (0.33)	0.026 (0.89)	0.105 (1.37)
Volatility of Returns	-0.039 (-0.81)	-0.112 (-1.61)	-0.171 (-0.92)
Constant	0.063 (0.55)	0.238 (1.44)	0.596 (1.35)
Year Dummies	YES	YES	YES
Industry Dummies	YES	YES	YES
No Obs	664	664	663
Adj. R^2.	-0.007	0.029	0.045

Table 13. Forecasted Error Sizes and Firm Investor Base

The table reports estimation results for hypothesis 3 of Chapter 3. Dependent variable represents different forecast errors. Main control variables are proportions of investor trade proportions (small/medium/large) in the total trading volume around the announcement days. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Variables	FE-Analyst			FE-Actual			FE-Forecast		
Small Trades	**0.004**	-	-	**0.009**	-	-	**0.014****	-	-
	(0.80)			**(0.17)**			**(2.18)**		
Medium Trades	-	**0.003**	-	-	**-0.057**	-	-	**0.018***	-
		(0.38)			**(-0.70)**			**(1.80)**	
Large Trades	-	-	**-0.007**	-	-	**0.010**	-	-	**-0.033*****
			(-1.24)			**(0.15)**			**(-3.97)**
Log Delta	-0.000	-0.000	-0.000	-0.004	-0.006	-0.002	0.000	0.001	-0.001***
	(-0.52)	(-0.73)	(-0.63)	(-0.89)	(-0.91)	(-0.54)	(0.61)	(0.66)	(-2.59)
Log Delta*Small Trades	**0.000**	-	-	**0.002**	-	-	**-0.001**	-	-
	(0.01)			**(0.15)**			**(-1.24)**		
Log Delta*Med Trades	-	**0.003**	-	-	**0.007**	-	-	**-0.002**	-
		(0.24)			**(0.48)**			**(-1.20)**	
Log Delta*Large Trades	-	-	**-0.000**	-	-	**-0.004**	-	-	**0.004*****
			(-0.04)			**(-0.30)**			**(2.57)**
Market Volume	0.000**	0.000*	0.000**	-0.000**	-0.000	-0.000	0.000***	0.000**	0.000***
	(2.47)	(1.92)	(2.46)	(-1.04)	(-1.09)	(-1.18)	(2.80)	(2.16)	(2.80)
Log Assets	0.000	-0.000	0.000	0.007**	0.006**	0.006*	0.000	-0.000	0.001
	(0.33)	(-0.36)	(1.06)	(2.04)	(1.98)	(1.93)	(0.60)	(-0.46)	(1.49)
Market-To-Book	0.000	0.000	0.000*	-0.001	-0.001	-0.001	0.000	0.000	0.000*
	(1.62)	(1.20)	(1.77)	(-0.46)	(-0.54)	(-0.53)	(1.61)	(1.14)	(1.80)
Leverage	-0.000	-0.000	-0.000	0.002	0.002*	0.002*	-0.000	-0.000	-0.000
	(-1.45)	(-1.18)	(-1.62)	(1.62)	(1.66)	(1.67)	(-0.48)	(-0.18)	(-0.78)
Returns	0.007***	0.006***	0.006***	-0.071***	-0.070***	-0.071***	0.008***	0.008***	0.008***
	(7.13)	(6.87)	(6.87)	(-6.45)	(-6.34)	(-6.46)	(6.27)	(5.83)	(5.86)
Volatility-Of-Returns	-0.008***	-0.007***	-0.008***	0.110***	0.108***	0.112***	-0.009***	-0.006*	-0.009**
	(-3.49)	(-2.90)	(-3.30)	(3.91)	(3.86)	(4.05)	(-2.62)	(-1.71)	(-2.49)
Constant	-0.002	0.0001	0.001	-0.050	-0.022	-0.042	-0.013	-0.010	0.001
	(-0.34)	(0.10)	(0.22)	(-0.72)	(-0.31)	(-0.65)	(-1.51)	(-1.16)	(0.06)
No Obs.	674	674	674	698	698	698	662	662	662
Adj. R2	0.10	0.10	0.11	0.12	0.12	0.12	0.08	0.08	0.11
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 14 . Test of Mean Differences in Matched Pairs of Forecasting and Non-Forecasting Firms

The table reports mean values of several variables for firms announcing EPS forecasts in a given year, and compare them to the mean values of the matched non-announcing firms in the same year. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Descriptive Statistics	Mean Forecasting Firm	Mean Matching Firm	T- Stat. of the Difference
Small NABs	0.05	-0.01	2.18**
Medium NABs	0.06	0.01	3.12***
Large NABs	0.07	-0.02	1.79*
Small trades (Event Days)	0.39	0.43	-2.19**
Medium trades (Event Days)	0.34	0.35	-1.03
Large trades (Event Days)	0.24	0.18	3.83***
Small trades (Non- Event Days)	0.41	0.42	-0.90
Medium trades (Non- Event Days)	0.34	0.34	-0.45
Large trades (Non- Event Days)	0.21	0.20	1.30
Compensation Delta	365	263	1.96**
Vested Stocks & Exercisable options	2.01	2.10	-0.24
Returns	0.07	0.09	0.75
Leverage	1.96	1.89	0.50
Market-to-Book	3.17	3.19	-0.12
Total Assets (mln)	11.4	10.2	0.88
Return Volatility	0.37	0.37	0.04

Table 15 . Probability of CEO EPS Forecasts and Firm Investor Base

The table reports estimation results for hypothesis 3 of Chapter 3. Dependent variable represents a dummy variable, for which 1 signifies that the firm has issued a forecast. Main control variables are proportions of investor trade sizes (small/medium/large) in the total trading volume two weeks before the announcement days. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Probability of Forecast	**Small Investors**	**Medium Investors**	**Large Investors**
Trade Proportions	**1.162***	**-1.145***	**-0.508**
	(1.86)	**(-1.74)**	**(-0.54)**
Log (Compensation-Delta)	0.068	0.066	0.072
	(0.86)	(0.84)	(0.86)
Log Assets	0.297***	0.242***	0.235**
	(3.00)	(2.68)	(2.48)
Market-To-Book	0.023	0.015	0.001
	(0.59)	(0.40)	(0.04)
Leverage	-0.053	-0.047	-0.040
	(-1.36)	(-1.22)	(-1.06)
Returns	-0.174	-0.147	-0.156
	(-0.77)	(-0.66)	(-0.70)
Volatility of Returns	1.468*	1.394*	1.599**
	(1.89)	(1.80)	(2.08)
Constant	-3.594***	-2.145**	-2.391***
	(-3.24)	(-2.50)	(-2.74)
Year Dummies	YES	YES	YES
Industry Dummies	YES	YES	YES
No Obs	517	517	517
Pseudo R^2.	0.03	0.03	0.02

Table 16. Cumulative Net Abnormal Buys Around 3 Days of Split Announcements

NABs	N	Small Investors	Medium Investors	Large Investors
1993	51	0.039	0.109	-0.278
1994	58	0.023	0.142	0.304
1995	59	0.020	0.069	-0.086
1996	83	0.020	0.247	-0.080
1997	100	0.022	0.122	0.096
1998	86	0.022	0.221	-0.020
1999	91	0.029	0.186	0.007
2000	76	0.012	0.092	-0.109
2001	26	0.017	0.084	0.154
2002	27	0.014	0.016	0.084
2003	19	0.042	0.115	0.045
2004	28	-0.041	0.008	-0.015
2005	38	0.013	0.027	0.007
2006	18	0.073	0.145	-0.061
2007	13	-0.053	0.105	0.009
2008	4	-0.099	0.023	-0.026
2009	2	-0.210	0.106	-0.094
2010	8	-0.024	0.015	0.062
2011	3	0.062	0.226	0.372
Average	**790**	**0.019**	**0.132**	**0.003**

Table 17. Trade Proportions of Different Investors Around Split Announcement Dates

Share in Total	N	Small Investors			Medium Investors			Large Investors		
		All	Buys	Sells	All	Buys	Sells	All	Buys	Sells
1993	51	0.029	0.020	0.008	0.234	0.133	0.101	0.667	0.332	0.335
1994	58	0.031	0.019	0.012	0.289	0.164	0.125	0.607	0.337	0.269
1995	59	0.028	0.017	0.011	0.266	0.150	0.116	0.641	0.316	0.325
1996	83	0.020	0.014	0.007	0.260	0.155	0.105	0.638	0.313	0.325
1997	100	0.019	0.012	0.006	0.234	0.129	0.105	0.689	0.363	0.326
1998	86	0.021	0.013	0.008	0.288	0.161	0.127	0.651	0.328	0.324
1999	91	0.024	0.013	0.011	0.253	0.138	0.116	0.695	0.356	0.338
2000	76	0.031	0.016	0.015	0.269	0.145	0.124	0.683	0.357	0.326
2001	26	0.074	0.042	0.033	0.323	0.180	0.143	0.591	0.320	0.270
2002	27	0.113	0.063	0.050	0.387	0.205	0.182	0.492	0.273	0.219
2003	19	0.216	0.120	0.096	0.451	0.258	0.193	0.317	0.179	0.137
2004	28	0.177	0.086	0.091	0.436	0.238	0.198	0.371	0.207	0.164
2005	38	0.242	0.127	0.115	0.478	0.256	0.221	0.267	0.146	0.121
2006	18	0.229	0.122	0.106	0.499	0.267	0.232	0.257	0.124	0.133
2007	13	0.279	0.139	0.140	0.526	0.275	0.251	0.177	0.095	0.082
2008	4	0.290	0.134	0.156	0.551	0.271	280	0.152	0.087	0.066
2009	2	0.309	0.147	0.162	0.541	0.282	0.259	0.149	0.070	0.079
2010	8	0.393	0.193	0.200	0.436	0.221	0.215	0.151	0.084	0.067
2011	3	0.308	0.155	0.153	0.428	0.226	0.202	0.212	0.116	0.096
Average	**790**	**0.065**	**0.036**	**0.030**	**0.303**	**0.167**	**0.135**	**0.588**	**0.304**	**0.284**

Table 18. Descriptive Statistics of Variables from Chapter 4

	N	Mean	Min	Max	St. Dev.
Small - NABs	790	0.019	-0.48	1.28	0.106
Medium -NABs	790	0.132	-1.44	8.38	0.524
Large - NABs	790	0.003	-8.70	6.63	0.932
Small Trades	790	0.065	0.00	0.711	0.129
Medium Trades	790	0.303	0.010	0.931	0.189
Large Trades	790	0.588	0.00	0.966	0.234
Total Assets (mln)	782	9.256	0.016	715	38.1
Illiquidity (Amihud, *mln)	786	0.012	0.000	0.472	0.031
CARs Around Splits	791	0.014	-0.184	0.263	0.051
Volatility of Returns	786	0.507	0.119	1.635	0.266
Returns	786	1.029	-0.373	5.824	0.862
Market-to-Book	774	5.93	0.842	122	5.92

Table 19. Net Abnormal Buys Around Stock Splits Across Investor Categories

Dependent variable represents Net Abnormal Buys around stock split announcements for each investor category in three different columns. Main control variables are the sizes of stock splits. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

NABs	Small Investors			Medium Investors			Large Investors		
Large Splits	**-0.003 (-0.22)**	**-0.003 (-0.19)**	**-0.005 (-0.33)**	**0.129 (1.56)**	**0.161* (1.86)**	**0.173** (2.01)**	**0.316** (2.15)**	**0.356** (2.31)**	**0.378** (2.39)**
Small Splits	**0.008 (1.18)**	**0.005 (0.66)**	**-0.001 (-0.15)**	**0.009 (0.22)**	**0.009 (0.19)**	**-0.072* (1.65)**	**0.058 (0.82)**	**0.012 (0.16)**	**0.033 (0.41)**
Illiquidity (Amihud)	-	-	0.41*** (2.91)	-	-	4.40*** (5.63)	-	-	-2.26 (-1.57)
Returns	-	-	-0.011 (-1.55)	-	-	-0.071* (-1.81)	-	-	0.043 (0.60)
Return Volatility	-	-	0.024 (0.91)	-	-	0.115 (0.76)	-	-	-0.036 (-0.13)
Log Assets	-	-	-0.003 (-1.10)	-	-	-0.037*** (-2.47)	-	-	0.003 (0.09)
Market-to-Book	-	-	0.000 (0.04)	-	-	-0.002 (-0.81)	-	-	-0.008 (-1.52)
Constant	0.13*** (3.21)	0.047 (0.86)	-0.222*** (-3.20)	0.129 (1.56)	0.012 (0.04)	0.425 (1.25)	-0.036 (-0.83)	-0.103 (-0.18)	0.401 (0.64)
No Obs.	790	781	766	792	783	768	791	782	767
Adj. R2	0.002	0.061	0.088	0.003	0.033	0.109	0.004	0.033	0.004
Year Dummies	NO	YES	YES	NO	YES	YES	NO	YES	YES
Industry Dummies	NO	YES	YES	NO	YES	YES	NO	YES	YES

Table 20. Split Size and Firm's Investor Base

Dependent variable represents the sizes of stock splits. Main control variables are proportions of investor trade sizes (small/medium/large) in the total trading volume around the announcement days. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Split Factor (Split Size)	Large Investors	Medium Investors	Small Investors	ALL
Large Trades (non-event)	**0.422*** (3.19)**	-	-	**0.284** (2.02)**
Medium Trades (non-event)	-	**0.053 (0.39)**		-
Small Trades (non-event)	-	-	**-0.734*** (-3.77)**	**-0.589*** (-2.84)**
Illiquidity (Amihud)	-0.175 (-0.24)	-0.820 (-1.11)	-0.554 (-0.77)	-0.20 (-0.27)
Returns	0.071** (1.98)	0.081** (2.25)	0.063* (1.76)	0.060* (1.68)
Return Volatility	-0.247* (-1.79)	-0.255* (-1.84)	-0.231* (-1.68)	-0.231* (-1.68)
Log Assets	0.024 (1.63)	0.042*** (2.90)	0.028** (2.04)	0.020 (1.35)
Market-to-Book	0.008*** (3.07)	0.009*** (3.38)	0.008*** (3.21)	0.008*** (3.04)
Constant	0.528* (1.70)	0.458 (1.42)	0.839*** (2.61)	0.795** (2.47)
No Obs.	768	768	768	768
Adj. R2	0.08	0.06	0.08	0.08
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES

Table 21. Test of Mean Differences in Matched Pairs

The table reports mean values of several variables for firms announcing stock splits in a given year, and compare them to the mean values of the matched non-announcing firms in the same year. Stars indicate significance at levels 1% (***), 5 %(**) and 10%(*), respectively.

	N	Split announcing firms	Matching firms	
		Mean	Mean	t-Stat
Small - NABs (3)	421	0.016	-0.015	2.92***
Medium -NABs (3)	421	0.123	0.036	2.65***
Large - NABs(3)	421	0.001	0.000	0.012
Small Trades	421	0.079	0.141	-8.82***
Medium Trades	421	0.318	0.322	-0.33
Large Trades	421	0.566	0.484	7.06***
Illiquidity (Amihud, *mln)	413	0.010	0.028	-2.86***
CARs Around Splits (3)	411	0.016	0.003	3.85***
Total Assets	421	7156	6671	2.12**
Returns	414	1.107	0.569	11.52***
Volatility of Returns	414	0.536	0.542	0.72
Market-to-Book	411	5.91	3.55	7.39***

Table 22. Mean Differences in Daily NABs Across Matched Pairs

The table reports mean values of daily net abnormal buys for firms announcing stock splits and compare them to the mean values of the matched non-announcing firms on the same days. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

	Splitting Firms	Matching Firms	t-stats
Small-NAB(-1)	-0.002	-0.004	0.70
Small-NAB(0)	0.011	-0.001	2.39**
Small-NAB(1)	0.009	-0.010	2.82***
Medium-NAB(-1)	0.014	0.005	0.73
Medium-NAB(0)	0.073	0.002	4.52***
Medium-NAB(1)	0.036	0.029	0.38
Large-NAB(-1)	-0.011	0.018	-0.85
Large-NAB(0)	0.013	-0.012	0.65
Large-NAB(1)	-0.001	-0.006	0.15

Table 23. NABs of Different Investors to Split Announcements

Dependent variable represents Net Abnormal Buys around stock split announcements for each investor category in three different columns. Important feature of this test is that the sample represents one to one matched splitting and matching firms. Main control variable is the dummy variable standing for splitting firms. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Variables	Small Investors			Medium Investors			Large Investors		
Splitting	**0.019*** (2.72)**	**0.019*** (2.83)**	**0.019** (2.43)**	**0.087*** (2.63)**	**0.087*** (2.62)**	**0.078** (2.09)**	**-0.026 (-0.38)**	**-0.026 (-0.38)**	**-0.027 (-0.35)**
Illiquidity (Amihud)	-	-	0.100 (1.11)	-	-	-0.206 (-1.05)	-	-	0.814** (2.03)
Returns	-	-	0.002 (0.31)	-	-	0.018 (0.63)	-	-	0.000 (0.00)
Return Volatility	-	-	-0.027 (-1.14)	-	-	-0.026 (-0.23)	-	-	0.187 (0.81)
Log Assets	-	-	-0.003 (-1.03)	-	-	-0.038*** (-2.54)	-	-	0.032 (1.04)
Market-to-Book	-	-	0.000 (0.09)	-	-	-0.002 (-0.57)	-	-	0.000 (0.06)
Constant	-0.006 (-1.07)	-0.173*** (-3.27)	-0.098 (-1.49)	0.036 (1.51)	-0.100 (-0.39)	0.148 (0.52)	0.027 (0.56)	0.144 (0.27)	-0.177 (-0.30)
No Obs.	837	837	821	842	842	826	841	841	825
Adj. R2	0.008	0.070	0.068	0.008	0.004	0.007	-0.001	-0.001	0.015
Year Dummies	NO	YES	YES	NO	YES	YES	NO	YES	YES
Industry Dummies	NO	YES	YES	NO	YES	YES	NO	YES	YES

Table 24. Probability of Splits and Firm Investor Base

Dependent variable represents a dummy variable, for which 1 signifies that the firm has announced a stock split. Main control variables are proportions of investor trade sizes (small/medium/large) in the total trading volume two weeks before the announcement days. T statistics are provided in parentheses. Stars indicate significance at levels 1% (***), 5 %(**) and 10 %(*), respectively.

Probability of Stock Splits	Small Investors	Medium Investors	Large Investors	ALL
Small Trades (non-event)	**-3.318*** (-3.75)**	-	-	**-2.693*** (-2.82)**
Medium Trades (non-event)	-	**0.630 (1.04)**	-	-
Large Trades (non-event)	-	-	**1.874*** (3.13)**	**1.082 (1.62)**
Illiquidity (Amihud)	-0.000*** (-2.83)	0.000 (-3.19)	-9.242*** (-2.56)	-9.386*** (-2.57)
Returns	1.550*** (8.49)	1.684*** (9.37)	1.624*** (8.88)	1.540*** (8.39)
Return Volatility	-4.056*** (-6.51)	-4.208*** (-6.85)	-4.086*** (-6.54)	-4.027*** (-6.42)
Log Assets	-0.264*** (-3.26)	-0.179** (-2.26)	-0.269*** (-3.27)	-0.297*** (-3.53)
Market-to-Book	0.115*** (4.33)	0.124*** (4.59)	0.107*** (4.00)	0.108*** (4.06)
Constant	3.559** (2.36)	1.377 (0.98)	1.899 (1.4)	3.321** (2.23)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
No Obs	826	826	826	826
Pseudo R^2.	0.20	0.19	0.19	0.20