

**Empirical evidence on the consequences of voluntary disclosure on competition**

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## **Abstract**

This paper examines if investors use disclosures on competition together with earnings information. I examine the impact of annual 10-K disclosures on competitors on the future earnings response coefficients of the US listed firms. The sample covers 19,692 US listed firms that file annual 10-K documents and report earnings for fiscal years 1996-2009. I find that competition disclosures can help investors to interpret future earnings information. In specific, the positive relation between returns and future earnings is attenuated if there is more disclosures on competition risk in the 10-K filing. This effect is emphasized in larger firms, loss firms, and in certain industries (sic codes 3, 4 and 5) whereas in the financial services industry (sic code = 6) disclosures on competition amplify investors' reactions to future earnings. Moreover, the results are more prevalent in the post-SOXLEY era. Collectively, the results suggest that disclosures on competition are related to the firms' competitor risk and investors consider these disclosures as risk increasing which smoothens their reactions to earnings signals. This paper contributes to corporate governance literature by demonstrating how *firm self-governance* (as measured by voluntary disclosures on competition) can influence investors' decision making in the capital markets.

**Keywords:** *Risk reporting, Self-governance, Returns, Earnings, Response, Competition*

JEL classification: M41, M48

## **1. Introduction**

The extant literature demonstrates that investors to some extent react to earnings information although the explanatory power of these models is relatively low (e.g., Lev, 1989; Ou and Penman, 1989; Easton and Harris, 1991). Nowadays firms provide a lot of qualitative information in their annual reports, websites, and conference calls. Also analysts and business press add to the information flow available in the capital markets. Prior studies show that also this type of information can be useful to investors (e.g., Abrahamson and Amir, 1996; Tetlock, 2007; Tetlock, 2008; Kothari, 2009).

One important information item to investors is risk reporting. Risk disclosure has peculiar characteristics compared to other narrative disclosure items because it impacts both the numerator and denominator of the simple discounted cash flow model. Hence, it can impact firm value either by reducing information risk (see, Akerlof, 1970; Welker, 1995; Leuz and Verrecchia, 2000) or by giving new information on the major risks and thereby altering expectations on future cash flows. In 2010, the SEC warned companies about risk disclosures that are too broad and generic. SEC Chairman, Mary Schapiro said the commission staff is working on revising risk disclosure requirements.

Earlier research on risk disclosures mainly focused on examining the determinants of risk reporting (e.g., Roulstone, 1999; Beretta and Bozzolan, 2004; Linsley and Shrivs, 2006) and the value-relevance of market risk disclosures reported by US firms (e.g., Rajgopal, 1999; Linsmeier, 2002; Jorion, 2002; Lim and Tan, 2007). Recent studies on the usefulness of risk disclosures demonstrate that the mandatory overall risk reviews required by the SEC are informative to investors (Kravet and Muslu, 2013; Campbell et al., 2014) and that the level of detail of risk disclosures is relevant (Hope et al., 2016). Moreover, the ability of high-quality risk disclosures

to reduce information asymmetry is demonstrated in other countries with advanced risk reporting guidance (Miihkinen, 2013).

The extant literature demonstrates that corporate governance is associated with mandatory and voluntary risk disclosure practices (e.g., Abraham and Cox, 2007; Elshandidy and Neri, 2015; Martikainen et al., 2015). Risk disclosures are an integral part of corporate governance and a choice that are made by company managers and board of directors. They are one form of self-governance which helps the firm to show external stakeholders how things look from the management's perspective. Reduced information asymmetry increases transparency and lowers agency costs.

Previous literature on returns-earnings relation shows that disclosures can bring the future forward and increase the level that current returns reflect future earnings news (Lundholm and Myers, 2002). Kormendi and Lipe (1987) suggest that earnings response coefficients should be higher if investors' perceive firm risk to be lower. If risk disclosures are used together with the earnings information, investors' reaction to earnings news should be stronger if disclosures reduce information risk. On the contrary, if the disclosures on average tell on increased future risk, and this average effect dominates the information risk effect, investors' reactions to earnings news should be weaker. Generally speaking we lack evidence on the pros and cons of corporate disclosures as a self-governance mechanism, and how investors interpret these disclosures. Especially, we are lacking evidence if disclosures on competitors are on average interpreted as risk increasing or risk decreasing. In this paper, I examine this motivating research question by answering the following specific research questions:

- 1. Does the intensity of disclosures on competitors affect investors' response to earnings information?*

2. *Is investors' response to earnings information influenced by firm size, growth prospects or profitability?*

3. *Is there time variation in investors' response to earnings information?*

Jorgensen and Kirschenheiter (2003) theorize that the expected risk premium of the firm is higher under a mandatory risk disclosure regime than under a voluntary disclosure regime. In the US the risk disclosure requirements are advanced in terms of market risk disclosures. Moreover, the SEC introduced new risk disclosure guidelines for overall risk disclosures in 2005. Accordingly, the US setting shows as promising for examining investors' reactions to disclosures on competitors, which also give information on the competition risk of the firm. Knowledge on competition should be value adding for investors because competitors impact the distribution of the revenues that are shared on the industry.

The target sample contains 19,692 US listed firms and the study period covers fiscal years from 1996 to 2009. However, information on future returns and earnings have been collected beyond fiscal year 2009 (three additional years as suggested in previous studies). I use Li et al. (2013) measure for competition to capture the extent of disclosures on competition risk. I follow the well-established methodology (e.g., Collins et al., 1994; Ettredge et al., 2005; Tucker and Zarowin, 2006) to compute earnings and future earnings response coefficients. Earnings (and other accounting related data) are collected from *COMPUSTAT Merged Fundamental Annual File*. Returns data is collected from *CRSP* (The Center for Research in Security Prices) database.

The results provide evidence that earnings information reflects returns similarly as in the previous literature. After adding disclosures on competition in the multivariate regression model, I find that the future earnings response coefficients are lower if there is more information provided on competitors. In large firms and in firms with low growth prospects this effect is more

prevalent with contemporaneous earnings. Moreover, the average effect is typical among the loss firms. The industry specific analyses demonstrate that the negative effect on future earnings response coefficients can be documented in two industries (Sic = 3, Sic = 4). In wholesale and retail trade industry (Sic = 5) the negative effect focuses on contemporaneous earnings whereas in the banking industry (Sic = 6) the effect on future earnings response coefficients is positive. Finally, I document that there is some time variation in the effect since both the contemporaneous earnings and future earnings are negatively affected by competition disclosures in the after SOXLEY era.

Collectively, the results suggest, that on average, competition disclosures provide investors information on the competition risk of the firm. From valuation perspective this effect overcomes the benefits of reduced information risk. This finding suggests that firms that face lot of competition and tell this to investors are considered more risky which smoothens investors' reactions to earnings information. The finding is in line with the predictions of the earnings response coefficient equation (Kormendi and Lipe, 1987) which suggests that increases in firm riskiness decrease earnings response coefficients. The finding also suggests that high levels of competitor risk disclosures may moderate investors' reactions to earnings. The benefit of these disclosures may be that the share price development is more persistent, and the risk of high drop in prices, because of adverse competition, is lower.

This study sheds light on the interaction between disclosures on competitors and earnings information. This way it continues further from the most recent risk disclosure papers which have examined the economic consequences of corporate risk disclosures (Kravet and Muslu, 2013; Miihkinen, 2013; Campbell et al., 2014; Hope et al., 2016). In addition, I add to the previous literature on returns-earnings relation (e.g., Lundholm and Myers, 2002; Ettredge et al., 2005; Tucker and Zarowin, 2006) by documenting how contemporaneous and future earnings are

interpreted together with risk disclosures. The results of the study suggest that disclosures on competitors are relevant to investors. In corporations, these disclosures can be used for self-governance purposes to increase transparency around competition. However, the managers and competitors will make the final decision on how much they want to reveal on competition to outsiders. Most probably, this decision depends on the context and thereby every firm has to weigh the benefits and costs of these disclosures time after time.

The remainder of this paper is organized as follows. Section two reviews relevant literature and provides the research hypotheses and section three reports variables and methods. This is followed by sample and descriptive statistics in section four. Section five reports the empirical results and section six concludes the paper.

## **2. Literature Review and Hypotheses**

### 2.1. Theory on Earnings Response Coefficients and Firm Risk

According to the theory share price follows the equation described below (Kormendi and Lipe, 1987):

$$P/E = 1/r \tag{1}$$

$$\longleftrightarrow P = E/r$$

*where P describes share price, E is the earnings per share of the firm and r is the applied discount factor which reflects the riskiness of the firm*

Earnings response coefficient describes the magnitude of investors' reaction to earnings information. It can be derived from the preceding formula and represented in equation 2 as follows:

$$ERC = 1 + 1/r \quad (2)$$

Kormendi and Lipe (1987) argue that investors' reactions to financial accounting information are expected to be higher when a high proportion of unexpected current earnings changes is persistent, and when the riskiness of the firm decreases. Consequently, the magnitude of ERC is negatively related to the applied interest rate. Applied interest rate measures the riskiness of the firm and adjust the expected future cash flows to the current time. However, there as summarized in Scott (2009), there is still lot of ambiguity why the market's response to good and bad earnings news differ between firms. Shedding light on this issue would improve accountants' understanding of how accounting information is useful to investors.

Market's response to financial accounting information can be influenced through risk disclosures. Risk information has two-way effect on prices. First, it gives information on the risks relating to the future cash flows of the firm. Therefore, greater risk awareness may affect investors' future cash flow estimates, by either increasing or decreasing them. Second, if we assume fixed future cash flow estimates, risk disclosures reduce information risk around the firm, which will lower the discount factor of the valuation model. This has positive effect on firm value. If firm value increases through additional risk disclosures, we can deduce that the reduction in information risk alone, or together with the updated future cash flow estimates, lead to more accurate and higher share prices.

High quality risk reporting increases the usefulness of earnings information in decision-making by increasing the predictability of the fundamental earnings process (Swaminathan,

1991). Furthermore, under mandatory risk disclosure environments investors' interest towards risk disclosures is expected to be higher than under voluntary risk disclosure environments because according to the theory investors' risk premiums are higher in this kind of environment (Jorgensen and Kirschenheiter, 2003). In international comparison, the US setting is highly mandatory with regard to risk disclosures because there is regulation on market risk disclosures, and also because SEC requires firms to provide overall risk reviews of the businesses since 2005. The relevance of the US risk disclosures has been also empirically document as Campbell et al. (2014) show that annual risk factor disclosures predict future riskiness.

## 2.2. Future Earnings and Returns Relation

In classical return-earnings comparisons, two measures of change are typically correlated: return around the earnings announcement and earnings (Lev, 1989). However, previous literature documents that investors' respond weakly to earnings releases which contain historical and verified earnings information for the preceding fiscal year (e.g., Lev, 1989; Ou and Penman, 1989; Easton and Harris, 1991). This is partly caused by returns ability to capture earnings information already before it is officially released.

To overcome the limitations of basic models that explain past earnings, some scholars have further developed them to accommodate also contemporaneous and future earnings information in the stock prices. Collins et al. (1994) examine the lack of timeliness and value-irrelevant noise in earnings as reasons for the low return-earnings association. They provide first evidence in the literature, that current and future earnings together (after error correction) explain approximately 3-6 times as much of the annual return variation as contemporaneous earnings

alone. They also provide a new and more accurate methodology for the estimation of future earnings response coefficients.

Lundholm and Meyers (2002) use similar framework for future earnings response coefficients to examine how disclosures can bring the future forward. They study how managers' disclosure choices can shape the relation between current annual stock return, contemporaneous annual earnings and future earnings. They find evidence that investors are able to incorporate earnings related future information in the stock prices early already during the current time period. This finding suggests that disclosures can be important in helping firm valuation.

Ettredge et al. (2005) analyze future earnings in a standard setting context by using the same methodology. They are able to demonstrate that SFAS No. 131 on segment disclosures was beneficial for the investors because they got more information on the expected future earnings. Importantly, they use concept forward earnings response coefficient (FERC) in their paper and define it as follows: "The FERC is the association between current-year returns and next-year earnings".

Tucker and Zarowin (2006) apply the same methodology to examine if income smoothing improves earnings informativeness. They provide evidence that the share prices of higher-smoothing firms impound more information on future earnings than those of lower-smoothing firms. With their results, they are able to provide new insight into the discussion on the consequences of income smoothing. The results demonstrate that managers' disclosure choice to smooth earnings is not garbling earnings information but instead it improves the informativeness of firms' current and past earnings about their future earnings and cash flows. They also discuss that their new approach provides a promising way to study the effects of earnings management.

Finally, Choi et al. (2011) use the same methodology to analyze if management EPS forecasts help investors to impound information on future earnings in the current stock prices.

They document that quarterly and short-term earnings forecasts are beneficial in aiding investors to estimate future earnings. In specific, they demonstrate that forecasting firms have higher future earnings response coefficients, and that, these coefficients are also higher when the forecasts are more precise or frequent. Interestingly, they use a little bit different wording than Ettredge et al. (2005) for FERC which they define as “future earnings response coefficient”.

Collectively, we can conclude from these papers that these papers use a methodology that makes it possible to examine the relation between the contemporaneous returns and future earnings more in detail. In this framework, it has been also possible to demonstrate that more informative disclosures can be beneficial for the firm because they increase returns ability to reflect future earnings.

### 2.3. Disclosures on Competitors and Earnings Response Coefficients

Disclosures are part of corporate governance. Following the agency theory, the management of the firm may have different motives than the owners, which causes monitoring costs. Increased disclosures can reduce agency costs because it becomes easier to monitor the firm. In addition, the benefits of increased transparency will reduce the threat of adverse selection. However, disclosures on competitors are controversial from the *self-governance point of view* and every manager and board of directors have to balance the pros and cons of these decisions. This is so because disclosures also have costs, and as demonstrated in Verrecchia’s (1983) model on discretionary disclosure, competitor costs (=proprietary costs) are a cost which determine the net benefit of disclosures. Accordingly, every firm has a threshold level of disclosure and going beyond that point make the costs higher than the benefits. From this perspective, disclosures on

competitors can be also seen as a one form of risk disclosures because competition risk has important effect on many businesses.

The effect of competition disclosures on earnings response coefficients is not self-evident a priori but we know that lower risk is expected to be associated with higher earnings response coefficients (Kormendi and Lipe, 1987). On the one hand, as documented in Lundholm and Myers (2002), and as predicted by the theory on information risk, high-quality disclosures bring the future forward, and help investors to estimate future earnings earlier. On the other hand, disclosures on competitors may also provide investors more to think and they may become more uncertain. Therefore, they may see the firm riskier than earlier and increase the discount factor they use in firm valuation. Of course, these effects can also cancel each other out but in this paper the purpose is to analyze if any of the directions is, on average, dominating. That would provide managers evidence how investors on average considers these kind of disclosures; are they more risk decreasing or risk increasing. Because of these competing explanations, it is an empirical question to find out which one is better. The following hypothesis is tested:

*H1: Investors use disclosures on competitors to interpret contemporaneous and future earnings information.*

Existing studies on corporate disclosures consistently show that larger firms disclose on average more transparently to investors (e.g., Cooke, 1989; Eng and Mak, 2003, Brammer and Pavelin, 2006). Consequently, it is expected that on average investors have more information needs with regard to smaller firms. In this situation competitor disclosures by smaller firms would be more useful to investors and affect more in their risk estimates. However, the adverse effect of competition on earnings may be emphasized in larger firms if there is more to lose because of competition. Moreover, the previous size effect that is documented for the level of

corporate disclosures is not in the first hand focusing on competition. Therefore, disclosures on competition may also surprise the owners of larger firms and help them to understand the risks relating to the current and future earnings of the firm. I hypothesize that:

*H2: Investors use disclosures on competitors to interpret contemporaneous and future earnings information, and the magnitude and direction of their reaction can be conditioned to firm size.*

Firm growth prospects is closely related to competition. If the growth prospects are high, there can be a drastic decrease in firm value if the firm does not survive in the competition that prevails in its industry. These firms are highly valued in respect of the substance value and in this situation, investors may be prone to react new information on competition more strongly. Hence, the following hypothesis states that:

*H3: Investors use disclosures on competitors to interpret contemporaneous and future earnings information, and the magnitude and direction of their reaction can be conditioned to firm growth prospects.*

Furthermore, firm profitability is one core fundament that determines future earnings. In a long run, only profitable firms can pay dividends in a sustainable way. It is also expected that profitability brings buffer against the adverse effects of competition. Low profitability is a risk factor, which makes the firm more vulnerable for the realization of risks, also the competition risk. Especially, firms that are making a loss have higher bankruptcy risk and thereby, adverse effects caused by competition may risk the whole business. In this situation, there is more uncertainty regarding the future cash flows of the loss firms and therefore managers' decision to provide competition disclosures may constrain investors' reactions to earnings information. Thus, I hypothesize that:

*H4: Investors use disclosures on competitors to interpret contemporaneous and future earnings information, and the magnitude and direction of their reaction can be conditioned to firm profitability.*

Finally, there can be some time variation in investors' capability and willingness to use information on competitors jointly with the earnings information. This is so because of the adoption of Sarbanes-Oxley Act (SOXLEY) in 2002. It increased firms' responsibilities in a considerable way, especially in terms of corporate governance. It increases managements' responsibility to provide transparent information, and set minimum requirements for board independence. In addition, external auditing and internal control are supposed to be stronger and better aligned after the adoption of the SOXLEY. Because disclosures are under higher scrutiny in the post-SOXLEY period, it is expected that investors' would considers disclosures on competitors more credible than in the pre-SOXLEY era. This is so because disclosures go under higher quality review, and also the board of directors sign off the 10-K reports. In this setting, it can be that investors are more motivated to use this information to interpret future earnings.

However, there are also alternative explanations. If disclosures are less regulated in the pre-SOXLEY period, they probably vary more in those years and serve as a surrogate for the self-governance quality of the firms, which would then be risk decreasing and earnings response coefficients increasing for the investors. In the post-SOXLEY period, the danger is that companies start imitating themselves in voluntary disclosures and gradually the disclosures become boilerplate and lose their relevance. Becomes of these competing arguments, I let the data speak and hypothesize that:

*H5: Investors use disclosures on competitors to interpret contemporaneous and future earnings information, but this phenomenon is affected by the adoption of the Sarbanes-Oxley Act.*

### **3. Variables and Methods**

#### *3.1 Empirical Indicator for the Level of Disclosures on Competitors*

Several prior studies implicitly assume that disclosure quantity is a valid proxy for disclosure quality (see, Botosan, 2004: 290). I follow Li et al. (2013) and use their measure for the competitive environment of the firm. They count the number of references to competition in firms' 10-K filings to get a raw score for competition. The competition related words measure the number of times the following words occurs in the 10-k: *competition, competitor, competitive, compete, competing*, including those words with an "s" appended. In computing these words, cases where "not," "less," "few", or "limited" precedes the word by three or fewer words are removed. The raw score is scaled by the total number of words in the document, and the final score is represented as competition-related words per 1,000 total words in the 10-K annual filing as follows:

$$DISC_{t-1} = (\text{net number of competition words}) / ((\text{total number of words in 10-K}) / 1000) \quad (3)$$

Li et al. (2013) document that there is significant amount of variation in the measure and this variation comes from within industry variation to a great extent. This provides evidence that disclosures on competitors are not boilerplate disclosures but vary according the industry specific needs. Moreover, it is important to understand the timing of these disclosures. I use competition disclosures that relate to the fiscal year (t-1) 10-K filing, and are therefore published around the

‘three months after the firm's fiscal year end’ date. That is the most recent 10-K disclosure on competitors that investors can then use when they interpret contemporaneous (=current) and future earnings information.

### 3.2 *Return/Earnings Regressions*

I use association test approach to obtain evidence on the interaction between contemporaneous and future earnings and competitor disclosures.<sup>1</sup> More specifically, I follow the methodology, which makes it possible to include past, contemporaneous, and future earnings in the same model (Collins et al. (1994); Lundholm and Myers, 2002; Ettredge et al., 2005; Tucker and Zarowin, 2006; Choi et al., 2011). Accordingly, I regress cumulative 12-month return on earnings per share of the firm in three different time periods (t-1, t, and t3). In addition I control the cumulative return at the time period t3. The equation is as follows:

$$RET_{it} = \beta_0 + \beta_1 EA_{it-1} + \beta_2 EA_{it} + \beta_3 EA_{it3} + \beta_4 RET_{it3} + e_{it} \quad (3)$$

In the equations,  $\beta$  represent the regression parameters to be estimated,  $e$  represents the regression residual, subscripts  $i$  and  $t$  refer to the firm and year, respectively. All regressions are run by using the OLS regression analysis. The standard errors are corrected by taking into account the clustering by firm and year (see, Petersen, 2009).

$RET_{it}$  is the dependent variable in the regressions. It is a 12-month cumulative buy and hold return for the firm in year  $t$ , measured over the 12-month period ending three months after

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<sup>1</sup> Association studies recognize that market agents learn about earnings and valuation-relevant events from many non-accounting information sources throughout the period. Thus, these studies investigate whether accounting earnings measurements are consistent with the underlying events and information set reflected in stock prices. Typically, causality is not inferred. The focus is rather on whether the earnings determination process in a meaningful and timely fashion captures the valuation relevant events (see, Collins and Kothari, 1989).

the firm's fiscal year end (cf., Lundholm and Myers, 2002; Tucker and Zarowin, 2006).  $EA_{it-1}$  and  $EA_{it}$  are the earnings per shares of the firms for years t-1 and t, respectively.  $EA_{it3}$  is the aggregate earnings per share of the firm for years from t1 to t3, and  $RET_{t3}$  is a cumulative compounded 36-month buy and hold return for years from t1 to t3. Yearly return period ends three months after the firm's fiscal year end. All earnings ratios are scaled by the market value of equity three months after the t-1 fiscal year-end (i.e., in the beginning of the returns measurement period) (Lundholm and Myers, 2002; Ettredge et al. 2005).

Following Tucker and Zarowin (2006) I predict that the coefficient for past earnings ( $\beta_1$ ) is negative, the coefficient for contemporaneous earnings ( $\beta_2$ ) is positive, and the coefficient for future earnings ( $\beta_3$ ) is positive. In addition, I predict that the coefficient on future returns ( $\beta_4$ ) is negative. To address the research question I add the competitor risk disclosure score to the base model and interact it with all the components of the base model. In addition I incorporate the control variables in the model:

$$RET_{it} = \beta_0 + \beta_1 EA_{it-1} + \beta_2 EA_{it} + \beta_3 EA_{it3} + \beta_4 RET_{it3} + \beta_5 DISC_{t-1} + \beta_6 DISC_{t-1} * EA_{it-1} + \beta_7 DISC_{t-1} * EA_{it} + \beta_8 DISC_{t-1} * EA_{it3} + \beta_9 DISC_{t-1} * RET_{it3} + CONTROLS + e_{it} \quad (4)$$

In this study, I am interested in coefficients  $\beta_7$  and  $\beta_8$ , that is, how investors react to contemporaneous and future earnings information. If investors consider disclosures on competitors as risk decreasing (increasing), the coefficients are expected to be positive (negative). Significant coefficients would provide evidence that investors use competitor disclosures to evaluate current and future earnings information. These coefficients also help to evaluate how much competition disclosures can bring the future forward. Coefficient  $\beta_7$  will

provide more information on reactions to current earnings whereas coefficient  $\beta_8$  demonstrates if future earnings can be better evaluated against these disclosures.

In addition, I control firm size, growth prospects, and profitability. Firm size (*SIZE*) is the natural logarithm of the total assets of the firm in the end of fiscal year t-1. Firm size demonstrated to be the most significant determinant of corporate disclosure levels in the existing literature (e.g., Cooke, 1989; Lang and Lundholm, 1993; Brammer and Pavelin, 2006). Moreover, recent empirical risk disclosure literature demonstrates the positive association between firm size and quality of risk disclosure (Linsley and Shrive, 2006; Dobler et al., 2011; Miihkinen, 2012). This variable will serve as a proxy for other disclosures that a firm provides in addition to disclosures on competitors. Firm growth prospects (*BM*) are measured by the book to market ratio of the firm in the end of fiscal year t-1. It is expected to capture how much the stock price is currently incorporating expectations on future earnings as compared to the substance value of the firm. *SIZE* and *BM* are often used as predictors of returns in the previous literature (e.g. Fama and French, 1992). Finally, I use return on assets (*ROA*) as a measure of profitability to capture a firm's past performance in generating profit. It is computed by dividing earnings before interest and taxes by total assets. Table 1 summarizes the variable definitions.<sup>2</sup>

(Table 1 about here)

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<sup>2</sup> In the empirical tests, I use non-winsorized values for  $DISC_{t-1}$ . Other variables are winsorized at the 1 percent and 99 percent levels.

## 4. Sample and Descriptive Statistics

### 4.1. Target Sample

The research population consists of 243,232 firm-years available in COMPUSTAT in 1994-2014. I lose 23,071 observations when I merge this data with CRSP database linktable. I also lose 5,116 observations because the earnings data is missing for some firm-years. The biggest drop in the sample size occurs after I merge the data with CRSP return data. I omit 97,763 observations and end-up in 117,282 observations. I lose additional 50,113 observations in the computation of earnings and return variables and have 67,169 observations. Finally, merging the data with Li et al. (2013) competitor risk disclosure scores gives me 20,334 observations. I lose additional 642 firm-years because of missing observations for control variables and end up in 19,692 firm-years in the target sample which covers fiscal years 1996-2009.

(Table 2 about here)

### 4.2. Summary Statistics

Table 3 panel A provides the descriptive statistics of the variables in the pooled sample. The number of observations is 19,692 which is the same amount of observations that is used in the main tests.  $RET_t$  has positive mean and median values. There is some skewness in the variable because mean and median values differ from each other. Variation in returns can be also seen from the considerably differing minimum and maximum values.

Earnings variables ( $EA_{t-1}$ ,  $EA_t$ ,  $EA_{t3}$ ) also have some skewness. In specific, median values are higher than the mean values which provides evidence than some firms have not been profitable or have made a loss. Interestingly, competition disclosure scores ( $DISC_{t-1}$ ) are in line

with Li et al. (2013) notion that there is variation in firms' competition risk disclosure scores. Mean and median values are 0.537 and 0.395, respectively. Minimum value is 0.000 and the maximum value is 4.689. With regard to the control variables, the sample is evenly distributed in terms of firm size. The median value of *BM* is 0.475 indicating that the price of the firm has been about two times as high its book value of equity. The median value of *ROA* is higher than the mean value which indicates that the sample includes some firms which have poor profitability. There is also a considerable variation in the minimum and maximum values of this variable.

Table 3 panel B gives the industry statistics. In terms of the number of observations, there are most observations in the manufacturing industry (Sic2 or Sic3). There are altogether 3,207 Sic2 observations and 6,922 Sic3 observations. The mean values of  $DISC_{t-1}$  are 0.495 and 0.602, respectively. Other well represented industry comprises firms from the transportation, communications, electric, gas, and sanitary services (Sic4, Nobs = 2,496). In this industry the mean disclosure score is 0.510. 'Wholesale trade and retail trade' industry (Sic5, Nobs = 1,411) is a priori considered an industry where there is lot of competition. Mean disclosure scores, however, are very similar to other industries. The highest disclosure mean values are at the 'public administration' sector but this industry also has a limited number of observations. Surprisingly, disclosure scores are at a low level in the banking industry (Sic6, Nobs = 336) which may indicate, that in this industry, the competition is not worth disclosing. Alternatively, this industry may be sensitive to competition and therefore firms avoid revealing too much information on competition. The median value of future earnings is positive in all industries except Sic9 the highest value being on the 'wholesale trade and retail trade' industry. Collectively, the industry statistics reveal some differences between the industries that can be examined in the further analysis.

(Table 3 about here)

## 5. Empirical Results

### 5.1 Correlation Analysis

Table 4 reports the Pearson correlation coefficients for the variables. The number of observations is 19,692 in all correlations. The earnings variables are significantly correlated with returns ( $RET_t$ ) with the expected signs, and returns are negatively correlated with the aggregate return ( $RET_{t3}$ ) as expected.  $DISC_{t-1}$  is not correlated with returns, which suggests that disclosures on competitions as such, is not a priced risk factor, or alternatively, capturing omitted firm characteristics that price the firm. Larger firms have on average earned lower returns, and high book-to-market firms higher returns. This is in line with Fama and French (1992) findings. Past profitability ( $ROA$ ) is negatively correlated with current returns.

Interestingly, the correlation coefficient between firm size ( $SIZE$ ) and  $DISC_{t-1}$  is negative and significant (-0.270). This finding suggests, that on average, the corporate governance function (management team and board of directors) has less motivation to give information on competition in larger firms. One reason may be that large firms have more to lose in competition and therefore they prefer hindering some of this information. Another, albeit less probable, explanation is that larger firms do not encounter as severe product market competition than the smaller firms, which makes competition disclosures redundant for them. This finding is especially interesting in the corporate disclosure context which consistently documents that larger firms disclose more (e.g., Cooke, 1989; Lang and Lundholm, 1993; Brammer and Pavelin, 2006).

Collectively, the correlation coefficients between the explanatory variables provide evidence that multicollinearity should not threaten our main results. The highest correlation

coefficient is -0.282 and that is documented between  $BM$  and  $ROA$ . In addition, I document the highest VIF value for  $EA_{t3}$ , which is only 3.69.<sup>3</sup> This is additional evidence on the low multicollinearity threat.

(Table 4 about here)

## 5.2 Multivariate results

Table 5 provides the results for the competition disclosures and future earnings response coefficients. All regression models are statistically very significant. The number of observations is 19,692 and the adjusted R square varies around 12.3-15.7 percent depending on the model which is very similar explanatory power than in Ettredge et al., 2005, lower than in Lundholm and Myers (2002), and higher than in Tucker and Zarowin (2006).

Past earnings ( $EA_{t-1}$ ) and future aggregate returns ( $Ret_{t3}$ ) are negatively and significantly related to returns whereas contemporaneous earnings and future earnings are positively and significantly associated with returns. All the signs are as expected (Zarowin and Tucker, 2006).  $DISC_{t-1}$  is positively but non-significantly associated with returns. Interaction variable  $DISC_{t-1} * EA_{t-1}$  is positive, and interaction variables  $DISC_{t-1} * EA_t$  and  $DISC_{t-1} * EA_{t3}$  are negative but only the interaction between competition disclosures and future earnings is significant. This finding suggests that the future earnings response coefficients are lower if the firm reports transparently on its competition, and thereby provides information on the competition risk relating to the future cash flows. This finding is in line with H1 which suggests that investors use disclosures on competitors to interpret future earnings information. The result is in line with the explanation that on average, investors have considered disclosures on competitors as risk increasing. This finding

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<sup>3</sup> One interaction variable ( $DISC_{t-1} * EA_{t3}$ ) has a slightly higher VIF value 3.76, which is very low considering the inherent tendency of the interaction variables to have higher VIF values.

is in line with the rationale that competition disclosures convey important information on firm competition risk and investors use this information together with the earnings information as suggested in H1.

The results are robust to the inclusion of all control variables. SIZE has a negative and non-significant regression coefficient. BM has a positive and significant regression coefficient and ROA a negative and significant regression coefficient.<sup>4</sup> These findings demonstrate that on average growth firms and firms with a track record of low profitability have earned higher contemporaneous returns.

(Table 5 about here)

Next I run regressions for the subsamples that are constructed based on the control variables. I divide the target sample by using the median of the specific variable as the separating criterion and form the following comparisons between the subsamples: small firms vs. large firms, low book-to-market firms vs. high book-to-market firms, and low profitability vs. high profitability firms. The regression results are provided in table 6. All the subsamples have 9,846 observations and the adjusted R-square varies between 11.8-18.1 percent. The results provide evidence that the interaction variable  $DISC_{t-1} * EA_t$  is negative and significant in the large firms subsample but non-significant in the small firms subsample. This finding suggests that competitor disclosures affect investors' reactions to contemporaneous earnings information in larger firms by moderating the rate at which contemporaneous earnings information is incorporated in the prices. This result together with the notion that larger firms disclose less information on competition suggests that larger firms are sensitive to information on competition

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<sup>4</sup> All significances of the reported tables in this paper are based on two-sided tests.

and investors use this information in the pricing of the large firms. The results is in line with the H2.

With regard to the growth prospects of the firms, I find evidence that among the low book-to-market subsample, competition disclosures affect investors' interpretation of the future earnings information whereas among high book-to-market subsample, these disclosures have an attenuating effect on the interpretation of the contemporaneous earnings information. This finding suggests that investors are more interested in the future earnings of the fast growing firms (low book-to-market ratio) than in their contemporaneous earnings. This is a logical finding because high growth prospects incorporate lot of expected earnings information from the future periods. On the contrary, investors most probably consider the contemporaneous earnings of the slowly growing firms (high book-to-market ratio) more important for the valuation of these firms, and therefore, they are more likely to interpret this information with the competition disclosures. I do not find a considerable difference between the low profitability and high profitability firms, if the median value of ROA is used as a cut-off point. In both subsamples competition disclosures influence the interpretation of future earnings information (see H3).<sup>5</sup>

(Table 6 about here)

### 5.3 *Additional Analyses*

#### 5.3.1 *Different levels of profitability*

Table 7 reports the results of the more sophisticated analyzes for the impact of different levels of profitability on the main findings. I first divide the sample to two subsamples: profitable vs. non-profitable. Profitable firms include those firms whose ROA is higher than the 75-percentile value.

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<sup>5</sup> The main test results are more significant if they are run without clustering the standard errors by firm and time.

Non-profitable firms include those firms whose ROA is non-negative but lower than the 25-percentile value. I do not find significant results in these subsamples. In the profitable firms subsample the interaction variable between competition disclosure and future earnings is negative (t-value 1.16). In the non-profitable firms subsample the interaction variable between competition disclosure and contemporaneous earnings is negative (t-value -1.54).

Next, I focus my analyses in the loss firms subsample. These firms include firms which will make a loss in the current fiscal year. The sample includes 4,579 observations and the adjusted R-square of the model is 16.5 percent. Earnings variables and  $RET_{t3}$  are related to contemporaneous returns significantly and with the expected signs. Interaction variable  $DISC_{t-1} * EA_{t3}$  is negative (coef. -0.241) and highly significant. This result provides evidence that loss firms concern investors and they understand the risks and vulnerability that are related to loss firms. In this context, also information on competition becomes more interesting and investors interpret it on average as risk increasing which smoothens the earnings response coefficients. Collectively, the results for profitability (in tables 6 and 7) suggests that investors' use of future earnings information can be conditioned on profitability, which is in line with the predictions of H4.

(Table 7 about here)

### 5.3.2 *Competition Disclosures in Different Industries*

Because competition can be industry specific, it is also important to examine if there are any industry differences with regard to the results. Table 8 depicts the results of industry-specific regressions which have been conducted by using the same firm-years than in the industry descriptive statistics reported in table 3 panel B. The results provide evidence that investors interpret competition disclosures together with future earnings information in Sic3

(=Manufacturing) and Sic4 (=Transportation, Communications, Electric, Gas and Sanitary Service).

Interestingly, in the Sic5 industry (=Wholesale Trade and Retail Trade) investors interpret competition disclosures by emphasizing contemporaneous earnings information by reacting less to earnings information if there is lot of accompanying information on competition. This finding suggests that in this industry there is lot of competition, which makes companies more vulnerable to competition and increases investors' interest in contemporaneous earnings. In the Sic6 industry competition disclosures are seen, on average, as risk reducing, which can be seen from the positive and significant regression coefficient (coef. 0.914, t-value 1.74) of the interaction variable  $DISC_{t-1} * EA_{t3}$ . One explanation is that in the banking industry competition also creates opportunities for positive synergies and can thereby reduce risks related to firms' ability to generate earnings in the future. Another explanation is that there is lot of information risk in the banking industry, and therefore, the benefits of additional knowledge on competition are so beneficial that they make bank firms less risky in the eyes of the investors despite additional knowledge on the competition risk.

(Table 8 about here)

### *5.3.3 The importance of the competition disclosures: comparison between pre- and post-SOXLEY years*

As a final robustness test, I examine if there is any time variation affecting the results. Therefore, I divide the sample based on the adoption of Sarbanes-Oxley Act (SOXLEY). SOXLEY increased management's reporting requirements and brought more scrutiny in firms' corporate governance by improving the internal controls and audit processes, by enhancing corporate disclosures and transparency, and by increasing board independence. For example, after the

adoption of the SOXLEY, only independent board members were allowed in the audit committee. Moreover, the board of directors were required to sign the 10-K annual filings, which is expected to increase the quality and credibility of these reports. Hence, it is expected that competition disclosures should go under more detailed evaluation, and it is an empirical question if investors appreciate this information more after the SOXLEY period.

Table 9 panel A provides the results for the regression where I include only the before SOXLEY years in the analyses.<sup>6</sup> The sample size is 10,431 and the adjusted R-square of the model varies between 9.2 and 13.3 percent. Contemporaneous earnings, future earnings, and future returns are associated with the current returns significantly and with the predicted signs. Moreover, the results show that investors have been able to incorporate more past earnings information in the share price, if the firm has provided more competition disclosure in its forthcoming annual filing. This finding suggests that those firms that have provided transparent disclosure on competition have been better self-governed which has also reflected investors' willingness to trust these companies. Lower risk has then lowered the discount factor and increased the past earnings response coefficient. In the pre-SOXLEY era, the relevance of current and future earnings information is not affected by the competition disclosures.

The results for the post-SOXLEY era are reported in table 9 panel B. The sample size is 9,260 in all regressions. Interestingly, the adjusted R-square varies between 21.1-22.7 percent and is almost 10 percentage point higher than in the pre-SOXLEY period. Among this subsample, competition disclosures attenuate investors' reactions to both the contemporaneous and future earnings information. This result proposes that in this period the importance of competition information in bringing the future forward has increased. On average investors consider these

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<sup>6</sup> After SOXLEY years include fiscal years between 2003-2009 and before SOXLEY years include fiscal years between 1996-2002.

disclosures as risk increasing and therefore the contemporaneous and future earnings response coefficients are also lower. It seems to be that after the SOXLEY period competition disclosures are more relevant to investors, probably due to the changes that SOXLEY brought in the corporate governance environment of the firms. Competition disclosures are also negatively and significantly related to investors' reactions to past earnings, which suggests that  $DISC_{t-1}$  is not as a good measure for the level of corporate self-governance in the post-SOXLEY era than in was in the pre-SOXLEY era.

The results are in line with the H5, which suggests that investors' use of competition disclosures jointly with future earnings information is more common in the post-SOXLEY era. The findings can be also interpreted against those of Lundholm and Myers (2002) who find that analysts' estimates on corporate disclosure quality are risk reducing and earnings response coefficients increasing in the pre-SOXLEY period. In specific, in this study competition disclosures are, on average, risk increasing and earnings response coefficients decreasing in the post-SOXLEY period. In both cases however, additional disclosures are helpful for investors and they are used together with the earnings information to bring the future forward.

(Table 9 about here)

## **6. Conclusions and Discussion**

This paper examines how investors use disclosures on competition jointly with contemporaneous and future earnings information. Disclosures are integral part of effective corporate governance and earlier research has documented that investors' response to earnings information is low. This paper is motivated to find out if competition disclosures affect investors' interpretation on firm

risk and, therefore also influence the future earnings response coefficients of the firm. I analyze this research question by conditioning the effect on firm size, growth prospects and profitability. Finally, I examine if the results differ between the pre- and post-SOXLEY years. This is so because changes in firms' self-regulation strategies (by using disclosures) and investors' trust on disclosures are expected after the adoption of Sarbanes-Oxley Act.

The target sample contains 19,692 US listed firms and the study period covers fiscal years from 1996 to 2009. I use Li et al. (2013) measure for disclosures on competition and follow the well-established methodology to examine contemporaneous and future earnings response coefficients (e.g., Collins et al., 1994; Lundholm and Myers, 2002; Tucker and Zarowin, 2006). The results provide evidence that, on average, investors consider competition disclosures as risk increasing. This is so because I report lower future earnings response coefficients for those firms that give more information on competition. Subsample analyses reveal that competition disclosures mediate the contemporaneous earnings response coefficients of larger firms and high book-to-market firms, and that investors' willingness to consider future earnings information jointly with competition disclosures is emphasized when they analyze loss firms. I also document that competition disclosure are more value-relevant in certain industries (Sic3, Sic4, Sic5, and Sic6).

Finally, the results provide evidence that the new requirements for corporate governance after the introduction of the Sarbanes-Oxley Act in 2002 have affected the value-relevance of competition disclosures. These disclosures do not affect investors' future earnings estimates in the pre-SOXLEY era but are significantly associated with both the contemporaneous and future earnings estimates in the post-SOXLEY era. This result is in line with the conclusion that the increased corporate transparency and additional rigor that SOXLEY brought to corporate governance, were also increasing investors' trust in these disclosures, and made them more useful

in the future earnings assessment. Collectively, the findings are in line with the predictions of the earnings response coefficient equation (Kormendi and Lipe, 1987) and suggest that competition disclosures can provide investors value-relevant information on the competition risk of the firm. The finding also suggests that high levels of competitor risk disclosures may make investors more uncertain on the persistence of the earnings in the future which moderates the earnings response coefficients.

This study contributes to the previous literature by shedding light on the interaction between disclosures on competition and earnings information. More specific, I confirm Lundholm and Myers (2002) finding that disclosures bring future forward but contrary to their findings show evidence that disclosures can also mediated the effect of future earnings information on returns. This finding also links the paper to risk disclosure literature because competition risk is one of the major risks of the companies and affect their disclosures motives. Consequently, this study also continues further from the most recent risk disclosure papers which examine the economic consequences of corporate risk disclosures (Kravet and Muslu, 2013; Campbell et al., 2014) by demonstrating how investors evaluate earnings information together with risk disclosures. Finally, I add to the previous literature on returns-earnings relation (Ettredge et al., 2005; Tucker and Zarowin, 2006) by documenting a new factor (competition disclosures) that affects investors' contemporaneous and future earnings estimates.

The findings of the paper are beneficial for the management and board of directors who makes decisions on corporate self-governance by using additional disclosures. Competition disclosures increase transparency around the company but at the same time investors may consider them as being risk increasing. Thereby, competition disclosures may have negative effect on the impact of future earnings news on firm value. However, managers' and board of directors who govern their companies by releasing this information upfront, maybe directing their

firms towards more sustainable valuation which is less vulnerable to the adverse effects of the competition in the future. Thereby, every management team and board of directors have to consider this disclosure choice against the strategies of their companies. The risks of scaring some investors and providing some valuable information to competitors by disclosing on competition have to be weighed against the benefits of increased transparency and reduced agency costs.

Further research could test these results in the non-US settings to provide evidence if investors use competition disclosures in a similar way in different institutional settings and corporate governance environments. Country differences in risk premiums, ownership concentration, investor protection and corporate transparency could also affect in investors' reactions to competition disclosures.

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**Table 1.** Variable definitions

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<i>RET<sub>t</sub></i>	A cumulative 12-month buy and hold return for the firm in year t, measured over the 12-month period ending three months after the firm's fiscal year end.
<i>EA<sub>t-1</sub></i>	Earnings per share of the firm for year t-1.
<i>EA<sub>t</sub></i>	Earnings per share of the firm for year t.
<i>EA<sub>t3</sub></i>	Earnings per share of the firm for years from t1 to t3.
<i>RET<sub>t3</sub></i>	A cumulative compounded 36-month buy and hold return for years from t1 to t3. Yearly return period ends three months after the firm's fiscal year end.
<i>DISC<sub>t-1</sub></i>	Measure for disclosures on competitors in year t-1 annual filing, i.e., in the first quarter of fiscal year t. It is the number of occurrences of competition-related words per 1,000 total words in the 10-K as specified in Li et al. (2013). The competition related words measure the number of times "competition, competitor, competitive, compete, competing," occurs in the 10-K, including those words with an "s" appended. In computing these words, cases where "not," "less," "few," or "limited" preceded the word by three or fewer words were removed.
<i>SIZE</i>	It is the natural logarithm of the total assets of the firm in the end of fiscal year t-1.
<i>BM</i>	It is the book to market ratio of the firm in the end of fiscal year t-1.
<i>ROA</i>	It is the return on assets ratio of the firm in the end of fiscal year t-1. It is computed by dividing earnings before interest and taxes by total assets.

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**Table 2.** Sample selection criteria (Nobs=19,692)

Selection criteria	Firm-years
1. Listed firms available from COMPUSTAT in 1994 - 2014	243,232 (23,071)
2. Observations after merging the COMPUSTAT data with CRSP permno (linktable)	220 161 (5,116)
3. Observations after omitting the missing earnings data	215,045 (97,763)
4. Observations after merging with CRSP return data	117,282 (50,113)
5. Observations after computing earnings and returns for time periods (t-1), t, and t3	67,169 (46,835)
6. Observations after merging the data with competitor risk disclosure data	20,334 (642)
7. Observations after omitting missing control variables	19,692

**Table 3.** Descriptive statistics of the variables (Nobs=19,692)

## Panel A: Target sample

	<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>
<i>RET<sub>t</sub></i>	0.210	0.074	-0.933	7.667	0.776
<i>EA<sub>t-1</sub></i>	0.002	0.042	-2.637	0.568	0.198
<i>EA<sub>t</sub></i>	0.022	0.043	-1.389	1.361	0.164
<i>EA<sub>t3</sub></i>	0.094	0.123	-3.192	5.020	0.486
<i>RET<sub>t3</sub></i>	0.071	0.064	-0.730	1.402	0.284
<i>DISC<sub>t-1</sub></i>	0.537	0.395	0.000	4.689	0.467
<i>SIZE</i>	6.099	5.978	1.815	11.604	1.924
<i>BM</i>	0.610	0.475	-0.763	6.259	0.566
<i>ROA</i>	0.077	0.083	-0.411	0.333	0.099

This panel provides the mean, median, minimum, maximum, and standard deviation values of the variables in the pooled sample. Number of observations is 19,692 for each variable. For variable definitions, see table 1.

Panel B: Statistics by industries

Sic = 0 (Nobs = 58)						Sic = 5 (Nobs = 1,411)					
	<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>		<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>
$RET_t$	0.252	0.078	-0.880	7.667	1.091	$RET_t$	0.227	0.077	-0.918	5.875	0.759
$EA_t$	0.021	0.035	-0.530	0.202	0.109	$EA_t$	0.047	0.056	-1.360	1.138	0.160
$EA_{t3}$	-0.015	0.089	-1.183	0.331	0.288	$EA_{t3}$	0.171	0.157	-3.192	4.133	0.529
$DISC_{t-1}$	0.334	0.310	0.046	1.385	0.207	$DISC_{t-1}$	0.547	0.433	0.005	3.255	0.434
Sic = 1 (Nobs = 1,627)						Sic = 6 (Nobs = 336)					
	<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>		<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>
$RET_t$	0.273	0.140	-0.933	5.179	0.744	$RET_t$	0.194	0.116	-0.864	3.342	0.573
$EA_t$	0.039	0.051	-1.389	1.361	0.182	$EA_t$	0.020	0.032	-1.018	0.488	0.150
$EA_{t3}$	0.143	0.140	-3.043	2.811	0.546	$EA_{t3}$	0.119	0.093	-2.049	2.766	0.478
$DISC_{t-1}$	0.339	0.245	0.005	4.689	0.328	$DISC_{t-1}$	0.349	0.254	0.010	2.309	0.347
Sic = 2 (Nobs = 3,207)						Sic = 7 (Nobs = 2,510)					
	<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>		<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>
$RET_t$	0.173	0.065	-0.933	6.224	0.661	$RET_t$	0.198	0.047	-0.933	7.667	0.818
$EA_t$	0.031	0.045	-1.389	1.361	0.143	$EA_t$	-0.002	0.030	-1.369	1.361	0.162
$EA_{t3}$	0.112	0.132	-3.192	5.020	0.447	$EA_{t3}$	0.033	0.089	-3.192	5.020	0.458
$DISC_{t-1}$	0.495	0.387	0.010	4.013	0.403	$DISC_{t-1}$	0.594	0.433	0.005	4.414	0.503
Sic = 3 (Nobs = 6,922)						Sic = 8 (Nobs = 982)					
	<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>		<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>
$RET_t$	0.225	0.064	-0.933	7.667	0.852	$RET_t$	0.201	0.056	-0.933	7.667	0.749
$EA_t$	0.020	0.041	-1.389	1.361	0.160	$EA_t$	0.018	0.044	-1.360	1.361	0.181
$EA_{t3}$	0.082	0.115	-3.192	5.020	0.476	$EA_{t3}$	0.112	0.135	-2.554	2.766	0.433
$DISC_{t-1}$	0.602	0.446	0.000	4.270	0.502	$DISC_{t-1}$	0.502	0.379	0.000	2.827	0.396
Sic = 4 (Nobs = 2,496)						Sic = 9 (Nobs = 143)					
	<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>		<i>Mean</i>	<i>Median</i>	<i>Min</i>	<i>Max</i>	<i>Std.Dev</i>
$RET_t$	0.180	0.086	-0.933	7.667	0.691	$RET_t$	0.178	-0.047	-0.870	3.780	0.835
$EA_t$	0.021	0.050	-1.389	1.361	0.177	$EA_t$	-0.041	0.010	-1.073	0.657	0.210
$EA_{t3}$	0.099	0.151	-3.192	5.020	0.518	$EA_{t3}$	-0.173	-0.092	-2.554	2.766	0.641
$DISC_{t-1}$	0.510	0.354	0.004	3.668	0.483	$DISC_{t-1}$	0.715	0.565	0.010	2.238	0.546

This panel provides the mean, median, minimum, maximum, and standard deviation values of  $RET_t$ ,  $EA_t$ , and  $DISC_{t-1}$  in every industry (as defined by SIC codes). Number of observations varies between 6,983 and 59 observations. For variable definitions, see table 1. Sic0 represents 'Agriculture, Forestry and Fishing'; Sic1 represents 'Mining and Construction'; Sic2 and Sic3 represent 'Manufacturing'; Sic4 represents 'Transportation, Communications, Electric, Gas and Sanitary service'; Sic5 represents 'Wholesale Trade and Retail Trade'; Sic6 represents 'Finance, Insurance and Real Estate'; Sic7 and Sic 8 represent 'Services', and Sic9 represents 'Public Administration'.

**Table 4.** Correlation matrix

	<i>RET<sub>t</sub></i>	<i>EA<sub>t-1</sub></i>	<i>EA<sub>t</sub></i>	<i>EA<sub>t3</sub></i>	<i>RET<sub>t3</sub></i>	<i>DISC<sub>t-1</sub></i>	<i>SIZE</i>	<i>BM</i>	<i>ROA</i>
<i>RET<sub>t</sub></i>									
<i>EA<sub>t-1</sub></i>	<b>-0.046</b>								
<i>EA<sub>t</sub></i>	<b>0.202</b>	<b>0.382</b>							
<i>EA<sub>t3</sub></i>	<b>0.139</b>	<b>0.148</b>	<b>0.393</b>						
<i>RET<sub>t3</sub></i>	<b>-0.159</b>	<b>-0.045</b>	<b>0.095</b>	<b>0.448</b>					
<i>DISC<sub>t-1</sub></i>	0.004	<b>-0.022</b>	<b>-0.059</b>	<b>-0.058</b>	<b>-0.020</b>				
<i>SIZE</i>	<b>-0.043</b>	<b>0.056</b>	<b>0.070</b>	<b>0.094</b>	<b>0.028</b>	<b>-0.270</b>			
<i>BM</i>	<b>0.080</b>	<b>-0.127</b>	<b>-0.039</b>	<b>0.033</b>	<b>0.129</b>	0.004	<b>-0.167</b>		
<i>ROA</i>	<b>-0.085</b>	<b>0.248</b>	<b>0.183</b>	<b>0.145</b>	<b>0.037</b>	<b>-0.029</b>	<b>0.192</b>	<b>-0.282</b>	

This table provides the Pearson correlation coefficients between the variables. For variable definitions, see table 1. The number of observations is 19,962 for each variable. Correlation coefficients significant at one percent level or lower are **bolded** and coefficients significant at five percent level or lower are presented in *italics*.

**Table 5.** Regressions results for the competition disclosures and future earnings response coefficients

<b>Dependent variable: RET<sub>t</sub></b>			
<u>Ind. variables</u>			
<i>Intercept</i>	0.212** (2.51)	0.174* (1.76)	0.255* (1.75)
<i>EA<sub>t-1</sub></i>	-0.666** (-2.40)	-0.800*** (-2.65)	-0.712** (-2.30)
<i>EA<sub>t</sub></i>	1.006*** (10.43)	1.109*** (6.16)	1.143*** (6.49)
<i>EA<sub>t3</sub></i>	0.329*** (5.26)	0.389*** (4.72)	0.403*** (5.21)
<i>RET<sub>t3</sub></i>	-0.761*** (-4.02)	-0.533** (-2.33)	-0.538** (-2.42)
<i>DISC<sub>t-1</sub></i>	----	0.0626 (0.62)	0.0470 (0.52)
<i>DISC<sub>t-1</sub> * EA<sub>t-1</sub></i>	----	0.289 (1.36)	0.333 (1.59)
<i>DISC<sub>t-1</sub> * EA<sub>t</sub></i>	----	-0.210 (-0.94)	-0.216 (-0.98)
<i>DISC<sub>t-1</sub> * EA<sub>t3</sub></i>	----	-0.126** (-2.04)	-0.124** (-2.09)
<i>DISC<sub>t-1</sub> * RET<sub>t3</sub></i>	----	-0.372 (-1.03)	-0.408 (-1.14)
<i>SIZE</i>	----	----	-0.0137 (-1.14)
<i>BM</i>	----	----	0.103*** (3.02)
<i>ROA</i>	----	----	-0.675* (-1.90)
<i>Adjusted R-square</i>	0.123	0.133	0.151
<i>F-value</i>	196.3	96.30	95.12
<i>Nobs</i>	19,692	19,692	19,692

This table provides regression results for the determinants of cumulative 12-month buy and hold returns. Variable definitions can be found in table 1. Non-winsorized values of *DISC<sub>t-1</sub>* are used. All other variables are winsorized at the 1 percent and 99 percent level. \*\*\*, \*\*, and \* denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. T-values of parameter estimates are computed from the heteroscedasticity robust standard errors clustered by firm and year.

**Table 6.** Regressions results for the subsamples

<b>Ind.Variables</b>	<b>Dependent variable: <math>RET_t</math></b>					
	<i>Small Firms</i>	<i>Large Firms</i>	<i>Low_BM</i>	<i>High_BM</i>	<i>Low_ROA</i>	<i>High_ROA</i>
<i>Intercept</i>	0.183 (1.45)	0.139 (1.25)	0.279* (1.84)	0.401*** (2.90)	0.301* (1.88)	0.0725 (0.69)
$EA_{t-1}$	-0.376** (-2.05)	-0.918** (-2.52)	-0.792*** (-2.69)	-0.714** (-2.20)	-0.771*** (-2.65)	-0.441 (-1.17)
$EA_t$	1.065*** (5.08)	1.171*** (8.10)	0.988** (2.51)	1.266*** (8.17)	0.946*** (5.59)	1.741*** (5.33)
$EA_{t3}$	0.250*** (4.74)	0.517*** (5.67)	0.478*** (6.13)	0.363*** (3.77)	0.380*** (4.62)	0.511*** (5.37)
$RET_{t3}$	-0.396** (-2.47)	-0.710** (-2.51)	-0.471** (-2.09)	-0.570** (-2.36)	-0.569** (-2.39)	-0.560*** (-2.81)
$DISC_{t-1}$	0.0771 (0.70)	-0.00963 (-0.13)	0.0461 (0.51)	0.0324 (0.37)	0.0142 (0.15)	0.0843 (0.93)
$DISC_{t-1} * EA_{t-1}$	0.126 (0.82)	0.377 (1.29)	0.625* (1.69)	0.248 (1.30)	0.231 (1.11)	0.656 (1.58)
$DISC_{t-1} * EA_t$	-0.103 (-0.40)	-0.389** (-2.13)	0.0956 (0.19)	-0.459*** (-2.89)	-0.173 (-0.91)	-0.408 (-0.99)
$DISC_{t-1} * EA_{t3}$	-0.0321 (-0.67)	-0.0667 (-0.87)	-0.238** (-2.54)	-0.0554 (-0.86)	-0.124* (-1.89)	-0.227** (-2.13)
$DISC_{t-1} * RET_{t3}$	-0.557 (-1.50)	-0.131 (-0.50)	-0.533 (-1.31)	-0.306 (-0.99)	-0.352 (-1.01)	-0.416 (-1.14)
<i>SIZE</i>	----	----	-0.0134 (-1.06)	-0.0191 (-1.63)	-0.0223 (-1.50)	-0.0109 (-0.98)
<i>BM</i>	0.104*** (3.24)	0.113** (2.51)	----	----	0.107*** (2.61)	0.123** (2.55)
<i>ROA</i>	-0.778* (-1.94)	-0.468 (-1.62)	-0.680** (-2.15)	-0.891* (-1.89)	----	----
<i>Adj.R-square</i>	0.118	0.232	0.136	0.157	0.137	0.181
<i>F-value</i>	56.17	58.49	46.98	49.87	51.71	63.58
<i>Nobs</i>	9,846	9,846	9,846	9,846	9,846	9,846

This table provides regression results for six subsamples: small firms vs. large firms, low book-to-market vs. high book-to-market firms, and low ROA vs. high ROA firms. Firms which are below (above) median size are categorized to small (large) firms. Firms which are below (above) median BM are categorized to low book-to-market (high book-to-market) firms. Firms which are below (above) median ROA are categorized to low\_ROA (high\_ROA) firms. small (large) firms. small (large) firms. Firms which are above median size are categorized to large firms. Variable definitions can be found in table 1. Non-winsorized values of  $DISC_{t-1}$  are used. All other variables are winsorized at the 1 percent and 99 percent level. \*\*\*, \*\*, and \* denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. T-values of parameter estimates are computed from the heteroscedasticity robust standard errors clustered by firm and year.

**Table 7.** Additional analysis for profitability

<u>Ind.Variables</u>	<b>Dependent variable: <math>RET_t</math></b>		
	<i>Profitable</i>	<i>Non-profitable</i>	<i>Loss</i>
<i>Intercept</i>	0.0275 (0.28)	0.376** (2.34)	0.411** (2.24)
$EA_{t-1}$	-0.704 (-1.24)	-0.568 (-1.16)	-0.896*** (-3.46)
$EA_t$	2.018*** (3.50)	1.344*** (6.18)	1.073*** (4.50)
$EA_{t3}$	0.512*** (3.55)	0.213*** (3.30)	0.405*** (3.96)
$RET_{t3}$	-0.537*** (-2.90)	-0.376 (-1.53)	-0.686** (-2.50)
$DISC_{t-1}$	0.0753 (0.80)	-0.00746 (-0.07)	0.0135 (0.09)
$DISC_{t-1} * EA_{t-1}$	0.477 (0.90)	0.389 (0.87)	0.357* (1.83)
$DISC_{t-1} * EA_t$	0.0656 (0.13)	-0.428 (-1.54)	-0.320 (-1.30)
$DISC_{t-1} * EA_{t3}$	-0.291 (-1.16)	0.0551 (0.59)	-0.241*** (-3.16)
$DISC_{t-1} * RET_{t3}$	-0.427 (-1.35)	-0.592 (-1.49)	-0.455 (-1.08)
<i>SIZE</i>	-0.00735 (-0.73)	-0.0279** (-2.05)	-0.0187 (-0.83)
<i>BM</i>	0.143*** (3.03)	0.0907** (2.24)	0.0909** (2.20)
<i>Adj.R-square</i>	0.182	0.148	0.165
<i>F-value</i>	36.50	13.40	41.53
<i>Nobs</i>	4,923	2,194	4,579

This table provides regression results for more detailed analysis after conditioning the results for different levels of profitability. Profitable represents firms, which have higher profitability than the 75 percentile value for profitability in fiscal year t. Non-profitable represents firms, whose profitability is positive but lower or equal to the 25 percentile value for profitability in fiscal year t. Loss represents firms which make a loss in fiscal year t. Variable definitions can be found in table 1. Non-winsorized values of  $DISC_{t-1}$  are used. All other variables are winsorized at the 1 percent and 99 percent level. \*\*\*, \*\*, and \* denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. T-values of parameter estimates are computed from the heteroscedasticity robust standard errors clustered by firm and year.

**Table 8.** Regressions results by industries

	<i>Sic = 0</i>	<i>Sic = 1</i>	<i>Sic = 2</i>	<i>Sic = 3</i>	<i>Sic = 4</i>
<i>EA<sub>t</sub></i>	-5.381 (-1.18)	0.859*** (6.34)	1.725*** (3.40)	1.282*** (8.40)	0.613 (1.39)
<i>EA<sub>t3</sub></i>	0.872 (0.99)	0.334** (2.54)	0.0827 (0.77)	0.519*** (4.74)	0.466*** (3.37)
<i>DISC<sub>t-1</sub></i>	-0.437 (-0.43)	-0.241** (-1.98)	0.0387 (0.56)	0.103 (0.93)	0.00374 (0.07)
<i>DISC<sub>t-1</sub> * EA<sub>t</sub></i>	13.09 (1.15)	0.382 (0.90)	-1.010 (-1.03)	-0.0557 (-0.26)	-0.0820 (-0.27)
<i>DISC<sub>t-1</sub> * EA<sub>t3</sub></i>	-1.114 (-0.64)	0.272 (1.37)	0.162 (1.04)	-0.213** (-2.45)	-0.263** (-2.13)
<i>Adjusted R-square</i>	0.189	0.188	0.125	0.196	0.170
<i>F-value</i>	4.945	17.07	11.58	55.37	8.111
<i>Nobs</i>	58	1,627	3,207	6,922	2,496
	<i>Sic = 5</i>	<i>Sic = 6</i>	<i>Sic = 7</i>	<i>Sic = 8</i>	<i>Sic = 9</i>
<i>EA<sub>t</sub></i>	1.821*** (5.24)	-0.349 (-0.58)	1.100*** (4.00)	1.107** (2.05)	0.627 (0.87)
<i>EA<sub>t3</sub></i>	0.430*** (3.71)	0.209 (0.94)	0.263 (1.61)	0.179 (0.65)	0.397** (2.22)
<i>DISC<sub>t-1</sub></i>	0.0139 (0.14)	0.00226 (0.03)	0.0281 (0.27)	0.0166 (0.16)	-0.114** (-2.21)
<i>DISC<sub>t-1</sub> * EA<sub>t</sub></i>	-1.046*** (-3.32)	0.935 (0.68)	-0.492 (-1.48)	-0.328 (-0.40)	-0.174 (-0.20)
<i>DISC<sub>t-1</sub> * EA<sub>t3</sub></i>	-0.0865 (-0.99)	0.914* (1.74)	-0.0326 (-0.16)	0.497 (1.56)	-0.460 (.)
<i>Adjusted R-square</i>	0.180	0.217	0.116	0.127	0.113
<i>F-value</i>	10.11	5.752	12.83	6.412	1.596
<i>Nobs</i>	1,411	336	2,510	982	143

This table provides regression results for different industries as defined by the Standard Industrial Classification (SIC codes). Sic0 represents ‘Agriculture, Forestry and Fishing’; Sic1 represents ‘Mining and Construction’; Sic2 and Sic3 represent ‘Manufacturing’; Sic4 represents ‘Transportation, Communications, Electric, Gas and Sanitary service; Sic5 represents ‘Wholesale Trade and Retail Trade’; Sic6 represents ‘Finance, Insurance and Real Estate’; Sic7 and Sic 8 represent ‘Services’, and Sic9 represents ‘Public Administration’. All variables that have been included in table 5 are included in the above regressions although the coefficients have not been reported. The dependent variable is the cumulative 12-month buy and hold returns. Every column provides the results for the regression in the specific industry (Sic0-Sic9). Variable definitions can be found in table 1. Non-winsorized values of *DISC<sub>t-1</sub>* are used. All other variables are winsorized at the 1 percent and 99 percent level. \*\*\*, \*\*, and \* denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. T-values of parameter estimates are computed from the heteroscedasticity robust standard errors clustered by firm and year.

**Table 9A.** Regressions results before the SOXLEY era

	<b>Dependent variable: RET<sub>t</sub></b>		
<b><u>Ind. variables</u></b>			
<i>Intercept</i>	0.282** (2.15)	0.259 (1.55)	0.463* (1.82)
<i>EA<sub>t-1</sub></i>	-0.541 (-1.41)	-0.732* (-1.73)	-0.580* (-1.76)
<i>EA<sub>t</sub></i>	0.833*** (11.93)	0.794*** (4.00)	0.838*** (4.22)
<i>EA<sub>t3</sub></i>	0.267*** (5.56)	0.291*** (4.25)	0.300*** (4.66)
<i>RET<sub>t3</sub></i>	-0.845*** (-3.50)	-0.477*** (-2.67)	-0.514*** (-2.98)
<i>DISC<sub>t-1</sub></i>	----	0.0217 (0.18)	0.00398 (0.04)
<i>DISC<sub>t-1</sub> * EA<sub>t-1</sub></i>	----	0.292** (1.97)	0.339** (2.21)
<i>DISC<sub>t-1</sub> * EA<sub>t</sub></i>	----	0.0536 (0.22)	0.0557 (0.23)
<i>DISC<sub>t-1</sub> * EA<sub>t3</sub></i>	----	-0.0540 (-1.10)	-0.0385 (-0.81)
<i>DISC<sub>t-1</sub> * RET<sub>t3</sub></i>	----	-0.474 (-1.24)	-0.496 (-1.31)
<i>SIZE</i>	----	----	-0.0251 (-1.15)
<i>BM</i>	----	----	0.0843** (2.22)
<i>ROA</i>	----	----	-1.192** (-2.03)
<i>Adjusted R-square</i>	0.092	0.102	0.133
<i>F-value</i>	108.7	59.80	59.15
<i>Nobs</i>	10,432	10,432	10,432

This table provides regression results for the determinants of cumulative 12-month buy and hold returns by using fiscal years from 1996 to 2002. Variable definitions can be found in table 1. Non-winsorized values of *DISC<sub>t-1</sub>* are used. All other variables are winsorized at the 1 percent and 99 percent level. \*\*\*, \*\*, and \* denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. T-values of parameter estimates are computed from the heteroscedasticity robust standard errors clustered by firm and year.

**Table 9B.** Regressions results after the SOXLEY era

<b>Dependent variable: RET<sub>t</sub></b>			
<b>Ind. variables</b>			
<i>Intercept</i>	0.139 (1.30)	0.146 (1.18)	0.0946 (0.70)
<i>EA<sub>t-1</sub></i>	-0.753** (-2.10)	-0.695* (-1.76)	-0.652 (-1.58)
<i>EA<sub>t</sub></i>	1.208*** (14.25)	1.482*** (12.96)	1.489*** (12.82)
<i>EA<sub>t3</sub></i>	0.407*** (5.20)	0.456*** (4.48)	0.458*** (4.90)
<i>RET<sub>t3</sub></i>	-0.678** (-2.33)	-0.743** (-2.21)	-0.734** (-2.29)
<i>DISC<sub>t-1</sub></i>	----	-0.0280 (-0.50)	-0.0423 (-0.84)
<i>DISC<sub>t-1</sub> * EA<sub>t-1</sub></i>	----	-0.184* (-1.88)	-0.147* (-1.66)
<i>DISC<sub>t-1</sub> * EA<sub>t</sub></i>	----	-0.849*** (-5.62)	-0.844*** (-5.96)
<i>DISC<sub>t-1</sub> * EA<sub>t3</sub></i>	----	-0.145* (-1.89)	-0.122* (-1.73)
<i>DISC<sub>t-1</sub> * RET<sub>t3</sub></i>	----	0.194 (0.90)	0.143 (0.67)
<i>SIZE</i>	----	----	-0.000233 (-0.05)
<i>BM</i>	----	----	0.119*** (2.92)
<i>ROA</i>	----	----	-0.177 (-1.14)
<i>Adjusted R-square</i>	0.211	0.215	0.227
<i>F-value</i>	110.9	51.22	48.63
<i>Nobs</i>	9,260	9,260	9,260

This table provides regression results for the determinants of cumulative 12-month buy and hold returns by using fiscal years from 2003 to 2009. Variable definitions can be found in table 1. Non-winsorized values of *DISC<sub>t-1</sub>* are used. All other variables are winsorized at the 1 percent and 99 percent level. \*\*\*, \*\*, and \* denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. T-values of parameter estimates are computed from the heteroscedasticity robust standard errors clustered by firm and year.