# Corporate Social Responsibility and Future Earnings

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# Abstract

Corporate social responsibility (CSR) initiatives can be studied as an investment, a signaling device, and/or an agency problem. In this paper, we focus on the investment and signaling hypotheses, and thus examine the association between CSR and future realized earnings and cash flow from operations (CFO). We find that CSR has negative long-term relation to both earnings and CFO, but there is no short-term evidence. These findings could be linked to the agency costs of CSR, a lower cost of equity of responsible firms, or both. Furthermore, the volatility of earnings negatively moderates the CSR effect on future earnings, i.e. it is different for stable and volatile firms. After raising social responsibility, stable firms experience no escalation in volatility, while having smaller losses in the long-run compared to volatile firms. On the contrary, volatile firms that engage in CSR tend to post a short-term reduction in volatility, followed by a sharp fall in the long-term earnings. Admittedly, when we account for the unobserved year effects, the only robust results are that CSR leads to a decline in the cash flow from operations, and a lower earnings volatility at volatile companies. Hence, while our results cast doubt whether CSR signals higher earnings or profitability, CSR could signal a lower volatility of earnings.

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# Introduction

Corporate social responsibility (CSR) initiatives have reached unprecedented levels across the globe (Becchetti et al., 2016). Being so widespread and controversial, these practices have captured the attention of executives, investors, politicians, and academics. Levitt (1958) and Friedman (1970) initiated a debate over theoretical and practical implications of CSR. During the 50-year debate, researchers applied a number of theories. Among them, the stakeholder, signaling, agency, and economic theories stand out (Stiglitz, 2000; McWilliams et al., 2006, Zerbini, 2015). As conflicting evidence began piling up, it became apparent that potential links between CSR and financial performance are indirect and thus a search for causal mechanisms started (Orlitzky et al., 2003; Margolis et al., 2009).

The stakeholder theory suggests that CSR can be strategic (Baron, 2001; McWilliams et al., 2006). Specifically, CSR can be linked to financial performance via intangible assets and stakeholder engagement (Barnett and Salomon, 2012; Mishra, 2017), as well as an insurance-like protection (Schnietz and Epstein, 2005; Godfrey et al., 2009). Meanwhile, the signaling and agency views consider endorsement effects (Zerbini, 2015), institutional voids (Su et al., 2016), transparency and cost of capital (Cheng et al., 2014), overinvestment (Barnea and Rubin, 2010), entrenchment (Cronqvist et al., 2009), risk aversion (Bouslah et al., 2013; Kim et al., 2014), and competitive advantages (Brammer and Millington, 2008).

Based on these theories, CSR practices can act as an investment, a signaling device, and/or an agency problem. We focus on the investment and signaling hypotheses, and thus study the association between CSR and future realized financial performance. To measure the financial performance, we use earnings before extraordinary items and cash flow from operations (CFO). CFO serves as a robustness check and as a cleaner metric of macroeconomic and industry-specific dynamics. Specifically, unlike earnings, CFO does not have accounting issues such as mismatches between revenues and expenses, aggressive accrual estimates, earnings smoothing behavior (Dechow and Dichev, 2002; Dichev and Tang, 2008; and Dichev and Tang, 2009). Following Dichev and Tang (2009), we expect the volatilities of earnings and CFO to negatively moderate the effect of CSR.

Using a battery of fixed firm effects and random year effects models, we find no evidence of a short-term association between CSR and future realized earnings or CFO, but there is a negative long-term relation. The lack of short-term findings could be caused by significant mean reversion and autocorrelation in earnings, as well as omitted variables or interactions acting as more reliable signals (Jaccard and Turrisi, 2003; Servaes and Tamayo, 2013; Su et al., 2016). The picture does not change if we control for advertising and R&D expenditures or use alternative CSR measures (conservative, internal, and external CSR). Furthermore, the negative long-term effect might be connected to the agency costs of CSR projects (Shleifer and Vishny, 1997; Tirole, 2001; Jensen, 2002), to socially responsible firms having a lower cost of equity (El Ghoul et al., 2011), or to a combination of these opposing arguments.

In addition, the volatility of earnings inversely moderates the relation between CSR and future earnings, i.e. it is different for stable and volatile firms. After enhancements in CSR, stable firms experience no escalation in volatility, while having smaller losses in the long-run compared to volatile firms. In contrast, volatile firms that raise their social responsibility tend to post a short-term reduction in volatility, followed by a sharp fall in the long-term earnings. Granted, when we account for the random year effects, the only robust results are that CSR leads to a decline in the cash flow from operations, and a lower earnings volatility at volatile companies. Thus, our findings suggest that socially responsible initiatives could only be effective at signaling lower earnings volatility (caused by potential accounting issues), and not at communicating higher earnings or profitability.

The rest of the paper is organized as follows: Chapter 1 discusses the stakeholder, signaling, agency, and economic theories; Chapter 2 describes sampling, calculations, summary, and correlation statistics; Chapter 3 explains the methodology; Chapter 4 analyzes the empirical results; Chapter 5 exhibits robustness checks; Chapter 6 suggests potential improvements; followed by Conclusions.

# Chapter 1: Literature review and hypotheses development

There are multiple definitions of corporate social responsibility and related concepts. Carroll (1999) analyzed how CSR had evolved to become a recognized multidimensional construct. The key parts of the modern definition are voluntary basis, stakeholders, society, environment, and corporate governance (Dahlsrud, 2008). From the economics perspective, CSR is an attempt of a firm to internalize the welfare of different stakeholders (Tirole, 2001). Therefore, we proceed with the following definition: "Corporate social responsibility is a voluntary practice of integrating social, environmental, and corporate governance concerns into business operations and interactions with stakeholders".

Given the complex nature of the topic, there are parallel lines of literature from the perspectives of management, corporate finance, economics. The academic interest in corporate social responsibility was preceded by the environmentalism and human rights movements of the 60s and 70s (Hill et al., 2007). Empirical research on CSR thus spans almost 50 years, while theoretical work can be traced back for centuries[1]. Levitt (1958) and Friedman (1970) initiated a debate over theoretical and practical implications of CSR. During the debate, researchers applied a number of theories. Among them, the stakeholder, signaling, agency, and economic theories dominate (Stiglitz, 2000; McWilliams et al., 2006, Zerbini, 2015).

Researchers focused on whether CSR affects financial performance in its accounting, market, or mixed forms (e.g., profitability, firm value, Tobin's Q). So far, the consensus is that there is a small positive relationship (Orlitzky et al., 2003; Margolis et al., 2009). However, there is also conflicting evidence indicating negative, convex, and concave associations (Brammer and Millington, 2008). As this evidence began piling up, it became apparent that potential links between CSR and financial performance are indirect (Orlitzky et al., 2003; Margolis et al., 2009).

## 1.1. Stakeholder theory

The modern stakeholder theory was outlined by Freeman (1984). Mitchell et al. (1997) expanded the Freeman's definition of a stakeholder by combining the concepts of power,

[1] The concept of corporate citizenship stems from Adam Smith's *The Wealth of Nations* (1776) and, if we consider political philosophy, from Aristotle's *Politics* (350 BC) and Plato's *Republic* (380 BC).

legitimacy, and urgency. The central idea is that companies should not ignore or mistreat any party that a) can affect (help or hurt) or be affected by the business; b) has legitimate stakes in the firm (contracts, rights, risks, moral claims); and c) must be dealt with immediately. Otherwise, mistreated groups withdraw their support (McWilliams et al., 2006). Thus, stakeholder theory is focused on managing relationships and reducing contracting costs.

Most importantly, stakeholder theory considers CSR an investment. Accordingly, Baron (2001) coined the term "strategic CSR", which refers to CSR being used for value-seeking purposes. McWilliams et al. (2006) point out that such behavior can be viewed as a positive externality. For instance, they write, "providing day care may lower the number of juvenile crimes in a community, but the firm might provide the day care only because it increases the availability of workers and lowers the cost of absenteeism". Although stakeholder theory does not address the inherent agency problems, management literature does recognize them. In fact, it separates "stakeholder management" from "social issues participation" (Hillman and Keim, 2001). Theoretically, financial performance suffers as soon as the company engages in activities irrelevant to its stakeholders (Brammer and Millington, 2008).

Intangible assets and stakeholder engagement represent major links between CSR and financial performance. Similar to R&D and advertising, CSR (in the form of socially responsible products, cause-oriented marketing, philanthropy) has been argued to enhance brand evaluation and customer loyalty, as well as to attract new customers (Hillman and Keim, 2001; Hill et al., 2007; Servaes and Tamayo, 2013). In contrast, Bagnoli and Watts (2003) demonstrate that CSR initiatives are negatively related to the intensity of industry competition and the willingness of consumers to pay premiums for CSR products. Furthermore, consumer preferences could cause a U-shaped relation between CSR and financial performance. Companies that choose either high differentiation or low cost strategies may outperform those "in the middle" (Porter, 1980). Findings of Bhattacharya and Sen (2004) hint that socially irresponsible firms could attract price-sensitive consumers, while the affluent and socially conscious flock to the CSR brands (Brammer and Millington, 2008). Likewise, CSR could be used to attract, motivate, and retain high-quality talent (Turban and Greening, 1997; Brekke and Nyborg, 2008).

Furthermore, Barnett (2007) and Barnett and Salomon (2012) advocate for the concept of "stakeholder influence capacity" (SIC) – the ability of companies to profitably execute CSR

initiatives over time. SIC resonates with the signaling theory, as it is path-dependent and expensive to observe and imitate. The researchers demonstrate that SIC can explain the U-shaped association between CSR and financial performance. In addition, stakeholder relationships can be challenging because of the implicit nature of some of the contracts (McGuire, 1988). An unsatisfied party can withdraw from an implicit agreement and make it explicit, thus increasing the transaction costs. Deng et al. (2013) adds that stakeholders are more likely to enter less favorable explicit contracts with highly socially responsible firms who commit to implicit agreements. Moreover, CSR can attract funding from socially conscious investors (Hill et al., 2007).

CSR is also hypothesized to act as insurance against regulatory, legislative, or fiscal risks (Hillman and Keim, 2001; Schnietz and Epstein, 2005). Naturally, the question is whether CSR can preserve financial performance. Godfrey et al. (2009) assess that with an event study of 178 negative legal and regulatory actions. The researchers argue that while "primary" CSR (aimed at employees, suppliers) is irrelevant in such cases, the social/institutional CSR does resemble insurance.

Stakeholder theory is widely recognized among scholars and practitioners, sometimes being called a "central paradigm for the business and society field" (Jones, 1995). However, its popularity poses serious corporate governance concerns (Tirole, 2001; Jensen, 2002). Those who embrace and practice the stakeholder theory are likely to be doing so because its unaccountable nature enables satisfaction of personal preferences at the expense of the firm's financial claimants and society in general (Jensen and Meckling, 1976; Shleifer and Vishny, 1997; Jensen, 2002). Furthermore, Jensen (2002) asserts that stakeholder theory is fundamentally flawed without the definition of "better versus worse", i.e. without a way for companies to choose among incompatible stakeholder interests. Specifically, stakeholder approach does not provide a clear objective function for the board of directors and managers to maximize. Moreover, Jensen argues, any firm whose goal is to internalize the welfare of stakeholders has no chance of survival facing competitors who instead maximize the enterprise value.

## 1.2. Signaling and agency theories

The core of the signaling and agency theories is the asymmetry of information about certain qualities or actions (i.e., imperfect or costly information). Stiglitz (2000) summarized two solutions: self-selection (signaling) and direct selection (incentives, monitoring). Spence (1973)

proposed a signaling model where job applicants could reveal their unobserved abilities to employers with observable characteristics (by obtaining higher levels of education). Using agriculture and insurance markets as examples, Stiglitz (1974) and Rothschild and Stiglitz (1976) demonstrated how the uninformed participant could apply incentives and monitoring in order to unveil hidden characteristics and/or direct actions of the party in question. However, there is a flip side, as the informed agent can create noise (make knowledge sufficiently expensive to obtain) in order to increase their rent (Stiglitz, 2000).

In the corporate context, the ownership and control of the firm are separated due to the benefits of specialization (Stiglitz, 2000). Hence, shareholders possess imperfect information about the qualities and actions of corporate executives. Jensen and Meckling (1976) showed how such asymmetric information poses the principal-agent problem, whereby the utilities of managers and shareholders are misaligned, thus causing a waste of firm's resources.

On the one hand, executives could signal the firm's qualities via investing, financing, dividend policy, or risk management decisions. Leland and Pyle (1977) and Allen and Faulhaber (1989) analyzed signals in the IPO setting, while Ross (1977) and Harris and Raviv (1985) studied the debt issuance. The traditional dividend signaling theory was pioneered by Bhattacharaya (1979), John and Williams (1985), Miller and Rock (1985), and was extended for stock repurchases by Williams (1988), Hausch and Seward (1993) and Persons (1994).

On the other hand, interests could be aligned via incentives such as increased insider ownership (Jensen and Meckling, 1976; Morck et al., 1988). In addition, better corporate governance could enforce screening and accountability (Navarro, 1988; Jones, 1995; Shleifer and Vishny, 1997; Tirole, 2001). Furthermore, the bondholders of the firm could impose debt covenants and their own supervision (Gilson, 1990; Diamond, 1991; Barnea and Rubin, 2010). Also, the market for corporate control (takeovers, leveraged buyouts, proxy fights) could weed out ineffective managers (Shleifer and Vishny, 1997; Tirole, 2001; Pagano and Volpin, 2005).

Zerbini (2015) provides a research framework of CSR signaling. In particular, it is helpful to distinguish between direct signals and endorsement signals. Within CSR, Zerbini classifies warranties, ethics committees, and corporate disclosures as direct signals, whereas certifications, memberships, and ratings (e.g., KLD ratings) are the third-party endorsements. On the empirical side, Su et al. (2016) present evidence of CSR signaling higher Tobin's Q in ten Asian developing

economies (CLSA data). Furthermore, the researchers demonstrate that the signal's strength depends on the maturity and information diffusion of the economy. In other words, CSR seems to be helpful in markets characterized by institutional voids, but its signal drowns in the sea of reliable information of the more developed markets (Su et al., 2016).

While empirical literature on CSR signaling is limited, endorsement effects have been documented in the management literature. King et al. (2005) conclude that certifications of management standards (ISO 14001) reduce information asymmetries between companies and customers, and thus act as a signal. In addition, Montiel et al. (2012) argue that the signaling power of certifications is even more pronounced in corrupt environments because of the greater concerns regarding business conduct. Furthermore, the Ramchander et al. (2012) event study demonstrates that additions (deletions) to the Domini Social 400 index positively (negatively) affect firm valuations. Notably, the effects are opposite for the announcing firms and their competitors, as well as more prominent in opaque industries.

Transparency and cost of capital are another links between CSR and financial performance. In a rigorous study, El Ghoul et al. (2011) conclude that socially responsible firms enjoy lower implied cost of equity. The researchers apply a battery of models to the forecasted earnings and stock prices in order to deduce the ex ante cost of equity. Moreover, tobacco and nuclear power companies have higher cost of equity financing than comparable firms in other industries. As for the cost of debt, Goss and Roberts (2011) find that banks seem to care about CSR only when dealing with low-quality borrowers, while the loan terms and premiums for companies with strong balance sheets are unaffected by CSR. Using the Thomson Reuters ASSET4 database, Cheng et al. (2014) follow up with supporting evidence of relaxed capital constrains at companies with superior CSR.

Researchers have also examined if CSR could play into competitive advantages (Hill et al., 2007). Theoretically, firms whose goal is to address incompatible stakeholder interests have no chance of survival facing value-maximizing competitors (Jensen, 2002). Moreover, empirical evidence shows that competitive advantages of CSR, R&D, and product quality are unsustainable when they can be cheaply observed and imitated (Dutta et al., 1995; Reinhardt, 1998; Hoppe and Lehmann-Grube, 2001; McWilliams et al., 2006; Brammer and Millington, 2008).

Overinvestment is also a major link between corporate social responsibility and financial performance. Barnea and Rubin (2010) demonstrate that companies with higher management ownership and leverage undertake less CSR initiatives. The researchers argue that this reflects the convergence of interests and bondholder monitoring. Overinvestment might also happen if executives view CSR as a non-monetary benefit or a “pet project” (Jensen and Meckling, 1976; Shleifer and Vishny, 1997; Jensen, 2002). A related dichotomy is "profit-making" and "profit-spending", under which CSR is deemed a luxury (Freeman, 1984). For example, Videras and Owen (2006) show that contributions to environmental causes increase personal life satisfaction and create a so-called “warm-glow” effect. Correspondingly, expenditures driven solely by personal agendas are considered wasteful and financial performance suffers (Shleifer and Vishny, 1997; Tirole, 2001; Jensen, 2002).

Entrenchment constitutes another causal mechanism behind CSR. In contrast to the convergence-of-interests hypothesis (Jensen and Meckling, 1976), entrenchment represents a potential negative effect of insider ownership (Morck et al., 1988). It is usually associated with job security, employees, and takeover threats. For instance, Pagano and Volpin (2005) construct a theoretical model where managers grant long-term contracts and high long-term wages to workers, who then act as a “shark repellent” and “white squires”. That is, employees with job security resist hostile takeovers in favor of the incumbent executives. Using Swedish employer-employee panel data, Cronqvist et al. (2009) find supporting evidence to this hypothesis.

Last, but not least, managers’ risk aversion could lead to positive but diminishing impact (upside-down U-shape) of CSR on financial performance (Brammer and Millington, 2008). If executive’s wealth and job security rest on the company’s value (Donaldson, 1961; Williamson, 1964), a risk-averse manager will overinvest in unprofitable CSR projects as long as they reduce the firm-specific risk. This would go against the interests of the diversified and risk-neutral shareholders (Wiseman and Gomez-Mejia, 1998). In addition, Jo and Na (2012) use U.S. data and find that CSR reduces risk only in controversial industries. This supports the hypothesis that executives in these industries are more risk averse and use CSR as a risk management device. Furthermore, Kim et al. (2014) demonstrate that CSR can backfire when used to cover up negative news and thus exacerbates the risk of a stock price crash.

## 1.3. Economic theory

The economic theory is associated with the social welfare, imperfect competition, externalities, and economic policy. Revisiting Adam Smith's arguments, Jensen (2002) discussed that, in theory, social welfare is maximized whenever all firms in the economy maximize their enterprise value. In other words, as long as the consumers of final goods and services value them more than the raw inputs (society's limited resources), the firms should continue producing. Jensen pointed out that such claim assumes that the transactions with input owners and consumers are voluntary. Also, such economy allows the existence of the producer and consumer surpluses. Put another way, there are no monopolies, oligopolies (cartels), and/or externalities, which is not the case in real life. Traditional example of an externality is the water and air pollution (Coase, 1960; Jensen, 2002).

On the one hand, preventing imperfect competition and externalities is the government's role. Friedman (1970) asserted that the most the society can ask from business is to obey the law and avoid causing harm. If managers start choosing and implementing any social initiatives beyond that, they would be effectively doing the government's job (Levitt, 1958). However, it is not realistic to consider the government an efficient allocator of resources either, as documented in the economic policy literature (Stigler, 1982; Winston, 2006). In fact, government's weaknesses and limitations are well-known: corruption, incompatible agendas, limited budgets, lack of information and communication (Winston, 2006; Rittenberg and Tregarthen, 2009). On the other hand, Coase (1960), Jensen and Meckling (1992), and Jensen (2002) discussed how imperfect competition and externalities could also be solved by assigning alienable decision rights to decision-makers. Theoretically, an alienable decision right positions its owner "to bear the full costs or to capture the full rewards of their actions".

## 1.4. Hypotheses development

Stakeholder, signaling, agency, and economic theories help in a variety of corporate finance topics and make modern firms carefully consider how their actions are interpreted by other market participants (Stiglitz, 2000; Tirole, 2001). In particular, they raise important questions about social responsibility. Overall, CSR can be studied as a signaling device, as an agency problem, or as an investment. Can managers use CSR as a signal of good prospects? How should the board of directors incentivize and monitor managers when it comes to social initiatives? Can managers

maximize firm value and performance through profitable CSR investments like R&D or marketing?

In this paper we focus on the investment and signaling hypotheses, but we do not distinguish between them (i.e., we attribute evidence to both of them). Also, the agency hypothesis remains intriguing to explore. The key point of CSR signaling hypothesis is that the company does not invest in CSR with an objective to improve its performance. Instead, the firm engages in CSR because it anticipates good prospects and wants to convincingly communicate that. We use earnings before extraordinary items and cash flow from operations (CFO) to measure financial performance. Following Dichev and Tang (2009), we expect the volatilities of earnings and CFO to negatively moderate the effect of CSR. Thus, here are the hypotheses we test:

*Hypothesis 1A: Changes in CSR have a positive effect on the future changes in earnings (or CFO)*

*Hypothesis 1B: The volatility of earnings (or CFO) negatively moderates the effect of changes in CSR on the future changes in earnings (or CFO)*

*Hypothesis 2A: For low-volatility firms, changes in CSR have a positive effect on the future changes in earnings (or CFO)*

*Hypothesis 2B: For high-volatility firms, changes in CSR have a negative effect on the future volatility of earnings (or CFO)*

# Chapter 2: Data

## 2.1. Sample

This study is based on corporate social responsibility (CSR) and accounting data. CSR variables are sourced from the MSCI ESG KLD STATS database ("MSCI KLD" hereafter), which was created in 1991 by KLD Research & Analytics (Kinder, Lydenberg, and Domini) and acquired by MSCI in 2010. Accounting variables are sourced from the Compustat Monthly Updates North America Fundamentals Annual and Quarterly databases ("Compustat" hereafter).

Our merged sample of CSR and accounting variables dates from 1991 to 2015 and totals 19,831 firm-years. First, we follow standard practice and filter out the highly regulated financial and utility firms (SIC codes 6000-6999 and 4900-4999, respectively). Then, we trim firms with the book value of equity below US$ 5 million and the book value of assets below US$ 10 million (Fama and French, 2000). After that, we exclude firms which in a given year recorded a loss before extraordinary items or a negative cash flow from operations (CFO) larger than the book value of assets in the same year (*ROA* > -100% or *ROA_CFO* > -100%). Also, we exclude firms which in a given year recorded a decline in earnings or CFO larger than the book value of assets in the previous year (*PC_EARN* > -100% or *PC_CFO* > -100%). Then, we winsorize all variables at the 1st and 99th percentiles of their empirical distributions. Finally, we filter out missing observations in key variables – percentage point changes in earnings and changes in the CSR net percentage score (*PC_EARN*, *PC_CSR*). Descriptions and calculations of variables are provided in the rest of this section, in the table notes, and in the *Appendix*.

## 2.2. CSR variables

We use MSCI KLD metrics as proxies for CSR investment (cash outflow in CSR initiatives). The dollar amount of CSR is usually underestimated, as some of its aspects are lumped with other accounting items like R&D or advertising, while the charity donations are relatively small and do not have to be reported (McWilliams and Siegel, 2000; Barnea and Rubin, 2010).

MSCI KLD data has seven categories: Corporate Governance, Community, Diversity, Employee Relations, Environment, Human Rights, and Product[2]. Each category is measured with

[2] We exclude the industry-based categories: Alcohol, Gaming, Firearms, Military, Nuclear, Tobacco.

individual indicators of strengths and concerns. For a given firm and year, each indicator can be documented or researched. A value of "1" says the indicator is researched and documented (the firm met the assessment criteria in that year), whereas a value of "0" means it is just researched (the firm did not meet the assessment criteria in that year). We do not consider cases when indicators are not researched ("R") or missing ("NA"). As such, a strength indicator with value "1" is understood as "good" for a given firm and year, while a concern indicator with value "1" is understood as "bad". Interpretation switches if the strength and concern indicators are "0".

As noted by Servaes and Tamayo (2013), Deng et al. (2013), Beccetti et al. (2016), numbers of documented CSR strengths and concerns (ones) are not comparable across years and categories because of the variation in the number of researched indicators (ones and zeroes). Therefore, we compute total and category-specific percentage scores of CSR strengths (concerns) as the number of documented strengths (concerns) scaled by the number of researched strengths (concerns)[3]. Then, the CSR net score is calculated by subtracting the concerns percentage score from the strengths percentage score. Finally, we compute the annual changes in the CSR net percentage score for each firm (*PC_CSR*).

## 2.3. Accounting variables

### Balance sheet variables

Following Grullon et al. (2005) and Coles et al. (2006), we calculate market-to-book ratio (*MB*) as a proxy for the Tobin's Q. We divide the sum of the market value of equity and the book value of debt by the book value of assets, and then take the natural logarithm of the ratio. Also, we take the natural logarithm of the book value of assets as a gauge of the firm's size (*SIZE*). In addition, leverage (*LEV*) is defined as a percentage ratio of the book value of long-term debt to the book value of assets (Core, 2006).

### Earnings/CFO, profitability, volatility, mean reversion

We use earnings before extraordinary items ("earnings" hereafter) and cash flow from operations (CFO) to measure financial performance. On the one hand, CFO serves as a straight-forward robustness check. On the other hand, CFO-based variables have their own interpretation.

[3] The empirical results are not affected if we calculate the CSR net score based on unscaled CSR strengths and concerns, i.e. if we ignore the number of researched strengths and concerns.

Borrowing insights from Dechow and Dichev (2002) and Dichev and Tang (2008, 2009), we can think of CFO as a cleaner metric of macroeconomic and industry-specific drivers of firm performance. Specifically, unlike earnings, CFO does not have accounting issues such as mismatches between revenues and expenses, aggressive accrual estimates, earnings smoothing behavior, etc. Consistent with Fama and French (2000), Nissim and Ziv (2001), and Grullon et al. (2005), our models are based on the change in earnings. Specifically, it is a percentage point change in earnings (*PC_EARN*) computed as the dollar change in earnings divided by the lagged book value of assets. Also, we calculate return on assets (*ROA*) as earnings scaled by the book value of assets, as well as its percentage point change (*PC_ROA*). Identical variables based on the cash flow from operations end with "*_CFO*".

Following Dichev and Tang (2009), we compute the volatilities of earnings and CFO. Each volatility is calculated as a rolling 20-quarters standard deviation of *ROA* or *ROA_CFO*, respectively. In addition, we center earnings/CFO volatility around its industry means to get the industry-adjusted volatility (*VOL*, *VOL_CFO*). This centering makes regression coefficients more intuitive to interpret (Jaccard and Turrisi, 2003; Servaes and Tamayo, 2013).

As documented by Brooks and Buckmaster (1976), Elgers and Lo (1994), Fama and French (2000), and Grullon et al. (2005), profitability is mean reverting. To account for this mean reversion (speed of adjustment), we run the following cross-sectional regressions year-by-year for every industry (2-digit SIC code). The lagged market-to-book ratio captures firms' investment opportunities and growth stages, while the size is self-explanatory. We take residuals from these regressions as proxies for deviations of individual firms' profitability from its expected industry level (DFE, DFE_CFO).

$$\mathrm{ROA_i} = \beta_0 + \beta_1 \cdot \mathrm{ROA_{i,t-1}} + \beta_2 \cdot \mathrm{MB_{i,t-1}} + \beta_3 \cdot \mathrm{SIZE_{i,t-1}} + \epsilon_i \quad (2.1)$$

$$\mathrm{ROA\_CFO_i} = \beta_0 + \beta_1 \cdot \mathrm{ROA\_CFO_{i,t-1}} + \beta_2 \cdot \mathrm{MB_{i,t-1}} + \beta_3 \cdot \mathrm{SIZE_{i,t-1}} + \epsilon_i \quad (2.2)$$

## 2.4. Summary and correlation statistics

In order to pick up potential effects of CSR, Tables 2.1A, 2.1B, and 2.1C compare subsets based on the direction of change in the CSR net percentage score. Curiously, when the CSR net score rises (Table 1A), the percentage point changes in earnings and CFO are higher on average,

and the centered volatilities of earnings and CFO are lower. Meanwhile, the balance sheet profiles of the subsets are almost identical, as represented by the means and standard deviations of *LEV*, *MB*, *SIZE*. Furthermore, available observations indicate that annual improvements in CSR occur a bit less often than deteriorations (37% and 45% of the time), and that constant CSR scores are also common (17% of the time). Drilling down, CSR strengths change less frequently than CSR concerns (untabulated). Also, increases in CSR strengths are less common than decreases, whereas increases in CSR concerns are more frequent than decreases. Moreover, Table 2.1D indicates that changes in the CSR net score of the Corporate Governance and Diversity categories are negative on average and most scattered compared to other categories.

Table 2.2A demonstrates that correlations between *PC_EARN* & *PC_CFO*, *DFE* & *DFE_CFO*, and *VOL* & *VOL_CFO* are respectively 0.40, 0.45, and 0.46. These suggest that earnings and CFO behave independently more than half the time. Therefore, we follow Dichev and Tang (2009) and use CFO models in addition to the earnings models. As expected, *SIZE* is negatively correlated with *VOL* and *VOL_CFO* (- 0.33). As for correlations among the balance sheet variables, *MB* and *LEV* are negatively correlated (- 0.27), while *SIZE* and *LEV* correlate positively (0.33). Other statistically significant correlations in Table 2.2A are either economically small or trivial (e.g. *DFE* and *PC_EARN* correlate by definition of *DFE*). Table 2.2B displays that changes in the total CSR net percentage score have the highest correlations (more than 0.50) with the Corporate Governance, Diversity, and Employee Relations categories. Among the categories, the most economically significant correlations (more than 0.10) are between Diversity & Corporate Governance and Employee Relations & Community. Moreover, all statistically significant correlations between changes in CSR strengths and concerns are economically small (untabulated). Finally, Table 2.2C demonstrates that all statistically significant correlations between accounting and CSR variables are economically small. Notable correlations are found between *PC_EARN* & *PC_CSR* (-0.02), *VOL_CFO* & *PC_CSR* (- 0.02), *SIZE* & *PC_CSR* (0.07), *PC_EARN* & *PC_CSR_DIV* (-0.04). In addition, *MB* negatively correlates with the Corporate Governance, Community, and Human Rights categories, while *SIZE* positively correlates with changes in all categories except Community and Product.

[Table 2.1]

[Table 2.2]

# Chapter 3: Methodology

We compare earnings models to CFO models in order to examine the robustness of empirical results, as well as to distinguish the accounting and economic factors (Dichev and Tang, 2009). In order to examine CSR effects, we treat realized earnings and CFO as proxies for future earnings and CFO. Likewise, we proxy future volatility of earnings and CFO with the realized volatility. In contrast to Fama and French (2000) and Grullon et al. (2005), we are not using the Fama-Macbeth two step estimation when dealing with the firm and time effects. Instead, our models are estimated using random year effects (feasible generalized least squares, FGLS) and fixed firm effects (ordinary least squares, OLS). Furthermore, we cluster standard errors by firm and year in order to make them robust to arbitrary correlation structures within firms, years, or both (Wooldridge, 2003a; Petersen, 2009; Thompson, 2011; Cameron et al., 2011). Also, we correct standard errors for heteroscedasticity (White, 1980; Cribari-Neto, 2004).

Due to software limits and the number models, using two-way effects (year, firm, and/or industry) is impractical. Moreover, firm effects are a stronger control than industry effects. Econometric theory (Davidson and MacKinnon, 1999; Baltagi, 2005; Wooldridge, 2010) dictates that estimates obtained with the random effects (FGLS) are more efficient. The efficiency is gained by assuming independence of the effects (year dummies in our models) from the rest of repressors. Following Baltagi (2005), variance in the random year effects models is estimated according to Amemiya (1971) instead of Swamy and Arora (1972) in order to avoid negative variance. To monitor which estimation method is appropriate and where, we employ three well-known specification tests: F test of fixed effects against pooled OLS, Honda's (1985) Lagrange Multipliers test of random effects against pooled OLS, and Hausman test of fixed effects against random effects (Davidson and MacKinnon, 1999; Baltagi, 2005; Wooldridge, 2010). For brevity, the specification test statistics are not reported.

## 3.1. H1: CSR and future changes in earnings/CFO

Following Fama and French (2000) and Grullon et al. (2005), we construct linear and non-linear models. To clarify, "linear" models assume linear autocorrelation in earnings/CFO. Similarly, the "non-linear" models are not logit or probit regressions, and instead account for the mean reversion (speed of adjustment) and the non-linear autocorrelation in earnings/CFO. Overall, models of the earnings/CFO changes are divided into four groups: linear models without

earnings/CFO volatility, linear models with earnings/CFO volatility, non-linear models without earnings/CFO volatility, and non-linear models with earnings/CFO volatility. Also, each model is estimated at three horizons, i.e. from one to three years after changes in the CSR net score (El Ghoul et al., 2011). There are three earnings models and three CFO models per group (one for every horizon). Finally, all models are estimated with two methods: random year effects and fixed firm effects. Summing up, we estimate 48 models of changes in earnings/CFO.

## H1A: Linear models

$$\mathrm{PC\_EARN}_{t+\tau} = \alpha + s \cdot \mathrm{PC\_CSR}_t + \rho \cdot \mathrm{PC\_EARN}_t + \pi \cdot \mathrm{ROA}_t + \epsilon_t \quad (3.1)$$

$$\mathrm{PC\_CFO}_{t+\tau} = \alpha + s \cdot \mathrm{PC\_CSR}_t + \rho \cdot \mathrm{PC\_CFO}_t + \pi \cdot \mathrm{ROA\_CFO}_t + \epsilon_t \quad (3.2)$$

The horizon (year after changes in The CSR net score) is denoted with $\tau$, and we estimate models with $\tau$ from 1 to 3. *PC_STR* and *PC_CON* capture changes in the total percentage scores of CSR strengths and concerns; *PC_EARN* and *PC_CFO* – the linear autocorrelation in earnings/CFO; *ROA* and *ROA_CFO* – the profitability.

$s$ is expected to be positive. To elaborate, we expect increases in CSR strengths to be associated with future growth in earnings/CFO, while decreases in CSR strengths – with future decline in earnings/CFO. Furthermore, we expect negative $\rho$ – changes in earnings/CFO revert from year to year (Fama and French, 2000; Grullon et al., 2005). $\pi$ is expected to be negative too – as firms become more profitable, incremental growth in earnings/CFO diminishes (Grullon et al., 2005).

## H1B: Linear models with earnings/CFO volatility

$$\begin{aligned}\mathrm{PC\_EARN}_{t+\tau} = {} & \alpha + s \cdot \mathrm{PC\_CSR}_t + \sigma \cdot \mathrm{VOL}_t + \sigma_S \cdot \mathrm{VOL}_t \cdot \mathrm{PC\_CSR}_t \\ & + \rho \cdot \mathrm{PC\_EARN}_t + \pi \cdot \mathrm{ROA}_t + \epsilon_t \end{aligned} \quad (3.3)$$

$$\begin{aligned}\mathrm{PC\_CFO}_{t+\tau} = {} & \alpha + s \cdot \mathrm{PC\_CSR}_t \\ & + \sigma \cdot \mathrm{VOL\_CFO}_t + \sigma_S \cdot \mathrm{VOL\_CFO}_t \cdot \mathrm{PC\_CSR}_t \\ & + \rho \cdot \mathrm{PC\_CFO}_t + \pi \cdot \mathrm{ROA\_CFO}_t + \epsilon_t \end{aligned} \quad (3.4)$$

Building upon the previous model group, *VOL* and *VOL_CFO* capture the industry-adjusted volatility of earnings/CFO. In addition, we study how future changes in earnings/CFO are affected by the interaction between the industry-adjusted earnings/CFO volatility and the changes in CSR strengths and concerns. To that end, we calculate interaction terms as pairwise products of earnings/CFO volatility and changes in CSR strengths and concerns.

Recall that *VOL* and *VOL_CFO* are centered around their industry means. Hence, *s* is interpreted in a slightly different way. Here, it corresponds to the effect of changes in CSR net score on future changes in earnings/CFO *for the firms with industry-average volatility of earnings/CFO* (Jaccard and Turrisi, 2003; Servaes and Tamayo, 2013). Again, *s* is expected to be positive. As for the volatility itself, we expect negative $\sigma$, i.e. negative relation between past 5-year volatility and future changes in earnings/CFO (Dichev and Tang, 2009). We expect $\sigma_S$ to be negative too. In other words, we expect the volatility of earnings/CFO to distort the effects of changes in CSR strengths on future changes in earnings/CFO.

## H1A: Non-linear models

$$\begin{aligned} \mathrm{PC\_EARN}_{t+\tau} = {} & \alpha + s \cdot \mathrm{PC\_CSR}_t + \mu \cdot \mathrm{DFE}_t + \mu_N \cdot \mathrm{N\_DFE}_t \\ & + \mu_{N^2} \cdot \mathrm{SN\_DFE}_t + \mu_{P^2} \cdot \mathrm{SP\_DFE}_t \\ & + \rho \cdot \mathrm{PC\_EARN}_t + \rho_D \cdot \mathrm{DEC\_EARN}_t \\ & + \rho_{D^2} \cdot \mathrm{SDEC\_EARN}_t + \rho_{I^2} \cdot \mathrm{SINC\_EARN}_t + \epsilon_t \end{aligned} \quad (3.5)$$

$$\begin{aligned} \mathrm{PC\_CFO}_{t+\tau} = {} & \alpha + s \cdot \mathrm{PC\_CSR}_t + \mu \cdot \mathrm{DFE\_CFO}_t + \mu_N \cdot \mathrm{N\_DFE\_CFO}_t \\ & + \mu_{N^2} \cdot \mathrm{SN\_DFE\_CFO}_t + \mu_{P^2} \cdot \mathrm{SP\_DFE\_CFO}_t \\ & + \rho \cdot \mathrm{PC\_CFO}_t + \rho_D \cdot \mathrm{DEC\_CFO}_t \\ & + \rho_{D^2} \cdot \mathrm{SDEC\_CFO}_t + \rho_{I^2} \cdot \mathrm{SINC\_CFO}_t + \epsilon_t \end{aligned} \quad (3.6)$$

Following Fama and French (2000) and Grullon et al. (2005) further, we include the following three dummies to capture the mean reversion (speed of adjustment) in earnings. *N_DFE* stands for unexpectedly low profitability and equals negative deviation of *ROA* from its expected industry level and zero otherwise. *SN_DFE* is the extremely low unexpected profitability and equals squared negative *DFE* and zero otherwise. *SP_DFE* – extremely high unexpected

profitability, equals squared positive *DFE* and zero otherwise. Note that these dummies are not binary.

Likewise, we account for non-linear autocorrelation in earnings by employing three more dummies. *DEC_EARN* stands for the decrease in earnings as a percentage of lagged assets and equals negative *PC_EARN* and zero otherwise. *SDEC_EARN* is the extreme decrease in earnings as a percentage of lagged assets and equals squared negative *PC_EARN* and zero otherwise. *SINC_EARN* – extreme increase in earnings as a percentage of lagged assets, equals squared positive *PC_EARN* and zero otherwise. Note that *DFE* and *N_DFE* are both included in our models, so there is no *P_DFE* to avoid perfect collinearity in regressors. There is no *INC_EARN* for the same reason. The corresponding names of CFO-based variables end with "*_CFO*".

We expect negative $\mu$, negative $\mu_N$, positive $\mu_{N^2}$, and negative $\mu_{P^2}$. In other words, we expect earnings/CFO to rise faster after experiencing unexpectedly low profitability as opposed to unexpectedly high profitability, as well as after experiencing extreme deviations from expected profitability as opposed to small deviations (Fama and French, 2000; Grullon et al., 2005). As for the non-linear autocorrelation in earnings/CFO, we expect negative $\rho$, negative $\rho_D$, positive $\rho_{D^2}$, and negative $\rho_{I^2}$. To clarify, we expect negative changes in earnings/CFO to revert faster than positive changes, and large changes to revert faster than small changes (Fama and French, 2000; Grullon et al., 2005).

## H1B: Non-linear models with earnings/CFO volatility

Ultimately, we combine all of the discussed explanatory variables: changes in CSR strengths and concerns, earnings/CFO volatility, mean reversion, and autocorrelation terms. Our expectations remain the same for all coefficients.

$$\begin{aligned} \mathrm{PC\_EARN}_{t+\tau} \quad = \alpha + s \cdot \mathrm{PC\_CSR}_t + \sigma \cdot \mathrm{VOL}_t + \sigma_S \cdot \mathrm{VOL}_t \cdot \mathrm{PC\_CSR}_t \\ + \mu \cdot \mathrm{DFE}_t + \mu_N \cdot \mathrm{N\_DFE}_t \\ + \mu_{N^2} \cdot \mathrm{SN\_DFE}_t + \mu_{P^2} \cdot \mathrm{SP\_DFE}_t \\ + \rho \cdot \mathrm{PC\_EARN}_t + \rho_D \cdot \mathrm{DEC\_EARN}_t \\ + \rho_{D^2} \cdot \mathrm{SDEC\_EARN}_t + \rho_{I^2} \cdot \mathrm{SINC\_EARN}_t \\ + \epsilon_t \end{aligned} \tag{3.7}$$

$$
\begin{aligned}
\mathrm{PC\_CFO}_{t+\tau} \quad = \quad & \alpha + s \cdot \mathrm{PC\_CSR}_t \\
& + \sigma \cdot \mathrm{VOL\_CFO}_t + \sigma_S \cdot \mathrm{VOL\_CFO}_t \cdot \mathrm{PC\_CSR}_t \\
& + \mu \cdot \mathrm{DFE\_CFO}_t + \mu_N \cdot \mathrm{N\_DFE\_CFO}_t \\
& + \mu_{N^2} \cdot \mathrm{SN\_DFE\_CFO}_t + \mu_{P^2} \cdot \mathrm{SP\_DFE\_CFO}_t \\
& + \rho \cdot \mathrm{PC\_CFO}_t + \rho_D \cdot \mathrm{DEC\_CFO}_t \\
& + \rho_{D^2} \cdot \mathrm{SDEC\_CFO}_t + \rho_{I^2} \cdot \mathrm{SINC\_CFO}_t + \epsilon_t
\end{aligned} \tag{3.8}
$$

## 3.2. H2: Stable and volatile firms

Following Dichev and Tang (2009), we continue the investigation of the effects of earnings volatility. Specifically, we are testing whether CSR effects are different for stable and volatile firms. Therefore, we split the volatility term into high- and low-volatility dummy variables. The high volatility dummies (*HVOL*) equal 1 when the volatility is in the top decile (10%) among industry peers (2-digit SIC code) and 0 otherwise. Similarly, the low volatility dummies (*LVOL*) take the value of 1 when the volatility is in the bottom decile and 0 otherwise. Consistent with the models of changes in earnings described earlier, the models with the high and low volatilities are divided into the same groups: linear and non-linear, with random year effects (Year RE) and fixed firm effects (Firm FE). Each model is estimated at three horizons. Summing up, we estimate 24 models of changes in earnings, and 12 models of the earnings volatility.

### H2A: Changes in earnings

Extended linear and non-linear earnings models are presented below. We expect positive $s$, negative $\sigma_H$, and positive $\sigma_L$. To clarify, the high volatility is expected to distort the effect of CSR on future earnings, whereas the low volatility – to amplify it. Expectations regarding the mean reversion and autocorrelation coefficients stay the same, as discussed earlier. Also, we expect negative $\sigma$, i.e. higher volatility to be followed by declines in earnings.

$$
\begin{aligned}
\mathrm{PC\_EARN}_{t+\tau} \quad = \quad & \alpha + s \cdot \mathrm{PC\_CSR}_t + \sigma \cdot \mathrm{VOL}_t \\
& + \sigma_H \cdot \mathrm{HVOL}_t \cdot \mathrm{PC\_CSR}_t + \sigma_L \cdot \mathrm{LVOL}_t \cdot \mathrm{PC\_CSR}_t \\
& + \rho \cdot \mathrm{PC\_EARN}_t + \pi \cdot \mathrm{ROA}_t + \epsilon_t
\end{aligned} \tag{3.9}
$$

$$
\begin{aligned}
\mathrm{PC\_EARN}_{t+\tau} \quad = \quad & \alpha + s \cdot \mathrm{PC\_CSR}_t + \sigma \cdot \mathrm{VOL}_t \\
& + \sigma_H \cdot \mathrm{HVOL}_t \cdot \mathrm{PC\_CSR}_t + \sigma_L \cdot \mathrm{LVOL}_t \cdot \mathrm{PC\_CSR}_t \\
& + \mu \cdot \mathrm{DFE}_t + \mu_N \cdot \mathrm{N\_DFE}_t \\
& + \mu_{N^2} \cdot \mathrm{SN\_DFE}_t + \mu_{P^2} \cdot \mathrm{SP\_DFE}_t \\
& + \rho \cdot \mathrm{PC\_EARN}_t + \rho_D \cdot \mathrm{DEC\_EARN}_t \\
& + \rho_{D^2} \cdot \mathrm{SDEC\_EARN}_t + \rho_{I^2} \cdot \mathrm{SINC\_EARN}_t + \epsilon_t
\end{aligned} \tag{3.10}
$$

## H2B: Volatility of earnings

Earnings volatility is modelled as follows. There is only one specification, i.e. there are no linear or non-linear forms of the model. We expect negative $s$, negative $\sigma_H$, and positive $\sigma_L$. Specifically, the high volatility is expected to reinforce the effect of CSR on future volatility, while the low volatility – to offset it. In addition, we expect positive autocorrelation in volatility (positive $\sigma$). Following Campbell et al. (2001) and Pastor and Veronesi (2003), we control for the market-to-book ratio, size, and leverage. We expect negative $\beta_1$, i.e. that future earnings of value (growth) companies are expected to be stable (volatile). Similarly, we expect negative $\beta_2$, since small firms tend to have unstable income. Finally, leverage is supposed to incentivize managers to keep earnings stable, so we expect negative $\beta_3$.

$$
\begin{aligned}
\mathrm{VOL}_{t+\tau} \quad = \quad & \alpha + s \cdot \mathrm{PC\_CSR}_t + \sigma \cdot \mathrm{VOL}_t \\
& + \sigma_H \cdot \mathrm{HVOL}_t \cdot \mathrm{PC\_CSR}_t + \sigma_L \cdot \mathrm{LVOL}_t \cdot \mathrm{PC\_CSR}_t \\
& + \beta_1 \cdot \mathrm{MB}_t + \beta_2 \cdot \mathrm{SIZE}_t + \beta_3 \cdot \mathrm{LEV}_t + \epsilon_t
\end{aligned} \tag{3.11}
$$

# Chapter 4: Empirical results

While all models include industry dummies, we apply fixed firm effects (Firm FE) and random year effects estimators (Year RE). F and LM tests (untabulated) demonstrate that all models should include year and firm effects (i.e. pooled OLS is worse). Furthermore, Hausman tests (untabulated) reveal that fixed firm effects are better than random firm effects, whereas random year effects are better than fixed year effects. Also, a meaningful amount of variability in earnings and CFO is captured only in the first year, as indicated by the adjusted R-squared that drops sharply at long horizons.

## 4.1. H1: CSR and future changes in earnings/CFO

Tables 4.1-4.4 exhibit how changes in the CSR net score affect future realized changes in earnings. Recall that there are four model groups: linear models without earnings volatility (Panel A in Tables 4.1 and 4.2), linear models with earnings volatility (Panel B in Tables 4.1 and 4.2), non-linear models without earnings volatility (Panel A in Tables 4.3 and 4.4), and non-linear models with earnings volatility (Panel B in Tables 4.3 and 4.4). Each model is estimated at three horizons (1-3 years after changes in the CSR net score). The results of CFO models are presented in Tables 4.5-4.8 and are organized in an identical manner.

### H1: Changes in earnings

As time passes after changes in the CSR net score, our fixed firm effects models (Tables 4.1 and 4.3) indicate that the effect on future earnings goes from insignificant (one and two years out) to surprisingly negative (three years out). Also at the 3-year horizon, the interaction between CSR net score and earnings volatility is negative. Admittedly, there is no evidence if we account for the unobserved year effects instead of the firm effects (Tables 4.2 and 4.4).

In the first two years, CSR effect could be dominated by significant mean reversion and autocorrelation in earnings. Consistent with Fama and French (2000), Nissim and Ziv (2001), and Grullon et al. (2005), the linear autocorrelation and the effect of profitability are negative as expected, while approximately 35%-41% of change in earnings reverts to the mean. Note that linear and non-linear models provide identical findings with respect to the CSR effects, so the particular form of the earnings mean reversion and autocorrelation is irrelevant. Furthermore, there could be an omitted variable or interaction (Jaccard and Turrisi, 2003; Servaes and Tamayo, 2013).

Since the firms in our sample operate in a developed capital market (U.S.), other drivers of future earnings could be more reliable (Su et al., 2016). Note that time-invariant characteristics are already captured by the fixed firm effects (Davidson and MacKinnon, 1999; Baltagi, 2005; Wooldridge, 2010).

In the third year, Hypothesis 1A is rejected. To elaborate, a 100% surge[4] in the CSR net score is associated with a 5-8%[5] decline in earnings three years later. This could manifest the agency costs of CSR, as discussed in the literature review (Jensen and Meckling, 1976; Schleifer and Vishny, 1997; Tirole, 2001; Jensen; 2002). Furthermore, this negative relation could be connected to the El Ghoul et al. (2011) argument that socially responsible firms have lower cost of equity. The researchers compute implied cost of equity based on the forecasted earnings and stock price, so a lower cost of equity could stem from either lower forecasted earnings, higher stock price, or both. In contrast, we examine the future realized earnings instead of the forecasted earnings. Also, we scale earnings by the book value of assets instead of the stock price. Thus, it would be interesting to combine the approaches of Nissim and Ziv (2001), Grullon et al. (2005), and El Ghoul et al. (2011), and test how CSR affects forecasted earnings in isolation from the stock price dynamics.

Hypothesis 1B is confirmed at the 3-year horizon. Earnings volatility does negatively moderate the effect of CSR changes on future earnings. According to the main CSR coefficient, three years after a 100% improvement in the CSR net score, earnings decline by 8% at firms with industry-average volatility of earnings. Meanwhile, the interaction term suggests that for a firm whose earnings are 1% more stable (less volatile) than its peers, the drop in earnings is less severe (higher by 2-3%). We explore the stable and volatile companies in greater detail later, as per Hypotheses 2A and 2B.

[Table 4.1]

[Table 4.2]

[Table 4.3]

[4] E.g., doubling of strengths, elimination of all concerns, or any combination of more strengths and less concerns that amounts to a 100% change in the CSR net score.
[5] Ranges include coefficients in all specifications.

[Table 4.4]

## H1: Changes in CFO

Hypothesis 1A is again rejected at the 2-year and 3-year horizons, while there are no findings regarding Hypothesis 1B (Tables 4.5 and 4.7). Specifically, a 100% surge in the CSR net score is associated with a 1-2% dip in CFO consecutively after two and three years, according to the fixed firm effects models. If we account for the unobserved year effects instead of the firm effects (Tables 4.6 and 4.8), the only significant result is a negative association at the 2-year horizon.

In light of the earnings models, the lack of evidence based on CFO is actually a result in itself. Recall that one reason to model the cash flow from operations is to isolate macroeconomic drivers of firm performance from its accounting factors. Earnings are riddled with accounting issues such as mismatches between revenues and expenses, aggressive accrual estimates, earnings smoothing behavior, etc. (Dechow and Dichev, 2002; Dichev and Tang, 2008; Dichev and Tang, 2009). We see that the main CSR coefficients in the earnings models are larger in absolute value than in the CFO models. From this perspective, CSR manifests the quality of financial reporting rather than the broad dynamics of the economy/industry. Furthermore, business cycles and industrial trends (captured by the CFO volatility) do not reinforce the impact of CSR, unlike accounting issues (represented by the earnings volatility).

Similar to the earnings models, the first year could be inconclusive due to strong mean reversion and autocorrelation in CFO, as well as omitted variables or interactions acting as more reliable drivers of future CFO (Jaccard and Turrisi, 2003; Servaes and Tamayo, 2013; Su et al., 2016). Moreover, the negative long-term relationship could be again connected to potential agency costs (Tirole, 2001; Jensen, 2002) or a lower cost of equity (El Ghoul et al., 2011). Although it would be interesting to test CSR effects with respect to forecasted CFO in isolation from the stock price dynamics, analyst forecasts of CFO could only be available and/or reliable for firms in certain industries such as energy and real estate (Dichev and Tang, 2009).

[Table 4.5]

[Table 4.6]

[Table 4.7]

[Table 4.8]

## 4.2. H2: Stable and volatile firms

In this section we look at how changes in the CSR net score of stable and volatile firms affect the future realized changes in earnings (Tables 4.9 and 4.10) and the future realized volatility of earnings (Tables 4.11 and 4.12). As expected, a more nuanced picture is unveiled once we split the volatility of earnings into the low volatility dummy (bottom quartile, Panel A) and the high volatility dummy (top quartile, Panel B). As discussed earlier, the particular form of the earnings mean reversion and autocorrelation is irrelevant. Also, the CFO volatility does not seem to attenuate the CSR effect. Therefore, linear models of earnings are sufficient to test Hypotheses 2A and 2B.

### H2A: Changes in earnings

The evidence supporting Hypothesis 2A is weak. Our extended fixed firm effects models demonstrate similar main coefficients: the CSR effect on future earnings goes from insignificant after one and two years to surprisingly negative three years later. Also at the 3-year horizon, CSR does not interact with the low volatility dummy, while negatively interacting with the high volatility dummy. To elaborate, a 100% surge (doubling) in the CSR net score of a stable firm leads to a 3%[6] decline in earnings after three years. Meanwhile, a volatile firm experiences a 10% drop in earnings in the same scenario. However, there are again no findings if we account for the unobserved year effects instead of the firm effects (Table 4.10).

[Table 4.9]

[Table 4.10]

### H2B: Volatility of earnings

Both fixed firm effects and random year effects models confirm Hypothesis 2B in the first two years following changes in the CSR net score (Tables 4.11 and 4.12). To elaborate, a 100% improvement in the CSR net score of a volatile firm leads to 2-4% decline in the volatility of earnings consecutively after one and two years. Therefore, volatile firms experience a reduction in volatility in the first two years after raising the social responsibility, but after three years their earnings tend to plunge.

[6] Sum of the main coefficient and the dummy interaction

Also at the 1-year and 2-year horizons, the negative main CSR coefficient is cancelled out by the low volatility interaction terms (-0.01 and 0.01). In other words, stable firms experience no escalation in volatility following CSR investments, while having smaller losses after three years compared to volatile firms. As for the balance sheet controls, future realized earnings volatility is negatively related to the market-to-book ratio and size. As expected, firms with more investment opportunities as well as larger companies tend to have lower earnings volatility.

[Table 4.11]

[Table 4.12]

# Chapter 5: Robustness tests

In this section we examine the reliability of our findings. In particular, we check if CSR precedes higher levels of earnings/CFO; how CSR interacts with expenditures on advertising, research and development; and whether alternative CSR scores have the same relation to future earnings. For brevity, we only discuss linear fixed firm effects models.

## 5.1. Levels of earnings/CFO

Consistent with the methodology and terminology of Nissim and Ziv (2001) and Grullon et al. (2005), we model the levels of earnings and CFO. "Levels" are earnings/CFO deflated by assets (*ROA* and *ROA_CFO*), so, in other words, we are modelling profitability. Tables 5.1 and 5.2 shows models of earnings and CFO levels, respectively. Based on the earnings and CFO levels, we cannot confirm or reject Hypothesis 1A or Hypothesis 1B. Similar to the models of changes, CSR effect on levels could be muffled by significant mean reversion and autocorrelation in earnings and CFO. Also, other drivers of future profitability and/or interactions with CSR could be more reliable (Jaccard and Turrisi, 2003; Servaes and Tamayo, 2013; Su et al., 2016).

Consistent with Fama and French (2000), Nissim and Ziv (2001), and Grullon et al. (2005), our models indicate a positive autocorrelation in profitability (from 0.05 to 0.10[7]), as well as a negative association with the past changes in profitability (from -0.14 to -0.19). As expected, profitability is positively associated with the market-to-book ratio (from 1.87 to 7.68) and negatively related to size (from -2.51 to -0.49).

[Table 5.1]

[Table 5.2]

## 5.1. Advertising and R&D expenditures

We augment our models with the advertising and research and development (R&D) expenditures. Servaes and Tamayo (2013) report a positive interaction between advertising and CSR. Their argument is that advertising increases the customer and media awareness of the company's CSR initiatives, and thus facilitates the CSR effect. A similar line of reasoning can be

[7] Ranges include coefficients in all specifications.

applied to the R&D expenditures. Since companies do not have to disclose immaterial expenditures, we substitute missing Compustat data with zeroes[8]. As final variables, we use the percentage point changes in expenditures on advertising and R&D (*PC_ADEX* and *PC_RDEX*). Table 5.3 presents that the CSR effects are robust to the inclusion of advertising and R&D expenditures. There are no associations in the first two years, while the negative relation three years later is amplified by the earnings volatility. Moreover, advertising and R&D expenditures do not moderate the CSR effect, as all interaction terms are insignificant.

[Table 5.3]

## 5.3. Alternative CSR scores

It is interesting to see if the CSR effect holds up across categories. We compute three alternative measures: conservative CSR, internal CSR, and external CSR (Godfrey et al., 2009[9]; Servaes and Tamayo, 2013). The only difference in their calculation is the combination of categories: conservative CSR excludes Corporate Governance and Product categories; internal CSR includes Diversity and Employee Relations; and external CSR comprises Community, Environment, and Human Rights. Shleifer and Vishny (1997) and Tirole (2001) discuss that corporate governance is hardly voluntary for companies, and the same is true for the product quality.

Our findings remain the same with the alternative CSR scores, rejecting Hypothesis 1A and confirming Hypothesis 1B (Tables 5.4-5.6). According to the main CSR coefficients, three years after a 100% improvement in the CSR net score, earnings decline by 4-8% at firms with industry-average volatility of earnings. Meanwhile, the interaction term suggests that for a firm whose earnings are 1% more stable (less volatile) than its peers, the drop in earnings is less severe (higher by 2-3%). Notably, external CSR has a significant negative association with the first year earnings, suggesting that the effect on financial performance is more immediate when CSR investments are aimed at the external stakeholders.

[Table 5.4]

[8] Servaes and Tamayo (2013) demonstrate that alternative treatments of missing expenditures (e.g., using industry averages or trimming) do not affect the relation of CSR to firm performance.
[9] Instead of "internal" and "external", Godfrey et al., 2009 use the terms "primary" and "secondary" CSR. We avoid the unnecessary connotations.

[Table 5.5]

[Table 5.6]

# Chapter 6: Limitations and future research

Like any paper, this one raises more questions than it answers. Here, we outline ways to build upon our efforts. As argued by Margolis et al. (2009), researchers can apply an advanced methodology and/or test different hypotheses.

## 6.1. Advanced methodology

In order to combat possible endogeneity violation, researchers are encouraged to apply two-stage sample selection models and instrumental variables (Heckman, 1979; Winship and Mare, 1992). To clarify, these models first control whether a firm is likely to invest in CSR, and then assess the relationship between CSR and future earnings (Margolis et al., 2009). Since KLD scores are clustered around zero, one can run a Tobit regression of CSR on firm characteristics and use the residuals in further analysis (Tobin, 1958a).

Another concern is potential survivorship bias (Dichev and Tang, 2009), as the insignificant short-term CSR effect is based on a larger sample than the long-term negative effect. In other words, we do not observe firms that were liquidated, acquired, or restructured after they increased or decreased CSR. This can be handled with a constant sample approach, i.e. by excluding companies that do not have long-term observations. Granted, the constant sample method introduces a look-ahead bias.

More generally, our findings are limited to the U.S. data. While it is possible to make inferences regarding corporate social responsibility in comparable developed economies, the use of a comprehensive global sample would be a more appropriate solution. For example, Durnev and Kim (2005), Khanna et al. (2006), Doidge et al. (2007), Chan and Cheung (2012), Su et al. (2016) use Credit Lyonnais Securities Asia (CLSA) corporate governance reports. CLSA data covers large companies in ten Asian emerging markets.

## 6.2. Different hypotheses

While we did not distinguish between the investment and signaling hypotheses, it is worthwhile to do so. The main difference between them is the anticipation of future performance. A proxy for such anticipations could be analyst forecasts obtained from Thomson Reuters I/B/E/S or FactSet databases (El Ghoul et al., 2011). In addition to tackling endogeneity, models of CSR scores would provide residuals that could be interpreted as unexpected CSR investments.

By comparing the effects of expected and unexpected CSR on financial performance, researchers could attribute evidence to either the investment or the signaling hypothesis. The agency hypothesis should be investigated as well.

In addition, as argued by Jensen (2002), opposing theories of CSR could be combined into an "enlightened" value maximization and stakeholder approach. In other words, governments and corporations could augment current practices of corporate governance with the value maximization as the "business equivalent of the medical Hippocratic oath" and the creative approach of the stakeholder theory. For this to happen, researchers should focus on where, when, and how CSR does work. Answers to these questions can come from the perspectives of firms, society, and/or institutions (Margolis et al., 2009; Su et al., 2016). Studying single (or different combinations of) CSR categories could be fruitful too.

From the company perspective, researchers can continue investigating the indirect mechanisms. Also, since every company/executive at some point contemplates if their goal is "to profit or to serve" (Merton, 1976), the natural question is "How to do both efficiently?" (Tirole, 2001; Margolis et al., 2009). Hence, research on organizational ambidexterity can shed light on how firms could pursue core business and social initiatives simultaneously (Raisch et al., 2009; O'Reilly and Tushman, 2013). Moreover, it is intriguing if there are creative ways for firms to manage specific categories of CSR. Most of the papers focus on the environmental aspect (Margolis et al., 2009). For instance, King and Lenox (2002) argue that prevention of pollution is more profitable than pollution treatment.

From the social standpoint, we can investigate if and when people should rely on CSR, and in what form. Hart et al. (1997), Hart (2005), Prahalad (2005), and Seelos and Mair (2005) hypothesize that corporations, non-profit organizations, "social entrepreneurs", and governments could team up and implement innovative solutions regarding poverty, infrastructure, public services, etc. On the contrary, Jensen (2002) and Reich (2007) assert that CSR in its current form is unreliable, distracting, and has no place in the governmental domain.

# Conclusions

Overall, CSR can be studied as an investment, a signaling device, and/or an agency problem. In this study, we focus on the investment and signaling hypotheses, and thus study the association between CSR and future realized financial performance. Based on a range of fixed firm effects and random year effects models, we find no evidence of a short-term (first two years) association between CSR and future realized earnings or CFO, but there is a negative long-term (third year) relation. The findings are consistent when we control for advertising and R&D expenditures or use alternative CSR gauges (conservative, internal, and external CSR). The negative long-term effect might be linked to socially responsible firms having agency problems (Tirole, 2001; Jensen, 2002), a lower cost of equity (El Ghoul et al., 2011), or both.

Furthermore, the volatility of earnings negatively moderates the CSR effect on future earnings, i.e. it is different for stable and volatile firms. After raising social responsibility, stable firms experience no escalation in volatility, while having smaller losses after three years compared to volatile firms. In the meantime, volatile firms that engage in CSR tend to have lower volatility in the first two years, followed by plunging earnings three years later. Admittedly, when we account for the random year effects, the only robust results are that CSR leads to a decline in the cash flow from operations, and a lower earnings volatility at volatile companies. Therefore, while our results cast doubt whether CSR signals higher earnings or profitability, CSR could signal a lower volatility of earnings.

To build upon our effort, researchers can apply a more advanced methodology and/or ask other questions (Margolis et al., 2009). Future efforts should address potential endogeneity violations and survivorship biases, as well as try collecting a global sample. While we did not distinguish between the investment and signaling hypotheses, it could be done by using analyst forecasts and/or splitting CSR into expected and unexpected parts. The agency hypothesis should be investigated too. More generally, researchers should continue deciphering where, when, and how CSR does work. Answers to these questions could be found from the perspectives of firms, society, and institutions.

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# Appendix

## List of variable definitions

### CSR variables (MSCI KLD)

#### *Identifiers*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **CUSIP8** | 8-character CUSIP code | Alphanumeric |
| **YEAR** | Fiscal year | 1991-2015 |
| **CNAME** | Company name | Character |

#### *CSR net percentage score*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **DOC_STR** | Total number of documented strengths = **DOC_STR_COM** + **DOC_STR_CGOV** + **DOC_STR_DIV** + **DOC_STR_EMP** + **DOC_STR_ENV** + **DOC_STR_HUM** + **DOC_STR_PRO** | Integer |
| **RES_STR** | Total number of researched strengths = **RES_STR_COM** + **RES_STR_CGOV** + **RES_STR_DIV** + **RES_STR_EMP** + **RES_STR_ENV** + **RES_STR_HUM** + **RES_STR_PRO** | Integer |
| **STR** | Total percentage score of CSR strengths = 100 * **DOC_STR** / **RES_STR** | % high - “good”, low - “bad” |
| **DOC_CON** | Total number of documented concerns = **DOC_CON_COM** + **DOC_CON_CGOV** + **DOC_CON_DIV** + **DOC_CON_EMP** + **DOC_CON_ENV** + **DOC_CON_HUM** + **DOC_CON_PRO** | Integer |
| **RES_CON** | Total number of researched concerns = **RES_CON_COM** + **RES_CON_CGOV** + **RES_CON_DIV** + **RES_CON_EMP** + **RES_CON_ENV** + **RES_CON_HUM** + **RES_CON_PRO** | Integer |
| **CON** | Total percentage score of CSR concerns = 100 * **DOC_CON** / **RES_CON** | % high - “bad”, low - “good” |
| **CSR** | Net percentage score = **STR** – **CON** | % points positive - “good”, negative - “bad” |
| **PC_CSR** | Change in the net percentage score = **CSR** – lag(**CSR)** | % points positive - “good”, negative - “bad” |

### *Conservative CSR (excluding Corporate Governance and Product)*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **DOC_STR_XGP** | Total number of documented strengths<br>= **DOC_STR_COM** + **DOC_STR_DIV** + **DOC_STR_EMP** + **DOC_STR_ENV** + **DOC_STR_HUM** | Integer |
| **RES_STR_XGP** | Total number of researched strengths<br>= **RES_STR_COM** + **RES_STR_DIV** + **RES_STR_EMP** + **RES_STR_ENV** + **RES_STR_HUM** | Integer |
| **STR_XGP** | Total percentage score of CSR strengths<br>= 100 * **DOC_STR_XGP** / **RES_STR_XGP** | %<br>high - “good”, low - “bad” |
| **DOC_CON_XGP** | Total number of documented concerns<br>= **DOC_CON_COM** + **DOC_CON_DIV** + **DOC_CON_EMP** + **DOC_CON_ENV** + **DOC_CON_HUM** | Integer |
| **RES_CON_XGP** | Total number of researched concerns<br>= **RES_CON_COM** + **RES_CON_DIV** + **RES_CON_EMP** + **RES_CON_ENV** + **RES_CON_HUM** | Integer |
| **CON_XGP** | Total percentage score of CSR concerns<br>= 100 * **DOC_CON_XGP** / **RES_CON_XGP** | %<br>high - “bad”, low - “good” |
| **CSR_XGP** | Net percentage score = **STR_XGP** – **CON_XGP** | % points<br>positive - “good”, negative - “bad” |
| **PC_CSR_XGP** | Change in the net percentage score<br>= **CSR_XGP** – lag(**CSR_XGP)** | % points<br>positive - “good”, negative - “bad” |

### *Internal CSR (Diversity and Employee Relations)*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **DOC_STR_INTER** | Total number of documented strengths<br>= **DOC_STR_DIV** + **DOC_STR_EMP** | Integer |
| **RES_STR_INTER** | Total number of researched strengths<br>= **RES_STR_DIV** + **RES_STR_EMP** | Integer |
| **STR_INTER** | Total percentage score of CSR strengths<br>= 100 * **DOC_STR_INTER** / **RES_STR_INTER** | %<br>high - "good", low - "bad" |
| **DOC_CON_INTER** | Total number of documented concerns<br>= **DOC_CON_DIV** + **DOC_CON_EMP** | Integer |
| **RES_CON_INTER** | Total number of researched concerns<br>= **RES_CON_DIV** + **RES_CON_EMP** | Integer |
| **CON_INTER** | Total percentage score of CSR concerns<br>= 100 * **DOC_CON_INTER** / **RES_CON_INTER** | %<br>high - "bad", low - "good" |
| **CSR_INTER** | Net percentage score<br>= **STR_INTER** – **CON_INTER** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_INTER** | Change in the net percentage score<br>= **CSR_INTER** – lag(**CSR_INTER)** | % points<br>positive - "good", negative - "bad" |

### *External CSR (community, Environment, Human Rights)*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **DOC_STR_EXTER** | Total number of documented strengths<br>= **DOC_STR_COM** + **DOC_STR_ENV** + **DOC_STR_HUM** | Integer |
| **RES_STR_EXTER** | Total number of researched strengths<br>= **RES_STR_COM** + **RES_STR_ENV** + **RES_STR_HUM** | Integer |
| **STR_EXTER** | Total percentage score of CSR strengths<br>= 100 * **DOC_STR_EXTER** / **RES_STR_EXTER** | %<br>high - "good", low - "bad" |
| **DOC_CON_EXTER** | Total number of documented concerns<br>= **DOC_CON_COM** + **DOC_CON_ENV** + **DOC_CON_HUM** | Integer |
| **RES_CON_EXTER** | Total number of researched concerns<br>= **RES_CON_COM** + **RES_CON_ENV** + **RES_CON_HUM** | Integer |
| **CON_EXTER** | Total percentage score of CSR concerns<br>= 100 * **DOC_CON_EXTER** / **RES_CON_EXTER** | %<br>high - "bad", low - "good" |
| **CSR_EXTER** | Net percentage score<br>= **STR_EXTER** – **CON_EXTER** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_EXTER** | Change in the net percentage score<br>= **CSR_EXTER** – lag(**CSR_EXTER)** | % points<br>positive - "good", negative - "bad" |

***Community, Corporate Governance***

| Name | Description/Formula | Units/Format |
|---|---|---|
| **STR_COM_[A-X]** | Strength indicators in the *Community* category | 1 – met criteria - "good"<br>0 – did not meet criteria - "bad"<br>R, NA – unresearched, not available |
| **DOC_STR_COM** | Number of documented strengths in a given year (ones) | Integer |
| **RES_STR_COM** | Number of researched strengths in a given year (ones and zeroes) | Integer |
| **STR_COM** | Percentage score of strengths in the *Community* category<br>= 100 * **DOC_STR_COM** / **RES_STR_COM** | %<br>high - "good", low - "bad" |
| **CON_COM_[A-X]** | Concern indicators in the *Community* category | 1 – met criteria - "bad"<br>0 – did not meet criteria - "good"<br>R, NA – unresearched, not available |
| **DOC_CON_COM** | Number of documented concerns in a given year (ones) | Integer |
| **RES_CON_COM** | Number of researched concerns in a given year (ones and zeroes) | Integer |
| **CON_COM** | Percentage score of concerns in the *Community* category<br>= 100 * **DOC_CON_COM** / **RES_CON_COM** | %<br>high - "bad", low - "good" |
| **CSR_COM** | Net percentage score = **STR_COM** – **CON_COM** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_COM** | Change in the net percentage score<br>= **CSR_COM** – lag(**CSR_COM)** | % points<br>positive - "good", negative - "bad" |
| | | |
| **STR_CGOV_[A-X]** | Strength indicators in the *Corporate Governance* category | 1 – met criteria - "good"<br>0 – did not meet criteria - "bad"<br>R, NA – unresearched, not available |
| **DOC_STR_CGOV** | Number of documented strengths in a given year (ones) | Integer |
| **RES_STR_CGOV** | Number of researched strengths in a given year (ones and zeroes) | Integer |
| **STR_CGOV** | Percentage score of strengths in the *Corporate Governance* cat.<br>= 100 * **DOC_STR_CGOV** / **RES_STR_CGOV** | %<br>high - "good", low - "bad" |
| **CON_CGOV_[A-X]** | Concern indicators in the *Corporate Governance* category | 1 – met criteria - "bad"<br>0 – did not meet criteria - "good"<br>R, NA – unresearched, not available |
| **DOC_CON_CGOV** | Number of documented concerns in a given year (ones) | Integer |
| **RES_CON_CGOV** | Number of researched concerns in a given year (ones and zeroes) | Integer |
| **CON_CGOV** | Percentage score of concerns in the *Corporate Governance* cat.<br>= 100 * **DOC_CON_CGOV** / **RES_CON_CGOV** | %<br>high - "bad", low - "good" |
| **CSR_CGOV** | Net percentage score = **STR_CGOV** – **CON_CGOV** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_CGOV** | Change in the net percentage score<br>= **CSR_CGOV** – lag(**CSR_CGOV)** | % points<br>positive - "good", negative - "bad" |

### *Diversity, Employee Relations*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **STR_DIV_[A-X]** | Strength indicators in the *Diversity* category | 1 – met criteria - "good"<br>0 – did not meet criteria - "bad"<br>R, NA – unresearched, not available |
| **DOC_STR_DIV** | Number of documented strengths in a given year (ones) | Integer |
| **RES_STR_DIV** | Number of researched strengths in a given year (ones and zeroes) | Integer |
| **STR_DIV** | Percentage score of strengths in the *Diversity* category<br>= 100 * **DOC_STR_DIV** / **RES_STR_DIV** | %<br>high - "good", low - "bad" |
| **CON_DIV_[A-X]** | Concern indicators in the *Diversity* category | 1 – met criteria - "bad"<br>0 – did not meet criteria - "good"<br>R, NA – unresearched, not available |
| **DOC_CON_DIV** | Number of documented concerns in a given year (ones) | Integer |
| **RES_CON_DIV** | Number of researched concerns in a given year (ones and zeroes) | Integer |
| **CON_DIV** | Percentage score of concerns in the *Diversity* category<br>= 100 * **DOC_CON_DIV** / **RES_CON_DIV** | %<br>high - "bad", low - "good" |
| **CSR_DIV** | Net percentage score = **STR_DIV** – **CON_DIV** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_DIV** | Change in the net percentage score<br>= **CSR_DIV** – lag(**CSR_DIV)** | % points<br>positive - "good", negative - "bad" |
| | | |
| **STR_EMP_[A-X]** | Strength indicators in the *Employee Relations* category | 1 – met criteria - "good"<br>0 – did not meet criteria - "bad"<br>R, NA – unresearched, not available |
| **DOC_STR_EMP** | Number of documented strengths in a given year (ones) | Integer |
| **RES_STR_EMP** | Number of researched strengths in a given year (ones and zeroes) | Integer |
| **STR_EMP** | Percentage score of strengths in the *Employee Relations* category<br>= 100 * **DOC_STR_EMP** / **RES_STR_EMP** | %<br>high - "good", low - "bad" |
| **CON_EMP_[A-X]** | Concern indicators in the *Employee Relations* category | 1 – met criteria - "bad"<br>0 – did not meet criteria - "good"<br>R, NA – unresearched, not available |
| **DOC_CON_EMP** | Number of documented concerns in a given year (ones) | Integer |
| **RES_CON_EMP** | Number of researched concerns in a given year (ones and zeroes) | Integer |
| **CON_EMP** | Percentage score of concerns in the *Employee Relations* category<br>= 100 * **DOC_CON_EMP** / **RES_CON_EMP** | %<br>high - "bad", low - "good" |
| **CSR_EMP** | Net percentage score = **STR_EMP** – **CON_EMP** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_EMP** | Change in the net percentage score<br>= **CSR_EMP** – lag(**CSR_EMP)** | % points<br>positive - "good", negative - "bad" |

### *Environment, Human Rights*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **STR_ENV_[A-X]** | Strength indicators in the *Environment* category | 1 – met criteria - "good"<br>0 – did not meet criteria - "bad"<br>R, NA – unresearched, not available |
| **DOC_STR_ENV** | Number of documented strengths in a given year (ones) | Integer |
| **RES_STR_ENV** | Number of researched strengths in a given year (ones and zeroes) | Integer |
| **STR_ENV** | Percentage score of strengths in the *Environment* category<br>= 100 * **DOC_STR_ENV** / **RES_STR_ENV** | %<br>high - "good", low - "bad" |
| **CON_ENV_[A-X]** | Concern indicators in the *Environment* category | 1 – met criteria - "bad"<br>0 – did not meet criteria - "good"<br>R, NA – unresearched, not available |
| **DOC_CON_ENV** | Number of documented concerns in a given year (ones) | Integer |
| **RES_CON_ENV** | Number of researched concerns in a given year (ones and zeroes) | Integer |
| **CON_ENV** | Percentage score of concerns in the *Environment* category<br>= 100 * **DOC_CON_ENV** / **RES_CON_ENV** | %<br>high - "bad", low - "good" |
| **CSR_ENV** | Net percentage score = **STR_ENV** – **CON_ENV** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_ENV** | Change in the net percentage score<br>= **CSR_ENV** – lag(**CSR_ENV)** | % points<br>positive - "good", negative - "bad" |
| | | |
| **STR_HUM_[A-X]** | Strength indicators in the *Human Rights* category | 1 – met criteria - "good"<br>0 – did not meet criteria - "bad"<br>R, NA – unresearched, not available |
| **DOC_STR_HUM** | Number of documented strengths in a given year (ones) | Integer |
| **RES_STR_HUM** | Number of researched strengths in a given year (ones and zeroes) | Integer |
| **STR_HUM** | Percentage score of strengths in the *Human Rights* category<br>= 100 * **DOC_STR_HUM** / **RES_STR_**H**UM** | %<br>high - "good", low - "bad" |
| **CON_HUM_[A-X]** | Concern indicators in the *Human Rights* category | 1 – met criteria - "bad"<br>0 – did not meet criteria - "good"<br>R, NA – unresearched, not available |
| **DOC_CON_HUM** | Number of documented concerns in a given year (ones) | Integer |
| **RES_CON_HUM** | Number of researched concerns in a given year (ones and zeroes) | Integer |
| **CON_HUM** | Percentage score of concerns in the *Human Rights* category<br>= 100 * **DOC_CON_HUM** / **RES_CON_HUM** | %<br>high - "bad", low - "good" |
| **CSR_HUM** | Net percentage score = **STR_HUM** – **CON_HUM** | % points<br>positive - "good", negative - "bad" |
| **PC_CSR_HUM** | Change in the net percentage score<br>= **CSR_HUM** – lag(**CSR_HUM)** | % points<br>positive - "good", negative - "bad" |

***Product***

| Name | Description/Formula | Units/Format |
|---|---|---|
| **STR_PRO_[A-X]** | Strength indicators in the *Product* category | 1 – met criteria - “good”<br>0 – did not meet criteria - “bad”<br>R, NA – unresearched, not available |
| **DOC_STR_PRO** | Number of documented strengths in a given year (ones) | Integer |
| **RES_STR_PRO** | Number of researched strengths in a given year (ones and zeroes) | Integer |
| **STR_PRO** | Percentage score of strengths in the *Product* category<br>= 100 * **DOC_STR_PRO** / **RES_STR_PRO** | %<br>high - “good”, low - “bad” |
| **CON_PRO_[A-X]** | Concern indicators in the *Product* category | 1 – met criteria - “bad”<br>0 – did not meet criteria - “good”<br>R, NA – unresearched, not available |
| **DOC_CON_PRO** | Number of documented concerns in a given year (ones) | Integer |
| **RES_CON_PRO** | Number of researched concerns in a given year (ones and zeroes) | Integer |
| **CON_PRO** | Percentage score of concerns in the *Product* category<br>= 100 * **DOC_CON_PRO** / **RES_CON_PRO** | %<br>high - “bad”, low - “good” |
| **CSR_PRO** | Net percentage score = **STR_PRO** – **CON_PRO** | % points<br>positive - “good”, negative - “bad” |
| **PC_CSR_PRO** | Change in the net percentage score<br>= **CSR_PRO** – lag(**CSR_PRO)** | % points<br>positive - “good”, negative - “bad” |

# Accounting variables (Compustat)

## *Identifiers*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **CUSIP8** | 8-character CUSIP code | Alphanumeric |
| **YEAR** | Fiscal year | 1991-2015 |
| **CNAME** | Company name | Character |
| | | |
| **SIC2** | 2-digit SIC code | Character (“01”-“99”) |
| **SIC2T** | Title of the 2-digit SIC code | Character |
| | | |
| **PRICE** | Close stock price as of the fiscal year end<br>Original name in Compustat - *prcc_f* | USD |
| **SHARES** | Number of common shares outstanding<br>Original name in Compustat - *csho* | Millions |

## *Balance sheet and expenditures*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **ASSETS** | Book value of assets<br>*at* in Compustat | USD millions |
| **BEQ** | Book value of equity<br>*ceq* in Compustat | USD millions |
| **LIAB** | Book value of liabilities<br>*lt* in Compustat | USD millions |
| **DEBT** | Book value of long-term debt<br>*dltt* in Compustat | USD millions |
| **LEV** | Leverage = 100 * **DEBT** / **ASSETS** | % |
| **MEQ** | Market value of equity as of the fiscal year end<br>= **PRICE** * **SHARES** | USD millions |
| **MB** | Market-to-book ratio, a proxy for Tobin’s Q<br>= log( (**MEQ** + **LIAB**) / **ASSETS** )<br>(Fama and French, 2000) | Natural log |
| **SIZE** | Natural logarithm of assets = log(**ASSETS**) | Natural log |
| | | |
| **PC_ADEX** | Percentage point change in the advertising expenditures<br>= **ADEX** / **SALES** – lag(**ADEX** / **SALES**) | % points |
| **PC_RDEX** | Percentage point change in the expenditures on research and development.<br>= **RDEX** / **ASSETS** – lag(**RDEX** / **ASSETS**) | % points |

### *Earnings/CFO profitability and volatility*

| Name | Description/Formula | Units/Format |
|---|---|---|
| **EARN** | Earnings before extraordinary items<br>*ibc* in Compustat | USD millions |
| **PC_EARN** | Percentage point change in earnings (dollar change scaled by lagged assets)<br>= 100 * (**EARN** - lag(**EARN**)) / lag(**ASSETS**)<br>(Fama and French, 2000; Grullon et. al, 2005) | % |
| **ROA** | Return on assets = 100 * **EARN** / **ASSETS**<br>(Fama and French, 2000) | % |
| **PC_ROA** | Percentage point change in return on assets<br>= **ROA** – lag(**ROA**)<br>(Fama and French, 2000; Grullon et al., 2005) | % points |
| **DFE** | ROA's deviation from its expected value.<br>The expected ROA is estimated with cross-sectional regressions:<br>**ROA** ~ lag(**ROA**) + lag(**SIZE**) + lag(**MB**)<br>**DFE** = **ROA** – E(**ROA**)<br>(Fama and French, 2000) | % points |
| **VOL** | Earnings volatility centered around industry means<br>= rolling 20-quarters standard deviation of **ROA** – average of the respective industry<br>(Dichev and Tang, 2009) | %<br>positive – "bad"<br>negative – "good" |
| | | |
| **CFO** | Cash flow from operations<br>*oancf* in Compustat | USD millions |
| **PC_CFO** | Percentage point change in cash flow from operations (dollar change scaled by lagged assets)<br>= 100 * (**CFO** - lag(**CFO**)) / lag(**ASSETS**)<br>(Fama and French, 2000; Grullon et. al, 2005) | % |
| **ROA_CFO** | Return on assets based on the cash flow from operations<br>= 100 * **CFO** / **ASSETS** | % |
| **PC_ROA_CFO** | Percentage point change in return on assets based on cash flow from operations<br>= **ROA_CFO** – lag(**ROA_CFO**) | % points |
| **DFE_CFO** | ROA_CFO's deviation from its expected value. The expected ROA_CFO is estimated with cross-sectional regressions:<br>**ROA_CFO** ~ lag(**ROA_CFO**) + lag(**SIZE**) + lag(**MB**)<br>**DFE_CFO** = **ROA_CFO** – E(**ROA_CFO**)<br>(Fama and French, 2000) | % points |
| **VOL_CFO** | CFO volatility centered around industry means)<br>= rolling 20-quarters standard deviation of **ROA_CFO** – average of the respective industry<br>(Dichev and Tang, 2009) | %<br>positive – "bad"<br>negative – "good" |

## Dummy variables and interaction terms

| Name | Description/Formula | Units/Format |
|---|---|---|
| **VOL * PC_CSR (VOL_CFO * PC_CSR)** | Centered earnings (CFO) volatility * Change in the CSR net percentage score | % points squared |
| | | |
| **HVOL (HVOL_CFO)** | HVOL takes the value of 1 when VOL is in the top decile (10%) among industry peers (2-digit SIC code) | %<br>Positive by definition high – "bad", low – "good" |
| **LVOL (LVOL_CFO)** | LVOL takes the value of 1 when VOL is in the bottom decile (10%) among industry peers (2-digit SIC code) | %<br>Negative by definition high – "good", low – "bad" |
| | | |
| **N_DFE (N_DFE_CFO)** | Unexpectedly low profitability<br>= Negative deviation of ROA from its expected industry level and 0 otherwise.<br>The deviation is the residual from cross-sectional regressions (see DFE).<br>(Fama and French, 2000; Grullon et al., 2005) | % points |
| **SN_DFE (SN_DFE_CFO)** | Extremely low unexpected profitability<br>= Squared negative deviation of ROA from its expected industry level and 0 otherwise.<br>The deviation is the residual from cross-sectional regressions (see DFE).<br>(Fama and French, 2000; Grullon et al., 2005) | % points squared |
| **SP_DFE (SP_DFE_CFO)** | Extremely high unexpected profitability<br>= Squared positive deviation of ROA from its expected industry level and 0 otherwise.<br>The deviation is the residual from cross-sectional regressions (see DFE).<br>(Fama and French, 2000; Grullon et al., 2005) | % points squared |
| | | |
| **DEC_EARN (DEC_CFO)** | Decrease in earnings (CFO) as a percentage of lagged assets<br>= negative PC_EARN (PC_CFO) and 0 otherwise<br>(Fama and French, 2000; Grullon et al., 2005) | % points |
| **SDEC_EARN (SDEC_CFO)** | Extreme decrease in earnings (CFO) as a percentage of lagged assets<br>= squared negative PC_EARN (PC_CFO) and 0 otherwise<br>(Fama and French, 2000; Grullon et al., 2005) | % points squared |
| **SINC_EARN (SINC_CFO)** | Extreme increase in earnings (CFO) as a percentage of lagged assets<br>= squared positive PC_EARN (PC_CFO) and 0 otherwise<br>(Fama and French, 2000; Grullon et al., 2005) | % points squared |

# Summary and correlation statistics

**Table 2.1: Summary statistics**

| | Mean | SD | 5th pctl. | Median | 95th pctl. | Obs. |
|---|---|---|---|---|---|---|
| **A. Increases in CSR net percentage score (PC_CSR > 0)** | | | | | | |
| **PC_EARN** | 0.83% | 9.19% | -10.83% | 0.81% | 11.54% | 7,404 |
| **PC_CFO** | 1.32% | 8.18% | -9.10% | 0.99% | 12.62% | 7,404 |
| **DFE** | 0.10% | 6.68% | -8.59% | 0.16% | 7.87% | 7,380 |
| **DFE_CFO** | 0.06% | 5.85% | -7.68% | 0.00% | 8.01% | 7,380 |
| **VOL** | -1.17% | 2.49% | -3.93% | -1.39% | 2.53% | 7,185 |
| **VOL_CFO** | -1.12% | 2.29% | -3.58% | -1.54% | 2.64% | 7,185 |
| **LEV** | 17.77% | 16.05% | 0.00% | 15.66% | 48.01% | 7,379 |
| **MB** | 0.63 | 0.51 | -0.04 | 0.54 | 1.63 | 7,388 |
| **SIZE** | 7.53 | 1.59 | 5.14 | 7.43 | 10.34 | 7,404 |
| **B. Decreases in CSR net percentage score (PC_CSR < 0)** | | | | | | |
| **PC_EARN** | 0.72% | 10.56% | -13.53% | 0.81% | 13.69% | 8,973 |
| **PC_CFO** | 1.00% | 8.83% | -11.02% | 0.84% | 12.82% | 8,973 |
| **DFE** | 0.00% | 7.78% | -10.20% | 0.22% | 9.23% | 8,940 |
| **DFE_CFO** | 0.02% | 6.23% | -8.48% | 0.00% | 8.34% | 8,940 |
| **VOL** | -0.97% | 2.70% | -3.85% | -1.31% | 3.25% | 8,711 |
| **VOL_CFO** | -1.00% | 2.34% | -3.45% | -1.46% | 2.92% | 8,711 |
| **LEV** | 17.55% | 16.46% | 0.00% | 15.43% | 49.03% | 8,935 |
| **MB** | 0.57 | 0.50 | -0.09 | 0.49 | 1.54 | 8,941 |
| **SIZE** | 7.31 | 1.56 | 5.00 | 7.19 | 10.12 | 8,973 |
| **C. No change in CSR net percentage score (PC_CSR = 0)** | | | | | | |
| **PC_EARN** | 1.17% | 11.97% | -13.44% | 0.56% | 17.08% | 3,454 |
| **PC_CFO** | 1.21% | 8.81% | -10.66% | 0.73% | 13.96% | 3,454 |
| **DFE** | 0.04% | 7.59% | -11.40% | 0.29% | 9.07% | 3,444 |
| **DFE_CFO** | 0.03% | 6.47% | -8.77% | 0.00% | 9.17% | 3,444 |
| **VOL** | -0.87% | 2.60% | -3.72% | -1.21% | 3.21% | 3,349 |
| **VOL_CFO** | -0.80% | 2.46% | -3.29% | -1.30% | 3.36% | 3,349 |
| **LEV** | 17.09% | 16.93% | 0.00% | 14.24% | 49.88% | 3,441 |
| **MB** | 0.56 | 0.48 | -0.07 | 0.46 | 1.47 | 3,442 |
| **SIZE** | 6.92 | 1.35 | 4.87 | 6.82 | 9.32 | 3,454 |
| **D. CSR net percentage score (total and by category)** | | | | | | |
| **PC_CSR** | 0.57% | 7.81% | -9.53% | 0% | 15% | 19831 |
| **PC_CSR_CGOV** | -0.99% | 24.3% | -33.33% | 0% | 33.33% | 16377 |
| **PC_CSR_COM** | 0.08% | 16.58% | -8.33% | 0% | 0% | 17014 |
| **PC_CSR_DIV** | -0.64% | 21.8% | -33.33% | 0% | 33.33% | 17283 |
| **PC_CSR_EMP** | 0.62% | 13.81% | -20% | 0% | 20% | 19691 |
| **PC_CSR_ENV** | 0.61% | 10.64% | -14.29% | 0% | 16.67% | 19827 |
| **PC_CSR_HUM** | 0.45% | 9.62% | 0% | 0% | 0% | 14890 |
| **PC_CSR_PRO** | 0.62% | 17.45% | -20% | 0% | 25% | 17922 |

Note. – Accounting variables are sourced from the Compustat Monthly Updates North America Fundamentals Annual and Quarterly databases, and merged with CSR variables from the MSCI ESG KLD STATS database from 1991 to 2015. PC_CSR – change in the CSR net percentage score. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CFO is the percentage point change in cash flow from operations (dollar change scaled by the lagged book value of assets). ROA is earnings before extraordinary items scaled by the book value of assets. ROA_CFO is cash flow from operations scaled by the book value of assets. DFE and DFE_CFO are deviations of ROA and ROA_CFO from their expected values (estimated with cross-sectional regressions of ROA or ROA_CFO on lagged ROA or ROA_CFO, MB, and SIZE). VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). VOL_CFO is the CFO volatility centered around industry means (rolling 20-quarters standard deviation of ROA_CFO). LEV is the book value of long-term debt scaled by the book value of assets. MB is the market-to-book ratio (natural logarithm of the sum of the market value of equity and the book value of liabilities scaled by the book value of assets). SIZE is the natural logarithm of the book value of assets. CGOV – *Corporate Governance* category, COM – *Community* category, DIV – *Diversity* category, EMP – *Employee Relations* category, ENV – *Environment* category, HUM – *Human Rights* category, PRO – *Product* category.

## Table 2.2: Correlation statistics

**A. Accounting variables**

| | PC_EARN | PC_CFO | DFE | DFE_CFO | VOL | VOL_CFO | LEV | MB |
|---|---|---|---|---|---|---|---|---|
| **PC_CFO** | 0.4*** | | | | | | | |
| **DFE** | 0.65*** | 0.3*** | | | | | | |
| **DFE_CFO** | 0.28*** | 0.71*** | 0.45*** | | | | | |
| **VOL** | 0.09*** | 0.03*** | -0.1*** | -0.04*** | | | | |
| **VOL_CFO** | 0.05*** | 0.05*** | 0 | -0.01 | 0.46*** | | | |
| **LEV** | -0.05*** | -0.03*** | -0.05*** | -0.04*** | -0.05*** | -0.14*** | | |
| **MB** | 0.13*** | 0.15*** | 0.04*** | 0.07*** | 0.03*** | 0.12*** | -0.27*** | |
| **SIZE** | -0.02*** | -0.01 | 0.02*** | 0 | -0.33*** | -0.33*** | 0.33*** | -0.15*** |

**B. CSR variables**

| | PC_CSR | PC_CSR_CGOV | PC_CSR_COM | PC_CSR_DIV | PC_CSR_EMP | PC_CSR_ENV | PC_CSR_HUM |
|---|---|---|---|---|---|---|---|
| **PC_CSR_CGOV** | 0.56*** | | | | | | |
| **PC_CSR_COM** | 0.32*** | 0.07*** | | | | | |
| **PC_CSR_DIV** | 0.51*** | 0.12*** | 0.04*** | | | | |
| **PC_CSR_EMP** | 0.49*** | 0.01* | 0.11*** | 0.02*** | | | |
| **PC_CSR_ENV** | 0.38*** | 0.06*** | 0.02** | 0 | 0.01** | | |
| **PC_CSR_HUM** | 0.28*** | 0.1*** | 0.04*** | 0.05*** | 0.06*** | 0.06*** | |
| **PC_CSR_PRO** | 0.34*** | 0.04*** | 0.09*** | 0.04*** | 0.05*** | 0.06*** | 0.1*** |

**C. Accounting and CSR variables**

| | PC_CSR | PC_CSR_CGOV | PC_CSR_COM | PC_CSR_DIV | PC_CSR_EMP | PC_CSR_ENV | PC_CSR_HUM | PC_CSR_PRO |
|---|---|---|---|---|---|---|---|---|
| **PC_EARN** | -0.02*** | 0 | 0 | -0.04*** | 0 | 0.01** | -0.01 | 0 |
| **PC_CFO** | 0 | 0 | 0 | 0.01 | 0 | -0.01 | -0.01 | -0.01 |
| **DFE** | 0.01* | 0.01 | 0 | 0.01 | 0 | 0 | 0.01 | 0.01 |
| **DFE_CFO** | 0.01 | -0.01 | 0 | 0.01* | 0 | 0.01 | -0.01 | 0 |
| **VOL** | -0.01* | -0.03*** | 0 | 0 | 0 | -0.01* | -0.01 | -0.01 |
| **VOL_CFO** | -0.02*** | -0.03*** | 0 | 0 | -0.01* | -0.02*** | -0.01 | -0.01 |
| **LEV** | 0.01 | 0.03*** | -0.01 | 0.01* | -0.01 | 0 | 0 | 0 |
| **MB** | 0 | -0.02** | -0.02** | -0.01 | 0 | 0.01 | -0.02*** | -0.01 |
| **SIZE** | 0.07*** | 0.08*** | -0.01 | 0.05*** | 0.02** | 0.06*** | 0.06*** | 0.01 |

Note. – Accounting variables are sourced from the Compustat Monthly Updates North America Fundamentals Annual and Quarterly databases, and merged with CSR variables from the MSCI ESG KLD STATS database. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CFO is the percentage point change in cash flow from operations (dollar change scaled by the lagged book value of assets). ROA is earnings before extraordinary items scaled by the book value of assets. ROA_CFO is cash flow from operations scaled by the book value of assets. DFE and DFE_CFO are deviations of ROA and ROA_CFO from their expected values (estimated with cross-sectional regressions of ROA or ROA_CFO on lagged ROA or ROA_CFO, MB, and SIZE). VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). VOL_CFO is the CFO volatility centered around industry means (rolling 20-quarters standard deviation of ROA_CFO). LEV is the book value of long-term debt scaled by the book value of assets. MB is the market-to-book ratio (natural logarithm of the sum of the market value of equity and book value of liabilities scaled by the book value of assets). SIZE is the natural logarithm of the book value of assets. PC_CSR – change in the CSR net percentage score. CGOV – *Corporate Governance* category, COM – *Community* category, DIV – *Diversity* category, EMP – *Employee Relations* category, ENV – *Environment* category, HUM – *Human Rights* category, PRO – *Product* category.

# Empirical results

## H1: Changes in earnings

**Table 4.1: H1 - Linear models of changes in earnings (fixed firm effects)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.02 | -0.005 | -0.05** | -0.02 | -0.01 | -0.08*** |
| | (0.01) | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) |
| **VOL** | | | | 0.39** | -0.28 | -0.62** |
| | | | | (0.19) | (0.37) | (0.30) |
| **VOL * PC_CSR** | | | | -0.003 | 0.001 | -0.03** |
| | | | | (0.01) | (0.01) | (0.01) |
| **PC_EARN** | 0.02 | -0.04 | -0.02 | 0.01 | -0.04 | -0.01 |
| | (0.03) | (0.03) | (0.04) | (0.03) | (0.03) | (0.03) |
| **ROA** | -0.76*** | -0.19*** | -0.02 | -0.74*** | -0.20*** | -0.04 |
| | (0.07) | (0.05) | (0.07) | (0.06) | (0.04) | (0.06) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 166.7*** | 30.15*** | 2.71** | 156.2*** | 18.15*** | 5.86*** |
| **Observations** | 17,338 | 14,845 | 12,705 | 16,806 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.22 | -0.13 | -0.17 | 0.22 | -0.13 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA).

**Table 4.2: H1 - Linear models of changes in earnings (random year effects)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.01 | 0.01 | -0.01 | -0.02 | 0.01 | -0.03 |
| | (0.02) | (0.01) | (0.05) | (0.03) | (0.02) | (0.06) |
| **VOL** | | | | -0.05 | 0.03 | -0.04 |
| | | | | (0.11) | | (0.12) |
| **VOL * PC_CSR** | | | | -0.004 | 0.002 | -0.01 |
| | | | | (0.01) | (0.003) | (0.01) |
| **PC_EARN** | -0.11*** | -0.04*** | 0.0003 | -0.11*** | -0.05*** | 0.001 |
| | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) |
| **ROA** | -0.28*** | -0.07*** | -0.02 | -0.28*** | -0.07*** | -0.03 |
| | (0.06) | (0.02) | (0.02) | (0.05) | (0.03) | (0.02) |
| **CONSTANT** | 1.52 | 0.32 | 0.51 | 1.56 | 0.42 | 0.46 |
| | (1.13) | (0.95) | (34.06) | (1.27) | (1.06) | (35.95) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Year RE | Year RE | Year RE | Year RE | Year RE | Year RE |
| **Clustered F-stat** | -16.62 | 0.77 | -0.54 | -5.92 | -3.11 | 0.66 |
| **Observations** | 17,338 | 14,845 | 12,705 | 16,806 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.13 | 0.01 | -0.002 | 0.12 | 0.01 | -0.002 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with FGLS (random year effects). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA).

**Table 4.3: H1 - Non-linear models of changes in earnings (fixed firm effects)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.02 | -0.01 | -0.05** | -0.02 | -0.02 | -0.08*** |
| | (0.01) | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) |
| **VOL** | | | | 0.47** | -0.18 | -0.58* |
| | | | | (0.20) | (0.33) | (0.30) |
| **VOL * PC_CSR** | | | | -0.002 | -0.003 | -0.02** |
| | | | | (0.01) | (0.01) | (0.01) |
| **DFE** | -0.40*** | 0.16 | 0.08 | -0.41*** | 0.16 | 0.07 |
| | (0.12) | (0.12) | (0.10) | (0.13) | (0.12) | (0.10) |
| **N_DFE** | -0.10 | -0.23* | -0.02 | -0.09 | -0.23* | -0.02 |
| | (0.17) | (0.12) | (0.13) | (0.17) | (0.13) | (0.12) |
| **SN_DFE** | 0.01*** | -0.001 | 0.003 | 0.01*** | -0.001 | 0.003 |
| | (0.002) | (0.001) | (0.002) | (0.002) | (0.001) | (0.002) |
| **SP_DFE** | 0.0002 | -0.01 | -0.01 | 0.0000 | -0.01 | -0.005 |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **PC_EARN** | 0.28*** | -0.08 | -0.09 | 0.26*** | -0.07 | -0.07 |
| | (0.07) | (0.06) | (0.07) | (0.06) | (0.05) | (0.06) |
| **DEC_EARN** | -0.62*** | -0.14* | -0.07 | -0.56*** | -0.16* | -0.12* |
| | (0.11) | (0.08) | (0.08) | (0.11) | (0.09) | (0.08) |
| **SDEC_EARN** | -0.003 | -0.002 | -0.01*** | -0.003 | -0.002 | -0.01*** |
| | (0.002) | (0.002) | (0.002) | (0.003) | (0.003) | (0.002) |
| **SINC_EARN** | -0.004*** | 0.0001 | 0.001 | -0.004*** | -0.0000 | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | -15145 | 7.17*** | -3.67 | -349.53 | 6.57*** | 3.04*** |
| **Observations** | 17,275 | 14,789 | 12,662 | 16,748 | 14,315 | 12,234 |
| **Adjusted $R^2$** | 0.10 | -0.15 | -0.16 | 0.11 | -0.15 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). DFE is the deviation of ROA from its expected value (estimated with cross-sectional regressions of ROA on lagged ROA, MB, and SIZE). N_DFE (P_DFE) is the negative (positive) value of DFE. DEC_EARN (INC_EARN) stands for percentage point decrease (increase) in earnings. Prefix S stands for squared terms.

**Table 4.4: H1 - Non-linear models of changes in earnings (random year effects)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.01 | 0.01 | -0.01 | -0.01 | 0.01 | -0.03 |
| | (0.01) | (0.01) | (0.05) | (0.02) | (0.01) | (0.07) |
| **VOL** | | | | -0.10 | 0.02 | -0.002 |
| | | | | (0.09) | | (0.16) |
| **VOL * PC_CSR** | | | | 0.001 | 0.002 | -0.01 |
| | | | | (0.01) | (0.004) | (0.01) |
| **DFE** | -0.34*** | -0.02 | 0.03 | -0.34*** | -0.01 | 0.02 |
| | (0.13) | (0.09) | (0.14) | (0.13) | (0.09) | (0.15) |
| **N_DFE** | 0.12 | -0.04 | -0.08 | 0.11 | -0.05 | -0.08 |
| | (0.16) | (0.12) | (0.24) | (0.16) | (0.12) | (0.23) |
| **SN_DFE** | 0.01*** | -0.001 | 0.001 | 0.01*** | -0.001 | 0.001 |
| | (0.002) | (0.001) | (0.002) | (0.002) | (0.001) | (0.002) |
| **SP_DFE** | 0.002 | 0.0000 | -0.003 | 0.002 | 0.0001 | -0.002 |
| | (0.01) | (0.003) | (0.01) | (0.01) | (0.004) | (0.01) |
| **PC_EARN** | 0.16*** | -0.002 | -0.03 | 0.17*** | -0.001 | -0.03 |
| | (0.04) | (0.03) | (0.04) | (0.04) | (0.04) | (0.04) |
| **DEC_EARN** | -0.39*** | -0.16* | -0.07 | -0.41*** | -0.15* | -0.07 |
| | (0.08) | (0.08) | (0.07) | (0.08) | (0.09) | (0.09) |
| **SDEC_EARN** | -0.003 | -0.001 | -0.005*** | -0.003 | -0.0005 | -0.005*** |
| | (0.002) | (0.001) | (0.001) | (0.002) | (0.002) | (0.002) |
| **SINC_EARN** | -0.003*** | -0.0005 | 0.001 | -0.003*** | -0.001 | 0.001 |
| | (0.001) | (0.0004) | (0.001) | (0.001) | (0.0004) | (0.001) |
| **CONSTANT** | -0.21 | -0.21 | 0.34 | -0.28 | -0.11 | 0.32 |
| | (0.71) | (0.87) | (36.50) | (0.82) | (0.97) | (39.21) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Year RE | Year RE | Year RE | Year RE | Year RE | Year RE |
| **Clustered F-stat** | -4.88 | 1.67*** | 0.94 | 918*** | -17.84 | 1.01 |
| **Observations** | 17,275 | 14,789 | 12,662 | 16,748 | 14,315 | 12,234 |
| **Adjusted $R^2$** | 0.15 | 0.01 | -0.0003 | 0.15 | 0.01 | 0.0001 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with FGLS (random year effects). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). DFE is the deviation of ROA from its expected value (estimated with cross-sectional regressions of ROA on lagged ROA, MB, and SIZE). N_DFE (P_DFE) is the negative (positive) value of DFE. DEC_EARN (INC_EARN) stands for percentage point decrease (increase) in earnings. Prefix S stands for squared terms.

# H1: Changes in CFO

**Table 4.5: H1 - Linear models of changes in CFO (fixed firm effects)**

| | Dependent variable – PC_CFO | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.01 | -0.01** | -0.02** | -0.002 | -0.02 | -0.02 |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **VOL_CFO** | | | | 0.08 | 0.27*** | 0.03 |
| | | | | (0.13) | (0.09) | (0.05) |
| **VOL_CFO * PC_CSR** | | | | 0.01 | -0.003 | -0.0002 |
| | | | | (0.01) | (0.01) | (0.01) |
| **PC_CFO** | -0.07*** | -0.01 | -0.003 | -0.07*** | -0.01 | -0.004 |
| | (0.02) | (0.03) | (0.03) | (0.02) | (0.03) | (0.03) |
| **ROA_CFO** | -0.66*** | -0.07** | -0.04 | -0.67*** | -0.07** | -0.04 |
| | (0.07) | (0.03) | (0.05) | (0.07) | (0.03) | (0.05) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 134.23*** | 7.36*** | 2.55* | 141.2*** | 5.43*** | 1.66 |
| **Observations** | 17,338 | 14,845 | 12,705 | 16,806 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.17 | -0.16 | -0.17 | 0.17 | -0.17 | -0.17 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_CFO is the percentage point change in cash flow from operations (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA_CFO is cash flow from operations scaled by the book value of assets. VOL_CFO is the CFO volatility centered around industry means (rolling 20-quarters standard deviation of ROA_CFO).

**Table 4.6: H1 - Linear models of changes in CFO (random year effects)**

| | Dependent variable – PC_CFO | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | 0.01 | -0.01** | -0.002 | 0.01 | -0.02*** | -0.001 |
| | (0.01) | (0.005) | (0.15) | (0.01) | (0.01) | (0.17) |
| **VOL_CFO** | | | | -0.07 | 0.05 | 0.06 |
| | | | | (0.05) | | (0.04) |
| **VOL_CFO * PC_CSR** | | | | 0.002 | -0.004 | 0.0000 |
| | | | | (0.01) | (0.004) | (0.03) |
| **PC_CFO** | -0.20*** | -0.003 | -0.01 | -0.20*** | -0.005 | -0.01 |
| | (0.02) | (0.02) | (0.04) | (0.02) | (0.02) | (0.03) |
| **ROA_CFO** | -0.15*** | 0.001 | 0.02 | -0.15*** | 0.002 | 0.02 |
| | (0.03) | (0.01) | (0.04) | (0.03) | (0.02) | (0.03) |
| **CONSTANT** | 2.08*** | 0.05 | 0.44 | 2.01*** | -0.05 | 0.40 |
| | (0.63) | (0.41) | (20.00) | (0.73) | (0.29) | (17.50) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Year RE | Year RE | Year RE | Year RE | Year RE | Year RE |
| **Clustered F-stat** | 273.56*** | -0.56 | -1.35 | 21.63*** | -0.85 | 0.88 |
| **Observations** | 17,338 | 14,845 | 12,705 | 16,806 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.10 | -0.0003 | -0.0004 | 0.10 | -0.0002 | -0.0004 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with FGLS (random year effects). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_CFO is the percentage point change in cash flow from operations (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA_CFO is cash flow from operations scaled by the book value of assets. VOL_CFO is the CFO volatility centered around industry means (rolling 20-quarters standard deviation of ROA_CFO).

**Table 4.7: H1 - Non-linear models of changes in CFO (fixed firm effects)**

| | Dependent variable – PC_CFO | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.01 | -0.01** | -0.02** | 0.003 | -0.02* | -0.01 |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **VOL_CFO** | | | | -0.09 | 0.23*** | 0.08 |
| | | | | (0.15) | (0.09) | (0.06) |
| **VOL_CFO * PC_CSR** | | | | 0.01 | -0.004 | 0.0004 |
| | | | | (0.005) | (0.01) | (0.01) |
| **DFE_CFO** | -0.36*** | -0.002 | -0.002 | -0.36*** | 0.01 | 0.001 |
| | (0.06) | (0.03) | (0.10) | (0.06) | (0.03) | (0.09) |
| **N_DFE_CFO** | 0.01 | 0.01 | 0.05 | 0.005 | 0.01 | 0.04 |
| | (0.13) | (0.07) | (0.16) | (0.14) | (0.07) | (0.16) |
| **SN_DFE_CFO** | 0.01 | -0.003 | 0.005 | 0.01 | -0.003 | 0.005 |
| | (0.01) | (0.004) | (0.004) | (0.01) | (0.004) | (0.004) |
| **SP_DFE_CFO** | -0.01** | -0.002 | -0.004 | -0.01** | -0.002 | -0.004 |
| | (0.003) | (0.002) | (0.01) | (0.003) | (0.002) | (0.01) |
| **PC_CFO** | -0.02 | 0.04 | -0.05* | -0.02 | 0.03 | -0.05** |
| | (0.05) | (0.05) | (0.03) | (0.05) | (0.05) | (0.02) |
| **DEC_CFO** | -0.34*** | -0.12 | -0.06 | -0.34*** | -0.10 | -0.05 |
| | (0.09) | (0.07) | (0.08) | (0.09) | (0.07) | (0.08) |
| **SDEC_CFO** | -0.01*** | 0.002 | -0.01** | -0.01*** | 0.002 | -0.01** |
| | (0.004) | (0.003) | (0.003) | (0.004) | (0.003) | (0.003) |
| **SINC_CFO** | -0.001 | -0.001 | 0.001 | -0.001 | -0.001 | 0.001 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 113*** | 3.16*** | -5.98 | 103*** | 4.56*** | -0.51 |
| **Observations** | 17,275 | 14,789 | 12,662 | 16,748 | 14,315 | 12,234 |
| **Adjusted $R^2$** | 0.08 | -0.16 | -0.16 | 0.07 | -0.17 | -0.17 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_CFO is the percentage point change in cash flow from operations (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA_CFO is cash flow from operations scaled by the book value of assets. VOL_CFO is the CFO volatility centered around industry means (rolling 20-quarters standard deviation of ROA_CFO). DFE_CFO is the deviation of ROA_CFO from its expected value (estimated with cross-sectional regressions of ROA_CFO on lagged ROA_CFO, MB, and SIZE). ). N_DFE_CFO (P_DFE_CFO) is the negative (positive) value of DFE_CFO. DEC_CFO (INC_CFO) stands for the percentage point decrease (increase) in CFO. Prefix S stands for squared terms.

**Table 4.8: H1 - Non-linear models of changes in CFO (random year effects)**

| | Dependent variable – PC_CFO | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | 0.002 | -0.01** | -0.001 | 0.01 | -0.02*** | 0.0004 |
| | (0.01) | (0.004) | (0.16) | (0.01) | (0.005) | (0.17) |
| **VOL_CFO** | | | | -0.02 | 0.01 | 0.07 |
| | | | | (0.04) | (0.02) | (0.04) |
| **VOL_CFO * PC_CSR** | | | | 0.01 | -0.01 | 0.0004 |
| | | | | (0.005) | (0.004) | (0.03) |
| **DFE_CFO** | -0.37*** | -0.02 | -0.06 | -0.37*** | -0.01 | -0.06 |
| | (0.11) | (0.08) | (0.37) | (0.11) | (0.08) | (0.30) |
| **N_DFE_CFO** | 0.16 | 0.04 | 0.09 | 0.17 | 0.04 | 0.09 |
| | (0.15) | (0.08) | (0.66) | (0.16) | (0.08) | (0.52) |
| **SN_DFE_CFO** | 0.004 | -0.003 | 0.002 | 0.004 | -0.003 | 0.002 |
| | (0.004) | (0.004) | (0.01) | (0.004) | (0.004) | (0.01) |
| **SP_DFE_CFO** | 0.002 | -0.002 | 0.003 | 0.002 | -0.002 | 0.003 |
| | (0.01) | (0.004) | (0.01) | (0.01) | (0.004) | (0.01) |
| **PC_CFO** | 0.07 | 0.05 | 0.04 | 0.08 | 0.04 | 0.03 |
| | (0.05) | (0.07) | (0.17) | (0.05) | (0.07) | (0.13) |
| **DEC_CFO** | -0.41*** | -0.09* | -0.11 | -0.41*** | -0.09* | -0.09 |
| | (0.09) | (0.05) | (0.33) | (0.09) | (0.05) | (0.26) |
| **SDEC_CFO** | -0.01*** | 0.002 | -0.003 | -0.01** | 0.002 | -0.003 |
| | (0.003) | (0.002) | (0.004) | (0.003) | (0.002) | (0.003) |
| **SINC_CFO** | -0.004** | 0.0003 | -0.001 | -0.004** | 0.0004 | -0.001 |
| | (0.002) | (0.002) | (0.004) | (0.002) | (0.002) | (0.003) |
| **CONSTANT** | 0.17 | -0.17 | 0.46 | 0.13 | -0.30 | 0.45 |
| | (0.13) | (0.53) | (20.05) | (0.18) | (0.44) | (17.16) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Year RE | Year RE | Year RE | Year RE | Year RE | Year RE |
| **Clustered F-stat** | 35.5*** | 4.03*** | 0.93 | 182*** | -4.21 | 0.96 |
| **Observations** | 17,275 | 14,789 | 12,662 | 16,748 | 14,315 | 12,234 |
| **Adjusted $R^2$** | 0.12 | 0.003 | -0.0001 | 0.12 | 0.003 | -0.0000 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with FGLS (random year effects). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_CFO is the percentage point change in cash flow from operations (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA_CFO is cash flow from operations scaled by the book value of assets. VOL_CFO is the CFO volatility centered around industry means (rolling 20-quarters standard deviation of ROA_CFO). DFE_CFO is the deviation of ROA_CFO from its expected value (estimated with cross-sectional regressions of ROA_CFO on lagged ROA_CFO, MB, and SIZE). N_DFE_CFO (P_DFE_CFO) is the negative (positive) value of DFE_CFO. DEC_CFO (INC_CFO) stands for the percentage point decrease (increase) in CFO. Prefix S stands for squared terms.

# H2A: Changes in earnings

**Table 4.9: H2A - Changes in earnings of stable and volatile firms (fixed firm effects)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Stable firms | | | B. Volatile firms | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.02 | -0.01 | -0.05** | -0.02** | -0.004 | -0.03* |
| | (0.02) | (0.02) | (0.02) | (0.01) | (0.01) | (0.02) |
| **LVOL** | -0.77*** | -0.19 | 0.0004 | | | |
| | (0.23) | (0.42) | (0.40) | | | |
| **LVOL * PC_CSR** | 0.001 | 0.01 | 0.02 | | | |
| | (0.02) | (0.01) | (0.02) | | | |
| **HVOL** | | | | 1.12*** | -0.72 | -1.45* |
| | | | | (0.39) | (0.58) | (0.79) |
| **HVOL * PC_CSR** | | | | 0.01 | -0.01 | -0.07** |
| | | | | (0.03) | (0.04) | (0.03) |
| **PC_EARN** | 0.02 | -0.04 | -0.02 | 0.01 | -0.04 | -0.02 |
| | (0.03) | (0.03) | (0.04) | (0.03) | (0.03) | (0.04) |
| **ROA** | -0.76*** | -0.19*** | -0.02 | -0.75*** | -0.20*** | -0.03 |
| | (0.07) | (0.05) | (0.07) | (0.07) | (0.04) | (0.07) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 122*** | 21.5*** | 2.62** | 116*** | 19.2*** | 3.15*** |
| **Observations** | 16,806 | 14,366 | 12,274 | 16,806 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.21 | -0.13 | -0.17 | 0.21 | -0.13 | -0.17 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). HVOL (LVOL) takes the value of 1 when VOL is in the top (bottom) quartile (25%) among industry peers (2-digit SIC code), and 0 otherwise.

**Table 4.10: H2A - Changes in earnings of stable and volatile firms (random year effects)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Stable firms | | | B. Volatile firms | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.02 | 0.003 | -0.01 | -0.01 | 0.01 | 0.002 |
| | (0.02) | (0.01) | (0.06) | (0.02) | (0.01) | (0.04) |
| **LVOL** | -0.15 | -0.25 | -0.14 | | | |
| | (0.18) | (0.16) | (0.32) | | | |
| **LVOL * PC_CSR** | 0.01 | 0.01 | 0.01 | | | |
| | (0.01) | (0.01) | (0.04) | | | |
| **HVOL** | | | | -0.12 | 0.05 | -0.02 |
| | | | | (0.33) | (0.18) | (0.51) |
| **HVOL * PC_CSR** | | | | -0.001 | -0.02 | -0.04 |
| | | | | (0.04) | (0.03) | (0.07) |
| **PC_EARN** | -0.11*** | -0.05*** | -0.0002 | -0.11*** | -0.05*** | -0.0001 |
| | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.01) |
| **ROA** | -0.27*** | -0.07*** | -0.02 | -0.27*** | -0.07*** | -0.02 |
| | (0.06) | (0.02) | (0.02) | (0.06) | (0.02) | (0.02) |
| **CONSTANT** | 1.62 | 0.47 | 0.49 | 1.60 | 0.39 | 0.45 |
| | (1.23) | (1.05) | (35.08) | (1.21) | (1.06) | (35.74) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Year RE | Year RE | Year RE | Year RE | Year RE | Year RE |
| **Clustered F-stat** | -3.51 | -8.4 | 0.7 | -9.17 | -11.35 | 0.57 |
| **Observations** | 16,806 | 14,366 | 12,274 | 16,806 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.12 | 0.01 | -0.002 | 0.12 | 0.01 | -0.002 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with FGLS (random year effects). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). HVOL (LVOL) takes the value of 1 when VOL is in the top (bottom) quartile (25%) among industry peers (2-digit SIC code), and 0 otherwise.

## H2B: Volatility of earnings

**Table 4.11: H2B - Earnings volatility (fixed firm effects)**

| | Dependent variable - VOL | | | | | |
|---|---|---|---|---|---|---|
| | A. Stable firms | | | B. Volatile firms | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.01** | -0.01*** | -0.003 | 0.0002 | -0.0003 | 0.001 |
| | (0.003) | (0.004) | (0.01) | (0.001) | (0.001) | (0.001) |
| **LVOL** | -0.55*** | -0.30*** | -0.07 | | | |
| | (0.04) | (0.05) | (0.05) | | | |
| **LVOL * PC_CSR** | 0.01** | 0.01*** | 0.004 | | | |
| | (0.003) | (0.004) | (0.01) | | | |
| **HVOL** | | | | 1.44*** | 0.66*** | 0.06 |
| | | | | (0.13) | (0.17) | (0.15) |
| **HVOL * PC_CSR** | | | | -0.02*** | -0.03*** | -0.01 |
| | | | | (0.01) | (0.01) | (0.02) |
| **MB** | -0.39*** | -0.31*** | -0.12 | -0.36*** | -0.31*** | -0.12 |
| | (0.08) | (0.10) | (0.11) | (0.08) | (0.10) | (0.11) |
| **SIZE** | -0.49*** | -0.38*** | -0.24*** | -0.36*** | -0.32*** | -0.24*** |
| | (0.08) | (0.08) | (0.07) | (0.07) | (0.07) | (0.07) |
| **LEV** | 0.003 | 0.0001 | 0.002 | 0.002 | -0.001 | 0.002 |
| | (0.002) | (0.003) | (0.002) | (0.002) | (0.003) | (0.002) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 44.0*** | 11.7*** | 6.1*** | 33.0*** | 9.5*** | 4.2*** |
| **Observations** | 16,696 | 14,260 | 12,180 | 16,696 | 14,260 | 12,180 |
| **Adjusted $R^2$** | -0.11 | -0.13 | -0.16 | -0.01 | -0.10 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. Models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). HVOL (LVOL) takes the value of 1 when VOL is in the top (bottom) quartile (25%) among industry peers (2-digit SIC code), and 0 otherwise. MB is the market-to-book ratio (natural logarithm of the sum of the market value of equity and the book value of liabilities scaled by the book value of assets). SIZE is the natural logarithm of the book value of assets. LEV is the book value of long-term debt as a percentage of the book value of assets.

**Table 4.12: H2B - Earnings volatility (random year effects)**

| | Dependent variable - VOL | | | | | |
|---|---|---|---|---|---|---|
| | A. Stable firms | | | B. Volatile firms | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.01 | -0.01 | -0.002 | 0.001 | 0.003 | 0.005 |
| | (0.01) | (0.01) | (0.03) | (0.002) | (0.002) | (0.02) |
| **LVOL** | -1.19*** | -0.99*** | -0.81*** | | | |
| | (0.06) | (0.06) | (0.14) | | | |
| **LVOL * PC_CSR** | 0.01 | 0.02** | 0.01 | | | |
| | (0.01) | (0.01) | (0.02) | | | |
| **HVOL** | | | | 2.80*** | 2.23*** | 1.76*** |
| | | | | (0.12) | (0.14) | (0.32) |
| **HVOL * PC_CSR** | | | | -0.03* | -0.04* | -0.02 |
| | | | | (0.02) | (0.02) | (0.04) |
| **MB** | 0.25** | 0.16 | 0.05 | 0.18* | 0.11 | 0.03 |
| | (0.12) | (0.13) | (0.24) | (0.10) | (0.11) | (0.31) |
| **SIZE** | -0.54*** | -0.51*** | -0.48*** | -0.33*** | -0.36*** | -0.36*** |
| | (0.05) | (0.05) | (0.05) | (0.03) | (0.03) | (0.04) |
| **LEV** | 0.005** | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.003) |
| **CONSTANT** | 3.64*** | 3.38*** | 2.90 | 1.29** | 1.63** | 1.58 |
| | (0.80) | (0.82) | (9.37) | (0.64) | (0.71) | (15.22) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Year RE | Year RE | Year RE | Year RE | Year RE | Year RE |
| **Clustered F-stat** | 29.6*** | 29.9*** | 72.9*** | 64.7*** | 59.7*** | 70.1*** |
| **Observations** | 16,696 | 14,260 | 12,180 | 16,696 | 14,260 | 12,180 |
| **Adjusted $R^2$** | 0.25 | 0.27 | 0.28 | 0.42 | 0.38 | 0.36 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. Models are estimated with FGLS (random year effects). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). HVOL (LVOL) takes the value of 1 when VOL is in the top (bottom) quartile (25%) among industry peers (2-digit SIC code), and 0 otherwise. MB is the market-to-book ratio (natural logarithm of the sum of the market value of equity and the book value of liabilities scaled by the book value of assets). SIZE is the natural logarithm of the book value of assets. LEV is the book value of long-term debt as a percentage of the book value of assets.

# Robustness tests

## Levels of earnings/CFO

**Table 5.1: Earnings levels**

| | Dependent variable – ROA | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | 0.01 | 0.03 | -0.02 | 0.02 | 0.02 | -0.03* |
| | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) |
| **VOL** | | | | 0.58 | 0.80*** | 0.35 |
| | | | | (0.40) | (0.30) | (0.37) |
| **VOL * PC_CSR** | | | | 0.01 | -0.002 | -0.01 |
| | | | | (0.01) | (0.01) | (0.01) |
| **PC_ROA** | 0.10*** | 0.10*** | 0.09** | 0.09*** | 0.08*** | 0.08*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.03) |
| **ROA** | -0.002 | -0.17*** | -0.19*** | 0.01 | -0.14*** | -0.18*** |
| | (0.06) | (0.06) | (0.05) | (0.06) | (0.06) | (0.04) |
| **MB** | 7.68*** | 2.43*** | 0.38 | 7.62*** | 2.29*** | 0.25 |
| | (0.60) | (0.71) | (0.64) | (0.58) | (0.73) | (0.64) |
| **SIZE** | -1.39*** | -2.51*** | -2.05*** | -1.10*** | -2.14*** | -1.91*** |
| | (0.43) | (0.47) | (0.48) | (0.35) | (0.42) | (0.45) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 42.9*** | 10.07*** | 10.94*** | 39.22*** | 7.85*** | 29.58*** |
| **Observations** | 14,804 | 12,670 | 10,849 | 14,364 | 12,274 | 10,490 |
| **Adjusted $R^2$** | -0.03 | -0.12 | -0.13 | -0.02 | -0.11 | -0.14 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. ROA is earnings before extraordinary items scaled by the book value of assets. PC_CSR – change in the CSR net percentage score. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). PC_ROA is the percentage point change in ROA. MB is the market-to-book ratio (natural logarithm of the sum of the market value of equity and the book value of liabilities scaled by the book value of assets). SIZE is the natural logarithm of the book value of assets.

## Table 5.2: CFO levels

| | Dependent variable – ROA_CFO | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | 0.001 | -0.004 | 0.01 | 0.004 | -0.01 | 0.02 |
| | (0.004) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **VOL_CFO** | | | | -0.13 | -0.10 | -0.26*** |
| | | | | (0.13) | (0.12) | (0.09) |
| **VOL_CFO * PC_CSR** | | | | 0.002 | -0.01 | 0.01* |
| | | | | (0.004) | (0.01) | (0.004) |
| **PC_ROA_CFO** | 0.003 | 0.05** | 0.05*** | 0.005 | 0.05** | 0.05*** |
| | (0.03) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) |
| **ROA_CFO** | 0.12** | -0.04 | -0.10*** | 0.11** | -0.05 | -0.10*** |
| | (0.05) | (0.04) | (0.03) | (0.05) | (0.04) | (0.03) |
| **MB** | 3.20*** | 2.61*** | 1.87*** | 3.15*** | 2.55*** | 1.79*** |
| | (0.63) | (0.47) | (0.39) | (0.65) | (0.48) | (0.38) |
| **SIZE** | -0.49 | -0.81*** | -0.86*** | -0.60 | -0.88** | -1.00*** |
| | (0.33) | (0.31) | (0.27) | (0.37) | (0.36) | (0.30) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 15.26*** | 27.14*** | 11.14*** | 12.87*** | 20.46*** | 9.88*** |
| **Observations** | 14,804 | 12,670 | 10,849 | 14,364 | 12,274 | 10,490 |
| **Adjusted $R^2$** | -0.11 | -0.14 | -0.16 | -0.11 | -0.14 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. ROA_CFO is cash flow from operations scaled by the book value of assets. PC_CSR – change in the CSR net percentage score. VOL is the CFO volatility centered around industry means (rolling 20-quarters standard deviation of ROA_CFO). PC_ROA_CFO is the percentage point change in ROA_CFO. MB is the market-to-book ratio (natural logarithm of the sum of the market value of equity and the book value of liabilities scaled by the book value of assets). SIZE is the natural logarithm of the book value of assets.

## Advertising and R&D expenditures

**Table 5.3: Advertising and R&D expenditures**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR** | -0.02 | -0.01 | -0.08*** | -0.01 | -0.01 | -0.08*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| **VOL** | 0.39** | -0.28 | -0.62** | 0.40** | -0.27 | -0.62** |
| | (0.19) | (0.37) | (0.30) | (0.20) | (0.38) | (0.31) |
| **VOL * PC_CSR** | -0.003 | 0.001 | -0.03** | 0.0001 | -0.001 | -0.03** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **PC_EARN** | 0.01 | -0.04 | -0.01 | 0.01 | -0.03 | -0.01 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.03) |
| **ROA** | -0.74*** | -0.20*** | -0.04 | -0.75*** | -0.20*** | -0.04 |
| | (0.06) | (0.04) | (0.06) | (0.06) | (0.04) | (0.06) |
| **PC_ADEX** | | | | 0.15 | -0.14 | 0.09 |
| | | | | (0.09) | (0.16) | (0.20) |
| **PC_ADEX * PC_CSR** | | | | -0.01 | -0.02* | 0.0003 |
| | | | | (0.01) | (0.01) | (0.02) |
| **PC_RDEX** | | | | -0.03 | 0.08 | 0.08 |
| | | | | (0.08) | (0.08) | (0.14) |
| **PC_RDEX * PC_CSR** | | | | 0.02 | -0.02 | -0.01 |
| | | | | (0.01) | (0.01) | (0.01) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 156.17*** | 18.15*** | 5.86*** | -277.73 | 14.05*** | 0.96 |
| **Observations** | 16,806 | 14,366 | 12,274 | 16,753 | 14,331 | 12,252 |
| **Adjusted $R^2$** | 0.22 | -0.13 | -0.16 | 0.22 | -0.13 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR – change in the CSR net percentage score. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA). PC_ADEX is the percentage point change in the advertising expenditures. PC_RDEX is the percentage point change in the expenditures on research and development.

## Alternative CSR scores

**Table 5.4: Conservative CSR (ex. Corporate Governance and Product)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR_XGP** | -0.02 | -0.004 | -0.04** | -0.02 | 0.003 | -0.08*** |
| | (0.01) | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) |
| **VOL** | | | | 0.39** | -0.27 | -0.62** |
| | | | | (0.19) | (0.37) | (0.30) |
| **VOL * PC_CSR_XGP** | | | | -0.005 | 0.01 | -0.03*** |
| | | | | (0.01) | (0.01) | (0.01) |
| **PC_EARN** | 0.02 | -0.04 | -0.02 | 0.01 | -0.04 | -0.01 |
| | (0.03) | (0.03) | (0.04) | (0.03) | (0.03) | (0.03) |
| **ROA** | -0.76*** | -0.19*** | -0.02 | -0.74*** | -0.20*** | -0.04 |
| | (0.07) | (0.05) | (0.07) | (0.06) | (0.04) | (0.06) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 155*** | 28.6*** | 2.9** | 130*** | 20.1*** | 7.6*** |
| **Observations** | 17,338 | 14,845 | 12,705 | 16,806 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.22 | -0.13 | -0.17 | 0.22 | -0.13 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR_XGP – change in the CSR net percentage score that excludes the Corporate Governance and Product categories. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA).

## Table 5.5: Internal CSR (Diversity and Employee Relations)

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR_INTER** | -0.01 | 0.002 | -0.02 | -0.01 | 0.001 | -0.04*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| **VOL** | | | | 0.39** | -0.28 | -0.63** |
| | | | | (0.20) | (0.37) | (0.30) |
| **VOL * PC_CSR_INTER** | | | | -0.0004 | -0.0003 | -0.02*** |
| | | | | (0.004) | (0.004) | (0.01) |
| **PC_EARN** | 0.02 | -0.04 | -0.02 | 0.01 | -0.04 | -0.01 |
| | (0.03) | (0.03) | (0.04) | (0.03) | (0.03) | (0.03) |
| **ROA** | -0.76*** | -0.19*** | -0.02 | -0.75*** | -0.20*** | -0.04 |
| | (0.07) | (0.05) | (0.07) | (0.06) | (0.04) | (0.06) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 152*** | 22.7*** | 2.5* | 157*** | 13.2*** | 4.3*** |
| **Observations** | 17,277 | 14,845 | 12,705 | 16,745 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.22 | -0.13 | -0.17 | 0.22 | -0.13 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR_INTER – change in the internal CSR net percentage score that only includes the Diversity and Employee Relations categories. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA).

**Table 5.6: External CSR (Community, Environment, Human Rights)**

| | Dependent variable – PC_EARN | | | | | |
|---|---|---|---|---|---|---|
| | A. Without volatility | | | B. With volatility | | |
| | **τ = 1** | **τ = 2** | **τ = 3** | **τ = 1** | **τ = 2** | **τ = 3** |
| **PC_CSR_EXTER** | -0.01 | -0.01 | -0.02 | -0.02* | 0.01 | -0.05* |
| | (0.004) | (0.01) | (0.02) | (0.01) | (0.01) | (0.03) |
| **VOL** | | | | 0.40** | -0.28 | -0.61** |
| | | | | (0.19) | (0.37) | (0.30) |
| **VOL * PC_CSR_EXTER** | | | | -0.01 | 0.01** | -0.01 |
| | | | | (0.004) | (0.005) | (0.01) |
| **PC_EARN** | 0.02 | -0.04 | -0.02 | 0.01 | -0.04 | -0.002 |
| | (0.03) | (0.03) | (0.04) | (0.03) | (0.03) | (0.03) |
| **ROA** | -0.76*** | -0.19*** | -0.02 | -0.74*** | -0.20*** | -0.05 |
| | (0.07) | (0.05) | (0.07) | (0.06) | (0.04) | (0.06) |
| **Industry dummies** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Method** | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE | Firm FE |
| **Clustered F-stat** | 141*** | 18.3*** | 1.7 | 109*** | 19.0*** | 2.2* |
| **Observations** | 17,336 | 14,845 | 12,705 | 16,804 | 14,366 | 12,274 |
| **Adjusted $R^2$** | 0.22 | -0.13 | -0.17 | 0.22 | -0.13 | -0.16 |

Note. – *p-value < 0.10 **p-value < 0.05 ***p-value < 0.01. All models are estimated with OLS (fixed firm effects, within estimator). Standard errors (in parentheses) are clustered by firm and year, as well as corrected for heteroscedasticity. PC_EARN is the percentage point change in earnings before extraordinary items (dollar change scaled by the lagged book value of assets). PC_CSR_EXTER – change in the external CSR net percentage score that only includes the Community, Environment, and Human Rights categories. ROA is earnings before extraordinary items scaled by the book value of assets. VOL is the earnings volatility centered around industry means (rolling 20-quarters standard deviation of ROA).