

Tax Aggressiveness and Firm's Cash Holdings: The Role of Corporate Social Responsibility

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Abstract

This study examines how tax aggressiveness affects the propensity of U.S. companies to stockpile cash and how the above relations are affected by the degree of corporate social responsibility (CSR) activities. The empirical results find that the tax aggressiveness is positively associated with firm's cash holdings, and when firms undertake corporate social responsibility, it mitigate the positive relation between the level of tax aggressiveness and firm's cash holdings.

Keywords: Cash holdings, Tax aggressiveness, Corporate Social Responsibility

JEL classification: G3, H2

I. Introduction

Prior researches largely view tax aggressiveness and other tax shelter strategies as ways to minimize cash payment to the tax authority, however, recent researches argue that tax management activities limit the flow of firm's specific information to prevent detection by the tax authorities (Dhaliwal et al., 2012).¹ In particular, Desai and Dharmapala (2008) argue that tax aggressiveness demands complexity and obfuscation to prevent detection, and these characteristics can become a shield for managerial opportunism. Recent studies point out tax aggressiveness activities can mask managerial opportunism related to earnings management and inside bad news (Chen et al., 2010; Kim et al., 2011; Chang and Huang, 2016). However, do tax aggressiveness can really help managers to increase cash holding from tax savings, and further increase their control rights to fulfil personal benefit, which leaves much room to discuss. Prior researches evaluate this question under agency perspective, suggesting that self-interest managers may make decision which is contrary to shareholders interest, and may conduct more aggressive tax reporting policy.

A large number of the existing researches have examined the relation between corporate governance and firm cash holdings (Oler, 2008). Harford et al. (2008) find that firms with weaker corporate governance structures have smaller cash reserves. However, there is little evidence on whether tax aggressiveness behavior affects cash holdings. According to agency theory, information asymmetric between managers and shareholders provides opportunity for managers to reduce firms' tax payment to tax authority. This behavior may influence shareholders' equity and also affect firm cash holdings. We further expands the view point from corporate governance to CSR, discussing the empirical relation among tax aggressiveness, CSR and firm's cash holdings. We broaden our research scope on CSR which not only shareholders' interest, but also stakeholders benefits. We examine how CSR activities affect the propensity of U.S. companies to stockpile cash.

Taken together, our research questions are as follows: first, does aggressive tax reporting policy lead managers to stockpile cash reserves? Second, do lower CSR, as indicated by a weak governance structure, concern less on employee's benefit and social welfare leading managers to stockpile cash reserves? Third, how do CSR change firm's cash stockpiles policy? Fourth, are there any differences in the deployment of cash reflected in differences in firm's

¹ We define tax aggressiveness as "the ability to pay a low amount of cash income taxes relative to corporate pre-tax earnings" (Dyregang et al., 2008).

CSR and tax aggressiveness, and is this true that compared with concerned CSR firms, strengthened CSR firms are more likely to mitigate the relation between tax aggressiveness and cash holdings?

CSR is a general framework for the responsible use of corporate power and social contribution that may provide corporate social performance increased (Turker, 2009). Recent research proposes that firms are generally broadening the basis of their performance from a short-term financial performance to long-term social, environmental and economic influences (Hardjono and Marrewijk, 2001). Under the scope of corporate governance, firms are encouraged to promote ethics, transparency and accountability in all their conducts, practices and dealings. Additionally, a company's decisions should be in line with the interests of the different stakeholders within and outside the firm, including workers, customers, suppliers, the community, society and the environment. These topics fall into the area of CSR; both the framework and the topics themselves have recently drawn increasing attention (Jamali et al., 2008).

Since these measures may substitute for each other in controlling the firm's agency problems, using synthesized measures provides a more complete picture and allows us to measure their differential impact on cash holdings. To measure CSR, the multiple social responsibility measures encompass corporate governance (including leadership and transparencies of public issue, effective reporting of social measures and so on), community (charitable and innovative offering), employee relations (employee's benefit in profit sharing, health and safety) and product safety and innovation. To capture the various aspects of cash holding, two cash holdings measurements are used following the definition in Harford et al. (2008), the natural logarithm of cash divided to net assets and industry-adjusted cash holding. Following Desai et al. (2009), we measure tax aggressiveness by inferring the difference between income reported to capital markets and tax authorities — the book-tax difference. The analysis demonstrates that this measure takes on higher values when a firm adopts aggressive tax reporting. Further, we apply overall corporate governance index to measure the quality of corporate governance.

We find a positive association between tax aggressiveness and firm's cash holdings. We also find the relation between CSR and firm's cash holding is negative, suggesting that firms conduct more aggressive tax reporting behavior may increase the level of cash holding, on the other hand, firms undertake more CSR activities may decrease the level of cash holdings. We further highlight the role of CSR can mitigate the positive relation between tax aggressiveness and firm's cash holdings.

Our research contributes to cash holding, tax aggressiveness and corporate social responsibility literatures in the following ways. First, prior researches have examined the association between corporate governance and cash holdings. However, there is little evidence on whether tax aggressiveness affects cash holdings. According to agency theory, there is information asymmetric between managers and shareholders. Managers tend to reduce firms' tax payment to tax authority. This behavior may influence shareholders' equity and also affect firm cash holdings.

Second, we examine whether CSR attenuates the association between tax aggressiveness and firm cash holdings. Prior literatures provide that corporate governance has a strong link with CSR. Different from prior researches, which emphasize on specific aspect of corporate governance, we broaden the research scope on CSR which including corporate governance,

environment and social as a proxy to examine whether it may affect the relation between tax aggressiveness and firm cash holdings or not. In addition, we investigate the interaction term of tax aggressiveness and CSR to understand whether CSR association with tax aggressiveness may affect the firm cash holdings.

Third, despite there are different aspects of governance, e.g., board characteristics (Bhagat and Black 1998), shareholders' activism (Carleton et al., 1998), and investor protection (La Porta et al. 2000). Literatures present that corporate governance has a strong link with CSR. In this research, we extend corporate governance to CSR which including corporate governance, environment and social and then examine the association with cash holdings. Finally, we use interaction term between CSR and tax aggressiveness to examine whether CSR may mitigate the association between tax aggressiveness and cash holdings or not.

The reminder of the paper is organized as follow: Section II reviews related literature and develops our hypothesis. Section III describes research methodologies. Section IV provides the data sources, sample selection and the empirical results. The final section draws conclusions.

II. Literature Review and Hypothesis Development

II.1 Corporate Social Responsibility

CSR has become increasingly important in recent years owing to the dramatic growth in the number of institutes, mutual funds, and online resources and other publications that specialize in encouraging corporations to improve their practices according to various responsibility criteria (Bassen et al., 2006). Additionally, large institutional investors are showing a preference for investing in firms that pursue specific socially responsible activities (Guenster et al., 2011).

CSR has been defined as the obligation of firms to be responsible for the environment and for their stakeholders in a manner that goes beyond financial goals (Gössling and Vocht, 2007). A particular definition of CSR is presented at the World Business Council for Sustainable Development: 'CSR is the continuing commitment by business to behave ethically and contribute to economic development, while improving the quality of life of the workforce and their families as of the local community at large' (Holme and Watts, 1999). Therefore, CSR is relevant at different levels within and outside the corporation and is difficult to measure.

Wood (1991) categorizes three principles of CSR as: institutional, organizational, and individual, and states that outcomes of corporate behavior include the impact on social programs and social policies.

II.2 Tax Aggressiveness

Hanlon and Heitzman (2010) define tax aggressiveness as the reduction of explicit taxes. The literature has been holding the view that large book-tax differences (i.e., the differences between reporting incomes and taxable income) and low effective tax rates reflect tax aggressiveness behavior.

Modern tax aggressiveness research incorporates more on the agency problem: managerial opportunism or resource diversion (Desai and Dharmapala, 2009b). Complex tax aggressiveness transactions can provide management with the tools, masks, and justifications for opportunistic managerial behaviors, such as earnings manipulations, related party transactions, and other resource-diverting activities (Desai and Dharmapala, 2006). Using case analysis, Desai (2005) provides detailed evidence on how these opportunistic managerial

behaviors can be facilitated by tax aggressiveness. This agency view of tax aggressiveness is attracting increasing attention in the literature (Hanlon and Heitzman, 2010).

II.3 Cash Holding

Prior literatures show that liquid assets such as cash can be easily varied into own benefits by self-interest managers (Myers and Rajan, 1998). Because cash is the most liquid of assets, the firm incurs the greatest premium or cost from maintaining cash reserves. Several researches point to two main benefits from holding liquid assets. The first benefit is “transaction motive”, it allows companies to avoid the transaction costs associated with increasing funds or liquidating assets to make current payments and it also let firms to meet their present responsibilities without resorting to costly external financing and asset sale. Prior researches show that commission costs and costly external financing affect firms to hold more liquid assets (Miller and Orr, 1966; Myers and Majluf, 1984).

The second benefit is “precautionary motive”, which means that the firm can take advantage of its liquid assets to invest when other sources of funding are not readily available or are excessively costly and it allows firms to use potentially profitable investments which would have otherwise been given up in the absence of firm cash holdings.

The precautionary motive for corporate cash holdings, however, has not been adequately and consistently modeled in the literature. It has been well documented empirically that cash flow volatility could affect a firm's cash-holding behavior. There are some evidences that firms may hold more liquid assets if their industry average cash flow volatility is higher (Opler et al., 1999). They further show that firms that persistently hold large cash reserves when compared with their peer firms (Mikkelson and Partch, 2003). These studies suggest that firms use internally generated funds to hedge against future cash flow uncertainty and to increase their cash holdings in response to increases in cash flow volatility. However, holding liquid assets implies an opportunity cost and causes agency problems between managers and shareholders. The free cash flow might raise discretion by managers, which against with shareholders' interest (Jensen, 1986; Harford, 1999; Oler, 2008). Gao et al. (2013) examine the drivers of cash policies for private and public firms in U.S., they find agency problems affect not only the target level of cash, but also how managers react to cash in excess of the target.

II.4 Tax Aggressiveness and Cash Holdings

Most literatures provide that the goal of tax aggressiveness activities is to maximize shareholders interest. However, Hanlon and Slemrod (2009) examine the market reaction to news about a firm's involvement in tax shelters. Kim et al. (2011) find tax aggressiveness firms are likely to exhibit stock price crash. They interpret this finding as evidence that tax aggressiveness allows managers to conceal negative news which “prevent investors and the board of directors from taking timely corrective actions or liquidating bad projects early”.

As far as we know, there are only few empirical researches discuss issues around tax aggressiveness and firm's cash holding. Dhaliwal et al. (2012) show that tax aggressiveness activities allows managers to attain their self-interest. Myers and Rajan (1998) also mention that liquid assets such as cash can be easily varied into own benefits by self-interest managers. Paying less tax to retain more cash, this leads managers arrange firms' resources to fulfill personal interests. Opler et al. (1999) research indicates that cash flow volatility could affect a firm's cash-holding behavior. Meanwhile, following the precautionary motivation for more cashing holding on hand, we expect that there is a significant positive association between tax

aggressiveness and cash holdings. For firms adopt tax aggressiveness reporting activities may accompany by the risk of tax investigation or litigation, this lead firms to reserve more cash in case the possible penalties from tax authority. We posit our first hypothesis as follow:

Hypothesis 1: The correlation between the level of tax reporting aggressiveness and firm's cash holdings is significantly positive.

II.5 Corporate Social Responsibility, Tax Aggressiveness and Cash Holdings

While a number of aspects of corporate governance have been examined the impact on cash holdings by academic researchers, investment practitioners, and regulators, a lot of the attention has been given to the market for corporate control, the structure of the board of directors and the outcomes of their decisions (e.g., executive compensation as an incentive device for corporate managers), and the role of institutional investors as monitors. The evidence shows that each of these areas has generated a great deal of shareholder interest, in terms of surveys, proposals submitted via shareholder proxy statements, and votes on these proposals, and in terms of market reactions around announcements of corporate governance events.

Despite the enormous interest in CSR, the extant literature concentrates mostly on the relation between CSR and financial performance. There are few articles that examine the similar issue with our research. CSR activities reduce available cash flows which can be used by self-interested managers to undertake nonvalue-maximizing projects (Jensen, 1986). By improving relation with key stakeholder groups, including consumers, employees, suppliers, and regulator, prior research proves that investing in CSR will likely reduce a firm's agency costs and limit overinvestment, leading to a decrease in cash holding (Harjoto and Jo, 2011; Waddock and Graves, 1997; Carroll, 1979). Atting et al. (2014) examine the relation between CSR and internal cash flow, they find that CSR performance leads to a decrease in internal cash flow, they further find that internal cash flow decreases (increases) when CSR strengths (concerns) increase. Accordingly, we posit our second hypothesis as follow:

Hypothesis 2: The correlation between corporate social responsibility and firm's cash holdings is significantly negative.

Hypothesis 1 predicts that firms undertake tax aggressiveness activities tend to have higher firms' cash holdings, meanwhile, hypothesis 2 expects that corporate social responsibility has a negative impact on firm's cash holdings. The questions here we examine whether corporate social responsibility activities may affect the relation between firms' tax decisions and cash holdings. The discussion aforementioned suggests that CSR can reduce firms' cash holding by reducing agency costs and improving firms' information quality, but tax aggressiveness may against this effect which tends to reserve more cash on hand for precaution or managerial personal benefit. However, when companies engaged in corporate social responsibility activities, how the relation between tax aggressiveness and firms cash holdings changed. The net effect of tax aggressiveness on cash holding is thus an empirical issue when firms strengthen CSR.

Prior research points out two competing arguments for the relation between CSR and tax avoidance. One arguments develop in the business and society literature suggesting a positive relation between CSR and Tax Payments (Christensen and Murphy, 2004; Kim et al., 2012; Davis et al. 2016). Under this perspective, the positive relation between CSR and tax payment may lead to significantly negative effect on firm's cash holding.

However, under traditional economic theory, prior research suggests that managers engage in tax avoidance to the extent that maximizes shareholder wealth. If both tax aggressiveness and CSR are mechanisms to maximize firm value, then there is no direct (or negative) relation between CSR and corporate tax payments (Hoi et al. 2013; Davis et al. 2016). In terms of information disclosure, CSR leads to improve information and monitoring quality, which mitigate the relation between tax aggressiveness and firm's cash holding. Based on these controversial arguments, therefore, we propose the following hypothesis:

Hypothesis 3: The level of corporate social responsibility activities can affect the positive relation between tax aggressiveness and firm's cash holdings.

III. Research Design

III.1 Sample Selection

We begin with two databases: COMPUSTAT and KLD STATS database, the first provides industry affiliation and financial data, the second provides corporate social responsibility data. Our sample period covers from 1991 to 2008. Excluding the missing data to compute our dependent and independent variable, we get 6,971 firm-year observations.

III.2 Regression Model

To test our hypotheses, we extend the model of Opler et al. (1999) as follows, and the definitions of the variables in Models (1) to (3) are shown in Table 1.

$$CASH\ HOLDINGS = \alpha_0 + \alpha_1 TAX_{it} + \alpha_2 MBRATIO_{it} + \alpha_3 SIZE_{it} + \alpha_4 NWC_{it} + \alpha_5 CAPEXP_{it} + \alpha_6 LEV_{it} + \alpha_7 RD_{it} + \alpha_8 DIVIDEND_{it} + \alpha_9 CFO_{it} + \varepsilon_{it} \quad (1)$$

$$CASH\ HOLDINGS = \beta_0 + \beta_1 CSR_{it} + \beta_2 MBRATIO_{it} + \beta_3 SIZE_{it} + \beta_4 NWC_{it} + \beta_5 CAPEXP_{it} + \beta_6 LEV_{it} + \beta_7 RD_{it} + \beta_8 DIVIDEND_{it} + \beta_9 CFO_{it} + \varepsilon_{it} \quad (2)$$

$$CASH\ HOLDINGS = \gamma_0 + \gamma_1 TAX_{it} + \gamma_2 CSR_{it} + \gamma_3 TAX_{it} * CSR_{it} + \gamma_4 MBRATIO_{it} + \gamma_5 SIZE_{it} + \gamma_6 NWC_{it} + \gamma_7 CAPEXP_{it} + \gamma_8 LEV_{it} + \gamma_9 RD_{it} + \gamma_{10} DIVIDEND_{it} + \gamma_{11} CFO_{it} + \varepsilon_{it} \quad (3)$$

[Table 1 about here.]

III.3 Cash Holdings

We use two measures for cash holdings. First, we follow Opler et al. (1999) to compute cash holdings (*CASH*) as cash and marketable securities divided by total assets minus cash plus marketable securities. Second, following Harford et al. (2008), we create an industry-adjusted measure of the firm's cash to sales ratio (*CTS*).

III.4 Tax Aggressiveness Measurement (*TAX*)

Following prior literatures (Desai and Dharmapala 2006; Dyreng et al. 2008; Frank et al., 2009; Rego and Wilson 2008; Wilson 2009), we adopt two measures of tax aggressiveness, one is book-tax differences, the other is permanent book-tax differences.

Based on Rego and Wilson (2008), the total book-tax difference (*TBTD*) is computed as $TBTD_{i,t} = \{ BI_{i,t} - [(CFTR_{i,t} + CFOR_{i,t}) / STR] \} / Asset_{i,t-1}$. Where *BI* is Pre-tax book income, *CFTR* is current federal tax expense, *CFOR* is current foreign tax expense, *STR* is statutory tax rate, and *Asset* is total asset in beginning of the year. When firms conduct tax shelters activities, it has larger book-tax differences (Wilson, 2009; Dasai and Dharmapala, 2006).

Permanent book-tax difference (*PBTD*) are computed as follow: $PBTD_{i,t} = \{ BI_{i,t} - [(CFTR_{i,t} + CFOR_{i,t}) / STR] - [DTE_{i,t} / STR] \} / Asset_{i,t-1}$. Where *DTE* is deferred tax expense. When the firms have higher value of permanent book-tax difference, it is considered to be involved in more tax aggressiveness activities. Wilson (2009) finds that tax shelters activities may cause permanent book-tax difference. Based on hypothesis 1, we expect a positive relation

between the level of tax aggressiveness and firms' cash holding, i.e. α_1 and γ_1 are positive.

III.5 Corporate Social Responsibility (CSR)

KLD STATS contains ratings on a wide range of CSR-related items compiled from various sources such as government agencies, non-governmental organizations, global media publications, annual reports, regulatory filings, proxy statements, and company disclosure. KLD STATS organizes the various CSR-related items into two major categories: qualitative issue areas and controversial business issues.² KLD assigns a binary (0/1) for each qualitative issue area, rating to a set of concerns and strengths as illustrated in Table 2. From Table 2, KLD examines both positive indicators (strengths) and negative indicators (concerns). Prior studies use the KLD data to construct CSR index (e.g., Szwajkowski and Figlewicz 1999; Davis et al. 2016) and note that the KLD data are a widely used, influential, and highly regarded measure of CSR (Chatterji et al., 2009; Hoi et al., 2013).

Following Kim et al. (2012) and Davis et al. (2016), we construct CSR index scores based on the following four KLD categories: the community (*CSR_COM*), corporate governance (*CSR_CG*), employee relations (*CSR_EMP*), and product characteristics (*CSR_PRO*). The CSR index score by adding 1 for each identified strength, subtracting 1 for each identified concern, and summing across all strengths and concerns for each firm-year. Regarding the integrated CSR score (*SCSR*) is measured as the sum of the scores of four categories. Based on hypothesis 2, we predict a negative relation between *SCSR* and cash holding, i.e. β_1 and γ_2 are negative. Regarding the interaction term of *CSR* and *TAX* (*CSR*TAX*), we expect the *CSR* activities can affect the positive relation between the *TAX* and *CASH/CTS*, the prediction sign of *CSR*TAX* is insignificant or significant negative.

III.6 Control Variables

Following Opler et al. (1999), we employ market to book (*MBRATIO*), firm size (*SIZE*), net working capital (*NWC*), capital expenditures (*CAPEXP*), firm leverage (*LEV*), research and development (*RD*), Dividend policy (*DEVIDEND*) and operating cash flows (*CFO*) as our control variables. *MBRATIO* is a proxy for growth opportunities measured as book value of assets minus book value of equity plus the market value of equity divided by total assets. We expect high growth firms to have more cash holdings, the expected signs of α_2 , β_2 , and γ_4 are positive. *SIZE* is measured as the natural log of total assets to control for takeover deterrent, we predict a negative coefficient on firm size, i.e. α_3 , β_3 , and $\gamma_5 < 0$. To control the effect from liquidity, *NWC* is measured as current assets minus current liabilities divided by total assets, we predict that a firm with more liquid asset may have lower cash holdings, i.e. α_4 , β_4 , and $\gamma_6 < 0$. *CAPEXP* is measured as capital expenditures divided by total assets to control for investment opportunities, we expect firms with more investment opportunities need more cash holdings, i.e. α_5 , β_5 , and $\gamma_7 > 0$. *LEV* is computed as total liabilities divided by total assets, we expect negative coefficients on leverage (α_6 , β_6 , and $\gamma_8 > 0$). *RD* is measured as R&D expenditure divided by net sales which is a proxy for growth opportunities and financial distress costs. We expect that firms with greater research and development expenses are likely to have more growth opportunities and thus may have higher cash holdings to avoid forgoing the exercise of these growth opportunities. We predict positive coefficients on *RD*, i.e. α_7 , β_7 , and $\gamma_9 > 0$. *Dividend* is measured as 1 for firms that pay dividends during a fiscal year and 0 otherwise, the coefficient on dividend is except to be negative, i.e. α_8 , β_8 , and

² Controversial business issues include: alcohol, gambling, tobacco, firearms, the military and nuclear power. For each controversial business issue, KLD assigns a binary (0/1) rating for whether a firm is involved in (at least one of) a set of concerns.

$\gamma_{10} > 0$. The level of operating cash flows may affect firms' cash holding, the coefficients on *CFO* are expected positive, i.e. α_9 , β_9 , and $\gamma_{11} > 0$.

[Table 2 about here.]

IV. Empirical Result

IV.1 Descriptive Statistics

Table 3 contains the descriptive statistics of the sample firms used to test hypotheses in this study. We winsorize the variables employed in our regression at the 1st and 99th percentiles. The mean (median) of *CASH* and *CTS* are 0.321(0.104) and 0.273(0.089). The mean and median of total book-tax differences (*TBTD*) and permanent book-tax differences (*PERM_BT D*) are all positive suggesting that the median firm in our sample reports higher levels of financial accounting income as compared to taxable income.

Table 3 also exhibits descriptive statistics for the CSR variables, including integrated CSR index (*SCSR*), corporate governance (*CSR_CG*), community (*CSR_COM*), employee relations (*CSR_EMP*) and product quality (*CSR_PRO*). All medians of CSR indexes are zero, suggesting that relatively balanced distribution of firms with strength and concern in different aspects. The means of integrated CSR index (*SCSR*), corporate governance (*CSR_CG*), community (*CSR_COM*), employee (*CSR_EMP*), and product quality (*CSR_PRO*) are -0.447, -0.261, 0.093, -0.142 and -0.137, respectively.

Table 4 reports the Pearson correlation statistics between the variables employed in our empirical assessment of firm cash holdings. Tax aggressiveness are significantly positive correlated with the firm's cash holding. *SCSR* are significantly negative correlated with the firm's cash holding. These correlations support our first and second hypotheses primarily that the level of tax aggressiveness activities are positively associated with firm's cash holding, however, the level of CSR activities are significant negative with firm's cash holding.

[Tables 3 and 4 about here.]

IV.2 Regression Results

Tables 5-8 present the results for the estimation of Equations (1) to (3). In Table 5, the results shown in the left-hand pair of columns labeled "*CASH*" indicate that the coefficient of *TBTD/PBTD* in Equation (1) is positive and significant (p-value < 0.01). The right-hand set of columns labeled "*CTS*" displays the similar results. The coefficients on *TBTD/PBTD* are 0.055/0.133 (*CASH* as dependent variable) and 0.028/0.050 (*CTS* as dependent variable) represent that companies with higher total book-tax differences have higher cash holding. All findings of Equation (1) are consistent with Hypothesis 1.

The effects of the control variables are mostly in line with our predictions. We find positive and significant coefficients for *MBRATIO*, *RD* and *CFO* across all settings. Consistent with our conjecture, companies with higher market to book value, R&D expenses and cash flow from operation are associated with a higher cash holding. In turn, we find negative and significant coefficients for *CAPEXP*, *LEV* and *Dividend* across all settings. Inconsistent with our expectation, companies with higher capital expenditure, leverage and dividend policy are associated with less cash holding.

[Table 5 about here.]

With respect to the effect of CSR activities on tax aggressiveness, Tables 6 and 7 show the results of regression (2). The coefficients on the *SCSR* of -0.020 (*CASH* as dependent variable), -0.011 (*CTS* as dependent variable) are negative and significant (at the 1% significance level). Also, the *CSR_CG* and *CSR_PRO* coefficients of -0.139/-0.141 and -0.086/-0.093 (*CASH* as dependent variable), -0.063/-0.061 and -0.031/-0.032 (*CTS* as

dependent variable), respectively. As the expectation of hypothesis 2, we find a negative and significant coefficient on the relation between *SCSR*, *CSR_CG* and *CSR_PRO* and cash holding, suggesting that firms showing better CSR scores, corporate governance and production quality have significantly lower cash holdings. Consistent with prior researches, firms or countries with better shareholding protected structure tends to hold less cash holding, indicating that shareholders want to limit the cash at managers' discretion. (Dittmar et al., 2003; Lins and Kalcheva, 2004; Pinkowitz et al., 2004) This result brings up an important finding that not only stockholder protected firms, CSR strengthened firms concern social welfare and hold less cash reserves.

However, with respect to the effect of community and employee relations, the coefficients on the *CSR_COM* and *CSR_EMP* of 0.031/0.041 and 0.047/0.055 (*CASH* as dependent variable), 0.002/0.006 and 0.018/0.022 (*CTS* as dependent variable) are positive. This finding suggests that firms strengthen in community or employee benefit hold higher level of cash.

[Tables 6 and 7 about here]

Table 8 examine whether CSR activities may affect the association between tax aggressiveness and cash holdings. To conduct this analysis we use interaction item between tax aggressiveness and CSR to examine whether CSR may attenuate the association between tax aggressiveness and cash holdings or not. The result shows that interaction items in a proxy of integrated CSR index (*CSCR*) and tax aggressiveness are insignificantly, suggesting that CSR weakens the positive correlation between tax aggressiveness and cash holdings, i.e. when enterprises undertake CSR activities may attenuate the association between tax aggressiveness and cash holdings.

[Table 8 about here]

V. Conclusion

This study examines the association between tax aggressiveness, CSR and the level of firm cash holdings. Recent research contends that there exists agency problem between manager and shareholders, suggesting that the optimal level of cash holding is the point at which the marginal benefit of holding cash equals its marginal costs. However, manager-shareholder conflicts of interest can result in firm cash holdings that depart from this optimal level. Given that cash is a fungible asset that can be easily diverted, it is more susceptible to agency conflicts. We evaluate this contention with respect to firm cash holdings and tax aggressiveness. Further, we examine the relation between CSR and the level of firm cash holdings, we also examine whether firm undertake CSR may affect the relation between tax aggressiveness and the level of cash holdings.

In general, we find a positive association between firm cash holdings and tax aggressiveness, this result is robust across multiple measures of tax aggressiveness employed in our research. We also examine the impact of CSR on the level of firm cash holdings. We find the association of CSR and firm's cash holding is negative; suggesting that firms undertake CSR may decrease the level of cash holdings. Further, we also highlight the role of CSR in effectively limiting the adverse effects between tax aggressiveness and the level of cash holdings.

Our findings consistent with the flexibility hypothesis which proposes that self-interested managers value flexibility and freedom from capital market discipline (Jensen, 1986). These managers do not invest all of the cash saved from tax avoidance, rather, they stockpile some of it, preferring to hold large cash reserves (Harford et al., 2008). We present the empirical evidence of the positive relation between firm cash holdings and tax aggressiveness. However,

flexibility hypothesis also indicate that the less effective is shareholders' control of managers, the greater will be the cash reserves. A firm with stronger governance structure has less cash holding under the prediction of this hypothesis. From the governance perspective, we not only investigate the relation between tax aggressiveness and corporate governance but also broaden the governance scope to stakeholder's benefit, i.e. CSR. We find a negative association between CSR and firm's cash holding; suggesting that firms undertake CSR may decrease the level of cash holdings. Consistent with flexibility hypothesis, if we enlarge the governance structure to corporate social benefit perspective, we can find the more strengthened are the CSR activities, the less will be the cash reserves, which mitigate the positive relation between the tax aggressiveness and cash holdings.

Overall, this study contributes to the growing literature that examines tax aggressiveness within an agency framework. We provide the most comprehensive evidence for CSR on the level of firm cash holdings. Based on Salaber (2007), investors' perception of strong versus weak-CSR firms is shaped by a country's culture and religion. Future studies may investigate cross-country and cross-culture variations in the relation between CSR and the level of firm cash holdings.

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Table 1 Variables Definitions

| DEPENDENT VARIABLE | | |
|----------------------|----------------|--|
| <i>CASH HOLDINGS</i> | <i>CASH</i> | (Cash+ marketable securities)/ (Total asset- cash+ marketable securities) |
| | <i>CTS</i> | (Cash / sales)- (median level of cash holding of firm's industry) |
| INTEREST VARIABLE | | |
| <i>TAX</i> | <i>TBTD</i> | Total book-tax difference |
| | <i>PBTD</i> | Permanent book-tax difference |
| <i>CSR</i> | <i>SCSR</i> | Integrated index of CSR of firm i in year t, equals to the sum of CSR_CG, CSR_COM, CSR_EMP, and CSR_PRO. |
| | <i>CSR_CG</i> | The corporate governance index in strengthen minus the index in concern of firm i in year t |
| | <i>CSR_COM</i> | The community index in strengthen minus the index in concern of firm i in year t |
| | <i>CSR_EMP</i> | The employee relation index in strengthen minus the index in concern of firm i in year t |
| | <i>CSR_PRO</i> | The product characteristic index in strengthen minus the index in concern of firm i in year t |
| CONTROL VARIABLE | | |
| <i>MBRATIO</i> | | Market Value of Assets/Book Value of Assets |
| <i>SIZE</i> | | Natural logarithm of Total Assets |
| <i>NWC</i> | | (Current Assets - Current Liabilities)/ Total Asset |
| <i>CAPEXP</i> | | Capital Expenditures/ Total Assets |
| <i>LEV</i> | | (Short-Term Debt + Long-Term Debt)/ Total Assets |
| <i>RD</i> | | Research and Development Expenses/ Net Sales |
| <i>DIVIDEND</i> | | Dummy variable equal to 1 for dividend paying firms, and 0 otherwise |
| <i>CFO</i> | | Cash Flows from Operation/ Total Net Assets |

Table 2 Corporate social responsibility measures

| Item | Strengths | Concerns |
|----------------------|---|---|
| Corporate governance | <ul style="list-style-type: none"> ♦ Limited compensation – notably low levels of compensation paid to top management. ♦ Owns company(ies) with social strengths ♦ Effective reporting of social/environmental measures. ♦ Leadership and transparencies of public policy issue. ♦ Other strength. | <ul style="list-style-type: none"> ♦ High compensation-notably high levels of compensation paid to top management. ♦ Owns company(ies) with social concerns(KLD) ♦ Weak reporting of social/environmental performance measures ♦ Controversies on accounting and or public policy issues ♦ Other concern |
| Community | <ul style="list-style-type: none"> ♦ Charitable giving ♦ Innovative input ♦ Non-US charitable giving ♦ Support for housing ♦ Support for education ♦ Indigenous peoples relations ♦ Volunteer programs ♦ Other strength | <ul style="list-style-type: none"> ♦ Investment ♦ controversies ♦ Negative economic impact ♦ Indigenous peoples relations ♦ Tax disputes ♦ Other concern |
| Employee relations | <ul style="list-style-type: none"> ♦ Union relations ♦ No-layoff policy ♦ Cash profit sharing ♦ Employee involvement ♦ Retirement benefits strength ♦ Health and safety strength ♦ Other strength | <ul style="list-style-type: none"> ♦ Union relations ♦ Health and safety concern ♦ Workforce reductions ♦ Retirement benefits concern ♦ Other concern |
| Product Quality | <ul style="list-style-type: none"> ♦ Product safety ♦ R&D/Innovation ♦ Benefits to economically disadvantaged ♦ Other strength | <ul style="list-style-type: none"> ♦ Characteristics ♦ Marketing/Contracting concern ♦ Antitrust ♦ Other concern |

Table 3 Descriptive Statistics

| Variables | N | Mean | Q1 | Median | Q3 | STD |
|---|-------|--------|--------|--------|-------|-------|
| Panel A: Dependent Variable | | | | | | |
| <i>CASH</i> | 6,971 | 0.321 | 0.029 | 0.104 | 0.333 | 0.572 |
| <i>CTS</i> | 6,971 | 0.273 | 0.026 | 0.089 | 0.280 | 0.531 |
| Panel B: Tax Aggressiveness | | | | | | |
| <i>TBTD</i> | 6,971 | 0.357 | 0.229 | 0.353 | 0.486 | 0.187 |
| <i>PBTD</i> | 6,971 | 0.306 | 0.174 | 0.301 | 0.440 | 0.198 |
| Panel C: Corporate Social Responsibility | | | | | | |
| <i>SCSR</i> | 6,971 | -0.447 | -1.000 | 0.000 | 0.000 | 1.577 |
| <i>CSR_CG</i> | 6,971 | -0.261 | -1.000 | 0.000 | 0.000 | 0.714 |
| <i>CSR_COM</i> | 6,971 | 0.093 | 0.000 | 0.000 | 0.000 | 0.541 |
| <i>CSR_EMP</i> | 6,971 | -0.142 | -1.000 | 0.000 | 0.000 | 0.914 |
| <i>CSR_PRO</i> | 6,971 | -0.137 | 0.000 | 0.000 | 0.000 | 0.625 |
| Panel D: Control Variable | | | | | | |
| <i>MB</i> | 6,971 | 2.195 | 1.318 | 1.762 | 2.549 | 1.378 |
| <i>SIZE</i> | 6,971 | 7.204 | 6.038 | 7.099 | 8.257 | 1.544 |
| <i>NWC</i> | 6,971 | 0.622 | 0.091 | 0.305 | 0.661 | 1.185 |
| <i>CAP</i> | 6,971 | 0.104 | 0.038 | 0.072 | 0.131 | 0.105 |
| <i>DEBT</i> | 6,971 | 0.206 | 0.033 | 0.182 | 0.315 | 0.186 |
| <i>RD</i> | 6,971 | 0.058 | 0.000 | 0.004 | 0.059 | 0.132 |
| <i>D</i> | 6,971 | 0.489 | 0.000 | 0.000 | 1.000 | 0.514 |
| <i>CFO</i> | 6,971 | 0.212 | 0.090 | 0.165 | 0.272 | 0.393 |

All variables are defined in table 1. We winsorize the variables used in analysis at the 1st and 99th percentiles.

Table 4 Pearson correlations Coefficient

| <i>Variables</i> | <i>CASH</i> | <i>CTS</i> | <i>TBTD</i> | <i>PBTD</i> | <i>CSR</i> | <i>COM</i> | <i>CG</i> | <i>EMP</i> | <i>PRO</i> | <i>MB</i> | <i>SIZE</i> | <i>NWC</i> | <i>CAP</i> | <i>DEBT</i> | <i>RD</i> | <i>D</i> |
|------------------|-------------|------------|-------------|-------------|------------|------------|-----------|------------|------------|-----------|-------------|------------|------------|-------------|-----------|----------|
| <i>CTS</i> | 0.568*** | | | | | | | | | | | | | | | |
| <i>TBTD</i> | -0.170*** | -0.060*** | | | | | | | | | | | | | | |
| <i>PBTD</i> | -0.022* | 0.028** | 0.730*** | | | | | | | | | | | | | |
| <i>SCSR</i> | -0.033*** | -0.025** | -0.121*** | -0.114*** | | | | | | | | | | | | |
| <i>CSR_COM</i> | -0.021** | -0.024** | 0.145*** | 0.168*** | 0.442*** | | | | | | | | | | | |
| <i>CSR_CG</i> | -0.008 | -0.062*** | -0.312*** | -0.337*** | 0.513*** | -0.043*** | | | | | | | | | | |
| <i>CSR_EMP</i> | 0.045*** | 0.024** | 0.112*** | 0.129*** | 0.653*** | 0.153*** | -0.011 | | | | | | | | | |
| <i>CSR_PRO</i> | 0.035*** | -0.006*** | -0.254*** | -0.252*** | 0.529*** | -0.053*** | 0.182*** | 0.086*** | | | | | | | | |
| <i>MB</i> | 0.337*** | 0.184*** | -0.033*** | 0.111*** | 0.159*** | 0.117*** | 0.019* | 0.146*** | 0.059*** | | | | | | | |
| <i>SIZE</i> | -0.319*** | -0.170*** | 0.796*** | 0.739*** | -0.175*** | 0.158*** | -0.384*** | 0.103*** | -0.300*** | -0.155*** | | | | | | |
| <i>NWC</i> | 0.552*** | 0.285*** | -0.189*** | -0.085*** | 0.049*** | -0.025*** | 0.051*** | 0.010 | 0.073*** | 0.248*** | -0.299*** | | | | | |
| <i>CAP</i> | 0.135*** | 0.016 | 0.030** | 0.001 | 0.101*** | 0.019* | 0.049*** | 0.078*** | 0.068*** | 0.208*** | -0.071*** | 0.303*** | | | | |
| <i>DEBT</i> | -0.429*** | -0.204*** | 0.234*** | 0.151*** | -0.148*** | -0.025** | -0.097*** | -0.091*** | -0.109*** | -0.231*** | 0.301*** | -0.287*** | -0.092*** | | | |
| <i>RD</i> | 0.430*** | 0.381*** | -0.033*** | 0.110*** | 0.031*** | 0.007 | -0.047*** | 0.055*** | 0.046*** | 0.196*** | -0.173*** | 0.374*** | 0.014 | -0.112*** | | |
| <i>D</i> | -0.309*** | -0.289*** | 0.230*** | 0.194*** | 0.041*** | 0.112*** | -0.025** | 0.076*** | -0.084*** | -0.060*** | 0.341*** | -0.209*** | -0.094*** | 0.044*** | -0.261*** | |
| <i>CFO</i> | 0.185*** | 0.066*** | -0.004 | 0.069*** | 0.073*** | 0.043*** | -0.010 | 0.102*** | 0.007 | 0.292*** | -0.006 | 0.303*** | 0.306*** | -0.182*** | -0.187*** | 0.020 |

All variables are defined in table 1. We winsorize the variables used in analysis at the 1st and 99th percentiles.

*** Denotes significance at 1%. ** Denotes significance at 5%. * Denotes significance at 10%.

Table 5 Regression Analysis: the Effect of Tax Aggressiveness on Cash Holdings.

$$CASH\ HOLDINGS = \alpha_0 + \alpha_1 TAX_{it} + \alpha_2 MBRATIO_{it} + \alpha_3 SIZE_{it} + \alpha_4 NWC_{it} + \alpha_5 CAPEXP_{it} + \alpha_6 LEV_{it} + \alpha_7 RD_{it} + \alpha_8 DIVIDEND_{it} + \alpha_9 CFO_{it} + \varepsilon_{it} \quad (1)$$

| Variables | CASH | | CTS | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Model 1 | Model 2 | Model 1 | Model 2 |
| <i>INTERCEPT</i> | -1.811*** (-17.27) | -1.395*** (-13.30) | -0.924*** (-17.46) | -0.796*** (-11.09) |
| <i>TBTD</i> | 0.055*** (4.41) | | 0.028*** (4.28) | |
| <i>PBTD</i> | | 0.133*** (11.69) | | 0.050*** (8.74) |
| <i>MBRATIO</i> | 0.199*** (14.44) | 0.170*** (12.32) | 0.031*** (5.25) | 0.021*** (3.45) |
| <i>SIZE</i> | -0.091*** (-5.60) | -0.169*** (-11.00) | -0.026*** (-3.03) | -0.049*** (-6.11) |
| <i>NWC</i> | 0.467*** (21.15) | 0.463*** (21.49) | 0.031*** (3.67) | 0.028*** (3.48) |
| <i>CAPEXP</i> | -0.767*** (-3.84) | -0.673*** (-3.42) | -0.662*** (-6.70) | -0.621*** (-6.35) |
| <i>LEV</i> | -2.206*** (-20.25) | -2.125*** (-19.76) | -0.389*** (-7.41) | -0.357*** (-6.83) |
| <i>RD</i> | 4.850*** (18.56) | 4.468*** (17.65) | 2.576*** (18.17) | 2.443*** (17.59) |
| <i>DIVIDEND</i> | -0.302*** (-8.94) | -0.304*** (-9.10) | -0.124*** (-7.09) | -0.125*** (-7.17) |
| <i>CFO</i> | 0.120 (-1.43) | 0.140* (-1.72) | 0.112*** (3.90) | 0.106 (3.79) |
| <i>year fixed effect</i> | yes | yes | yes | yes |
| <i>industry fixed effect</i> | yes | yes | yes | yes |
| N | 6,971 | 6,971 | 6,971 | 6,971 |
| Adj-R ² | 0.535 | 0.544 | 0.315 | 0.321 |
| F-STAT | 132.30*** | 137.05*** | 53.48*** | 54.98*** |

All variables are defined in table 1. We winsorize the variables used in analysis at the 1st and 99th percentiles.

*** Denotes significance at 1%. ** Denotes significance at 5%. * Denotes significance at 10%.

Table 6 Regression Analysis: the Effect of Corporate Social Responsibility on Cash Holdings.

$$CASH\ HOLDINGS = \beta_0 + \beta_1 CSR_{it} + \beta_2 MBRATIO_{it} + \beta_3 SIZE_{it} + \beta_4 NWC_{it} + \beta_5 CAPEXP_{it} + \beta_6 LEV_{it} + \beta_7 RD_{it} + \beta_8 DIVIDEND_{it} + \beta_9 CFO_{it} + \varepsilon_{it} \quad (2)$$

| | CASH | | | | | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>INTERCEPT</i> | -2.037*** (-12.86) | -1.921*** (-12.08) | -2.074*** (-13.14) | -2.054*** (-13.02) | -2.006*** (-12.65) | -1.696*** (-23.03) |
| <i>SCSR</i> | -0.020*** (-2.94) | | | | | |
| <i>CSR_CG</i> | | -0.139*** (-8.88) | | | | -0.141*** (-9.04) |
| <i>CSR_COM</i> | | | 0.031* (1.66) | | | 0.041** (2.18) |
| <i>CSR_EMP</i> | | | | 0.047*** (4.08) | | 0.055*** (4.73) |
| <i>CSR_PRO</i> | | | | | -0.086*** (-5.23) | -0.093*** (-5.67) |
| <i>MBRATIO</i> | 0.162*** (16.12) | 0.156*** (15.6) | 0.158*** (15.78) | 0.157*** (15.54) | 0.159*** (15.89) | 0.190*** (18.88) |
| <i>SIZE</i> | -0.071*** (-8.94) | -0.088*** (-10.36) | -0.060*** (-7.59) | -0.063*** (-8.04) | -0.072*** (-8.93) | -0.085*** (-9.33) |
| <i>NWC</i> | 0.399*** (33.26) | 0.402*** (33.59) | 0.402*** (33.59) | 0.402*** (33.57) | 0.401*** (33.49) | 0.438*** (35.68) |
| <i>CAPEXP</i> | -1.212*** (-8.32) | -1.242*** (-8.25) | -1.238*** (-8.41) | -1.251*** (-8.50) | -1.237*** (-8.30) | -1.109*** (-8.25) |
| <i>LEV</i> | -1.997*** (-28.65) | -1.979*** (-28.46) | -1.986*** (-28.43) | -1.980*** (-28.27) | -1.979*** (-28.37) | -2.133*** (-30.06) |
| <i>RD</i> | 2.206*** (20.3) | 2.158*** (19.92) | 2.197*** (20.16) | 2.196*** (20.12) | 2.226*** (20.38) | 2.662*** (25.53) |
| <i>DIVIDEND</i> | -0.324*** (-12.75) | -0.317*** (-12.44) | -0.332*** (-13.02) | -0.334*** (-13.07) | -0.334*** (-13.12) | -0.351*** (-13.11) |
| <i>CFO</i> | 0.109*** (2.6) | 0.102** (2.44) | 0.107** (2.53) | 0.106** (2.51) | 0.107** (2.55) | 0.189** (2.15) |
| <i>year fixed effect</i> | yes | yes | yes | yes | yes | yes |
| <i>industry fixed effect</i> | yes | yes | yes | yes | yes | yes |
| <i>N</i> | 13286 | 13286 | 13286 | 13286 | 13286 | 13286 |
| <i>Adj- R²</i> | 0.550 | 0.551 | 0.549 | 0.549 | 0.549 | 0.527 |
| <i>F-STAT</i> | 242.9*** | 243.9*** | 242*** | 241.9*** | 242.6*** | 232.4*** |

All variables are defined in table 1. We winsorize the variables used in analysis at the 1st and 99th percentiles.

*** Denotes significance at 1%. ** Denotes significance at 5%. * Denotes significance at 10%.

Table 7 Regression Analysis: the Effect of Corporate Social Responsibility on Cash Holdings.

$$CASH\ HOLDINGS = \beta_0 + \beta_1 CSR_{it} + \beta_2 MBRATIO_{it} + \beta_3 SIZE_{it} + \beta_4 NWC_{it} + \beta_5 CAPEXP_{it} + \beta_6 LEV_{it} + \beta_7 RD_{it} + \beta_8 DIVIDEND_{it} + \beta_9 CFO_{it} + \varepsilon_{it} \quad (2)$$

| CTS | | | | | | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Variables | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 |
| <i>INTERCEPT</i> | -0.974*** (-30.36) | -0.928*** (-27.35) | -0.996*** (-30.15) | -1.002*** (-30.11) | -1.000*** (-29.42) | -0.908*** (-25.09) |
| <i>SCSR</i> | -0.011*** (-2.76) | | | | | |
| <i>CSR_CG</i> | | -0.063*** (-7.46) | | | | -0.061*** (-7.50) |
| <i>CSR_COM</i> | | | 0.002 (0.15) | | | 0.006 (0.58) |
| <i>CSR_EMP</i> | | | | 0.018*** (3.00) | | 0.022*** (3.54) |
| <i>CSR_PRO</i> | | | | | -0.031*** (-3.30) | -0.032*** (-3.54) |
| <i>MBRATIO</i> | 0.038*** (8.41) | 0.063*** (7.97) | 0.037*** (8.20) | 0.036*** (7.95) | 0.037*** (8.27) | 0.034*** (7.56) |
| <i>SIZE</i> | 0.004 (0.86) | 0.008 (1.62) | 0.003 (1.49) | 0.004 (1.38) | 0.003 (0.56) | -0.013*** (-2.65) |
| <i>NWC</i> | 0.054*** (8.86) | 0.054*** (9.01) | 0.055*** (8.98) | 0.056*** (9.09) | 0.054*** (8.93) | 0.055*** (9.09) |
| <i>CAPEXP</i> | -0.619*** (-9.94) | -0.613** (-9.90) | -0.627** (-10.05) | -0.632*** (-10.14) | -0.620*** (-9.95) | -0.613*** (-9.09) |
| <i>LEV</i> | -0.432*** (-12.46) | -0.424*** (-12.28) | -0.427*** (-12.29) | -0.421*** (-12.12) | -0.428*** (-12.35) | -0.416*** (-12.02) |
| <i>RD</i> | 1.351*** (20.21) | 1.321*** (19.91) | 1.349*** (20.18) | 1.340*** (20.08) | 1.350*** (20.21) | 1.310*** (19.75) |
| <i>DIVIDEND</i> | -0.159*** (-12.20) | -0.153*** (-11.73) | -0.161*** (-12.28) | -0.162*** (-12.30) | -0.162*** (-12.35) | -0.155*** (-11.84) |
| <i>CFO</i> | 0.097*** (4.99) | 0.094*** (4.83) | 0.096*** (4.84) | 0.094*** (4.83) | 0.031* (4.95) | 0.091*** (4.69) |
| <i>year fixed effect</i> | yes | yes | yes | yes | yes | yes |
| <i>industry fixed effect</i> | yes | yes | yes | yes | yes | yes |
| <i>N</i> | 13286 | 13286 | 13286 | 13286 | 13286 | 13286 |
| <i>Adj- R²</i> | 0.315 | 0.312 | 0.312 | 0.312 | 0.312 | 0.316 |
| <i>F-STAT</i> | 99.71*** | 100.9*** | 99.51*** | 99.73*** | 99.77*** | 96.71*** |

All variables are defined in table 1. We winsorize the variables used in analysis at the 1st and 99th percentiles.

*** Denotes significance at 1%. ** Denotes significance at 5%. * Denotes significance at 10%.

Table 8 Regression Analysis: the Effect of Corporate Social Responsibility (CSR=SCSR) on the Relation between Tax Aggressiveness and Cash Holdings

$$CASH\ HOLDINGS = \gamma_0 + \gamma_1 TAX_{it} + \gamma_2 CSR_{it} + \gamma_3 TAX_{it} * CSR_{it} + \gamma_4 MBRATIO_{it} + \gamma_5 SIZE_{it} + \gamma_6 NWC_{it} + \gamma_7 CAPEXP_{it} + \gamma_8 LEV_{it} + \gamma_9 RD_{it} + \gamma_{10} DIVIDEND_{it} + \gamma_{11} CFO_{it} + \varepsilon_{it} \quad (3)$$

| Variables | CASH | | CTS | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Model 9 | Model 10 | Model 9 | Model 10 |
| INTERCEPT | -1.797*** (-17.27) | -1.374*** (-13.02) | -0.916*** (-17.27) | -0.788*** (-14.88) |
| TBTD | 0.058*** (4.49) | | 0.029*** (4.31) | |
| PBTD | | 0.136*** (11.47) | | 0.051*** (8.76) |
| SCSR | -0.047** (-1.96) | -0.046** (-1.93) | -0.021* (-1.70) | -0.018* (-1.6) |
| TBTD*SCSR | 0.006 (1.30) | | 0.002 (0.65) | |
| PBTD*SCSR | | 0.006 (1.36) | | 0.001 (0.49) |
| MBRATIO | 0.201*** (14.61) | 0.171*** (12.42) | 0.032*** (5.45) | 0.022*** (3.63) |
| SIZE | -0.097*** (-5.93) | -0.180*** (-11.16) | -0.028*** (-3.42) | -0.052*** (-6.51) |
| NWC | 0.466*** (21.06) | 0.461*** (21.40) | 0.029*** (3.54) | 0.027*** (3.34) |
| CAPEXP | -0.758*** (-3.80) | -0.659*** (-3.36) | -0.655*** (-6.64) | -0.614*** (-6.28) |
| LEV | -2.221*** (-20.35) | -2.138*** (-19.85) | -0.397*** (-7.57) | -0.365*** (-6.98) |
| RD | 4.868*** (18.53) | 4.486*** (17.63) | 2.594*** (18.13) | 2.462*** (17.56) |
| DIVIDEND | -0.294*** (-8.66) | -0.295*** (-8.47) | -0.120*** (-6.84) | -0.121*** (-6.92) |
| CFO | -0.118 (-1.42) | -0.139* (-1.72) | 0.113*** (3.95) | 0.107*** (3.85) |
| year fixed effect | yes | yes | yes | yes |
| industry fixed effect | yes | yes | yes | yes |
| N | 6,971 | 6,971 | 6,971 | 6,971 |
| Adj-R ² | 0.535 | 0.544 | 0.315 | 0.321 |
| F-STAT | 128.30*** | 132.91*** | 51.97*** | 54.98*** |

All variables are defined in table 1. We winsorize the variables used in analysis at the 1st and 99th percentiles.

*** Denotes significance at 1%. ** Denotes significance at 5%. * Denotes significance at 10%.