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Growth Options and Corporate Goodness

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by

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ABSTRACT

I find evidence to support the negative impact of growth options on corporate social responsibility (CSR). I propose that attention-constrained managers reduce corporate goodness to focus on growth opportunities. The effect is more pronounced for well-governed firms, for financially-constrained firms, and for capital-intensive social dimensions. Firms reduce their research and development (R&D) and capital expenditures, and experience lower annual buy-and-hold abnormal returns (BHAR) subsequent to significant increases in their social performance. I also report value implications of CSR investments. The empirical evidence suggests that managerial choices to divert attention from growth projects toward CSR hurt shareholders.

CHAPTER 1

INTRODUCTION

In this paper, I examine whether cross-firm variations in corporate social responsibility (CSR) can be explained by growth options, assuming that managers have limited attention. Managers are naturally drawn to CSR for personal gains —an agency tendency known as "doing good with other people's money" (Cheng, Hong, and Shue, 2013). If the firms have a plethora of growth opportunities, the managers are incentivized to focus on these projects and divert their attention away from less profitable investments, including unproductive CSR. The inverse relation between growth options and CSR hinges on the inevitable financial and attention constraints that firms face. Loosely speaking, CSR imposes an opportunity cost for firms with ample good growth options because the managers can alternatively focus their attention and financial resources on these projects.

The agency view in corporate finance has long depicted managers as self-interested individuals who deviate from the shareholder maximization objective for personal gains. In the realm of CSR, agency issues may manifest in different forms. For example, managers may focus on objectives which enhance stakeholders' benefits, such as installing environmental-friendly production facilities, donating to charitable organizations, hiring less qualified employees to promote diversity and offering extensive employee benefits. More troubling, managers may divert their attention away from important corporate matters and toward CSR. This attention shift behavior is costly to shareholders because the managers can exert their full effort and attention on shareholder-maximizing projects instead.

By definition, the agency theory states that managers are tempted to pursue activities

contradicting the shareholder maximization objective for their personal gains. On the surface, it is not obvious what self-interested reasons motivate managers to engage in these stakeholder-friendly CSR activities. At the same time, the media has increasingly promoted stories in which the "give and take" mentality is considered the driver of success behind many corporations. For instance, socially responsible firms may be able to gain more enthusiastic workers, more loyal customers, or more reliable suppliers which are valuable to firms. These effects are consistent with the "doing well by doing good" view that was previously documented (Deng, Kang, and Low (2013), Flammer (2015) and Krüger (2015)). However, it is questionable whether these "halo effects" that CSR generates dominate the opportunity costs imposed on firms when managers choose to focus on CSR rather than other projects.

There are several feasible arguments for the agency theory regarding CSR. One viable explanation is that CSR is an outlet for altruistic managers to improve stakeholders' welfare without having to make much personal sacrifice. In other words, managers are tempted to use corporate resources rather than personal wealth for their charity-oriented purposes. Ultimately, the cost of lower firm value is mostly incurred by the firm's shareholders. More importantly, this agency behavior is most likely shielded from subsequent punishments. For instance, managers are likely to be replaced following their value-destroying mergers (Lehn and Zhao, 2006) whereas socially responsible managers are less subject to CEO turnover. In addition, praise from the media, support from environmental groups, and advocacy from consumers are another source of personal benefits which draw managers' attention to CSR and away from contemporary corporate issues.

In this paper, I propose that managers can overcome the temptation to shift their attention to CSR if the firms have really good growth opportunities. The corresponding compensation from dedicating to growth projects will rise above that of a managerial decision to be socially responsible. A firm's CSR is, hence, an equilibrium resulting from trading off the manager's personal benefits of investing in CSR and the opportunity costs of forgone compensation from growth options. The more profitable the projects, the less likely the managers will attend

to CSR. In this case, firm growth options act as a self-driven mechanism which attenuates the agency problem of attention shift. Conversely, if there are not many good growth opportunities, it will be more difficult for managers to resist the temptation of engaging in CSR projects. Overall, I expect CSR to be inversely related to growth options.

Behavioral finance research has demonstrated that managers sometimes make suboptimal corporate decisions proceeding from their behavioral biases.[1] For example, managers may overestimate the potential personal gains from investing in CSR and underestimate the expected compensation from focusing on growth opportunities instead. In these scenarios, compensation schemes designed to align managers' interests with those of shareholders typically fail to work. Thus, competent boards play a critical role in holding managers accountable. For instance, the board may advise against CSR if growth opportunities exist. However, if there are not many growth options, the board is less likely to intervene with the manager's decision because it is better than him pursuing negative net present value (NPV) projects. Taken together, effective governance mechanisms add another layer of protection against agency issues by ensuring that managers act in the best interests of shareholders. By and large, I expect the growth options-CSR relation to be stronger among well-governed firms.

In practice, numerous governance mechanisms have been proposed and adopted in order to alleviate agency problems. Apart from internal governance mechanisms such as independent boards of directors and performance-contingent compensation schemes, several external mechanisms are discussed such as regulatory compliance, takeover threats, analysts, and media pressure. Using analysts following as a proxy for external governance, I show that the growth options-CSR relation is responsive to not only internal corporate governance but also external corporate governance. In addition, I predict a stronger effect for financially-constrained firms and for capital-intensive CSR areas. If firms are financially-constrained, their boards will likely exert monitoring efforts to ensure that the firms' resources are well-managed and

[1]Cronqvist and Yu (2017) document managers' tendency to have concerns for diversity and on average invest more in CSR if they have daughters.

allocated to the most profitable investments. Meanwhile, boards of non-constrained firms are more accepting of unproductive CSR as long as they are positive NPV. Likewise, boards are more resistant to CSR investments that require significant capital, and less opposing to non-capital-intensive CSR projects.

In my empirical analysis, I employ social ratings retrieved from the MSCI (formerly KLD) database over the period from 1995 to 2013. Using models with firm and year fixed-effects, I show that CSR is negatively related to growth options, and the effect is stronger for well-governed firms. The empirical evidence lends credence to my story that firm growth options help altruistic managers to overcome the temptation to shift their attention toward CSR. I also examine the relationship for firms with strong internal and external corporate governance mechanisms. Using three different measures of internal corporate governance, and the number of analysts following as an external governance mechanism, I show that the growth-CSR inverse relationship is more pronounced among well-governed firms, among capital-constrained firms and among capital-intensive social areas. In a non-regression setting, I examine the changes in R&D and capital expenditure as well as buy-and-hold abnormal returns (BHAR) for a group of firms experiencing significant changes in their corporate goodness. I find that increases in CSR are associated with reductions in R&D, capital expenditure, and BHAR.

Using Tobin's Q as a performance metric, I further examine the effects on firm value subsequent to firm engagements in CSR. Consistently, I find supporting evidence for the negative impact of CSR on firm value for growth firms across all different model specifications. Interestingly, I also find the CSR-firm value negative relationship among well-governed firms although it first appears counter-intuitive that well-governed firms make ineffective CSR investments. One feasible explanation is that investors infer firms' active engagements in CSR as an indicator of not having growth opportunities. In other words, value reduction is a consequence of investors updating beliefs about the state of firm growth opportunities. I predict that firm devaluation is more prevalent among less competitive industries. In

competitive industries, managers may be compelled to improve their social performance to hedge against criticism from the media and environmental groups, or gain favor from workers, customers, prosecutors and compete with their industry socially-responsible peers.[2] Thus, it is more difficult for investors to infer information about firm growth options via CSR when CSR is likely to be a manifestation of industry peer pressure.

I proceed to investigate the CSR-firm value relationship in a triple-interaction setting. I propose two concurrent effects following firm investments in CSR. First, I document the CSR-firm value negative relationship for firms with growth options. This result is consistent with what was previously found in the double-interaction analysis. This first layer of firm devaluation reflects the opportunity costs of CSR for growth firms because they can alternatively focus on growth projects. Second, I observe a stronger CSR-firm devaluation among growth firms if these firms are well-governed. Because well-governed firms are more inclined to make shareholder-optimizing decisions, investors are more convinced that these socially-conscious firms lack good growth options. Collectively, the results suggest that investors learn about firm growth options upon observing firm investing in CSR.

This paper contributes to the growing literature of CSR and valuation, which is dominated by the two main theories. The classical view considers CSR as an agency cost and a deviation from the shareholder maximization objective. Viewing CSR as a waste of corporate resources, the agency theory predicts minimal CSR investments for pure profit-maximizers. On the other side of the spectrum, the stakeholder maximization view, often referred to as "doing well by doing good", suggests that corporate goodness to all stakeholders may generate positive effects which are incorporated in firm value. For example, a firm may gain more sales from customers or receive extended credits from suppliers as a consequence of being socially responsible. On average, the stakeholder maximization view predicts high CSR across all firms. In practice, there are substantial variations in CSR across firms, suggesting that both of the theories are incomplete pictures of firms' motives to invest in CSR. Empirically,

[2]Hong and Liskovich (2015) document that socially responsible firms pay $2 million less in fines.

there is little evidence for a direct relationship between CSR and firm value. Rather, the relationship is observed through indirect channels (Servaes and Tamayo, 2013).

One way to empirically test the agency theory of CSR is to study whether well-governed firms, which supposedly suffer less from agency problems, are more socially responsible. However, prior empirical research is mixed about the link between corporate governance and social performance. Some papers show that well-governed firms tend to invest less on CSR and exhibit lower social ratings (Cheng, Hong, and Shue (2013), Di Giuli and Kostovetsky (2014)). However, other studies suggest the contradicting results that well-governed firms are more likely to engage in CSR (Ferrell, Liang, and Renneboog (2016), Jo and Harjoto (2011)). Meanwhile, other papers supporting the stakeholder view indicate that there are many factors, rather than governance, which may affect firm choices of CSR. Among many previously discussed measurable benefits to socially responsible firms are cheaper equity financing (El Ghoul, Guedhami, Kwok, and Mishra, 2011), lower loan spreads and longer maturities (Goss and Roberts, 2011), better merger outcomes (Deng, Kang, and Low, 2013), and more optimistic analyst recommendations (Ioannou and Serafeim, 2015).

In summary, the debate about the relationship between governance and CSR is inconclusive because of different sample periods, research designs and statistical methodologies. Although it is unclear whether well-governed firms are more or less socially responsible, large variations in CSR within the well-governed firm group suggest that governance does not fully account for CSR. In this paper, I attempt to explain the variations in CSR by growth options. In particular, I find that firms with good growth opportunities exhibit lower social performance and the inverse relationship is more pronounced among well-governed firms.

CHAPTER 2

MODEL

Consider a firm that has CSR R and firm valuation V. The manager and shareholders have Cobb-Douglas utility given by

$$\begin{cases} U_m(R,V) = R^{\alpha}V^{\beta} & (2.1) \\ U_s(R,V) = R^{\alpha}V^{\lambda} & (2.2) \end{cases}$$

where α, β, λ all lie in the unit interval (0,1). Assume that the utility functions of the manager and the shareholders have the same sensitivity to a change in R —that is, the utility elasticity of CSR is α for both the manager and the shareholders. In addition, I assume that shareholders have higher utility elasticity of firm value than managers or $\lambda > \beta$.

The manager can decide where he pays his attention A: either focus on growth projects that yield V, or invest in CSR that yields R. Mathematically, his attention constraint is given by:

$$A_{CSR} + A_{Growth} = A \tag{2.3}$$

Assume that attention generates CSR (R) and value (V) via the following production functions:

$$\begin{cases} R = (A_{CSR})^{\phi} & (2.4) \\ V = (A_{Growth})^{\theta} & (2.5) \end{cases}$$

for some ϕ and θ in the unit interval. Note that θ is a proxy for growth options.

Assume that the manager maximizes the utility function given by

$$U(R, V) = (1 - \omega)U_m(R, V) + \omega U_s(R, V) \tag{2.6}$$

where ω is a measure of corporate governance, and $\omega \in [0, 1]$. A high ω indicates that the firm is well-governed, and vice versa. A high ω also suggests that the manager makes decisions that benefit shareholders.

The manager maximizes a linear combination of his personal benefits and shareholders' benefits from investing in projects and CSR, subject to his attention constraint A. The linear combination is determined by the governance factor (ω), which dictates the degree to which the manager adheres to the shareholder maximization goal. More specifically, the manager's optimization problem is given by:

$$\begin{aligned} &\text{maximize} \quad U(R, V) = (1 - \omega)U_m(R, V) + \omega U_s(R, V) \\ &\text{subject to} \quad A_{CSR} + A_{Growth} = A \end{aligned}$$

The model predicts that the more growth options the firm has, the less corporate goodness, or $\frac{\partial R}{\partial \theta} < 0$. If the firm has many growth opportunities, the potential benefits from focusing on the projects exceed those generated from CSR investments.

Another implication of the model is that the manager is more sensitive to growth options if the firm is well-governed: $\frac{\partial^2 R}{\partial \theta \partial \omega} > 0$. To see why, consider two extreme cases: $\omega = 0$ and $\omega = 1$. When $\omega = 0$ (the firm is very poorly-governed), the manager can easily focus on maximizing his own benefits. When $\omega = 1$ (the firm is very well-governed), the manager is forced to serve the shareholders' benefits. The magnitude of the sensitivity of corporate goodness to growth options is larger in the well-governed case ($\omega = 1$) because the utility function governing the manager's decisions in the well-governed case is the shareholders' function $U_s(R, V)$, and shareholders appreciate firm value (V generated from growth projects) more than the manager. I provide mathematical proofs for interested readers in Appendix B.

I summarize the two propositions as follows:

Proposition 1. *There is a negative relationship between firm growth options and corporate goodness* ($\frac{\partial R}{\partial \theta} < 0$).

Proposition 2. *The manager has higher propensity to decrease corporate goodness to focus on growth options if the firm is well-governed* ($\frac{\partial^2 R}{\partial \theta \partial \omega} > 0$).

CHAPTER 3

DATA

Using the model as my general guidance, I proceed to conduct empirical analysis. I employ the MSCI environmental, social, and governance (ESG) social ratings (formerly Kinder, Lydenberg and Domini- KLD) database to construct measures of social performance for the period from 1995 to 2013. I choose to start the data sample from 1995 because the data on social ratings is incomplete for the period prior to 1995. Over the years, the MSCI database has expanded its coverage substantially. For example, between 1991 and 2000, the MSCI (KLD) database covered the S&P 500 and the Domini 400 Social Index. The Russell 1000 and Russell 2000 were added to the database in 2001 and 2003, respectively. The MSCI ESG database provides the ratings on corporate social performance in thirteen dimensions: community, diversity, employee's relations, environment, human rights, product, alcohol, gambling, firearms, military, nuclear, tobacco, and corporate governance. I exclude several categories in my analyses because they are only relevant to certain industries and not applicable to all firms. Specifically, I include the six dimensions which are frequently used in previous studies: community, diversity, employee's relations, environment, human rights, and product.

Each year, I compute a composite score for each firm by taking the average of all six component scores, each of which is computed by adding strength points and subtracting concern points. More specifically, the composite variable *csr* is calculated as

$$csr_{it} = \frac{\sum(strengths - concerns)_{it}}{n}$$

where i is a CSR component score, t is the year, and n is the number of components included in the composite score. For the years in which the human right scores are not available, I compute the average for the other five component scores. Following Servaes and Tamayo (2013), I also compute a conservative composite score csr_2 representing the overall performance in five areas: community, diversity, employee's relations, environment, and human rights. The measure csr_2 is similarly calculated as csr_1 except that I do not include product quality in the variable. Excluding product quality from the composite score is consistent with the notion that product quality does not necessarily belong to the spectrum of CSR. The product category reflects firm performance in several aspects such as product quality, product safety and innovative features. Thus, firms manufacturing or selling products of higher caliber receive higher social ratings on the product dimension and are considered to be more socially responsible as a consequence. In robustness tests, I use this conservative measure to ensure that the results are robust to this variable measurement.

I notice the expansive coverage of the MSCI database over time, not just in the number of firms, but also in the number of strengths and concerns in each dimension. Specifically, the database has become more extensive and detailed in their rating criteria and construction of the "total" score given to each CSR dimension. For instance, in 1991, the community category included only four sub-dimensions of strengths and the number of sub-dimensions increased to seven in 2013. Therefore, a time-series analysis is inappropriate when I use the composite CSR score without adjusting for the time trend. In order to overcome this issue, I construct a trend-adjusted score to take into account the fact that the data set has dramatically evolved over the years. More specifically, I calculate an adjusted composite CSR score (adj_csr) as the average of the adjusted component scores, which are computed by adding pre-scaled strength points and subtracting pre-scaled concern points. Mathematically,

$$adj\_csr_{it} = \frac{\sum(adj\_component_{it})}{n}$$

where

$$adj\_component_{it} = \frac{strengths_{it}}{max(strengths_t)} - \frac{concerns_{it}}{max(concerns_t)}$$

The valuation implication analyses use Tobin's Q, a widely used proxy for firm value. Tobin's Q is calculated as *(book value of assets + market value of equity - book value of equity deferred taxes investment tax credit + redemption value of preferred stock)/book value of assets*. Alternatively, I use industry-adjusted Tobin's Q (adj_q), which is defined as firm Tobin's Q divided by the industry median Tobin's Q based on the Fama-French 49 industry classifications. The accounting data used to compute Tobin's Q comes from Compustat, which can be accessed through Wharton Research Data Services (WRDS). In robustness tests, I use return on assets (roa) in place of Tobin's Q. Even though ROA is widely used as a measure of profitability and operating performance, I use Tobin's Q as the main measure because Tobin's Q reflects the market value which is driven by expectations of future long-term cash flows whereas ROA is a measure constructed from book value accounting data.

There are a couple of measures of growth options adopted in the literature such as the ratio of capital expenditure to fixed assets and growth in capital investments (Anderson and Garcia-Feijóo (2006), Cao, Simin, and Zhao (2006), Trigeorgis and Lambertides (2014)). Following previous studies, I adopt two measures of growth options ($capg_1$ and $capg_2$) which can be calculated using firm financial data. More specifically, $capg_1$ is defined as capital expenditure divided by fixed assets and $capg_2$ is measured as the annual change in capital expenditure scaled by the previous year's total asset. Trigeorgis and Lambertides (2014) argue that capital expenditure divided by fixed assets ($capg_1$) is a more direct way of capturing growth options, rather than indirectly incorporating market reactions as some other measures such as M/B and Tobin's Q.

I adopt several measures of corporate governance. For internal mechanisms, I use three measures including the MSCI corporate governance (cg), the governance index ($G - index$) and the entrenchment index ($E - index$). The MSCI corporate governance ratings are based on the assessment of firm performance on the following areas: compensation, ownership

structure, accounting transparency, political accountability, public policy, controversial investments and business ethics. The G- index data is collected from the website of Professor Andrew Metrick (Gompers, Ishii, and Metrick, 2003). The entrenchment E-index is from the website of Professor Lucian Bebchuk (Bebchuk, Cohen, and Ferrell, 2008). I multiply the G-index and E-index with (-1) so that higher scores indicate more effective governance. By this construction, all regression results yield the same sign effect (either positive or negative) on the variables of interest, regardless of the metrics or proxies used. The data on G-index and E-index is available from 1995 to 2006 with biennial frequency of data points, thus I extrapolated data points for missing years between 1995 and 2006 using linear functions. For external corporate governance, I use the natural logarithm of the number of analysts following.

Table 1 provides descriptive statistics of the sample. The sample consists of 9,169 firms with 40,110 firm-year observations. The average composite score ranges from (-1.6) to 3 with an average of 0.012. When adjusted for additional coverage of more sub-dimensions over time, the data range shrinks (between -0.653 and 0.675) and the average (the average trend-adjusted CSR score) is negative (-0.023).

CHAPTER 4

DETERMINANTS OF CSR

In section 2, I present a model which predicts a negative relation between growth options and CSR, assuming that the manager has attention limits. In this section, I proceed to formulate a testable prediction to shed light on the relation empirically. The prediction is summarized as follows:

Prediction 1. *CSR and growth options are negatively correlated and the effect is stronger for well-governed firms.*

I estimate regressions of CSR as a function of growth for various levels of governance. Specifically, my model is as follows:

$$csr = \beta_0 + \beta_1 * growth + \epsilon$$

I estimate the model for terciles of firms sorted based on their governance indexes. I report the results in Table 2. The empirical evidence confirms my prediction —that is, there is a negative relationship between growth opportunities and CSR. The effect is strongest among well-governed firms. The coefficient decreases monotonically as firm governance becomes less effective.

Alternatively, I estimate panel regressions of CSR as a function of growth and governance and an interaction term between the two variables:

$$csr = \beta_0 + \beta_1 * growth + \beta_2 * governance + \beta_3 * growth * governance + \epsilon$$

Methodologically, I estimate the model using firm and year fixed effects to control for unobserved factors. Because one firm can be estimated multiple times in each model, I cluster the standard errors at the firm level to control for the lack of independence across observations. All standard errors are robust to hetero-skedasticity (White, 1980). I report the results in Table 3.

My analyses rely on the MSCI governance score being a good measure of governance. Thus, I also conduct tests using alternative measures of corporate governance, including the G-index (Gompers, Ishii, and Metrick, 2003) and the E-index (Bebchuk, Cohen, and Ferrell, 2008) for robustness check. In Table 3, I report the main results using all three different measures of internal corporate governance: the MSCI CG score, the GIM G-index (Gompers, Ishii, and Metrick, 2003), and the BCF E-index (Bebchuk, Cohen, and Ferrell, 2008). The tests yield qualitatively similar results and statistical significance levels of coefficients. For each governance measure included in Table 3, I report two specifications: one using composite CSR score and one using the trend-adjusted CSR score. All models use firm and year fixed effects to control for time-invariant unobservable firm characteristics. In four out of six models (models 1-4), I find that corporate governance is positively correlated with firm social performance. The coefficients on the interaction term between growth options and corporate governance are consistently negative and statistically significant for all six models regardless of whether the models use the unadjusted or adjusted CSR scores. Overall, these findings are supportive of the hypothesis that there is a negative relation between growth options and CSR and the effects are stronger for well-governed firms.

I further investigate the relationship for firms with different levels of external pressure. I use the natural logarithm of the number of analysts following as a proxy for external governance and report the results in Table 4. The coefficient on the interaction term is negative and significant for the group of firms which are in the top tercile of analysts following. These firms are expected to undergo the highest external pressure from analysts, assuming that the more analysts following, the more the firms are pressured to conform to certain behaviors.

The coefficient reduces in economic magnitude and becomes statistically insignificant for firms in the middle and bottom terciles. I find qualitatively similar results using E-index in the place of the MSCI governance index. These results provide supporting evidence for a stronger inverse relationship between growth and CSR amongst well-governed firms.

I also hypothesize that the CSR-growth relationship is more pronounced for financially-constrained firms. I use the Kaplan-Zingales score (Kaplan and Zingales, 1995) as a measure of how constrained a firm financially is. I sort firms based on their previous year's financial constraint Kaplan-Zingales scores into tercile. Firms in the top tercile are considered constrained firms, and those in the middle and bottom terciles are coded as non-constrained firms (or less constrained firms). I report the results in Table 5. I find that the coefficient on the interaction term between growth and governance is stronger for constrained firms. The evidence suggests that the growth-CSR inverse relationship for well-governed firms is more pronounced if the firms are financially constrained. The coefficient is smaller in magnitude and becomes insignificant for non-constrained firms, indicating that if firms can borrow to finance all projects, CSR is less likely to be affected by the number and profitability of growth projects. Taken together, these results suggest that financial constraint is one channel whereby growth opportunities undercut CSR.

In a similar vein, I examine the growth-CSR relationship by investigating whether the project costs have an impact on managerial decision to invest in a certain CSR project. Although the MSCI (KLD) database does not provide the monetary costs, it is fair to assume that the costs of implementing CSR projects vary substantially. For example, I expect that the financial costs of adhering to environmental regulations and promoting green energy facilities are higher than those of promoting workforce diversity and human rights. I report the results in Table 6. The empirical results are consistent with my argument for a stronger growth-CSR inverse relationship among capital-intensive CSR areas. Specifically, the coefficient on the interaction term between governance and growth is statistically significant and economically large for the environment component.

CHAPTER 5

VALUE IMPLICATIONS OF CSR

5.1 Growth firms

In previous sections, I establish an inverse relationship between growth opportunities and CSR. If profitable projects exist, managers are more likely to choose to focus on these projects instead of diverting their away towards CSR. In this section, I analyze the value implications of investing in CSR. I expect that shareholders suffer from managerial choice to forgo good projects to attend to CSR. I formally outline a testable hypothesis as follows:

Prediction 2. *Firm value is negatively correlated with CSR for growth firms.*

Methodologically, I estimate the following model:

$$q = \beta_0 + \beta_1 * growth + \beta_2 * csr + \beta_3 * csr * growth + \epsilon$$

Using fixed effects, I indeed find evidence that there is a negative relation between CSR and firm value for firms with growth options. The results are robust to using alternative measures, such as industry-adjusted Tobin's Q and trend-adjusted CSR score. The coefficients on the interaction terms between growth and CSR are negative and significant across all different specification models. I report the results in Table 7. The empirical results suggest that CSR imposes an opportunity cost for firms with growth options, and that cost is incorporated into firm value.[1] Specifically, firm value is lower for firms with growth options but choose to

[1]Our results are robust to using an alternative proxy for growth options and to using *roa* in place of Tobin's q. The results are represented in Appendix C

attend to CSR.

5.2 Well-governed firms

In this section, I seek to understand the value implication of investing in CSR when well-governed choose to engage in CSR. I estimate the following model:

$$q = \beta_0 + \beta_1 * governance + \beta_2 * csr + \beta_3 * csr * goverance + \epsilon$$

I report the results in Table 8. The coefficients on the interaction terms persist throughout all model specifications. It first appears counter-intuitive that well-governed firms make less productive CSR investments. One possible explanation for the negative impact on valuation when well-governed firms choose to invest in CSR is that lower q is driven by lower market valuation of future cash flows perceived by investors. I propose that part of the investor population learns about growth options via CSR. Upon observing well-governed firms investing in CSR, investors infer that firms do not have many growth projects and lower their valuation sequentially.

I predict that the effect is more pronounced for less competitive industries. In a competitive environment, firms are more pressured to invest in CSR as a strategic response to external pressure from customers, employees, regulators, and the media. I sort firms into terciles based on the Herfindahl-Hirschman (HHI) index, which is a measure of market concentration and competitiveness. Firms operating in the top HHI tercile are coded as firms of the least competitive industries. I report our results in Table 9. As shown in Table 9, the effect is strongest for the least competitive industries, but becomes weaker for the middle tercile and turns positive for the most competitive industries. The results are consistent with my prediction.

5.3 Triple Interactions

In this subsection, I analyze the relationship in a triple-interaction setting. I create a triple interaction term of CSR measure, governance and growth options. For completeness, I include all single variables and double interaction terms and estimate the following model:

$$\begin{aligned} q = {} & \beta_0 + \beta_1 * governance + \beta_2 * growth + \beta_3 * csr \\ & + \beta_4 * governance * growth + \beta_5 * governance * csr + \beta_6 * growth * csr \\ & + \beta_7 * governance * growth * csr + \epsilon \end{aligned}$$

I report the results of triple interaction analysis in Table 10. In table 10, I employ three alternative measures of value and profitability: Tobin's Q, industry-adjusted Tobin's Q, and ROA. The empirical evidence is striking. The negative coefficient on the double interaction term between CSR and growth persists through all three models. This suggests that for a firm with a governance score of 0, which is close to the average, the previous result of CSR-firm value negative relation for growth firms withstands. The double interaction term between CSR and governance is positive and significant, suggesting that for firms with growth options of 0 (which is significantly lower than the average), the relationship between CSR and Tobins Q turns positive for well-governed firms. This implies that governance helps to alleviate the negative effects of CSR on firm value. In other words, well-governed firms are able to make "smarter" or more productive CSR investments than their poorly-governed counterparts. The triple interaction term between CSR, governance and growth is negative and significant, with a coefficient of (-2.148) and t-stat of (-4.24) (model 1) even after correcting for heteroskedasticity and clustering standard errors (White, 1980). The results indicate that the CSR-firm value inverse relationship of growth firms is stronger if firms are well-governed. This indicates that part of investors population revise their valuation downwards when well-governed firms invest in CSR because investors are more convinced that firms lack good growth options.

CHAPTER 6

ADDITIONAL TESTS

6.1 Change to CSR

The regression results indicate that growth options explain the cross-sectional variations in CSR because firms are subject to financial and attention constraints. In this section, I provide non-regression tests to further strengthen the results. More specifically, I examine the changes in capital expenditure, research and development (R&D) and annual buy-and-hold abnormal returns (BHAR) for firms experiencing significant changes in their social responsibility. In particular, I divide the sample into two groups: a treatment group and a control group. The treatment group includes all firms experiencing significant changes to their CSR from one year to the next, either positive or negative. A change is categorized as "significant" if it is at least twice the average standard deviation of CSR across all firms in the sample. The control group includes all firms which are not in the treatment group.

After identifying the treatment group experiencing either a significant increase or decrease, we examine the before- and after- changes in R&D, capital expenditure and BHAR for the year with the significant change. A change in R&D is calculated as the difference in the capital expenditure scaled by total assets from year $(t-1)$ to year $(t+1)$ where t is the year with a "significant" increase or decrease in firm social performance. Changes in capital expenditure and buy-and-hold abnormal returns (BHAR) are calculated in a similar manner. Mathematically, the calculations are presented as follows:

$$\Delta XRD/AT_t = \frac{XRD_{i,t+1}}{AT_{i,t+1}} - \frac{XRD_{i,t-1}}{AT_{i,t-1}}$$
$$\Delta CAPX/AT_t = \frac{CAPX_{i,t+1}}{AT_{i,t+1}} - \frac{CAPX_{i,t-1}}{AT_{i,t-1}}$$
$$\Delta BHAR_t = BHAR_{i,t+1} - BHAR_{i,t-1}$$

where $BHAR$ is the buy-and-hold abnormal return similar to Ritter and Welch (2002), among others. I calculate the twelve-month market-adjusted buy-and-hold abnormal returns using the value-weighted CRSP index as the benchmark. The BHARs are calculated as follows:

$$BHAR_i = \prod_{t=1}^{12}(1 + r_t^i) - \prod_{t=1}^{12}(1 + r_t^m)$$

where $BHAR_i$ is the twelve-month buy-and-hold abnormal returns for firm i. r_t^i is the raw return for firm i in month t and r_t^m is the value-weighted market return in month t.

Table 11 reports the results of the average of the pre- and post-differences in R&D, capital expenditure and buy-and-hold abnormal returns for firms undergoing significant changes in their CSR.

Panel A shows the increase (decrease) in R&D expenditure, capital expenditure and BHAR the year after relatively to the year prior to the change. Most significantly, investors enjoy 5.07% increase in return following a significant reduction in CSR measures, and suffer from a decrease of 6.45% after the firm experiences a big jump in CSR. I also observe a 0.369% reduction in R&D investments amongst firms which increased in CSR substantially. Using the conservative composite CSR score as the measure of CSR, I find that firms which swiftly increase in their CSR reduce their capital investments by 0.247% on average. Using the conservative score, which excludes product dimension, is more appropriate in the analysis because firms producing high quality and innovative products naturally have higher levels of R&D and capital expenditure.

Panel B shows the before- and after- changes in R&D, capital expenditure and BHAR for

firms experiencing significant changes to their CSR components: community, environment, employee, human rights, diversity and product. I identify firms experiencing significant changes to each component score using the same methodology as employed in the composite score (Panel A). For example, a firm is categorized as a positive-change firm in its community score if the firm increases its community score by more than twice the average standard deviation in corporate community score across all firms. The analyses in community and environment areas lend credence to the argument that CSR and growth options are negatively correlated. More specifically, I observe a significant decrease in R&D and capital expenditure investment for firms significantly increased their community, environment and product component scores. For firms significantly reduced their environment score, I find an increase of 2.47% on capital expenditure. Because community, environment and products are the most capital intensive CSR components, I expect to find the most supportive evidence in these CSR dimensions. There is little evidence to support that firms becoming more socially responsible in their employee's relation, human rights and diversity, drastically reduce in their investments in R&D and capital expenditure. The lack of evidence in these areas is expected because the growth-CSR relation is stronger for capital-intensive CSR dimensions.

6.2 Score matching

In an alternative research design, I use propensity score matching method to compare the differences in buy-and-hold abnormal returns between the treatment and control groups. For each firm in the treatment group, I find good matches from the control group and compare the average differences in the buy-and-hold abnormal returns. I employ three matching methods: the nearest neighbor matching, the Gaussian kernel matching and the stratification matching.

In the score matching technique, I save the predicted probabilities from the probit model to use for the matching procedures. Firms in the treatment group and control group have similar characteristics that I would like to control for: industry, size, growth options and cash

holdings. I then examine the average treatment effects on the treated – that is, the average difference in buy-and-hold abnormal returns between the treatment and the control groups.

In the nearest neighbor matching setup, for each treatment firm, a control firm which has the closest propensity (based on industry, size, growth options and cash holdings) to the treatment firm is selected. In the Gaussian kernel matching, for each treated observation, several matches are selected and the weighted average treatment effects are sequentially computed where the weights are determined by their distances to the treated observations. In the stratification matching method, propensity scores are sorted into different blocks and within each block, treatment and control firms are paired and the average treatment effects are computed for all the pairs. The t-stats are based on one-hundred time bootstrapping. I report the results in Table 12.

The results reported in Table 12 are astounding. I find that the firms which had significantly reduced their CSR enjoyed significantly higher returns. The magnitude is economically large. For instance, the stratification matching shows a difference of 7.12% in annual excess returns for firms which experienced a drastic drop in their CSR. Other matching methods yield results of similar magnitudes. In a stark contrast, I find that firms which had dramatically improved their social performance earned significantly lower returns. The differences are economically meaningful. For example, using the stratification matching method, I find that firms experiencing a dramatic increase in CSR earned 4.98% lower return than control firms.

CHAPTER 7

CONCLUSIONS

The agency view posits that CSR is a mismanagement of corporate resources, and that managers are tempted to invest in CSR for their personal benefits. In this paper, I propose that growth opportunities can act as a self-regulated scheme in which managers are incentivized to divert their away attention away from CSR to focus on growth. When firms have plenty of profitable projects, managers are motivated to spend their time and resources on these projects. When firms do not have good projects, managers are tempted to "do good with other people's money" for personal gains (Cheng, Hong, and Shue, 2013). Since well-governed firms are more inclined to make corporate financial decisions which are consistent with the shareholder maximization goal, I expect that the negative relationship between growth options and CSR is more pronounced amongst firms with stronger governance mechanisms. I indeed find this inverse relationship between growth and CSR to be stronger amongst well-governed firms, financially-constrained firms, and capital-intensive projects.

In this paper, I do not claim any causal relationship between growth options and CSR. I simply suggest that the attention shift is one channel via which growth options may undercut CSR. I rely on the assumption that managers are time-constrained and attention-limited. When given different projects which are not necessarily mutually exclusive, managers may choose to divert from less productive projects to focus on projects that generate the most personal benefits.

Table 1: Summary statistics

Table 1 provides summary statistics of the key variables in our sample from 1995 to 2013. I use Tobin's Q and industry-adjusted Tobin's Q as measures of firm value, and ROA as a measure of operating performance. I measure corporate social performance using social ratings from the MSCI (formerly KLD) dataset. I use three different measures of corporate governance: the MSCI CG, the GIM G-Index (Gompers, Ishii and Metrick, 2003) and the BCF entrenchment E-Index (Bebchuk, Cohen and Farrell, 2009). Detailed definitions and constructs of variables are provided in the Appendix A. The sample consists of 9,169 firms with 40,110 firm-year observations.

Variable	*Label*	*N*	*Mean*	*Std Dev*	*Minimum*	*Maximum*
q	Tobin's Q	24241	2.054028	1.718104	0.319665	54.67314
adj_q	Industry-adjusted Q	23949	1.315757	0.946551	0.15905	35.57376
roa	Operating performance	28892	0.022975	0.180525	-12.3309	2.170109
csr	CSR composite score	40110	0.012637	0.402136	-1.6	3
adj_csr	Trend-adjusted CSR composite score	40110	-0.02348	0.103735	-0.65333	0.675
csr_2	CSR composite score (exclude product)	40110	0.040161	0.469311	-1.6	3.8
adj_csr_2	Trend-adjusted CSR composite score (exclude product)	40110	-0.02537	0.114933	-0.65	0.86
cg	Corporate governance score	40110	-0.2092	0.688874	-4	3
adj_cg	Trend-adjusted corporate governance score	40110	-0.03238	0.269687	-1	1
G_Index	Gompers-Ishii-Metrick (GIM) governance index	11951	-9.38751	2.602777	-18	-1
E_index	Bebchuk-Cohen-Farrell (BCF) entrenchment index	9502	-2.52465	1.275908	-6	0
$capg_1$	Growth option measure	24630	0.138463	1.065008	-0.41786	129.9763
$capg_2$	Alternative growth option measure	27819	0.008276	0.177543	-0.97748	27.93187
$cash$	Cash holdings (cash and marketable securities scaled by assets)	28898	0.167551	0.199518	0	0.999099
lag_kz	Capital constraint Kaplan-Zingales Index	23133	-47.4046	1409.02	-169972	483.179

Table 2: The relationship between growth options and CSR

This table shows the inverse relationship between growth options and CSR for various firms. I use two popular measures of corporate governance: the GIM G-Index (Gompers, Ishii, and Metrick (2003)) and the BCF entrenchment E-Index (Bebchuk, Cohen, and Ferrell (2008)). The G-index and E-index are constructed such that the higher the score, the more effective the governance. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects.

	Well-governed		Middle		Poorly-governed	
	(1)	(2)	(3)	(4)	(5)	(6)
	csr	*csr*	*csr*	*csr*	*csr*	*csr*
$capg_1$	-0.164**	-0.258**	-0.130	-0.0548	-0.0483	-0.0798
	(-2.31)	(-2.15)	(-1.32)	(-0.71)	(-0.40)	(-0.62)
N	2581	1572	2145	3399	2489	1644
G Measure	*G_index*	*E_index*	*G_index*	*E_index*	*G_index*	*E_index*
R-squared	0.7679	0.7993	0.8388	0.813	0.814	0.8289
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 3: Growth options and CSR for well-governed firms

This table shows the inverse relationship between growth options and CSR for well-governed firms. I use three different measures of corporate governance: the MSCI CG, the GIM G-Index (Gompers, Ishii, and Metrick (2003)) and the BCF entrenchment E-Index (Bebchuk, Cohen, and Ferrell (2008)). The G-index and E-index are constructed such that the higher the score, the more effective the governance. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm-level (White (1980)).

	MSCI CG		*BCF E-Index*		*GIM G-index*	
	(1) *csr*	(2) *adj_csr*	(3) *csr*	(4) *adj_csr*	(5) *csr*	(6) *adj_csr*
cg	0.0923***	0.0534***	0.0437**	0.0137***	0.0025	0.00179
	(12.01)	(9.11)	(2.47)	(2.70)	(0.47)	(1.09)
$capg_1$	0.000848	0.000237	-0.408**	-0.102*	-0.382**	-0.132***
	(0.87)	(1.08)	(-2.08)	(-1.91)	(-2.56)	(-2.84)
$cg * capg_1$	**-0.0479***	**-0.0435***	**-0.129***	**-0.0358***	**-0.0318***	**-0.0128****
	(-1.69)	**(-1.78)**	**(-1.76)**	**(-1.82)**	**(-1.81)**	**(-2.36)**
cash	0.0555**	0.0136*	-8.7E-05	0.00199	0.0038	0.0059
	(2.06)	(1.84)	(-0.00)	(0.12)	(0.09)	(0.46)
N	23539	23539	6750	6750	7383	7383
G measure	*cg*	*adj_cg*	*E_index*	*E_index*	*G_index*	*G_index*
R-squared	0.6606	0.6351	0.7946	0.7575	0.7942	0.7506
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm	None	None

Table 4: External governance: analyst following

This table shows the relationship between growth options and CSR for firms with different external governance, proxied by the number of analysts following. Every year, I sort log(number of analysts following) into tercile and the top tercile is coded as the highest external governance. I use two different measures of internal corporate governance: the MSCI CG and the BCF E-Index (Bebchuk, Cohen, and Ferrell (2008)). Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm-level (White (1980)).

	Highest analyst		*Middle*		*Lowest analyst*	
	(1) *csr*	(2) *csr*	(3) *csr*	(4) *csr*	(5) *csr*	(6) *csr*
cg	0.114***	0.0442	0.0534***	0.0806***	0.0272***	0.0435
	(7.73)	(1.43)	(3.71)	(3.35)	(2.85)	(1.55)
$capg_1$	0.021	-0.626*	0.0434	-0.284	0.000316	-0.518*
	(0.28)	(-1.91)	(1.44)	(-1.12)	(1.31)	(-1.72)
$cg * capg_1$	**-0.152****	**-0.216***	**-0.0498**	**-0.123**	**-0.0178**	**-0.108**
	(-1.99)	**(-1.80)**	**(-0.93)**	**(-1.25)**	**(-0.60)**	**(-1.06)**
cash	0.043	-0.108	0.041	0.00547	0.0476	0.139
	(0.67)	(-0.99)	(1.17)	(0.06)	(1.32)	(1.47)
N	7580	2680	6961	1904	6186	1340
G measure	*cg*	$E-index$	*cg*	$E-index$	*cg*	$E-index$
R-squared	0.7229	0.805	0.7193	0.8691	0.7195	0.864
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm	Firm	Firm

Table 5: Financial constrained vs. non-constrained firms

This table shows the effects of growth options on social performance for financially-constrained and non-constrained firms. Firms in the top tercile sorted based on their previous year's financial constraint Kaplan-Zingales (Kaplan and Zingales (1995)) scores are coded as constrained firms. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm-level (White (1980)).

	Dependent Variable			
	Constrained firms		*Non-constrained firms*	
	(1) *csr*	(2) *adj_csr*	(3) *csr*	(4) *adj_csr*
$capg_1$	0.131	0.00164	0.000668	0.000339
	(1.34)	(0.06)	(0.83)	(1.4)
cg	0.0937***	0.0655***	0.0940***	0.0517***
	(5.74)	(5.66)	(10.63)	(7.69)
$cg * capg_1$	**-0.168***	**-0.127***	**-0.0449**	**-0.0393**
	(-1.83)	**(-1.88)**	**(-1.35)**	**(-1.39)**
N	4713	4713	18218	18218
G measure	*cg*	*adj_cg*	*cg*	*adj_cg*
R-squared	0.6421	0.6243	0.6818	0.6551
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm

Table 6: Capital-intensive vs. non-capital-intensive CSR components

This table shows the effects of growth options on performance in capital intensive and non-capital-intensive subareas of CSR. The six areas are: community (*com*), environment(*env*), employee relations (*emp*), human rights (*hum*), diversity (*div*) and product (*pro*). Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm-level (White, 1980).
a. Panel A shows the effects of growth options on different CSR components, using the MSCI CG index as a measure of corporate governance.

	(1) *com*	(2) *env*	(3) *emp*	(4) *hum*	(5) *div*	(6) *pro*
cg	0.0754***	0.209***	0.0722***	0.0338***	0.113***	0.0524***
	(6.84)	(10.84)	(3.88)	(4.26)	(5.66)	(4.01)
$capg_1$	-0.00274	0.00324	0.000416	0.00116	0.000574	0.00203
	(-1.04)	(1.09)	(0.2)	(0.87)	(0.25)	(0.78)
$cg * capg_1$	**-0.0063**	**-0.146****	**-0.0939**	**0.00183**	**-0.0124**	**-0.0382**
	(-0.19)	**(-2.37)**	**(-1.50)**	**(0.07)**	**(-0.14)**	**(-0.88)**
cash	0.0595	0.186***	-0.108	0.0418**	0.128	0.0372
	(1.62)	(3.59)	(-1.32)	(2.21)	(1.53)	(0.91)
N	23539	23539	23539	22316	23539	23539
R-squared	0.5785	0.5715	0.5144	0.4279	0.7307	0.6229
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm	Firm	Firm

b. Panel B shows the effects of growth options on different CSR components, using the BCF entrenchment index (Bebchuk, Cohen, and Ferrell (2008)) as an alternative measure of governance.

	(1) *com*	(2) *env*	(3) *emp*	(4) *hum*	(5) *div*	(6) *pro*
e_index	0.042	0.0707**	0.0682	0.00364	0.103*	-0.0369
	(1.35)	(2.02)	(1.44)	(0.23)	(1.93)	(-1.13)
$capg_1$	-0.476	-0.720***	-0.637	-0.0452	-0.828	0.246
	(-1.44)	(-3.08)	(-1.50)	(-0.32)	(-1.49)	(0.91)
$e * capg_1$	**-0.0823**	**-0.243****	**-0.223**	**-0.0093**	**-0.219**	**0.0336**
	(-0.64)	**(-2.50)**	**(-1.39)**	**(-0.18)**	**(-1.07)**	**-(0.31)**
cash	-0.0532	0.201**	-0.239	-0.0311	-0.00448	0.191*
	(-0.67)	(2.03)	(-1.41)	(-0.64)	(-0.02)	(1.74)
N	6750	6750	6750	5739	6750	6750
R-squared	0.7317	0.7882	0.6808	0.6673	0.7847	0.7809
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm	Firm	Firm

Table 7: Value implications of CSR for firms with growth options

This table studies the effects of CSR on firm value (proxied by Tobin's Q) with respect to different firm growth options. Tobin's Q is measured as *(book value of assets + market value of equity - book value of equity deferred taxes investment tax credit + redemption value of preferred stock)/book value of assets*. Alternatively, I use industry-adjusted Tobin's Q based on Fama-French 49 industry classifications. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm level (White, 1980).

	Dependent variable			
	(1)	(2)	(3)	(4)
	q	adj_q	q	adj_q
csr	0.0555	0.0760***	0.262	0.268***
	(1.03)	(2.63)	(1.43)	(2.69)
$capg_1$	0.646***	0.430***	0.432***	0.295***
	(4.11)	(5.00)	(3.84)	(4.73)
$csr * capg_1$	**-1.264*** **	**-0.842*** **	**-4.311*** **	**-2.952*** **
	(-4.01)	**(-4.89)**	**(-3.71)**	**(-4.58)**
$cash$	1.737***	0.821***	1.739***	0.824***
	(8.35)	(7.20)	(8.35)	(7.23)
N	21473	21306	21473	21306
CSR measure	csr	csr	adj_csr	adj_csr
R-squared	0.7084	0.7124	0.7081	0.7121
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm

Table 8: Value implications of CSR for well-governed firms

This table shows the regression results of CSR on firm value for well-governed firms. Tobin's Q is measured as *(book value of assets + market value of equity - book value of equity deferred taxes investment tax credit + redemption value of preferred stock)/book value of assets*. Alternatively, I use industry-adjusted Tobin's Q based on Fama-French 49 industry classifications. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. Standard errors are robust to heteroskedasticity and clustered at firm level (White, 1980).

	Dependent variable			
	(1)	(2)	(3)	(4)
	q	adj_q	q	adj_q
csr	-0.268*	-0.0943	-0.340***	-0.140**
	(-1.89)	(-1.22)	(-2.75)	(-2.06)
cg	0.0242	0.0199	0.0269	0.023
	(0.56)	(0.85)	(0.62)	(0.98)
$csr * cg$	**-1.038*** **	**-0.582*** **	**-1.153*** **	**-0.579*** **
	(-3.58)	**(-3.50)**	**(-3.84)**	**(-3.73)**
$cash$	1.719***	0.827***	1.718***	0.826***
	(8.40)	(7.34)	(8.40)	(7.34)
N	23069	22792	23069	22792
G measure	adj_cg	adj_cg	adj_cg	adj_cg
CSR measure	adj_csr	adj_csr	adj_csr_2	adj_csr_2
R-squared	0.71	0.7112	0.7102	0.7113
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm

Table 9: Competitiveness of industries

This table shows the effects of CSR on firm value for well-governed firms across industries of different competitiveness. Competitiveness is measured based on Herfindahl-Hirschman Index(HHI). HHI is sorted into terciles and the top tercile is coded as the least competitive industries. Tobin's Q is measured as *(book value of assets + market value of equity - book value of equity deferred taxes investment tax credit + redemption value of preferred stock)/book value of assets*. Alternatively, I use industry-adjusted Tobin's Q based on Fama-French 49 industry classifications. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. Standard errors are robust to heteroskedasticity and clustered at firm level (White, 1980).

	Least competitive	*Middle*	*Most competitive*
	(1)	(2)	(3)
	adj_q	*adj_q*	*adj_q*
csr	-0.209	-0.132	0.159
	(-1.44)	(-1.37)	(1.26)
cg	-0.00258	0.0201	0.0505
	(-0.06)	(0.54)	(1.37)
$csr * cg$	**-0.581****	**-0.309**	**0.0354**
	(-2.17)	**(-1.36)**	**(0.10)**
cash	1.046***	0.599***	0.951***
	(6.23)	(4.14)	(4.48)
N	8018	7991	5927
G measure	*adj_cg*	*adj_cg*	*adj_cg*
CSR measure	*adj_csr*	*adj_csr*	*adj_csr*
R-squared	0.7576	0.7135	0.7947
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Clustering	Firm	Firm	Firm

Table 10: Triple interactions: Value implications of CSR

This table studies the effect of CSR investment, governance and growth options on firm value. I created double and triple interaction terms from the three variables. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm level (White (1980)).

	Dependent variable		
	(1)	(2)	(3)
	q	adj_q	roa
csr	0.074	0.0873***	0.0137**
	(1.42)	(3.09)	(2.27)
cg	0.0109	0.00075	0.000711
	(0.47)	(0.06)	(0.21)
$capg_1$	0.859***	0.555***	0.0817***
	(5.81)	(6.85)	(3.26)
$cash$	1.731***	0.817***	0.132***
	(8.34)	(7.16)	(3.44)
$csr * cg$	0.176***	0.0873***	0.0139*
	(3.27)	(2.97)	(1.89)
$csr * capg_1$	-1.697***	-1.095***	-0.160***
	(-5.74)	(-6.76)	(-3.22)
$cg * capg_1$	0.192	0.163	0.0116
	(1.06)	(1.61)	(0.40)
$csr * cg * capg_1$	-2.148***	-1.118***	-0.127*
	(-4.24)	(-3.93)	(-1.78)
N	21473	21306	23539
R-squared	0.7094	0.7135	0.5185
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	Firm	Firm	Firm

Table 11: Response to significant changes in CSR

This table shows the pre- and post- differences in firm R&D expenditure, capital expenditure, and buy-and-hold abnormal returns (BHAR) for firms experiencing significant changes in CSR. Changes that are at least twice the average standard deviation of CSR across all firms are coded as *"significant"*. A positive (negative) change indicates a significant increase (decrease) in CSR. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively.

A. Panel A shows the changes in firm R&D expenditure, capital expenditure (scaled by total assets) and annual excess returns from the year before to the year after the year which firms undergo "significant" changes.

	Positive change			*Negative change*		
	XRD/TA	*CAPX/TA*	*BHAR*	*XRD/TA*	*CAPX/TA*	*BHAR*
csr	-0.00369**	-0.00165	-0.0758***	-0.00201	-0.00132	0.0649
	(-2.28)	(-1.23)	(-2.95)	(-1.48)	(-0.71)	(1.65)
	N= 245	N=408	N=407	N=118	N=206	N=205
csr_2	-0.00171	-0.00247 **	-0.0645***	-0.00417	-0.0007	0.0507*
	(-1.13)	(-2.03)	(-3.22)	(-1.21)	(-0.45)	(1.82)
	N=388	N=670	N=671	N=250	N=436	N=438

B. Panel B shows the pre- and post- changes in firm R&D expenditure, capital expenditure (scaled by total assets) and annual excess returns for firms experiencing significant changes to their CSR components. For example, "significant" change in community score is defined as a change which is at least twice the average standard deviation of community scores across all firms. Changes in other CSR components are defined in a similar fashion.

	Positive change			*Negative change*		
	XRD/TA	*CAPX/TA*	*BHAR*	*XRD/TA*	*CAPX/TA*	*BHAR*
Community (COM)	-0.00222**	-0.00427***	-0.0569***	-0.00151	-0.00011	0.00796
	(-2.34)	(-3.97)	(-3.07)	(-1.46)	(-0.11)	(0.42)
	N=359	N=794	N=834	N=320	N=691	N=723
Environment (ENV)	-0.00115	-0.00395***	0.0163	0.000262	0.00247**	-0.0392**
	(-1.58)	(-4.09)	(1.14)	(0.37)	(2.31)	(-2.19)
	N=813	N=1378	N=1377	N=537	N=1009	N=1008
Employee (EMP)	-0.0027	-0.00104	-0.0008	-0.00151	-0.00522***	0.0234
	(-1.52)	(-0.84)	(-0.04)	(-0.60)	(-2.92)	(0.67)
	N=371	N=659	N=655	N=141	N=256	N=261
Human rights (HUM)	-0.00249*	-0.00276	-0.2212***	-0.0004	-0.00386*	0.0381
	(-1.84)	(-1.37)	(-6.62)	(-0.31)	(-1.96)	(1.13)
	N=186	N=326	N=328	N=139	N=204	N=204
Diversity (DIV)	0.00355	0.00299**	-0.0764***	-0.00840***	-0.00539***	0.0616**
	(1.06)	(2.51)	(-3.04)	(-2.63)	(-4.10)	(2.55)
	N=342	N=651	N=640	N=390	N=693	N=691
Product (PRO)	-0.0012	-0.00264***	-0.0483**	-0.00164	-0.00198**	0.0317**
	(-1.07)	(-3.33)	(-2.19)	(-1.21)	(-2.40)	(2.10)
	N=545	N=1078	N=1085	N=504	N=996	N=1015

Table 12: Differences in performance: score matching

This table shows the differences in BHAR for firms incurring "significant" changes in their CSR. Changes that are at least twice the average standard deviation of CSR across all firms are coded as *"significant"*. A positive (negative) change indicates a significant increase (decrease) in CSR. I match a firm experiencing a drastic change in CSR (treatment group) with a CSR-stable firm (control group) based on industry, size, growth options and cash holdings. I use three different matching methods: the nearest neighborhood, the Gaussian kernel and the stratification matching methods. The t-statistics based on one-hundred time bootstrapping are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively.

	Positive Change			*Negative Change*		
	Nearest Neighbor	*Stratification*	*Kernel*	*Nearest Neighbor*	*Stratification*	*Kernel*
csr	-0.0541	-0.0498*	-0.0261	0.0614	0.0528	0.0595
	(-0.94)	(-1.68)	(-0.96)	(0.81)	(1.23)	(1.46)
Observations (treat)	402	402	402	198	198	198
Observations (control)	343	23624	13022	103	23574	6289
adj_csr	-0.0418	-0.0262	-0.00689	0.0873	0.0712*	0.0697*
	(-0.91)	(-0.91)	(-0.27)	(1.48)	(1.83)	(1.70)
Observations (treat)	494	494	494	335	335	335
Observations (control)	422	23774	11897	193	23833	7348

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APPENDIX A

VARIABLES

Variable	*Label*	*Definition/Construction*
q	Tobin's Q	(book value of assets + market value of equity - book value of equity deferred taxes investment tax credit + redemption value of preferred stock)/book value of assets. Source: Compustat
adj_q	Industry-adjusted Q	Firm Tobin's Q/industry median Tobin's Q (based on the Fama-French 49 industry classification). Source: Compustat
csr	CSR composite score	The average of (strength scores - concern scores) across six categories: community, diversity, employee, environment, human rights, and product. Source: MSCI ESG (formerly KLD)
adj_csr	Trend-adjusted CSR composite score	The average of adjusted component scores across six categories: community, diversity, employee, environment, human rights, and product. Source: MSCI ESG (formerly KLD)
csr_2	Conservative CSR score (exclude product)	The average of (strength scores - concern scores) across five categories: community, diversity, employee, environment, and human rights (exclude product). Source: MSCI ESG (formerly KLD)
adj_csr_2	Trend- adjusted conservative CSR score (exclude product)	The average of adjusted component scores across five categories: community, diversity, employee, environment, and human rights (exclude product). Source: MSCI ESG (formerly KLD)

cg	Corporate governance score	(Corporate governance strength score - corporate governance concern score) Corporate governance ratings are given based on the assessment of firm performance on the following areas: compensation, ownership structure, accounting transparency, political accountability, public policy, controversial investments and business ethics. Source: MSCI ESG (formerly KLD)
adj_cg	Trend-adjusted corporate governance score	(Corporate governance strength score/ maximum corporate governance strength score) - (Corporate governance concern score/maximum corporate governance concern score) Source: MSCI ESG (formerly KLD)
$G - index$	Alternative corporate governance measure	Governance G-index (Gompers, Ishii, and Metrick, 2003)
$E - index$	Alternative corporate governance measure	Entrenchment E-Index (Bebchuk, Cohen, and Ferrell, 2008)
$capg_1$	Growth option measure	proxied by capital expenditure growth and measured as capital expenditure divided by fixed assets (capx/ppegt) Source: Compustat
$capg_2$	Alternative growth option measure	proxied by capital expenditure growth and measured as changes in capital expenditure divided by lagged assets (capx-lag_capx)/lag_at Source: Compustat
roa	Performance measure	Net income/Total Asset (ni/at) Source: Compustat
size	Firm size	The natural logarithm of the prior year's total asset (log(lag_at)) Source: Compustat
lag_kz	Capital Constraint Kaplan-Zingales Index (Kaplan and Zingales (1995))	KZ=-1.001909*((ib+dp)/lag_ppent)+ 0.2826389*((at+(prcc_f*csho)-ceq-txdb)/at)+3.139193*((dltt+dlc)/(dltt+dlc +seq))-39.3678*((dvc+dvp)/lag_ppent)- 1.314759*(che/lag_ppent) Source: Compustat
cash	Cash holdings	Cash= cash +marketable securities scaled by assets (che/at) Source: Compustat

hhi	Herfindahl-Hirschman Index	hhi is calculated by adding up the squared the market share of each firm $hhi = s_1^2 + s_2^2 + s_3^2 + ...$ where s_i is the market share of firm i Source: Compustat
analyst	External governance measure	Analyst= Log(number of analysts following in the year) Source: I/B/E/S

APPENDIX B

MATH PROOFS

For tractability of the math, I solve for the two extreme cases of governance (ω): ω= 0 and ω=1.

Proof. (**Proposition 1**)

- Case 1: ω=0 (bad governance):

  The firm utility is given by

$$U(R,V) = U_m(R,V) = R^{\alpha}V^{\beta}$$

  The manager's optimization problem:

$$\begin{aligned} &\text{maximize} \quad (A_{CSR})^{\phi\alpha}(A_{Growth})^{\theta\beta} \\ &\text{subject to} \quad A_{CSR} + A_{Growth} = A \end{aligned}$$

$$\iff \text{maximize } (A_{CSR})^{\phi\alpha}(A - A_{CSR})^{\theta\beta}$$

  The first order condition needs to be satisfied. That is:

$$(\phi\alpha)(A_{CSR})^{(\phi\alpha-1)}(A - A_{CSR})^{\theta\beta} - (A_{CSR})^{\phi\alpha}(\theta\beta)(A - A_{CSR})^{(\theta\beta-1)} = 0 \qquad \text{(B.1)}$$

  Multiply both sides with $\frac{1}{(A_{CSR})^{\phi\alpha}}\frac{1}{(A-A_{CSR})^{\theta\beta}}$

$$\text{(C.1)} \iff \frac{(\phi\alpha)}{(A_{CSR})} - \frac{(\theta\beta)}{(A - A_{CSR})} = 0$$

$$\iff (\phi\alpha)(A - A_{CSR}) = (\theta\beta)(A_{CSR})$$

$$\iff (\phi\alpha)A = (\theta\beta + \phi\alpha)(A_{CSR})$$

  or

$$\begin{cases} A_{CSR} = \left(\frac{\phi\alpha}{\phi\alpha+\theta\beta}\right) A \\ A_{Growth} = A\left[1 - \left(\frac{\phi\alpha}{\phi\alpha+\theta\beta}\right)\right] = \left(\frac{\theta\beta}{\phi\alpha+\theta\beta}\right) A \end{cases}$$

  Thus,

$$R = (A_{CSR})^{\phi} = \left[\left(\frac{\phi\alpha}{\phi\alpha + \theta\beta}\right) A\right]^{\phi}$$

$$\Rightarrow \frac{\partial R}{\partial \theta} = -[(\phi\alpha)A]^{\phi}\phi(\phi\alpha + \theta\beta)^{\phi-1}\beta < 0 \tag{B.2}$$

- Case 2: ω=1 (good governance): The firm utility is given by

$$U(R, V) = U_s(R, V) = R^{\alpha}V^{\lambda}$$

The manager's optimization problem:

$$\begin{aligned} &\text{maximize} \quad (A_{CSR})^{\phi\alpha}(A_{Growth})^{\theta\lambda} \\ &\text{subject to} \quad A_{CSR} + A_{Growth} = A \end{aligned}$$

$$\iff \text{maximize } (A_{CSR})^{\phi\alpha}(A - A_{CSR})^{\theta\lambda}$$

The first order condition needs to be satisfied. That is:

$$(\phi\alpha)(A_{CSR})^{(\phi\alpha-1)}(A - A_{CSR})^{\theta\lambda} - (A_{CSR})^{\phi\alpha}(\theta\lambda)(A - A_{CSR})^{(\theta\lambda-1)} = 0 \tag{B.3}$$

Multiply both sides with $\frac{1}{(A_{CSR})^{\phi\alpha}}\frac{1}{(A-A_{CSR})^{\theta\lambda}}$

$$\text{(C.2)} \iff \frac{(\phi\alpha)}{(A_{CSR})} - \frac{(\theta\lambda)}{(A - A_{CSR})} = 0$$

$$\iff (\phi\alpha)(A - A_{CSR}) = (\theta\lambda)(A_{CSR})$$

$$\iff (\phi\alpha)A = (\theta\lambda + \phi\alpha)(A_{CSR})$$

or

$$\begin{cases} A_{CSR} = \left(\frac{\phi\alpha}{\phi\alpha+\theta\lambda}\right) A \\ A_{Growth} = A\left[1 - \left(\frac{\phi\alpha}{\phi\alpha+\theta\lambda}\right)\right] = \left(\frac{\theta\lambda}{\phi\alpha+\theta\lambda}\right) A \end{cases}$$

Thus,

$$R = (A_{CSR})^{\phi} = \left[\left(\frac{\phi\alpha}{\phi\alpha + \theta\lambda}\right) A\right]^{\phi}$$

$$\Rightarrow \frac{\partial R}{\partial \theta} = -[(\phi\alpha)A]^{\phi}\phi(\phi\alpha + \theta\lambda)^{\phi-1}\lambda < 0 \tag{B.4}$$

(C.2) and (C.4) complete the proof of Proposition 1 [1].

□

Proof. (**Proposition 2**)
From the proof of Proposition 1:

$$\begin{cases} \text{From } (C.2) & : \frac{\partial R}{\partial \theta} = -[(\phi\alpha)A]^{\phi}\phi(\phi\alpha + \theta\beta)^{\phi-1}\beta < 0 \ (\omega = 0) \\ \text{From } (C.4) & : \frac{\partial R}{\partial \theta} = -[(\phi\alpha)A]^{\phi}\phi(\phi\alpha + \theta\lambda)^{\phi-1}\lambda < 0 \ (\omega = 1) \end{cases}$$

[1] Because $\lambda > \beta$, $\phi \in [0, 1] \rightarrow R_{\omega=0} > R_{\omega=1}$

Because $\lambda > \beta$, $\phi \in [0,1]$, we get $\frac{\partial^2 R}{\partial \theta \partial \omega} > 0$. This completes the proof of Proposition 2.

□

APPENDIX C

ADDITIONAL ROBUST RESULTS

Table C1: Robustness test: Value implications of CSR for growth firms

This table studies the effect of CSR on firm value with respect to different firm growth options using an alternative measure of growth options. Growth option is measured as changes in capital expenditure scaled by lagged assets. Tobin's Q is measured as *(book value of assets + market value of equity - book value of equity deferred taxes investment tax credit + redemption value of preferred stock)/book value of assets.* Alternatively, I use industry-adjusted Tobin's Q based on Fama-French 49 industry classifications. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm level (White, 1980).

	Dependent Variable			
	(1)	(2)	(3)	(4)
	adj_q	adj_q	adj_q	adj_q
csr	-0.00806	-0.0318	-0.0234	-0.0828
	(-0.34)	(-0.41)	(-1.12)	(-1.21)
$capg_2$	0.0585	0.0449	0.0583	0.0422
	(1.10)	(1.06)	(1.11)	(1.06)
$csr * capg_2$	**-0.479***	**-3.296*****	**-0.442***	**-3.218*****
	(-1.65)	**(-3.74)**	**(-1.74)**	**(-4.26)**
$cash$	0.825***	0.823***	0.826***	0.824***
	(7.27)	(7.26)	(7.29)	(7.27)
N	22592	22592	22592	22592
CSR measure	csr	adj_csr	csr_2	adj_csr_2
R-squared	0.7116	0.7118	0.7116	0.7119
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm

Table C2: Value implications of CSR for growth firms: Operating performance

This table studies the effect of CSR investment, and growth options firm operating performance, proxied by *roa*. Detailed definitions and constructs of variables are provided in the Appendix A. T-statistics are reported in parentheses. ***, **, * indicate significance of the coefficient at the 1%, 5% and 10% levels, respectively. All regressions are controlled for firm and year fixed effects. Standard errors are robust to heteroskedasticity and clustered at firm level (White, 1980).

	Dependent Variable			
	(1)	(2)	(3)	(4)
	roa	*roa*	*roa*	*roa*
csr	0.0121*	0.0422	0.00966	0.0343
	(1.68)	(1.56)	(1.53)	(1.41)
$capg_1$	0.0694**	0.0489**	0.0701**	0.0507**
	(2.13)	(2.16)	(2.06)	(2.12)
$csr * capg_1$	**-0.135****	**-0.489****	**-0.114****	**-0.423****
	(-2.08)	**(-2.09)**	**(-2.01)**	**(-2.05)**
cash	0.132***	0.133***	0.133***	0.133***
	(3.48)	(3.48)	(3.48)	(3.49)
N	23539	23539	23539	23539
CSR mesaure	*csr*	*adj_csr*	csr_2	adj_csr_2
R-squared	0.5182	0.518	0.5182	0.5181
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm