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Corporate Social Responsibility and Firm Leverage: The Impact of Market Competition

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ABSTRACT

This study examines the impact of market competition on the relation between CSR and firm leverage. Empirical results indicate that CSR is negatively associated with both book leverage and market leverage. However, this association is driven by competition in product markets. Specifically, CSR has a negative effect on firm leverage only when competition in product markets is high. When competition is low, CSR has no impact on firm leverage. Results also show that the impact of CSR is driven by the community, diversity, employee relations and environment dimensions of CSR and product dimension has not significant effect. Further tests also show that CSR increases firm value only when competition is high.

Key words: Corporate social responsibility; market competition; book leverage; market leverage

JEL classification: G32; G34; G38; J31; J33

1. Introduction

Corporate social responsibility (CSR) has been a popular topic of research in economics, finance and management literature. Most of the research on CSR is focused on examining the relation between CSR and firm performance and value. Although numerous articles have been written on this topic, there still is no consensus in theory on how CSR affects firm performance and value. The agency theory of economics (Jensen and Meckling, 1976) views CSR as an agency problem (Friedman, 1970) and argues that managers tend to overinvest in CSR in order to build their personal reputations using corporate resources. However, the stakeholder theory of management (Freeman, 1984) argues that CSR increases firm value by balancing the interests of all stakeholders who provide resources.

Most of the empirical studies explore the effect of CSR on firm value using investment decisions. Recently, there has been an attempt to examine the relation between CSR and firm value using firm financing decisions. Agency theory predicts no association between CSR and firm capital structure because investment in CSR is viewed as a misuse of corporate resources and rent extraction by entrenched managers. Management literature however contends that CSR is associated with lower cost of capital (Sharfman and Fernando, 2008; El Ghoul et al., 2011; Girerd-Potin et al., 2014; Ng and Rezaee, 2015) for two reasons. First, CSR reduces information asymmetry (Dhaliwal et al., 2012; Kim et al., 2012; Cho et al., 2013). Second, high CSR firms are perceived less risky by investors (Robinson et al., 2008; Starks, 2009) because CSR provides insurance like protection in the event of poor financial performance (Godfrey, 2005; Luo and Battacharya, 2009). Consequently, high CSR firms face lower capital constraints (Cheng et al., 2014) and are more likely to issue equity than low CSR firms (Pijourlet, 2013).

This study argues that the relation between CSR and firm leverage is influenced by competition in product markets. High competition in product markets imposes external discipline on managers (Alchian, 1950; Stigler 1958; Schmidt (1997) and persuades them to make value increasing investment and financing decisions (Grossman and Hart, 1983). High competition also increases the likelihood of failure and bankruptcy. CSR helps firms to differentiate and achieve competitive advantage (Jones, 1995) when competition is high (Russo and Fouts, 1997). Since high CSR firms have lower cost of equity, they are more likely to use lower cost advantage when market competition is high. Moreover, high CSR firms treat their employees well (Vierwijmeren and Derwall, 2010; Bae et al., 2011) and tend to save their employees from the harmful effects of bankruptcy. Since higher market competition increases the likelihood of bankruptcy and leverage is positively related to the likelihood of bankruptcy, higher CSR firms are more likely to reduce leverage when market competition is high.

In order to test how market competition affects the relation between CSR and firm leverage, I collect a sample of large US firms for the period 1996-2015. I measure corporate social responsibility using the MSCI (formerly KLD) data and market competition using Hoberg and Phillips (2016) text-based Herfindahl index of market concentration. Empirical results from OLS and industry fixed effects regressions indicate that CSR is negatively related to future book leverage and market leverage after controlling CEO firm specific wealth and corporate governance. However, the negative association between CSR and leverage is influenced by competition in product markets because CSR is negatively related to firm leverage only when competition is high. When competition is low, CSR does not seem to have any significant effect on firm leverage. Overall, the results show that CSR is associated with value increasing financing decisions only when firms operate in high competition markets.

The empirical results remain robust when I use Hoberg et al. (2014) product fluidity to measure market threats and competition or drop firms with zero debt. Results also remain same when I treat CSR as endogenous and use instrumental variable (IV-GMM) regressions. Moreover, results do not change when I divide the total period into sub samples of pre and post financial crisis, measure firm leverage with two period lags or use alternative measure of CSR. Results also remain similar when I winsorize all variables at 1% level to control the effect of outliers in the data.

This study contributes to the literature on CSR and firm financing decisions in two distinct ways. First, it shows that CSR is negatively related to firm leverage. In this regard, it adds to the scant literature that examines firm financing decisions in order to evaluate the effect of CSR on firm value (e.g. Verwijmeren and Derwall, 2010; Bae et al., 2011; Girerd-Potin et al., 2011; Pijourlet, 2013). Second, it shows that the relation between CSR and value increasing financing decisions holds only when market competition is high. To my knowledge, this is the first study that provides empirical evidence on how product market competition changes the relation between CSR and firm leverage.

The rest of theis study is organized as follows. Section 2 explains motivation and development of hypotheses by reviewing previous literature. Section 3 provides data, measurement of CSR, market competition and the empirical strategy. Section 4 reports empirical results from estimation and discusses the robustness of these results. Section 5 provides summary and discussion.

2. Motivation and hypotheses

Corporate social responsibility (CSR) has been studied widely in economics, finance and management literature. There is however no theoretical consensus on how CSR impacts firm value. The agency theory of economics (Jensen and Meckling, 1976) argues that CSR is an agency

problem (Friedman, 1970) and a misuse of corporate resources by the managers. According to the agency theory, managers tend to overinvest in CSR in order to gain personal reputation at the expense of shareholders (Barnea and Rubin, 2010) and destroy firm value by using corporate resources. A number of empirical studies find evidence in favor of agency theory (e.g. Galaskiewics, 1985; Atkinson and Galaskiewcz, 1988; Werbel and Carter, 2002; Barnea and Rubin, 2010).

The stakeholder theory (Freeman, 1984) of management however contends that firm value is influenced by all the stakeholders who provide resources to the corporation. These stakeholders are divided into investing (shareholders) and non-investing (employees, suppliers, customers, community etc.) stakeholders. The stakeholder theory argues that CSR increases firm value by reducing risks associated with resource acquisitions by balancing the interests of all the stakeholders (Haley, 1991; Backhaus et al., 2002). Ruf et al. (2001) find that changes in corporate social performance have a positive effect on firm financial performance. Brammer and Millington (2003) find that higher levels of philanthropic expenditures have better reputations and Wang and Choi (2013) find that good stakeholder relations lead to higher financial performance. Others like Russo and Fouts (1997) and McWilliams and Siegel (2011) argue that CSR is a strategic resource that provides competitive advantage to firms and creates value for all stakeholders.

2.1. CSR and firm leverage

Most of the previous studies examine the relation between CSR and firm value through investment decisions and ignore the fact that firm value is also a function of smart financing decisions. There are only a few studies that explore the link between CSR and firm value through financing decisions. Agency theory predicts that there is no relation between CSR and firm

leverage as managers tend to overinvest in CSR to build their personal reputations. The management literature, however argues that CSR increases firm value by reducing cost of capital (Sharfman and Fernando, 2008; El Ghoul et al., 2011; Girerd-Potin et al., 2014; Ng and Rezaee, 2015) through various channels. First of all, CSR disclosures introduce transparency and reduce information asymmetry between firms and investors (Chih et al., 2008; Cui et al., 2016). High CSR firms disclose more information to project their positive image and reduce information asymmetry (Dhaliwal et al., 2009). Second, firms that invest in CSR tend to have larger investor base and lower cost of capital as socially conscious investors stay away from low CSR firms (Heinkel et al., 2001; El Ghoul et al., 2011). Third, high CSR firms are generally perceived less risky than low CSR firms (Robinson et al., 2008; Starks, 2009) and investors demand low risk premiums for holding such stocks. This is because CSR provides insurance like protection in the event of poor performance (Godfrey, 2005; Luo and Battacharya, 2009).

Mishra and Modi (2012) analyze the relation between positive and negative CSR and firm idiosyncratic risk. They find that positive CSR reduces idiosyncratic risk and negative CSR increases it but the positive effect is not sustained in firms that have high levels of financial leverage. Vierwijmeren and Derwall (2010) show that firms that treat their employees well are more likely to issue equity because of lower cost of equity. They find that employee well-being is associated with lower leverage ratios. Bae et al. (2011) also find that firms that score higher on employee treatment index tend to have lower debt ratios. Similarly, Pijourlet (2013) finds that high CSR firms are more likely to issue equity and have lower leverage relative to low CSR firms. Harjoto (2017) using a sample of 8,116 firm year observations for the period 1991-2011 estimates the effect of CSR on degrees of operating leverage (DOL) and financial leverage (DOF). He finds

that CSR and CSR strengths are positively (negatively) related to DOL (DFL). Yang et al. (2018) however find a positive relation between CSR and firm leverage in Chinese listed corporations.

The above discussion suggests that CSR is negatively related to firm leverage according to the management literature and is not related to leverage according the agency view. I therefore formulate the following null hypothesis:

Hypothesis 1: CSR is not related to firm leverage

2.2. CSR, market competition and firm leverage

Competition in product markets disciplines managers and mitigates agency problems (Alchian, 1950; Stigler 1958; Hart, 1983; Schmidt, 1997). Prior studies show that firms are more likely to invest in CSR as a differentiation strategy when markets are competitive (Siegel and Vitaliano, 2007; Fisman et al., 2008; Dereleck and M'Zali, 2012; Fernández-Kranz and Santaló, 2010). When competition is high, any investment made in CSR indicates managerial efforts to increase firm value and to protect their jobs from higher risk of failure. Empirical evidence shows that CSR is positively related to firm value when market competition is high (Jia and Shi, 2014; Ryu et al., 2016; Sheikh, 2018).

Higher market competition increases the probability of failure due to thin profit margins especially for those firms that have high costs (Schmidt, 1997). Any small competitive advantage results in more than proportional increase in cash flows when competition is intense. Heinkel et al. (2001) and El Ghoul et al. (2011) show that high CSR firms have lower cost of equity that enables them to finance their projects at lower cost. The lower cost of equity presents a competitive advantage to firms that perform high on CSR. Higher CSR firms are therefore more likely to use

lower cost of equity to their advantage and reduce debt when they operate in more competitive markets.

Moreover, prior studies show that firms that treat their employees well tend to use lower debt in their capital structure to save their stakeholders (employees and customers) from the harmful effects of bankruptcy (Vierwijmeren and Derwall, 2010; Bae et al., 2011). Since higher market competition increases the likelihood of bankruptcy and leverage is positively related to the likelihood of bankruptcy, higher CSR firms are more likely to reduce leverage when market competition is high. The above analysis leads to the following hypothesis:

Hypothesis 2: CSR is negatively related to firm leverage when market competition is high

3. Data, sample selection and measurement

3.1. Sample selection

I collect data from various sources to create a sample of firms for the period 1996-2015. The sample period begins from 1996 because the Hoberg and Phillips (2016) data on market competition was not available prior to 1996. Data on CEO age, duality and firm specific wealth are from S&P Execucomp database. Information on corporate governance is extracted from Institutional Shareholders' Service (formerly RiskMetriks). Data on firm financial variables like sales, leverage, profitability, fixed assets, and R&D expenditures are derived from Compustat. Information on corporate social responsibility is drawn from MSCI (formerly KLD) database. Following previous studies, I drop firms in the financial sectors and in the regulated industries (SIC codes in the range 4910-4949 and 6000-6999). The final sample consists of 2,009 companies and 26,840 firm year observations. The actual number of observations used in each regression is

however less due to missing observations on some control variables and a one year lag between measures of firm leverage and CSR.

3.2. Measuring firm leverage

Following previous studies on capital structure (Berger et al., 1997: Vierwijmeren and Derwall, 2010; Bae et al., 2011), I use two measures of firm leverage: book leverage and market leverage. Book leverage is calculated as the book value of total debt divided by the book value of total assets. Market leverage is the ratio of book value of total debt to book value of total debt plus market value of equity. Market value of equity in turn is computed by multiplying the stock price with the total number of shares outstanding.

3.3. Measuring corporate social responsibility

I use the MSCI (formerly KLD) database to measure corporate social responsibility (CSR). The MSCI database is the most widely used dataset in CSR studies and covers companies in S&P 500 and Russell 3000 index. It provides information on corporate social performance in seven different dimensions either as strengths or concerns. The seven dimensions of social performance are community, diversity, employee relations, product, environment, governance and human rights. In each dimension, CSR strengths represent actions that have positive effect on social performance while CSR concerns represent actions that have negative effect on social performance. Following previous studies (Gregory et al 2014; Harjoto and Laksmana 2018), I exclude governance and human rights categories. The human rights dimension is excluded because it is available only for a small fraction of firms for its focus on non-US operations and the governance measure is excluded because the data focus more on social aspects and measure

governance differently than traditional governance measures. Instead, I include Gompers et al. (2003) G-index to control for the effect of corporate governance.

Since there are different number of strengths and concerns in each dimension of social performance, a simple subtraction of total number of concerns from total number of strengths gives unequal weights to each dimension (Manescu 2009; Deng et al 2013). I therefore divide the strengths and concerns in each dimension by total number of strengths and concerns in that dimension and then calculate net CSR as the difference between total number of strengths and concerns on five dimensions (community, diversity, employees, product and environment). My results are similar if I calculate CSR as the difference between CSR strengths and concerns without adjusting for the unequal weights.

3.4. Measuring product market competition

I use Hoberg and Phillips (2016) text-based industry concentration index as the primary measure of market competition. They use 10-K text-based network industries (TNIC) classification to construct Herfindahl index (TNICHHI) of market power[1]. According to Hoberg and Phillips, "[the] Industry Classifications have a spatial representation. All firms have a location in a product market space shaped as a unit sphere. Competitive product markets are areas of the sphere where many firms are located. Concentrated areas are sparsely populated." High (low) competition sample includes those firm year observations where (1-TNICHHI) is higher (lower) than sample median.

I also use product market fluidity index of Hoberg et al. (2014) to measure threats and instabilities arising from the actions of competitors. It is constructed on the basis of similarity

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[1] The TNICHHI data are available at http://hobergphillips.usc.edu/industryconcen.htm

between a firm's vocabulary and the change in the overall use of vocabulary by competitors. Greater similarity implies that a firm faces greater threats from its competitors and an increased competition in the product markets. High (low) fluidity sample equals 1 if firm level fluidity is greater (less) than sample median fluidity.

3.5. Empirical methodology

I use the following equation to estimate the determinants of firm leverage as benchmark regressions.

$$Leverage_{i,t+1} = \beta_0 + \beta_1 CSR_{i,t} + \sum_{j=2}^{n} \beta_j\ Control\ Variables_{i,t} + \varepsilon_{i,t} \qquad (1)$$

Where i and t denote firm and time series dimensions respectively. Leverage is measured by book leverage and market leverage. CSR is the net corporate social responsibility score on five social dimensions. Equation (1) is estimated using ordinary least squares (OLS) with robust standard errors clustered at the firm level and industry fixed effects regressions using Fama-French 48 industry classification. OLS regressions include both industry and year controls and industry fixed effects regressions include only year controls.

Following previous studies, I control for various manager, firm and governance characteristics that are known to have a significant effect on firm leverage. CEO age, duality and firm specific wealth are used as manager specific controls. CEO age is an important determinant of CEO risk aversion and firm leverage. Older CEOs tend to be more risk-averse and less likely to increase firm leverage. Similarly, CEOs who are also chairs of their boards tend to have higher influence on firm financing decisions. Agency theory argues that CEOs tend to reduce firm leverage to protect their firm specific wealth from the increased risk of bankruptcy attached to

higher leverage. To control for this, I include total value of stock and options portfolio held by a CEO and expect a negative sign on this variable.[2]

A number of firm specific variables that are known to influence firm financing decisions are also used as control variables. Firm size is an important determinant of firm leverage (Friend and Lang, 1988). Firm size is measured by total assets (Berger et al, 1997). I also use log of sales and log of total employees and find similar results. Asset tangibility is another important determinant of firm leverage as firms can use tangible assets as collateral for more debt and collateral reduces agency problems (Degryse et al., 2012). Asset tangibility is calculated as the ratio of fixed assets to total assets. Previous studies find both a negative (DeAngelo and Masulis, 1980) and a positive (Bathala et al., 1994) association between non-debt tax shield (NTDS) and firm leverage. I therefore include NTDS in all the regressions. It is measured as the sum of depreciation and amortization divided by total assets.

Profitable firms have sufficient internally generated funds and are less likely to rely on external debt. Rajan and Zingalese (1995) find a negative relation between firm profitability and debt. Profitability is measured as the ratio of earnings before taxes, depreciation and amortization to total assets (EBITDA/assets). Higher levels of free cash flows increase CEO ability to divert corporate resources. I include free cash flows computed as cash flows from operations minus capital expenditures divided by total assets in all regressions. R&D and capital expenditures may compete with other investment expenditures that require raising more debt. I include R&D expenditures as a ratio of total assets to control for resource competition and capital expenditures to total assets to control for growth opportunities (Jiraporn et al., 2012). Finally, I include Gompers

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[2] CEO firm specific wealth is the sum of the value of stock and option portfolio held by the CEO. For more details, please see Coles et al., (2006). The data on firm specific wealth are available at https://sites.temple.edu/lnaveen/data/

et al. (2003) governance index to control for corporate governance effect on firm financing decisions.

Table 1 provides descriptive statistics of the variables used in this study. Average CEO in the sample is 56 years old and holds $34.2 million in firm specific wealth. The CEO is also the chair of the board about 41% of the time. Average firm in the sample has 20.3% book leverage and 18.6% market leverage. Average CSR score is -0.051 (median 0) and average assets are $6.76 billion. The non-debt tax shield, profitability, and free cash flows of the average firm are 4.61%, 12.6% and 37.2% of its assets. Average fixed assets, R&D and capital expenditures are 54.2%, 3.63% and 5.51% of total assets respectively. Average G-index is approximately 8.

[INSERT TABLE 1 HERE]

4. Empirical results

4.1. Corporate social responsibility and firm leverage: Benchmark regressions

Table 2 presents results from the benchmark regressions. Columns 1 & 3 report results from OLS regressions with robust standard errors clustered at the firm level and columns 2 & 4 report results from industry fixed effects regressions using Fama-French 48 industry classification. The coefficients on CSR are all negative and statistically significant in both OLS and fixed effects regressions and for both book leverage and market leverage. At the median level of book (market) leverage, a one unit increase in CSR results in 1.88% (4.46%) decrease in book (market leverage) in OLS regressions and 1.06% (3.54%) decrease in fixed effects regressions. I therefore reject the null hypothesis 1 that states that there is no relation between CSR and firm leverage. It seems that firms that score higher on corporate social responsibility have lower leverage ratios. These results are similar to previous studies (e.g. Vierwijmeren and Derwall, 2010; Bae et al., 2011). Other

control variables in Table 2 have expected signs. CEO age and firm specific wealth are negatively associated with leverage but CEO duality has a positive association.

The coefficients on governance index are positive and significant. Since high values of G-index indicate poor governance, it seems that firms with poor corporate governance tend to have higher leverage ratios. Bigger firms, firms with high free cash flows and higher non-debt tax shields are associated with higher leverage ratios. Profitability is negatively related to firm leverage (Abor, 2007). Asset tangibility measured by the ratio of fixed assets to total assets has positive effect on firm leverage ratios (Degryse et al., 2012). Capital expenditures are negatively associated with firm leverage. However, the negative coefficients are significant only in market leverage ratios. The coefficients on R&D expenditures are all negative and significant indicating that the firms with higher R&D expenditures use less debt. Overall, the benchmark regressions show that CSR firms tend to use less debt in their capital structures.

[INSERT TABLE 2 HERE]

4.2. CSR and firm leverage: Effect of market competition

In order to examine how product market competition affects the relation between CSR and firm leverage, I create two categorical variables. High competition equals 1 if Hoberg and Phillips (2016) text-based Herfindahl index (TNICHHI) of market concentration is greater than sample median and 0 otherwise. Low competition equals 1 when high competition is zero. I then create interaction variables of CSR $\times$ high competition and CSR $\times$ low competition and do not include CSR variable in the regressions. This simple transformation provides a direct and easy interpretation of the interaction variables.[3] CSR $\times$ high competition measures the effect of CSR on

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[3] Low competition= 1-high competition

firm leverage when market competition is high and CSR × low competition measures the effect of CSR on firm leverage when market competition is low.

Table 3 provides results from this specification. The coefficients on the interaction of CSR and high competition are negative and significant in both OLS and fixed effects regressions and for both book leverage and market leverage. A one unit increase in CSR at the median level of book (market) leverage leads to 11.65% (18.23%) decrease in book (market leverage) when competition is high in OLS regressions and 6.94% (11.23%) decrease in fixed effects regressions respectively. The coefficients on CSR and low competition however are not significant in three out of four specifications. In the industry fixed effects regression in book leverage, the coefficient on CSR and low competition is positive and marginally significant. The coefficients on the interaction of CSR and low competition are also small in magnitude. The results in Table 3 provide support to hypothesis 2. CSR has a negative and significant effect on firm leverage only when product market competition is high. In low competition markets where agency problems are severe, CSR is not related to firm leverage.

The coefficient on high competition shows that firms in high competition markets rely less on debt. The G-index is positively associated with firm leverage as in the benchmark regressions. All other control variables have signs and significance similar to the benchmark regressions.

[INSERT TABLE 3 HERE]

4.3. CSR and firm leverage: Effect of product market fluidity

I also use Hoberg et al. (2014) index of product market fluidity that measures threats and instabilities arising from the actions of competitors to examine its impact on the relation between CSR and firm leverage. The fluidity index constructed on the basis of similarity between a firm's

vocabulary and the change in the overall use of vocabulary by its competitors. It shows how rivals are changing the product words that overlap with firm's own vocabulary (Hoberg et al., 2014). Greater similarity indicates that a firm is going to face greater threats from its rivals. Thus product market fluidity reflects expected competition in the market.

As before, I create two variables to estimate the effect of product market fluidity on the relation between CSR and firm leverage. High fluidity equals 1 if firm level fluidity index is greater than sample median fluidity index. Low fluidity equal 1 when high fluidity equals zero. I then create interaction variables of CSR × high fluidity and CSR × low fluidity and do not include CSR variable in the regressions. The results are given in Table 4. The coefficients on the interaction of CSR and high fluidity are positive and significant in both OLS and industry fixed effects regressions and for both measures of firm leverage. However, the coefficients on the interaction of CSR and low fluidity are not statistically significant at any acceptable level in either of the regressions. These results provide further support to the results in Table 3. It seems that when firms face higher expected competition, they use less debt to finance investment projects.

[INSERT TABLE 4 HERE]

4.4. CSR dimensions and firm leverage

As described in section 3.3, CSR is measured using firm performance on five social dimensions. In this section, I run OLS regressions on each individual dimension of CSR to examine the effect of market competition on the relation between CSR and firm leverage. The five dimensions are community, diversity, employee relations, product and environment. The results are provided in Table 5. The coefficients on the interaction of CSR and high competition are negative and significant in community, diversity, employee relations and environment and not

negative but insignificant in product dimension. The coefficients on the interaction of CSR and low competition are negative and insignificant in 8 out of 10 specifications. In the diversity dimension, the coefficient on the interaction of CSR and low competition is positive and significant and negative and significant in employee relations. Overall, the results show that the effect of CSR in benchmark regressions is driven by four dimensions (community, diversity, employee relations and environment) and product dimension has not effect. The coefficients on all other control variables have expected signs and significance.

[INSERT TABLE 5 HERE]

4.5. CSR and firm leverage: Using instrumental variable (IV-GMM) regressions.

The above analysis estimates the effect of CSR on firm leverage assuming that CSR is exogenous. However, there may be concerns about CSR being endogenous. In this section I use instrumental variable regressions to treat potential endogeneity of CSR. The IV-GMM estimation implements two-step efficient generalized method of moments (GMM) estimator and generates efficient estimates of the coefficients as well as consistent estimates of the standard errors.[4] We need instruments that are highly correlated with CSR but uncorrelated with firm leverage. Following Flammer and Kacperczyk (2016), I use constituency statutes of the state where the firm is located as instrumental variable. Constituency statutes provide legal power to the board of directors to balance the interests of different stakeholders without breaching their fiduciary obligations to the shareholders (Orts, 1992; Stout, 2012). Luoma and Goodstein (1999) find that stakeholder representation increases on corporate boards for those companies that enact constituency statutes. Flammer and Kacperczyk (2016) also show that constituency statutes

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[4] STATA executes this estimation with the ivreg2, gmm2s robust command. For more details please see Baum et al (2003)

enactment is positively associated with CSR index. I create a categorical variable (constituency statutes) that equals 1 if the state where the company headquarters are located has enacted constituency statutes and 0 otherwise. This variable is highly positively correlated with CSR but has no direct relation with firm leverage. Since CSR is predominantly influenced by industry characteristics (Brammer and Millington, 2006; Garcia-Castro et al, 2010), I also use industry average (median) net scores on CSR as a second instrumental variable. The industry median scores are calculated using Fama-French 48 industry classification.

Table 6 reports results from 2SLS (IV-GMM) regressions. The first stage results show that the coefficients on the constituency statutes instrument are positive and significant in all specifications. The coefficients on industry median CSR are all positive and significant too. The first stage regressions show that both the instruments are highly positively correlated with CSR. All other control variables in the first stage regression have expected signs. The second stage results in Table 6 show that the coefficients on CSR (instrumented) are negative and significant in high competition samples. In low competition samples, the coefficients on CSR (instrumented) are not significant at any acceptable level. The coefficients on all other control variables have signs and significance similar to those in benchmark regressions. The results in Table 6 show that even when we treat CSR as endogenous, the primary findings of this study do not change. CSR is negatively associated with firm leverage only when competition in product markets is high.

[INSERT TABLE 6 HERE]

4.6. CSR and firm leverage: Dropping firms with zero debt

The sample used in the above analysis includes those firms that have zero debt. There are 884 firms in the full sample that have zero debt. In order to see if the results of this study are sensitive to the exclusion of zero debt firms, I drop I all firm year observations where the leverage is zero

(4,670 firm year observations). I then run the regressions with firms that have positive debt values. Results are provided in Table 7. The coefficients on the interaction of CSR and high competition are negative and significant and the coefficients on the interaction of CSR and low competition are not significant at any acceptable level. It seems that the inclusion of zero debt firms in the full sample does not affect the primary results of this study.

[INSERT TABLE 7 HERE]

4.7. CSR and firm leverage: Using CSR as a categorical variable

I measure CSR as a continuous variable computed as the difference between total CSR strengths and total CSR concerns. In this section, I create a new variable (high CSR) that equals 1 if a firm's CSR net score is greater than sample median and zero otherwise. I then create interaction variables of high CSR and high competition and high CSR and low competition. The results of this specification are given in Table 8. Here again, the coefficients on the interaction of high CSR and high competition are negative and significant and the coefficients on the interaction of high CSR and low competition are not significant. These results indicate that measuring CSR differently does not change the primary results of this study.

[INSERT TABLE 8 HERE]

4.8. CSR and firm leverage: Using two year lag between CSR and firm leverage

Equation 1 estimates the relation between CSR and firm leverage by measuring leverage at period t+1 and CSR and all other control variables at period t+2. The unreported results show that CSR has a negative effect on firm leverage only when competition is high and no effect on firm leverage when market competition is low. I find similar results when I use a three year lag.

4.9. CSR and firm leverage: Dividing the sample period

The sample period 1996-2015 includes the financial crisis period which may have differential effect on firm financing decisions. In order to check the sensitivity of my benchmark results to the inclusion of financial crisis period, I divide the sample into pre (1996-2008) and post financial crisis (2009-2015) and run the benchmark regressions separately on each sample. The unreported results show that there is no significant difference between the two periods. CSR remains significantly negatively related to firm leverage only in high competition markets in both sample periods.

4.10.   CSR and firm leverage: Effect of outliers

I also winsorize all control variables and leverage variables at 1% and run benchmark regressions to check the sensitivity of benchmark results to outliers. The unreported results are similar to benchmark results. CSR continues to have a significant negative effect on book leverage and market leverage only when market competition is high and has no significant effect on firm leverage when market competition is low.

4.11.   CSR, competition and firm value: Additional tests

The primary results of this study suggest that higher CSR results in lower leverage. Previous studies show that high CSR firms have lower cost of capital which helps them to finance their investments at lower cost and increase firm value. These studies indirectly suggest a positive association between CSR and firm value through financing decisions. In this section, I attempt to see if CSR affects firm value differently in high competition and low competition market given the results that CSR is negatively associated with firm leverage in high competition markets only.

In order to test the effect of market competition on the relation between CSR and firm value, I run the following regression:

$$Tobin\ Q_{i,t+1} = \beta_0 + \beta_1 CSR_{i,t} + \sum_{j=2}^{n} \beta_j\ Control\ Variables_{i,t} + \varepsilon_{i,t} \qquad (2)$$

Where value is measured by industry adjusted Tobin's Q. Control variables include prior year industry adjusted Tobin's Q, firm size, leverage, profitability, R&D , capital expenditures and governance index of Gompers et al. (2003).

Results are provided in Table 9. The coefficients on the interaction of CSR and high competition are positive and significant indicating that higher levels of CSR are associated with increased firm value. The coefficients on the interaction of CSR and low competition are positive but not significant at any acceptable level. These results are in line with Sheikh (2018) who reports a positive effect of CSR on firm value in high competition industries. The coefficients on all other control variables are of the expected signs. G-index has a negative effect on firm value. An increase in G-index indicates deterioration in the quality of governance and a reduction in firm value. Firm profitability and R&D expenditures have a positive effect on firm value. Firm size is negatively associated with firm value. Overall, the results show that that CSR leads to higher firm value only when market competition is high. This may be due to efficient financing decisions.

[INSERT TABLE 9 HERE]

5. Summary and discussion

This study attempts to examine the moderating role of product market competition on the relation between corporate social responsibility (CSR) and firm leverage. Previous studies find

that CSR is associated with lower cost of capital (Sharfman and Fernando, 2008; El Ghoul et al., 2011; Girerd-Potin et al., 2014; Ng and Rezaee, 2015) and lower debt ratios (Vierwijmeren and Derwall, 2010; Bae et al., 2011; Pijourlet, 2013; Harjoto, 2017). This study argues that competition in product markets significantly influences the negative relation between CSR and firm leverage. Using a panel of 2,009 companies and 26,840 firm year observations for the period 1996-2015, it shows that the negative relation between CSR and firm leverage is influenced by market competition. CSR has a negative and significant effect on firm leverage only when market competition is high and has no effect on firm leverage when market competition is low. The empirical results show that market competition enables companies to use CSR related lower cost of equity as a competitive advantage and reduce firm debt. Further tests show that CSR is positively related to firm value only when market competition is high.

Although, the empirical results are robust to various specifications, there are a few limitations of this study. First, CSR is measured using net scores from the MSCI social ratings data. There is no systematic conceptual basis for measuring social performance using social ratings. For this reason, there are multiple sources of CSR data available (e.g. Dow Jones Sustainability Index (DJSI), Accountability Ratings and Global reporting Initiative (GRI)). Future research should use other measures of CSR to test if the same results hold. Second, this study uses data only on US corporations. The influence of market competition may be different in different countries due to differences in regulation and culture. Future research should examine the effect of market competition on the relation between CSR and firm leverage using data from other countries. Third, although this study controls the industry effect using industry fixed effects regressions, it does not estimate the effect of competition in individual industries. Future studies should estimate how

market competition influences the relation between CSR and firm leverage in specific industries

and whether the influence of market competition changes significantly in different industries.

Conflict of interest: None

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Table 1: Descriptive statistics

Table 1 provides descriptive statistics of the variables for the period 1996-2015. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. CSR is the net score on CSR strengths and CSR concerns. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003).

Variable	Mean	Median	Std. Dev.	1st percentile	99th percentile	Minimum	Maximum
CEO characteristics							
CEO age	55.56	55.00	7.57	39.00	76.00	27.00	96.00
Duality	0.41	0.00	0.49	0.00	1.00	0.00	1.00
CEO firm specific wealth ($ millions)	34.20	16.81	38.60	3.53	120.56	2.34	122.23
Leverage							
Book leverage	0.20	0.17	0.21	0.00	0.88	0.00	4.39
Market leverage	0.19	0.13	0.21	0.00	0.89	0.00	1.00
Firm characteristics							
Adjusted CSR	-0.05	0.00	0.40	-1.09	1.54	-2.73	3.10
Assets ($ billions)	6.77	1.29	26.61	0.04	93.66	0.00	797.77
Non-debt tax shield	0.05	0.04	0.05	0.00	0.17	0.00	3.35
Free cash flows	0.37	0.33	0.29	-0.18	1.24	-7.02	3.85
Profitability	0.13	0.13	0.32	-0.34	0.43	-32.00	1.25
Fixed assets ratio	0.54	0.55	0.22	0.07	0.95	0.00	1.00
Capital expenditures	0.06	0.04	0.06	0.00	0.29	0.00	1.21
R&D expenditures	0.04	0.00	0.12	0.00	0.32	0.00	14.86
G-index (0-24)	7.99	8.00	2.41	3.00	14.00	1.00	18.00

Table 2: Corporate Social Responsibility and firm leverage: Benchmark regressions

Results are from OLS with robust standard errors clustered at firm level and industry fixed effects based on Fama-French 48 industry classification. CSR is the net score on CSR strengths and CSR concerns. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

| | Book leverage$_{t+1}$ | | Market leverage$_{t+1}$ | |
Variables	OLS	Industry Fixed Effects	OLS	Industry Fixed Effects
CSR	-0.0032*	-0.0018**	-0.0058***	-0.0046***
	(0.090)	(0.046)	(0.000)	(0.000)
CEO age	-0.0006	-0.0007***	0.0007**	0.0006***
	(0.173)	(0.001)	(0.041)	(0.000)
Duality	0.0264***	0.0193***	0.0197***	0.0178***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm specific wealth	-0.0256***	-0.0235***	-0.0374***	-0.0357***
	(0.000)	(0.000)	(0.000)	(0.000)
Governance index	0.0050***	0.0044***	0.0041***	0.0045***
	(0.001)	(0.000)	(0.001)	(0.000)
Firm size	0.0616***	0.0614***	0.0426***	0.0409***
	(0.000)	(0.000)	(0.000)	(0.000)
Non-debt tax shield	0.3894**	0.4281***	0.4027***	0.3290***
	(0.032)	(0.000)	(0.000)	(0.000)
Free cash flows	0.1419***	0.1322***	0.0054	0.0033
	(0.001)	(0.000)	(0.717)	(0.596)
Profitability	-0.5425**	-0.5429***	-0.5275***	-0.5156***
	(0.013)	(0.000)	(0.000)	(0.000)
Fixed assets ratio	0.1755***	0.0955***	0.1091***	0.0932***
	(0.000)	(0.000)	(0.000)	(0.000)
Capital expenditures	-0.1147	0.0037	-0.1572***	-0.1968***
	(0.486)	(0.922)	(0.006)	(0.000)
R&D expenditures	-0.1246	0.1199***	-0.7241***	-0.5446***
	(0.445)	(0.000)	(0.000)	(0.000)
R&D missing	0.0304***	0.0246***	0.0191**	0.0248***
	(0.008)	(0.000)	(0.016)	(0.000)
Observations	23,381	23,381	23,381	23,381
R-squared (overall)	0.2045	0.1949	0.4135	0.3835

Table 3: Corporate Social Responsibility and firm leverage: Effect of market competition

Results are from OLS with robust standard errors clustered at firm level and industry fixed effects based on Fama-French 48 industry classification. CSR is the net score on CSR strengths and CSR concerns. High competition equals 1 if (1-TNICHHI) is higher (lower) than sample median and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). Industry and year controls not reported. *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

	Book leverage$_{t+1}$		Market leverage$_{t+1}$	
Variables	OLS	Industry Fixed Effects	OLS	Industry Fixed Effects
CSR× high competition	-0.0198*	-0.0118**	-0.0237***	-0.0146**
	(0.052)	(0.043)	(0.000)	(0.022)
CSR× low competition	0.0106	0.0136**	-0.0071	-0.0047
	(0.301)	(0.015)	(0.269)	(0.611)
High competition	-0.0492***	-0.0406***	-0.0105**	-0.0073
	(0.000)	(0.000)	(0.028)	(0.318)
Governance index	0.0061***	0.0059***	0.0041***	0.0044***
	(0.000)	(0.000)	(0.001)	(0.000)
CEO age	-0.0006	-0.0005**	0.0005	0.0004
	(0.233)	(0.017)	(0.152)	(0.275)
Duality	0.0277***	0.0229***	0.0202***	0.0179***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm specific wealth	-0.0235***	-0.0228***	-0.0330***	-0.0317***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0540***	0.0554***	0.0435***	0.0429***
	(0.000)	(0.000)	(0.000)	(0.000)
Non-debt tax shield	0.5252***	0.4853***	0.3281***	0.2606***
	(0.009)	(0.000)	(0.001)	(0.002)
Free cash flows	0.1638***	0.1743***	-0.0398**	-0.0450*
	(0.000)	(0.000)	(0.012)	(0.086)
Profitability	-0.4867**	-0.4996***	-0.4778***	-0.4622***
	(0.033)	(0.000)	(0.000)	(0.000)
Fixed assets ratio	0.1131***	0.0588***	0.1413***	0.1336***
	(0.000)	(0.000)	(0.000)	(0.000)
Capital expenditures	-0.0092	-0.0015	-0.2612***	-0.2999***

	(0.962)	(0.969)	(0.000)	(0.003)
R&D expenditures	-0.0656	0.0736**	-0.6832***	-0.4869***
	(0.724)	(0.032)	(0.000)	(0.000)
R&D missing	0.0109	0.0282***	0.0183**	0.0212**
	(0.397)	(0.000)	(0.025)	(0.019)
Observations	23,381	23,381	23,381	23,381
R-squared (overall)	0.2064	0.163	0.4047	0.3782

Table 4: Corporate Social Responsibility and firm leverage: Product market fluidity

Results are from OLS with robust standard errors clustered at firm level and industry fixed effects based on Fama-French 48 industry classification. CSR is the net score on CSR strengths and CSR concerns. High (low) fluidity equals 1 if Hoberg et al. (2014) fluidity index is higher (lower) than sample median and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). Industry and year controls not reported. *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

Variables	Book leverage$_{t+1}$		Market leverage$_{t+1}$	
	OLS	Industry Fixed Effects	OLS	Industry Fixed Effects
CSR× high fluidity	-0.0267**	-0.0204**	-0.0202**	-0.0165**
	(0.035)	(0.011)	(0.011)	(0.040)
CSR× low fluidity	0.0035	0.0078	-0.0082	-0.0077
	(0.690)	(0.101)	(0.125)	(0.210)
High fluidity	-0.0348**	-0.0125***	0.0112*	0.0126
	(0.018)	(0.005)	(0.051)	(0.192)
Governance index	0.0060***	0.0058***	0.0046***	0.0044***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO age	-0.0006	-0.0005**	0.0004	0.0005
	(0.218)	(0.017)	(0.173)	(0.260)
Duality	0.0274***	0.0229***	0.0207***	0.0181***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm specific wealth	-0.0233***	-0.0229***	-0.0324***	-0.0322***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0535***	0.0548***	0.0435***	0.0429***
	(0.000)	(0.000)	(0.000)	(0.000)
Non-debt tax shield	0.5154**	0.4746***	0.2074**	0.2546***
	(0.011)	(0.000)	(0.026)	(0.003)
Free cash flows	0.1716***	0.1795***	-0.0242	-0.0430*
	(0.000)	(0.000)	(0.144)	(0.100)
Profitability	-0.5030**	-0.5093***	-0.5073***	-0.4624***
	(0.029)	(0.000)	(0.000)	(0.000)

Fixed assets ratio	0.1175***	0.0641***	0.1247***	0.1334***
	(0.000)	(0.000)	(0.000)	(0.000)
Capital expenditures	-0.0142	-0.005	-0.3225***	-0.3025***
	(0.941)	(0.898)	(0.000)	(0.002)
R&D expenditures	-0.088	0.036	-0.6530***	-0.5054***
	(0.636)	(0.294)	(0.000)	(0.000)
R&D missing	0.0103	0.0277***	0.0342***	0.0208**
	(0.426)	(0.000)	(0.000)	(0.017)
Observations	23,381	23,381	23,381	23,381
R-squared (overall)	0.202	0.158	0.4188	0.3771

Table 5: Corporate Social Responsibility and firm leverage: Dimensions of CSR

Results are from second stage 2SLS (IV-GMM) regressions. Community, diversity, employee relations, product and environment measure net score by subtracting strengths and concerns in each dimension. High competition equals 1 if (1-TNICHHI) is higher (lower) than sample median and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). Industry and year controls not reported. *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

	Community		Diversity		Employee relations		Product		Environment	
Variables	Book Leverage $_{t+1}$	Market Leverage $_{t+1}$	Book Leverage $_{t+1}$	Market Leverage $_{t+1}$	Book Leverage $_{t+1}$	Market Leverage $_{t+1}$	Book Leverage $_{t+1}$	Market Leverage $_{t+1}$	Book Leverage $_{t+1}$	Market Leverage $_{t+1}$
CSR× high competition	-0.0188***	-0.0166**	-0.0047**	-0.0062**	-0.0214***	-0.0160***	-0.0166*	-0.0129**	-0.0008	-0.0115***
	(0.001)	(0.012)	(0.028)	(0.016)	(0.000)	(0.000)	(0.087)	(0.022)	(0.887)	(0.003)
CSR× low competition	-0.0071	-0.0084	0.0081***	0.0002	-0.0078	-0.0110***	-0.0032	-0.0047	0.0065	-0.005
	(0.132)	(0.129)	(0.000)	(0.936)	(0.145)	(0.000)	(0.693)	(0.423)	(0.237)	(0.246)
High competition	-0.0469***	-0.0095**	-0.0429***	-0.0134***	-0.0472***	-0.0133***	-0.0404***	-0.0120***	-0.0472***	-0.0130***
	(0.000)	(0.043)	(0.000)	(0.005)	(0.000)	(0.005)	(0.000)	(0.010)	(0.000)	(0.008)
Governance index	0.0061***	0.0027***	0.0048***	0.0040***	0.0062***	0.0041***	0.0059***	0.0046***	0.0061***	0.0020*
	(0.000)	(0.009)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.064)
CEO age	-0.0006**	0.0006*	-0.0001	0.0007**	-0.0006	0.0007**	-0.0005	0.0007**	-0.0006	0.0006**
	(0.020)	(0.072)	(0.559)	(0.037)	(0.227)	(0.036)	(0.250)	(0.033)	(0.234)	(0.045)
Duality	0.0277***	0.0180***	0.0199***	0.0202***	0.0272***	0.0197***	0.0228***	0.0182***	0.0280***	0.0176***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm specific wealth	-0.0235***	-0.0358***	-0.0246***	-0.0372***	-0.0237***	-0.0373***	-0.0227***	-0.0353***	-0.0236***	-0.0378***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Log (assets)	0.0544***	0.0409***	0.0536***	0.0415***	0.0547***	0.0416***	0.0545***	0.0387***	0.0535***	0.0425***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Non-debt tax shield	0.5218***	0.3171***	0.4901***	0.4065***	0.5206***	0.4029***	0.4819**	0.3285***	0.5238***	0.3673***
	(0.001)	(0.001)	(0.002)	(0.000)	(0.009)	(0.000)	(0.016)	(0.000)	(0.009)	(0.000)
Free cash flows	0.1651***	0.0026	0.1613***	0.0004	0.1636***	-0.0009	0.1736***	-0.0006	0.1631***	0.0026
	(0.000)	(0.876)	(0.000)	(0.980)	(0.000)	(0.953)	(0.000)	(0.972)	(0.000)	(0.863)
Profitability	-0.4873***	-0.5137***	-0.4828***	-0.5254***	-0.4803**	-0.5184***	-0.4991**	-0.5143***	-0.4862**	-0.5201***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.035)	(0.000)	(0.018)	(0.000)	(0.033)	(0.000)
Fixed assets ratio	0.1133***	0.0947***	0.1246***	0.1094***	0.1108***	0.1075***	0.0601*	0.0945***	0.1137***	0.1125***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.067)	(0.000)	(0.000)	(0.000)
Capital expenditures	-0.0062	-0.1745***	0.0106	-0.1611***	-0.0028	-0.1561***	-0.0013	-0.2019***	-0.0115	-0.1413**
	(0.953)	(0.002)	(0.920)	(0.005)	(0.988)	(0.007)	(0.994)	(0.000)	(0.952)	(0.013)
R&D expenditures	-0.0653	-0.5378***	-0.164	-0.7153***	-0.053	-0.7042***	0.0753	-0.5368***	-0.0682	-0.7107***
	(0.698)	(0.000)	(0.317)	(0.000)	(0.776)	(0.000)	(0.699)	(0.000)	(0.714)	(0.000)
R&D missing	0.0106	0.0259***	0.0205***	0.0198**	0.0113	0.0204**	0.0278**	0.0258***	0.0108	0.0194**
	(0.118)	(0.001)	(0.006)	(0.013)	(0.381)	(0.011)	(0.043)	(0.001)	(0.398)	(0.014)
Observations	23,381	23,381	23,381	23,381	23,381	23,381	23,381	23,381	23,381	23,381
R-squared	0.2062	0.422	0.1795	0.4124	0.2077	0.4142	0.2062	0.4122	0.206	0.3944

Table 6: Corporate Social Responsibility and firm leverage: Using IV-GMM regressions

Results are from second stage 2SLS (IV-GMM) regressions. CSR is the net score on CSR strengths and CSR concerns. High competition equals 1 if (1-TNICHHI) is higher (lower) than sample median and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). Industry and year controls not reported. *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

| | Book leverage$_{t+1}$ | | | | Market leverage$_{t+1}$ | | | |
| | High competition | | Low competition | | High competition | | Low competition | |
Variables	First stage	Second stage	First stage	Second stage	First stage	Second stage	First stage	Second stage
Constituency statues	0.0171***		0.0318***		0.0281**		0.0313**	
	(0.007)		(0.000)		(0.028)		(0.047)	
Industry CSR	0.2207***		0.2262***		0.2478***		0.2272***	
	(0.000)		(0.000)		(0.000)		(0.000)	
CSR (instrumented)		-0.1180***		-0.0029		-0.1160***		0.0141
		(0.000)		(0.894)		(0.000)		(0.573)
Governance index	0.0007	0.0071***	0.0069***	0.0062***	0.0045**	0.0031**	0.0070	0.0052***
	(0.479)	(0.000)	(0.000)	(0.000)	(0.013)	(0.025)	(0.015)	(0.001)
CEO age	-0.0006	-0.0002	-0.0015***	-0.0004	-0.0008	0.0006*	-0.0014	0.0010**
	(0.117)	(0.444)	(0.003)	(0.340)	(0.235)	(0.086)	(0.114)	(0.024)
Duality	-0.0125*	0.0296***	-0.0133	0.0247***	0.0067	0.0200***	-0.0141	0.0179***
	(0.056)	(0.000)	(0.122)	(0.000)	(0.525)	(0.000)	(0.302)	(0.004)
Firm specific wealth	0.0002	-0.0281***	-0.0074***	-0.0213***	0.0027	-0.0385***	-0.0070*	-0.0350***
	(0.907)	(0.000)	(0.004)	(0.000)	(0.406)	(0.000)	(0.097)	(0.000)
Log (assets)	0.0515***	0.0577***	0.0609***	0.0559***	0.0511***	0.0501***	0.0607***	0.0393***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Non-debt tax shield	0.0969	0.6046***	0.1320	0.3571*	0.2420	0.2252**	0.1335	0.6966***
	(0.176)	(0.003)	(0.262)	(0.054)	(0.106)	(0.028)	(0.498)	(0.000)
Free cash flows	0.0504***	0.1000***	0.0999***	0.1976***	0.0546*	0.0421**	0.1004**	-0.0240
	(0.001)	(0.000)	(0.000)	(0.000)	(0.078)	(0.018)	(0.016)	(0.237)
Profitability	0.0877**	-0.3203***	0.0140	-0.5761***	0.0350	-0.5748***	0.0117	-0.5054***
	(0.010)	(0.000)	(0.370)	(0.002)	(0.584)	(0.000)	(0.855)	(0.000)
Fixed assets ratio	-0.0805***	0.0968***	-0.0310	0.0954***	-0.0642*	0.1186***	-0.0304	0.0866***
	(0.000)	(0.000)	(0.188)	(0.000)	(0.053)	(0.000)	(0.486)	(0.000)
Capital expenditures	0.1879***	-0.0738	0.2643***	0.0103	0.3582***	-0.0279	0.2613*	-0.3882***
	(0.000)	(0.298)	(0.003)	(0.958)	(0.000)	(0.649)	(0.066)	(0.000)
R&D expenditures	0.1623***	-0.1078	0.1704*	-0.0230	0.0802	-0.6071***	0.1673	-0.8641***
	(0.001)	(0.566)	(0.066)	(0.863)	(0.404)	(0.000)	(0.316)	(0.000)
R&D missing	-0.0085	0.0185**	-0.0557***	0.0093	0.0023	0.0151	-0.0561***	0.0277***
	(0.270)	(0.012)	(0.000)	(0.188)	(0.871)	(0.108)	(0.002)	(0.008)
K-Paap (Cragg-Donald) F statistic	209.349		210.305		81.362		56.454	
Hansen J statistic	0.076		1.794		11.829***		4.057*	
Observations	12,977	12,977	10,404	10,404	12,971	12,971	10,398	10,398

Table 7: Corporate Social Responsibility and firm leverage: Excluding firms with zero debt

Results are from OLS with robust standard errors clustered at firm level and industry fixed effects based on Fama-French 48 industry classification. CSR is the net score on CSR strengths and CSR concerns. High competition equals 1 if (1-TNICHHI) is higher (lower) than sample median and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). Industry and year controls not reported. *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

	Book leverage$_{t+1}$		Market leverage$_{t+1}$	
Variables	OLS	Industry Fixed Effects	OLS	Industry Fixed Effects
CSR× high competition	-0.0205*	-0.0112*	-0.0249***	-0.0151**
	(0.058)	(0.079)	(0.000)	(0.020)
CSR× low competition	0.0092	0.0130**	-0.0101	-0.0072
	(0.379)	(0.032)	(0.126)	(0.385)
High competition	-0.0472***	-0.0380***	-0.0088*	-0.0063
	(0.000)	(0.000)	(0.086)	(0.417)
Governance index	0.0059***	0.0061***	0.0036***	0.0041***
	(0.000)	(0.000)	(0.004)	(0.001)
CEO age	-0.0005	-0.0006**	0.0005	0.0004
	(0.326)	(0.026)	(0.172)	(0.340)
Duality	0.0257***	0.0209***	0.0206***	0.0191***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm specific wealth	-0.0228***	-0.0217***	-0.0348***	-0.0334***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0447***	0.0468***	0.0378***	0.0369***
	(0.000)	(0.000)	(0.000)	(0.000)
Non-debt tax shield	0.5335**	0.4697***	0.3647***	0.2961***
	(0.020)	(0.000)	(0.001)	(0.002)
Free cash flows	0.1486**	0.1672***	-0.0682***	-0.0723**
	(0.014)	(0.000)	(0.000)	(0.014)
Profitability	-0.5044*	-0.5272***	-0.5109***	-0.4923***
	(0.094)	(0.000)	(0.000)	(0.000)
Fixed assets ratio	0.0801**	0.014	0.0969***	0.0873***
	(0.028)	(0.279)	(0.000)	(0.009)
Capital expenditures	-0.0277	-0.0147	-0.2626***	-0.3178***
	(0.898)	(0.730)	(0.000)	(0.001)

R&D expenditures	-0.0546	0.1412***	-0.8185***	-0.5952***
	(0.825)	(0.001)	(0.000)	(0.000)
R&D missing	0.0088	0.0238***	0.0185**	0.0212**
	(0.523)	(0.000)	(0.027)	(0.019)
Observations	19,580	19,580	19,580	19,580
R-squared (overall)	0.1509	0.108	0.3733	0.3486

Table 8: Corporate Social Responsibility and firm leverage: Alternative construction of CSR

Results are from OLS with robust standard errors clustered at firm level and industry fixed effects based on Fama-French 48 industry classification. High competition equals 1 if (1-TNICHHI) is higher (lower) than sample median and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Book leverage is the book value of total debt divided by the book value of total assets. Market leverage is book value of debt divided by the sum of the book value of debt and market value of equity. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). Industry and year controls not reported. *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

Variables	Book leverage$_{t+1}$		Market leverage$_{t+1}$	
	OLS	Industry Fixed Effects	OLS	Industry Fixed Effects
CSR dummy × high competition	-0.0253**	-0.0187***	-0.0154***	-0.0135**
	(0.014)	(0.003)	(0.009)	(0.034)
CSR dummy × low competition	0.0035	0.0077	-0.009	-0.011
	(0.728)	(0.205)	(0.145)	(0.226)
High competition	-0.0424***	-0.0347***	-0.0113**	-0.007
	(0.000)	(0.000)	(0.027)	(0.338)
Governance index	0.0061***	0.0059***	0.0046***	0.0044***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO age	-0.0006	-0.0005**	0.0004	0.0004
	(0.209)	(0.013)	(0.226)	(0.318)
Duality	0.0280***	0.0234***	0.0205***	0.0180***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm specific wealth	-0.0236***	-0.0229***	-0.0317***	-0.0316***
	(0.000)	(0.000)	(0.000)	(0.000)
Log (assets)	0.0543***	0.0557***	0.0435***	0.0428***
	(0.000)	(0.000)	(0.000)	(0.000)
Non-debt tax shield	0.5206***	0.4842***	0.2170**	0.2640***
	(0.009)	(0.000)	(0.019)	(0.002)
Free cash flows	0.1650***	0.1752***	-0.0268	-0.0452*
	(0.000)	(0.000)	(0.103)	(0.083)
Profitability	-0.4839**	-0.4966***	-0.5037***	-0.4592***
	(0.032)	(0.000)	(0.000)	(0.000)
Fixed assets ratio	0.1146***	0.0600***	0.1250***	0.1345***

	(0.000)	(0.000)	(0.000)	(0.000)
Capital expenditures	-0.013	-0.0059	-0.3214***	-0.3038***
	(0.945)	(0.878)	(0.000)	(0.002)
R&D expenditures	-0.066	0.0717**	-0.6250***	-0.4826***
	(0.720)	(0.035)	(0.000)	(0.000)
R&D missing	0.011	0.0281***	0.0352***	0.0217**
	(0.391)	(0.000)	(0.000)	(0.015)
Observations	23,381	23,381	23,381	23,381
R-squared (overall)	0.2027	0.1641	0.4187	0.3777

Table 9: Corporate Social Responsibility and firm value: Effect of market competition

Results are from OLS with robust standard errors clustered at firm level and industry fixed effects based on Fama-French 48 industry classification. High competition equals 1 if (1-TNICHHI) is higher (lower) than sample median and 0 otherwise. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. Tobin's Q is the market value of assets divided by the book value of assets. The market value of assets is the market value of equity plus the book value of assets minus the book value of common equity net of deferred taxes. It is net of industry median Tobin's Q. CEO duality equals 1 if the CEO is also the chair of the board and 0 otherwise. CEO firm specific wealth is the sum of the value of CEO stock and option holdings. Non-debt tax shield is the ratio of sum of depreciation and amortization divided by total assets. Free cash flows is net income plus depreciation and amortization minus capital expenditures. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. Fixed asset ratio is the ratio of fixed assets to total assets. R&D and capital expenditures are divided by total assets. G-index is the governance index of Gompers et al. (2003). Industry and year controls not reported. *, **, *** are statistically significant at the 1, 5 and 10% levels, respectively.

	Adjusted Tobin's Q $_{t+1}$	
Variables	OLS	Industry Fixed Effects
CSR × high competition	0.0619**	0.0570**
	(0.023)	(0.048)
CSR × low competition	0.0315	0.0308
	(0.162)	(0.269)
High competition	0.0128	0.0027
	(0.681)	(0.877)
Adjusted Tobin's Q	0.4582***	0.4574***
	(0.000)	(0.000)
Governance index	-0.0216***	-0.0216***
	(0.000)	(0.000)
Leverage	1.2508***	1.2581***
	(0.000)	(0.000)
Log (assets)	-0.1037***	-0.1045***
	(0.000)	(0.000)
Profitability	2.2205***	2.2484***
	(0.000)	(0.000)
Capital expenditures	0.037	0.0211
	(0.901)	(0.897)
R&D expenditures	3.0111***	2.9929***
	(0.000)	(0.000)
R&D missing	-0.0357	-0.0624***
	(0.359)	(0.003)
Observations	26,818	26,818

| R-squared (overall) | 0.538 | 0.537 |