The Market for Corporate Social Responsibility (CSR): How Industry Structure Determines CSR

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Abstract: The effect of competition on firm performance and activities is at the core of strategy research; however, the question of how competition affects CSR remains largely understudied. This is partly due to endogeneity issues inherent in the question, and partly due to problems with existing data and methods. We overcome these limitations by triangulating traditional and non-traditional research methods in a specific empirical setting: addressing endogeneity issues not only with fixed effects and instrumental variables but also by calibrating market structure and strategic CSR in a simulation. Results of the more static regression analysis show that competition and CSR of competitors increase CSR at the firm level, while the more dynamic simulation analysis demonstrates that competition in fact decreases CSR at the industry level.

Key words: strategic corporate social responsibility (CSR), market structure, competition, social performance, simulation

Acknowledgments: We thank Ioannis Ioannou for sharing data, Kira Fabrizio, Gerry McNamara, William Mitchell and conference participants and reviewers at 2012 AoM, 2011 INFORMS and 2011 SMS for comments on the early draft of this paper.

The effect of competition on firm performance and activities is at the core of strategy research; however, the question of how competition affects corporate social responsibility (CSR) remains largely understudied (Campbell, 2007; Flammer, 2012). This is partly due to endogeneity issues inherent in the question (i.e. CSR of the focal firm may determine competition, while competition may determine CSR of the focal firm), and partly due to problems with existing data and methods (Declerck & M'Zali, 2012; Fernandez-Kranz & Santalo, 2010). Seeking to provide a more reliable answer to this important research question, we triangulate qualitative and quantitative methods, corroborating more traditional methods to deal with endogeneity (i.e. firm fixed effects and instrumental variables) with simulation constructed from our empirical data. Simulation is a reliable and informative method in this context because exogenous structural changes in competition are rarely directly observed: we calibrate the market structure from monopoly to perfect competition to observe quantitatively how aggregate industry CSR would change with exogenous changes in the market structure.

There are several reasons why it is important to understand how industry structure determines CSR. First, competition is at the core of the strategy field, inherently recognized as an important determinant of firm performance and actions (e.g., Porter's five forces); therefore, overlooking the effect of competition on CSR poses limitations for the growing strategic CSR literature (Barnett & Salomon, 2006, 2012; Brammer & Millington, 2008; Hillman & Keim, 2001; McWilliams & Siegel, 2000; Surroca, Tribó, & Waddock, 2009; Waddock & Graves, 1997). Second, understanding how (firm- and industry-level) CSR would change with changes in the market structure may provide critical insights for public policy makers, as they introduce or relax barriers to entry for greater public good. Finally, the relationship between industry structure and strategic CSR represents an important trade-off for managers, deciding how to allocate scarce resources. While a monopoly firm enjoys monopoly profit and power, and has resources to engage in CSR to a greater extent, it may

have fewer incentives to do so, since consumers will buy its products in any case. A firm in a competitive market, on the other hand, despite its limited resources and earning zero economic profit, may have greater incentives to conduct CSR in order to differentiate and attract consumers. The motivation for this paper comes from these opposing viewpoints, anecdotal evidence (see Appendices A and B), recent theoretical developments and methodological limitations.

Conceptually, based on the potential for firm survival, sales and profitability under different market conditions, Campbell (2007) suggests that the relationship between competition and the likelihood of CSR engagement is curvilinear. However, empirically this hypothesis is yet to be tested; we find no support for this proposition: like others (Declerck & M'Zali, 2012; Fernandez-Kranz & Santalo, 2010; Flammer, 2012) we find the relationship to be linear and positive. In addition, several other important gaps remain. First, it is not clear how CSR of competitors affects CSR of an individual firm: 'Do firms compete on CSR?' Second, it remains to be seen how changes in competition affect the total amount of CSR in the industry: previous research has solely focused on firm-level CSR. Finally, empirically, a critical gap remains regarding the dynamics in the relationship between competition and CSR, where major changes in competition take place over decades and cannot be observed in currently available data with relatively steady market structure.

We argue that independent of the market structure, higher CSR engagement of competitors will result in higher (competitive) pressure to engage in CSR, and thus, higher CSR of the focal firm. We find support for this hypothesis using instrumental variables approach and a panel of 542 U.S. firms in 40 industries over six years (2002-2008). In addition, to understand how the aggregate level of CSR in the industry responds to exogenous changes in competition, we calibrate the market structure from our regression data. Seemingly contrary to the regression results, in our simulation we find that in all sectors of

the U.S. economy, aggregate industry CSR decreases with competition.

By using both traditional and non-traditional methods to answer this theoretically intriguing research question, we conclude that prior literature has not been able to adequately address it. This is due to the static effect, or previous studies conducted in the short term (Declerck & M'Zali, 2012; Fernandez-Kranz & Santalo, 2010; Flammer, 2012) where market structure is relatively stable and the only source of variation in competition comes from different industries in the sample. By running a simulation, we examine the dynamics in the relationship between competition and CSR in a longer term, where market structure changes, and the structural change and the amount of CSR are co-determined. Simulation is especially effective for examining these dynamics (Davis, Eisenhardt, & Bingham, 2007) because through experimental design we could change the industry structure from monopoly to perfect competition, and directly observe the corresponding changes in CSR. Thus, the contribution of this paper is that we not only examine the static view with the help of a more standard regression analysis but also use our data to calibrate the parameters in a dynamic simulation model, answering our research question to a fuller extent.

We contribute to the strategy and CSR literatures by examining how competition affects CSR of a focal firm as well as of the whole industry. Our findings are important due to public policy implications of the wider social welfare as well as competitive effects and CSR strategies of firms. We view CSR as a strategic activity, by which firms intend to maximize their profits and conduct CSR only to the optimal point of their own profit maximization. In doing so, we extend the strategic view of CSR (Baron, 2001; McWilliams & Siegel, 2001; Bagnoli & Watts, 2003) and offer insights on why and to what extent firms engage in CSR in the first place (Campbell, 2007). This question is interesting to strategy scholars and practitioners alike because of limited resources and profitability entailed.

CSR AND COMPETITION

Corporate social responsibility – 'the firm's considerations of, and response to, issues beyond the narrow economic, technical, and legal requirements of the firm' (Davis, 1973: 312) – has been the subject of more than a hundred empirical studies, mainly examining its effect on financial performance (Margolis & Walsh, 2003; Margolis, Elfenbein, & Walsh, 2007). However, the conditions under which firms engage in CSR, to lower or greater extent, have been largely overlooked (Aguilera, Rupp, Williams, & Ganapathi, 2007; Campbell, 2007). Some studies consider the supply and demand for CSR (Vogel, 2005) by examining the pressures from investors (Mackey, Mackey, & Barney, 2007), NGOs, governments (Donaldson & Preston, 1995), consumers (McWilliams & Siegel, 2001; Schuler & Cording, 2006), employees and other stakeholders (Aguilera *et al.*, 2007; Barnett, 2007; Baron, 2001). However, our understanding of the market for CSR will remain limited without examining the role of competition (Campbell, 2007; Flammer, 2012).

Previous strategic CSR literature has discussed competition and CSR in three tangential ways. The first research stream examines the effect of the competitive environment as a boundary condition for the relationship between firms' strategic CSR and performance. For instance, Hull and Rothenberg empirically investigate the impact of differentiation on the relationship between CSR and firm performance, finding strong moderating effects (2008).

The second stream of research addresses the reverse question of how CSR affects the strategic positioning of a firm in the industry, where CSR is viewed as a strategic activity that creates market opportunities (Porter & Linde, 1995). This view emerged into *integrated strategy* perspective that takes into account both market and nonmarket actors' concerns (Baron, 1995; Porter & Kramer, 2011) and argues that 'CSR can be much more than a cost, a constraint, or a charitable deed – it can be a potent source of innovation and competitive advantage' (Porter & Kramer, 2006: 80). Several studies examine this view. A case study of

the U.K. retail-banking sector, for instance, shows that CSR can lead to competitive advantages for certain socially responsive banks (Decker, 2004). A marketing survey of CSR positioning, however, shows that not all CSR initiatives are beneficial: only brands that integrate CSR strategy with core business strategy are more likely to reap a range of CSR-specific benefits in the consumer domain (Du, Bhattacharya, & Sen, 2007). Thus, strategic CSR activities result in competitive benefits for firms that undertake them.

Finally, the third body of strategic CSR literature is more relevant for our study as the main interest here lies in understanding the impact of industry effects (Siegel & Vitaliano, 2007) or competitive forces (Campbell, 2007) on firms' CSR activities or scores. Thus, Van De Ven & Jeurissen speculate how specific competitive conditions, such as the intensity of competition, the legal environment, and the risks to reputation, may affect CSR (2005); however, their study focuses on understanding which CSR strategies are feasible for a firm under these competitive conditions, theorizing about moral, not strategic implications for the firm. Fernandez-Kranz and Santalo, on the other hand, set up a 'horse race' between altruistic and strategic views of CSR and argue that the more competitive environments firms are in, the higher their social ratings (2010). They find support for the strategic view of CSR by measuring the market power with Herfindahl index (HHI), import penetration and number of players in a market, and CSR with KLD scores. Continuing this line of research, Declerck and M'Zali also report a positive correlation of competition with CSR (2012). Both studies, however, are static (in that they do not observe any changes in the market structure) and thus, are prone to the endogeneity problem as CSR may be both a response to competition as well as the determinant of market power or structure, as the second research stream demonstrates.

Using the same data, Flammer (2012) attempts to address the endogeneity problem by presenting large tariff reductions as a natural experiment for increases in competition. The results of the difference-in-differences approach show that CSR significantly increased after

tariff reduction; however, this is contingent on whether tariff reduction actually changes the industry structure, and these changes in turn influence CSR. In addition, it is still unclear how the *equilibrium* CSR changes as the import increases. Even if the tariff reduction *marginally* changes the market structure, we do not know how major changes in competition (e.g., from monopoly to perfect competition) affect industry CSR. In comparison, we will demonstrate that once the market structure changes completely, the apparent positive relationship between competition and CSR may not imply that firms will actually undertake more CSR.

To conclude, the main limitations of prior studies are that 1) they are static (i.e. there is no major change in the market structure), 2) they rely on the KLD data (while we will use another source), 3) they ignore CSR of competitors, and 4) overlook the question of whether *aggregate* industry CSR (instead of CSR per firm) will increase or decrease as the market structure changes. Industry CSR, not CSR per firm, should be more important to examine because it determines social welfare.

HYPOTHESES

Discussing various institutional drivers of CSR, Campbell (2007) offers three arguments for a curvilinear relationship between competition and CSR. First, low levels of competition (i.e. monopoly) imply little to no choice for suppliers and customers as corporate reputation and customer/brand loyalty do not determine sales, profitability, or survival; therefore, firms will have few incentives to engage in CSR. Second, high levels of competition (i.e. perfect competition) are associated with narrow profit margins that put shareholder value and firm survival at risk; therefore, firms will 'cut corners' and avoid CSR to preserve cash (2007: 953). Finally, medium ('normal') levels of competition offer more opportunities for customers to switch if corporate reputation has been tarnished or trust has been lost due to socially irresponsible behavior; therefore, CSR will be more attractive as a source of differentiation. We found no previous studies that directly tested this argument, so our null

hypothesis is the curvilinear relationship between CSR and competition.

Next, we develop original hypotheses by casting doubt on some of Campbell's arguments, examining CSR of competitors, shifting focus to the industry CSR, and setting up a 'horse race' between two 'extreme' market conditions – monopoly and perfect competition.

CSR of competitors has been previously neglected from the discussion of the effect of competition on CSR. However, firms compete not only based on product or service parameters, but also on CSR dimensions: in particular, social performance dimensions that are common amongst all firms. They include product responsibility, engagement in the community, philanthropic donations, human rights, diversity, health and safety, employment quality, training and development (Gardberg & Fombrun, 2006). These activities provide a competitive edge for socially responsible companies (Brammer & Millington, 2008), e.g., by attracting more devoted or even better employees (Dutton, Dukerich, & Harquail, 1994), or securing customer loyalty (Bagnoli & Watts, 2003). Competition on CSR is further enhanced by various external rankings and lists (e.g., Fortune's Most Admired, Best Places To Work). The strategic view of CSR lists additional benefits that come with the strategic engagement in such policies but overall, greater CSR of competitors increases the pressure for the focal firm to engage and improve in CSR to stay competitive. This leads us to the first hypothesis:

> *Hypothesis 1a: The greater the CSR of competitors, the greater the CSR of the focal firm.*

However, given that CSR is not the only dimension for competition among firms, we will counter-argue that with greater CSR of competitors, the managers of the focal firm may choose to allocate scarce resources to other dimensions of competition. This is due to lower chances to differentiate by means of CSR. Hence, we offer an alternative hypothesis:

> *Hypothesis 1b: The greater the CSR of competitors, the lower the CSR of the focal firm.*

Now let us discuss the implications of competition for CSR of the focal firm while

speculating about the aggregate industry CSR. First, let us consider highly concentrated industries. Campbell (2007) suggests that low levels of competition will result in lower likelihood of CSR engagement. However, 'the iron law of responsibility' (Davis, 1967: 48) or the notion that 'with greater power comes greater responsibility' (Kacperczyk, 2009) offers at least one counter-argument to this view. It helps explain why some companies in highly regulated and concentrated industries (e.g., telecommunications) take responsibility (or *post factum* clean up the mess that they cause, i.e. the BP case in Appendix A): 'Whoever does not use his social power responsibly will lose it. In the long run those who do not use power in a manner which society considers responsible will tend to lose it because other groups eventually will step in to assume those responsibilities' (Davis, 1960: 63). Thus, the fear of government action (Baron, 2001), or greater market power, visibility and exposure to the public (Eesley & Lenox, 2006) may in fact increase the perception of social responsibility in highly concentrated industries. This in turn may increase CSR of the focal firm and as a result, the aggregate industry CSR. In addition, it is much easier to coordinate and collaborate in CSR in highly concentrated industries (e.g., through voluntary industry standards or associations). Therefore, we suggest:

> *Hypothesis 2a: The closer the market structure is to monopoly, the higher the CSR of the focal firm and the industry CSR.*

A larger base of resources of monopoly firms further substantiates this hypothesis: a firm with substantial market power has large economic surpluses to spend on CSR and thus, can have higher CSR in comparison to firms in more competitive industries. However, even though firms in a perfectly competitive market may be enjoying zero economic profit, and thus, may be limited in the ability to spend on CSR, they may want to do so for other reasons – i.e. for product differentiation. While a firm in a monopolistic market may not have any incentives toward CSR because even CSR-sensitive consumers will have to purchase from it

in any case, a firm in a perfectly competitive market may have no other way to differentiate but through CSR. Therefore, we propose another competing hypothesis:

> *Hypothesis 2b: The closer the market structure is to perfect competition, the higher the CSR of the focal firm and the industry CSR.*

METHODOLOGY

In designing this study we shall beware of the endogeneity problem as both competition and CSR can be affected by each other. We deal with this issue by using two primary research methods. First, to answer the main research question of how competition affects CSR of the focal firm (and to test Campbell's proposition), we rely on the regression analysis, instrumental variables and fixed effects. Second, to answer the second part of the question about industry CSR in a more dynamic and structured setting, we exogenously change the market structure by calibrating our parameters in a simulation. Figure 1 shows our methodological process; we describe both methods in more detail below.

*****Insert Figure 1 here*****

Data

To avoid the limits of KLD data (Chatterji, Levine, & Toffel, 2009), we use another source from ASSET4 (owned by Thompson Reuters, available from Datastream, used by Ioannou & Serafeim, 2012; Chen, Ioannou, & Serafeim, 2013). It is a Swiss-based company that specializes in CSR consulting, collecting data and scoring firms on CSR dimensions since 2002. Their research analysts collect 900 evaluation points per firm, where all primary data is objective and publicly available: typical sources include stock exchange filings, CSR and annual reports, NGO websites, and various news sources. Subsequently, these 900 data points are used as inputs to a default equal-weighted framework to calculate 250 key performance indicators that they further organize into 18 categories within 3 pillars: a) environmental, b) social and c) corporate governance scores. Every year, a firm receives a z-score for each of

the pillars, benchmarking its performance with the rest of the firms. We use the score on social performance to explain the variance in CSR; social performance is the most general CSR indicator[1] attributed to all firms in all industries, while environmental performance and corporate governance may be more salient indicators in selected industries (e.g., natural resources vs. banking) or for selected firms (e.g., public vs. private).

We get accounting data from WorldScope. The sample includes 3,095 observations (2002-2008) with data for all variables (including lagged) for 2,508 observations during 2003-2008. We limit our analysis to USA because 1) starting with one country shall help tease out the desired effects while removing country-specific effects; 2) data on U.S. firms is more easily available; 3) the U.S. market represents a greater share of the global economy.

Dependent Variable: CSR

Our dependent variable, *CSR*, is ASSET4's social performance score that measures a company's capacity to generate trust and loyalty with its workforce, customers and society. The social performance score is constructed based on a variety of questions, including product responsibility, community policy, donations, human rights, crisis management systems, diversity, health and safety, employment quality, training and development. The resulting z-score is continuous from 0 to 1: the higher the score, the more socially responsible is the firm. For robustness check, to remove the effect of firm size, we also construct another dependent variable *Log(CSR/Size),* a logarithm of CSR divided by firm size.

Independent Variable: Competition

We use the Herfindahl index of concentration within industry, *HHI*, as our main independent variable: the higher the index, the less competitive the industry. Ranging from 0 to 1, it moves from a large number of small firms to a single monopolistic producer. Since Campbell

[1] In a robustness check, we used an equally weighted composite measure of social, environmental and corporate governance scores: the results were similar and are available upon request.

(2007) predicted that CSR engagement will be lower when there is too little or too much competition, we explore the possibility for the inverted U-shaped relationship between competition and CSR by including a squared term for HHI, *HHI_squared*.

Control Variables

We control for various factors previously studied in the literature (McWilliams & Siegel, 2000): *Firm size* (logarithm of total assets), *Diversification* (the number of industry segments in which the focal firm operates), *R&D intensity* (R&D expenses over sales), *Market-to-book ratio* (market value of equity over book value of equity calculated at fiscal year end) and *Lagged ROA* (to control for endogeneity, we calculate it as industry adjusted net income over total assets). In addition, whether the firm operated in a *Highly regulated* industry (0, 1) including oil, paper, chemicals, petroleum, metal, mining and utilities (Cho & Patten, 2007), and whether it was *Domestic* to the U.S. (1) or global in scope (0).

In additional analyses that address endogeneity concerns more directly, we instrument the average CSR of the firm's competitors with lagged average market-to-book ratio, R&D intensity and ROA of competitors. Table 1 provides descriptive statistics and Table 2 offers correlations: there is substantial interdependence, except for expected correlations between the squared and single terms of industry concentration, and *CSR* and *Log(CSR/Size)*.

*****Insert Table 1 and Table 2 here*****

Estimation Results

First, to demonstrate variation in CSR engagement by industry concentration, we plot average industry CSR scores and the Herfindahl index (HHI) over 2002-2008 (see Figure 2). The majority of industries are in the middle of the competition intensity axis (HHI varies from 0.3 to 0.7); however, the trend is upward suggesting preliminary evidence in support of hypothesis 2a and a rebuttal to Campbell's proposition that it is the mid-level competition that increases CSR engagement.

*****Insert Figure 2 here*****

Next, to examine these patterns in more detail, we plot average industry CSR for each year in our sample[2]. We limit the sample to U.S. industries that have more than one firm and data on CSR. Overall, the figures demonstrate substantial variance in CSR by industry and HHI, but the relationship between CSR and industry concentration in general seems to be positive as the upward trend in these figures demonstrates. Once again this goes against Campbell's proposition and in support of hypothesis 2a.

Overall, these figures suggest that industries with high consolidation are correlated with high CSR; however, they do not show how CSR of a firm or a sector would change if we change the extent of concentration (HHI). As market structure and aggregate industry CSR interact with each other, we cannot make causal inference by simply observing the correlation between the concentration measure and average CSR. Instead, in order to reason the causal relationship, in addition to conducting a simulation analysis with exogenous changes in the market structure, a more promising approach would be to regress a firm's CSR on industry concentration, assuming that all firms collectively determine the market structure, and a *price-taking* firm perceives the structure of the industry as exogenous.

*****Insert Table 3 here*****

Table 3 provides results of such analysis. Model 1 demonstrates basic results with a number of controls from prior literature (McWilliams & Siegel, 2000): social responsibility is higher for bigger firms. We ran fixed and random effects specifications: the Hausman statistic was large and significant (79.31, Prob>chi2=0.0) so the reported models use fixed effects. Heteroskedasticity test ('Modified Wald test for groupwise heteroskedasticity in fixed effect regression model') using *xttest3* command in Stata pointed to the presence of heteroskedasticity, and autocorrelation test ('Wooldridge test for autocorrelation in panel

[2] Annual charts can be provided upon request

data') using *xtserial* command confirmed the presence of autocorrelation, so to deal with these issues, we will only report fixed effects models with standard error estimates robust to heteroskedastic and autocorrelated disturbances (i.e. using *'cluster'* option)[3].

Model 2 shows the results when we add our main variable of interest: the Herfindahl index (HHI) is negative and significant (β = -0.438, $p<0.05$), so the less competitive the industry, the lower the CSR per firm, or the higher the competition, the higher the CSR per firm. To test the null hypothesis, Model 3 adds a squared term for *HHI*. The effect on the squared term is insignificant. In order to remove the effect of firm size, we use an alternative dependent variable – a logarithm of CSR divided by size – the results of this test are presented in Models 4-6. Model 4 shows basic results with previous controls (except for size): R&D intensity is slightly positive and significant, while the sign and the significance on the constant changed to negative and highly significant, reflecting the conversion of our dependent variable (instead of positive values, it now varies from -5.846 to -1.787).

Overall, the amount of variance explained in previous models (1-3) is higher than in this robustness check (13%-14% versus 11%-12% respectively). Model 5 adds our main variable of interest – *HHI* – the effect is negative and highly significant (β = -1.522, $p<0.01$). Model 6 adds the squared term but once again it is insignificant. These results provide further support for the negative relationship between *HHI* and *CSR* at the firm level and a rebuttal to Campbell's proposition of a curvilinear relationship.

Next, to test hypothesis 1, we run analyses with the average CSR of competitors as the main variable of interest. Since firms compete with each other using CSR to enhance their profits (i.e. strategic CSR), CSR of a focal firm and its competitors interact with each other. To remedy this endogeneity issue, we run a two-stage least squares regression using such

[3] See Table 1 in Hoechle, D. (2007) "Robust Standard Errors for Panel Regressions with Cross-Sectional Dependence" *The Stata Journal*, **7** (3): 281-312

instruments as exogenous control variables and competitors' financial information (R&D intensity, ROA, and market-to-book ratio (*MBR*)) in the previous year. Intuitively, these lagged instruments are correlated with competitors' CSR in the current year, but a focal firm's current-year CSR does not influence those previous-year's values of the instruments. In particular, we assume that a) R&D intensity positively affects CSR (Padgett & Galan, 2010), b) more profitable firms in the previous year have more resources to spend on CSR in the current year, and c) the more intangible assets comprise the firm value (i.e. the higher the market-to-book ratio, or *MBR*), the more such firms need to invest in CSR to maintain it.

We used two procedures to build a reliable model for instrumental variables. First, using '*redundant'* option in Stata, we examined the strength of the three instruments – whether any of them did not provide any useful information. The IV redundancy test (LM test of redundancy of specified instruments) was significant for the lagged *MBR* of competitors (13.81 Chi-sq(1) P-val = 0.00) and *R&D intensity* (58.83 Chi-sq(1) P-val = 0.00) but not for ROA (0.00 Chi-sq(1) P-val = 0.98); so we dropped the *ROA* instrument. Second, we examined Hansen J statistic (similar to Sargan test) and Endogeneity test (*'endog'* option) to ensure that our instrument set is valid and our specification is good with the remaining instruments: they confirmed both of these assumptions[4].

Due to the unbalanced nature of our panel and heteroskedasticity[5], we conduct two types of analyses: 1) linear regression analysis using *ivreg2* command with the *'gmm2s'* and *'robust'* options in Stata, and 2) time-series analysis using *xtivreg2* command, with the same specification and fixed effects. In the presence of heteroskedasticity or clustered errors, although the standard IV coefficient estimates remain consistent, their standard errors and the usual forms of the diagnostic tests are not (Baum, Schaffer, & Stillman, 2003). Therefore, in

[4] For instance, for fixed effects 2-step GMM estimation robust to heteroskedasticity, Hansen J statistic: 0.41 Chi-sq(1) P-val= 0.523; Endogeneity test: 6.82 Chi-sq(1) P-val= 0.01

[5] Pagan-Hall general test statistic: 32.643 Chi-sq(15) P-value = 0.0032

our implementation we specify a GMM option to provide more efficient estimation, valid inference, and diagnostic testing, allowing for clustering the errors at the firm level. We report these results in Table 4.

*****Insert Table 4 here*****

Model 7 shows the results of the first-stage linear regression analysis with *'robust'* option; Model 8 shows the results of the second-stage regression using *ivreg2*, where we instrument for the average CSR of competitors with their lagged market-to-book ratio and R&D intensity and include the control variables. The coefficient on the average competitors' CSR is positive and significant ($\beta = 1.7$, $p<0.01$) providing support to hypothesis 1a. Model 9 demonstrates the results of the second-stage regression analysis with fixed effects: the sample is smaller due to singleton groups (29 observations) not used in the analysis. The significant positive coefficient on the average CSR of competitors ($\beta = 2.03$ $p<0.05$) suggests that on average, the higher the CSR engagement of the firm's competitors, the higher is its own engagement in CSR (thus, there is a *contagion* effect in the industry). Overall, these results provide support for hypothesis 1a.

Since these results can be explained by firm size, we repeat this analysis for the alternative dependent variable from our robustness check – logarithm of CSR adjusted by firm size. Model 10 presents the results from the first-stage regression; Model 11 shows the second-stage results using *ivreg2* with highly significant positive coefficient on our variable of interest ($\beta = 2.045$, $p<0.05$). Model 12 shows the second-stage results using *xtivreg2* command and fixed effects specification. Once again, the result ($\beta = 6.521$, $p<0.05$) confirms that on average, adjusted by firm size, CSR engagement is higher for firms in industries with higher CSR engagement of competitors. Altogether, these results support hypothesis 1a.

CALIBRATION AND SIMULATION

Our previous analysis is static in that it may only describe the apparent (positive) relationship between CSR and competition; however, it is still unclear how a change in the market structure toward more competition would affect the aggregate industry CSR. Where little empirical data is available and mechanisms and relationships cannot be directly observed in reality (i.e. a major exogenous structural change in the industry towards more or less competition), a simulation approach can help: Simulation methods enable effective experimentation by varying the value of the construct that was held constant otherwise (Davis *et al*, 2007). We use this research method to show more directly how industry CSR changes as we change the industry structure from monopoly to perfect competition. In this section, we design a simple calibratable model of the industry structure, compute its optimal parameters using our data and simulate the market structure. This method will help determine more reliably whether competition increases average industry CSR.

Let us first formulate an inverse demand function for firm *i*. The price of a good is derived from the quantities of production Q and the amount of CSR that a firm (i) and its competitors ($-i$) produce[6]:

$$P\,(Q, S_{-i}, S_i, s_i) = \alpha - \beta Q - \theta S_{-i} + \delta s_i \qquad \text{Eq. 1}$$

where Q is the aggregate production of a sector, S_{-i} is the quantity of CSR of i's competitors, $1/\beta$ is the slope of this demand function, and s_i is CSR by firm i. Thus, a firm faces a price function subject to aggregate quantities of products and CSR (its own as well as its

[6] We derive this inverse demand function starting from: $P(Q,S_{-i},S_i,s_i) = \alpha - \beta Q - \theta_1 S_{-i} + \theta_2 S + \delta s_i$. This is mathematically equivalent to our setting and consistent with the literature. S is the quantity of CSR in a sector ($S_{-i}+s_i$). When all competitors conduct CSR, firm i can be pressured to engage in CSR as well. Without CSR, firm i may not be able to charge the same price because some consumers may obtain larger utility, consuming products from firms doing CSR (Baron, 2001) (i.e. $\theta_1 > 0$). θ_2 denotes how consumers categorically respond to the aggregate CSR of a sector. When a sector has a good reputation regarding CSR, consumers will have a more positive view and impression of the sector, so they will be willing to pay more for the products from the sector (Schuler and Cording, 2006). δ specifies how much a firm can differentiate its products through CSR measured as the premium that the firm can charge to consumers.

competitors'). θ denotes the net effect of CSR by competitors in excess of perceptive improvement in the sector. θ can be either positive or negative. Positive θ means the higher CSR by competitors, the more likely customers of a firm will leave for the competitors (i.e. this will result in lower demand for the firm's products and services). Negative θ means the opposite: the higher CSR by the competitors of a firm, the larger the industry grows, so much as to result in higher demand for the firm. In turn, δ is a sum of two effects: 1) differentiation of a product over competitors, and 2) contribution to perceptive improvement in the industry through CSR. Now to define the cost function, we assume increasing marginal costs for both production and CSR quantities: $c_1 q_i^2/2 + c_2 s_i^2/2 + c_0$. Then, under Cournot-Nash approach, the profit function of firm *i* becomes the following:

$$\pi_i (q_i, s_i) \equiv P (Q, S_{-i}, S_i, s_i) q_i - (c_1 q_i^2/2 + c_2 s_i^2/2 + c_0). \quad \text{Eq. 2}$$

The first-order conditions for interior solutions are: $\partial \pi^i / \partial q_i = 0$ and $\partial \pi^i / \partial s_i = 0$. The second order conditions are satisfied if $(c_1+2\beta)c_2 > \delta^2$ or $-(c_1+2\beta)^{1/2} < \delta/c_2 < (c_1+2\beta)^{1/2}$. Thus, δ/c_2 should not be either too small or too large, which means that the marginal cost of CSR should be large enough or the absolute value of the differentiation effect through CSR will be small. We regard δ/c_2 as the efficiency of strategic CSR because it indicates the benefit of CSR over the cost of producing it.

Let us assume that the second-order condition holds. Then, the optimal solutions for production (q_i^*) and CSR (s_i^*) of a firm *i* are ($D \equiv ((c_1+2\beta)c_2-\delta^2) > 0$[7]):

$$q_i^* = \tilde{\alpha} - \tilde{\theta} S_{-i} - \tilde{\beta} Q_{-i}$$
$$s_i^* / q_i^* = \tilde{\delta} \quad \text{Eq. 3}$$

[7] Similar to other models using Cournot game, the results of our model remain robust even if we introduce heterogeneous cost function and heterogeneous perception of the demand function. For further information, see Fudenberg and Tirole (1991: 215). In addition, suppose each player sets the quantities of CSR and product sequentially. Then, it is possible that the quantities of products and CSR dynamically converge to equilibrium. See Fudenberg and Tirole (1991: 47) for the case of iterated deletion in the Cournot model.

in which $(\tilde{\alpha},\tilde{\theta},\tilde{\beta},\tilde{\delta}) \equiv (\alpha c_2 / D, \theta c_2 / D, \beta c_2 / D, \delta / c_2)$.

Next, assuming measurement error regarding the exact level of production and CSR, we have the following empirical specifications:

$$q_i^* = \tilde{\alpha} - \tilde{\theta} S_{-i} - \tilde{\beta} Q_{-i} + \varepsilon_{q,i} \text{ and } s_i^* / q_i^* = \tilde{\delta} + \varepsilon_{s,i}. \quad \text{Eq. 4}$$

The coefficients with tilda (~) are firm specific because they are a function of c_1 and c_2, which represent the cost structure of firms in production and CSR. In addition, since those coefficients should be positive in theory, except θ, we model them as the absolute function of the linear combination of industry dummies, year dummies and firm specific variables:

$$\{\tilde{\alpha},\tilde{\beta},\tilde{\delta}\} = |const + b_1 industry + b_2 year + b_3 \, firm \; specific \; data| \quad \text{Eq. 5}$$

$$\{\tilde{\theta}\} = const + b_1 industry + b_2 year + b_3 \, firm \; specific \; data$$

We do not impose the positivity on θ because positive externality can occur, in which a firm's demand increases with the increase of its competitors' CSR. Note that our structural parameters $\{\tilde{\alpha},\tilde{\theta},\tilde{\beta},\tilde{\delta}\}$ vary as industry, year or firm-specific information vary. We use GMM estimators to obtain the calibrated parameters {*const*, b_i} that determine our structural parameters, $\{\tilde{\alpha},\tilde{\theta},\tilde{\beta},\tilde{\delta}\}$. Once we obtain the calibrated parameters, we plug them into Eq. 5 for our structural parameters, $\{\tilde{\alpha},\tilde{\theta},\tilde{\beta},\tilde{\delta}\}$.

Next we describe the GMM procedure to obtain calibrated parameters in this highly nonlinear setup. Let $\varepsilon_i \equiv (\varepsilon_{q,i}, \varepsilon_{s,i})'$ and $g(X_i,\theta) \equiv X_i'\varepsilon_i$. X_i includes all our previous instrument variables, i.e. industry dummies, year dummies and firm-specific information. Then the GMM estimator (θ_{GMM}) subject to the constraint of $q_i > 0$ (positive production) is:

$$\theta_{GMM} = \text{argmin}_{\theta \in \Theta} \hat{m}(\theta)' \Omega^{-1} \hat{m}(\theta) \quad \text{Eq. 6}$$

$$\hat{m}(\theta) \equiv \frac{1}{N} \sum_{i=1}^{N} g(X_i, \theta)$$

$$\Omega = E\left(g\left(X_i,\theta\right)g\left(X_i,\theta\right)'\right)$$

We estimate Ω using White (1982), heteroskedasticity and autocorrelation consistent (HAC) variance estimate of Ω with lag = 2:

$$\Omega_{HAC} = \Gamma_0\left(\theta_c\right) + \frac{1}{lag}\sum_{j}^{lag-1} w_{j,n}\left(\Gamma_j\left(\theta_c\right) + \Gamma_j'\left(\theta_c\right)\right) \qquad \text{Eq. 7}$$

$$\Gamma_j\left(\theta_c\right) \equiv \frac{1}{N}\sum_{t=j+1}^{N} g\left(X_t,\theta_c\right)g\left(X_{t-j},\theta_c\right)'$$

θ_c is any consistent estimator of the parameters to be estimated. We also undertake the following operationalization. For production (q_i), we use sales data of firm *i* to normalize quality differences in prices. For the measure of CSR production (s_i), we only have data on CSR scores, which do not take firm size into account. However, conditional on the same score, the larger the firm, the larger the effect of CSR: thus, we define s_i = log(*firm size*)* *CSR_score*. For industry dummies, we use 11 industry classifications from our data: banks, business services, chemicals, chips/IT, computers, pharma, energy, insurance, retail, telecommunications and utilities. We regard banks as the base case to construct dummy variables. For year dummies, we use 'before 2002' and 2003 - 2008. We regard 'before 2002' as the base case. For firm specific information, we include log(size), leverage, market-to-book ratio (MBR) and R&D/sales. We use R (http://www.r-project.org) to calibrate our parameters and undertake simulations[8]; the code and data can be provided upon request.

*****Insert Table 5 here*****

Table 5 describes our calibration results: calibrated coefficients for industry dummies, year dummies, firm-specific information and intercepts. Let us focus on the core parameters: the negative spillover of competitor CSR to a firm over CSR production costs ($\tilde{\theta} \equiv \theta c_2 / D$)

[8] R is an open source equivalence/alternative of high-level computing languages such as matlab, S-Plus, GAUSS, etc.

and CSR efficiency ($\widetilde{\delta} \equiv \delta / c_2$). In comparison to the base industry (i.e. banks), the negative spillover increases in business services, computers, pharma and energy but it decreases in chemicals and utilities. CSR efficiency increases in chemicals and chips/IT. But it decreases for other sectors. In comparison to the base year (before 2002), the negative spillover increases in 2003-2005 and 2007, but decreases in 2008 (possibly due to the financial crisis). This means that the externality of competitor CSR tends to become more favorable over time. CSR efficiency increases in 2003 and 2006, but decreases in 2004-2005. For firm-specific information, the firms with high leverage or R&D tend to face larger negative spillovers from competitor CSR. Firm-specific information such as log(size), leverage, MBR and R&D are unrelated to the efficiency of strategic CSR ($\widetilde{\delta}$).

From the calibrated parameters in Table 5, we compute the structural parameters $\{\widetilde{\alpha}, \widetilde{\theta}, \widetilde{\beta}, \widetilde{\delta}\}$ for each industry and each year using industry-year average values based on firm specific data. Table 6 shows our structural parameters for each industry as of 2008. The direct effect of CSR by a firm is greater than the spillover effect of CSR by its competitors ($|\theta| < \delta$) in all sectors. This is a desired and intuitive result validating our calibrated and structural parameters.

*****Insert Table 6 here*****

In particular, Eq. 1 describes the demand function of firm *i*, where δ indicates how much the CSR by firm *i* changes the demand of the firm *i*'s product, and θ measures how the CSR of the firm *i*'s competitors affects the demand of firm *i*. There are two reasons why $|\theta| < \delta$ is likely to hold. First, while δ demonstrates the direct effect of CSR, θ shows the indirect effect, such that competitors' CSR affects the relative position of firm *i*; therefore, the direct effect should be larger than the indirect effect. Second, there is a countervailing effect in θ. When only competitors undertake CSR, it may make firm *i* look relatively self-centered and

ignorant of the external environment. However, the more favorable impression of the industry is formed by customers (based on the competitors' CSR), the more it may positively affect the demand of firm *i*. Because of this countervailing negative and positive effect, θ should be smaller than δ, which indicates exclusively positive effect.

Results and Interpretation

We presume that industry CSR varies as we change industry structure from monopoly to oligopoly and eventually to perfect competition. For illustration purposes, we model the market structure of each U.S. sector as the basic Cournot-Nash competition. We explain our industry analysis based on the Cournot model below.

Let N be the number of competitors. All players are assumed to be symmetric. Then, we have $Q_{-i} = Nq_i$ and $S_{-i} = Ns_i$. By plugging these values in the optimal solutions of firm *i* into Eq. 3, we obtain the following equilibrium for the optimal production (q^*), CSR (s^*) and profit (π^*) given the number of competitors. Note we drop *i* for symmetry.

$$(q^*, \pi^*) = \left(\frac{\alpha c_2}{(\delta\theta + \beta c_2)N + D}, \frac{\alpha^2 c_2 D}{2\left(N(\delta\theta + \beta c_2) + D\right)^2} - c_0 \right) \qquad \text{Eq. 8}$$

$$s^* = \delta q^* / c_2$$

Due to the second order condition ($D > 0$), all quantities (production, profit and CSR per firm) are positive. Not surprisingly, as the number of competitors increase (N), production and CSR per firm decrease**.** Thus, we multiply this equation by N+1 to obtain the quantity of *industry* production and CSR. When the number of players goes to infinity (i.e. perfect competition), the industry quantities of production (Q^*) and CSR (S^*) converge to constants easily calculable. The industry CSR under N+1 players is:

$$S^* = \frac{\hat{\delta}\tilde{\alpha}(N+1)}{(\tilde{\delta}\tilde{\theta} + \tilde{\beta})N + 1} \qquad \text{Eq. 9}$$

Plugging N = 0 and Inf, we obtain (aggregate) industry CSR under monopoly and perfect

competition. Intermediate values of *N* specify oligopoly. The larger *N*, the more competition arises among oligopolistic firms. Table 7 shows the results for such simulation.

*****Insert Table 7 here*****

Table 7 is based on Eq. 9 and structural parameters in each sector. The first column indicates sectors. The second column is the average number of firms in each sector from 2003-2008. The third column shows the industry CSR, the sum of CSR of each firm in each industry as of 2008. The fourth column shows the simulated industry CSR when $N = 0$, a case of monopoly. The fifth to 14th columns indicate the simulated industry CSR for $N = 1$ to $N = 10$. The last column is the CSR for $N = \text{Inf}$.

These simulation results are interesting in many ways. First, the larger the number of Cournot competitors, the smaller the simulated industry CSR. This provides support for hypothesis 2a. Second, a far smaller number of Cournot competitors than the current number of players generate the industry CSR equivalent to the current value. Thus, at least in the U.S. where our sample is based, increasing competition in a product market can reduce aggregate CSR. In particular, Cournot-Nash quantity competition can significantly cut the level of industry CSR. This result matches the pattern in Figure 2, strengthening the external validity of our theory and providing validity to the simulation (Davis *et al*, 2007).

Now let us discuss the key driver of this simulation result – the magnitude of θ, the extent of the negative spillover. In our simulation, competition decreases CSR because θ is large. θ indicates that a firm cannot charge as high of a price as before competitors engaged in CSR (Baron, 2001). Thus, θ denotes the extent of peer competition on the CSR dimension: the more competition in a product market, the more competition to conduct CSR in the market as well. Such relationship is magnified with larger θ. This in turn reduces the *net* size of the market (i.e. the total market size minus the loss of the market due to competitor CSR) and eventually reduces the size of the *market for CSR*. This extension of standard externality

intuition in microeconomics helps us understand the dynamics in the market for CSR.

In other words, the negative spillover effects become larger as competitors' strategic CSR increases. This leads to under-supply of strategic CSR in the industry because a firm may not fully capture the benefit of its CSR investment. Moreover, from the perspective of a focal firm, the negative spillover to competitors is a positive spillover. Monopoly can internalize such externality and diminish the under-supply problem. However, the under-supply problem becomes even more severe in a highly competitive market, where the externality becomes salient and (under perfect competition) perfectly exogenous from the perspective of a focal firm.

To conclude, in our previous regression analysis, we found that the larger the Herfindahl index (i.e. industry concentration), the lower the CSR of the focal firm – an apparent positive relationship between competition and CSR of an individual firm. However, at the industry level, with the same data, by calibrating parameters in a simulation in a more dynamic setting, we found that competition actually diminishes aggregate CSR. The main implication of these findings is that while competition, on average, increases CSR per firm, it tends to decrease it over time at the industry level. This caveat has major implications for scholars of public policy and strategy as well as managers that we will discuss below.

Due to assumptions necessary for a robust and simple model, our calibration and simulation analysis has several potential limitations. First, we estimate θ, the extent of consumer sensitivity, only indirectly. However, using survey or experimental data about the extent of consumer sensitivity (θ), future research can possibly obtain more accurate results and richer policy and managerial implications. Second, we assume a static Cournot game; however, if it is to be repeated, cooperative CSR can arise (e.g., Kreps & Wilson, 1982; Kreps, Milgrom, Roberts, & Wilson, 1982) which can dramatically change our simulation. Future research could investigate this repeated game in standalone theory papers. Third, our

calibration and simulation can be extended to other modes of competition beyond Cournot model. Nonetheless, our results demonstrating the negative relationship between competition and industry CSR are an important benchmark for future studies and offer many implications.

DISCUSSION AND CONCLUSION

In this paper, we seek to answer an important question of how competition determines CSR at the firm and industry levels of analysis. Existing literature considered firm-level CSR and argued for two types of relationship: 1) a linear relationship, where more product market competition in the industry leads to higher strategic CSR (Declerck and M'Zali, 2012; Fernandez-Kranz and Santalo, 2010; Flammer, 2012), and 2) a curvilinear relationship, where CSR engagement should be lower with too little or too much competition (Campbell, 2007). We test these arguments paying close attention to the endogeneity problem that undermines prior work and offer a novel insight on this relationship.

Using more traditional methods to deal with endogeneity, we find support for the positive relationship between competition and CSR by showing the apparent negative relationship between strategic CSR and the Herfindahl index, an indicator of market concentration. We also find that strategic CSR is contagious in the industry (i.e. the higher CSR of competitors, the higher CSR of a focal firm) which further supports the positive relationship between competition and CSR at the firm level. However, at the industry level, using the same data to calibrate Cournot-Nash competition in a more dynamic simulation model, we find that as industry structure changes from monopoly to perfect competition, strategic CSR may in fact decrease. These findings provide several important contributions.

First, by highlighting the salience of the market structure for CSR engagement, we offer broad implications for practitioners and public policy makers. Regulators, for instance, may want to consider a mechanism to coordinate strategic CSR of firms in order to reduce the externality. In turn, this may increase both consumer and producer surpluses. Managers,

on the other hand, can conjecture how strategic CSR of competitors may change as their own CSR or the industry structure change. This can help them design enhanced strategic CSR and understand the dynamics of the market for CSR and competition on this particular dimension.

Second, by asking how competition affects CSR, this paper contributes to the strategic CSR literature: we go beyond numerous studies on the effect of CSR on financial performance (Barnett & Salomon, 2006, 2012; Brammer & Millington, 2008; Hillman & Keim, 2001; McWilliams & Siegel, 2000; Surroca *et al*, 2009; Waddock & Graves, 1997) and offer novel insights about the conditions that influence CSR engagement (Campbell, 2007). The findings in our paper may explain why so many firms in so many industries reject social responsibility or undertake only a minimum, while others seem to lead the way and benefit from it. In addition, we provide one of the first empirical tests of Campbell's proposition of the curvilinear relationship (2007), discounting it and showing that the mechanisms for the relationship between CSR and competition rest not only in the market conditions themselves but also in the market for CSR. Thus, in our analysis we consider such components of the market for CSR as CSR production costs, optimal amount of CSR engagement, customer utility, profit maximization and enhancement of CSR benefits.

Third, by investigating the change of aggregate industry CSR in response to exogenous market structure changes in a simulation, we offer important insights for the strategy literature on competition. We demonstrate that if the market structure moves to perfect competition, the aggregate strategic CSR will decrease in all industries. For instance, for the eleven U.S. sectors used in our analysis, the ratios of industry CSR under perfect competition to that under current competitive conditions are: banking (16%), business services (64%), chemicals (48%), chips/IT (67%), computers (12%), pharmaceuticals (77%), energy (26%), insurance (37%), retail (39%), telecommunications (48%), and utilities (28%). They demonstrate significant reductions in CSR (from 23 to 88 percent). The key implication

is that, if consumers tend to punish *relatively* irresponsible firms harsh enough, as the case of our calibrated model suggests, strategic CSR generates negative spillovers to competitors. This is consistent with prior literature on discoveries of corporate deviance that damage the legitimacy of the responsible organization while making other similar organizations pay for the consequences (Jonsson, Greve, & Fujiwara-Greve, 2009). Also, this result may relate to the idea that firms may engage in CSR to offset corporate social irresponsibility (Kotchen & Moon, 2012). In our case, the firm will not be able to capture the full benefit of its CSR, which can ultimately result in the under-supply of aggregate industry CSR. Yet the more the industry structure moves towards monopoly, the more internalized the spillover gets. In turn, this increases industry CSR. The main purpose of the simulation was to provide exogenous changes to the market structure; however, with this insight on the market for CSR, our simulation analysis sheds light on the mechanism previously ignored in the literature.

Finally, we offer a methodological contribution to the strategic CSR literature by going beyond the more traditional regression towards more non-traditional methods and simulating the industry structure, calibrating its parameters from the empirical data and observing what happens to the aggregate CSR as exogenous changes in the market structure take place. We are aware of no prior studies that have accomplished this. Even though the simulation model was generated based on the empirical data used in the traditional regression analysis, its results are new and in fact contradict the results of the more traditional regression. We argue that traditional methods cannot guarantee reliability of the answer to this particular research question due to two main reasons: the endogeneity problem and the lack of reliable data, where we can directly observe major (exogenous) changes in the market structure. Therefore, the evidence from the simulation and calibration analysis (corroborated by anecdotal evidence in Figure 2) help answer our research question in a more reliable way.

In addition to the limitations of calibration and simulation analysis mentioned above,

this paper has several other issues that we hope will provide direction for future research. First, our sample is limited to U.S.A.: while there can be industry variation in how customers respond to CSR, cross-country variation can add more nuances and can expose a more salient relationship between CSR and competition. Second, our simulation setting assumes that firms are symmetric; while relaxing this assumption complicates our simulation model and goes beyond the scope of our research question, future studies can investigate how heterogeneity in the industry can affect the aggregate CSR. Finally, due to lack of data we do not focus on consumer behavior; however, using consumer surveys in combination with firm-level data can generate even more fine-grained results and implications (Servaes & Tamayo, 2013).

Regardless of its limitations, this paper overcomes the main shortcomings of previous CSR studies by using case studies to motivate the research question, addressing endogeneity issues with traditional and non-traditional methods, building a formal model of the hypothesized relationships and calibrating market structure and strategic CSR – triangulating research methods that has been previously called for (Margolis & Walsh, 2003). Strategic CSR scholars can help develop the argument proposed in this paper even further by providing empirical evidence or extending our model.

REFERENCES

Aguilera, R. V., Rupp, D. E., Williams, C. A., & Ganapathi, J. 2007. Putting the S Back in Corporate Social Responsiblity: A Multilevel Theory of Social Change in Organizations. *Academy of Management Review*, **32**(3): 836-863.

Bagnoli, M., & Watts, S. G. 2003. Selling to Socially Responsible Consumers: Competition and The Private Provision of Public Goods. *Journal of Economics & Management Strategy*, **12**(3): 419-445.

Barnett, M. L. 2007. Stakeholder Influence Capacity and the Variability of Financial Returns to Corporate Social Responsibility. *Academy of Management Review*, **32**(3): 794-816.

Barnett, M. L., & Salomon, R. M. 2006. Beyond dichotomy: the curvilinear relationship between social responsibility and financial performance. *Strategic Management Journal*, **27**(11): 1101-1122.

Barnett, M. L., & Salomon, R. M. 2012. Does it pay to be really good? Addressing the shape of the relationship between social and financial performance. *Strategic Management Journal*, **33**(11): 1304-1320.

Baron, D. P. 1995. Integrated Strategy: Market and Nonmarket Components. *California Management Review*, **37**(2): 47.

Baron, D. P. 2001. Private Politics, Corporate Social Responsibility, and Integrated Strategy. *Journal of Economics & Management Strategy*, **10**(1): 7-45.

Baum, C. F., Schaffer, M. E., & Stillman, S. 2003. Instrumental variables and GMM: Estimation and testing. *The Stata Journal*, **3**(1): 1-31.

Brammer, S., & Millington, A. 2008. Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal*, **29**(12): 1325-1343.

Campbell, J. L. 2007. Why Would Corporations Behave in Socially Responsible Ways? An Institutional Theory of Corporate Social Responsibility. *Academy of Management Review*, **32**(3): 946-967.

Chatterji, A., Levine, D. I., & Toffel, M. W. 2009. How Well Do Social Ratings Actually Measure Corporate Social Responsibility. *Journal of Economics and Management Strategy*, **18** (1), 125-169.

Cheng, B., Ioannou, I., & Serafeim, G. Corporate Social Responsibility and Access to Finance. *Strategic Management Journal. Forthcoming*.

Cho, C. H., & Patten, D. M. 2007. The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, **32**(7-8): 639-647.

Davis, J. P., Eisenhardt, K. M., & Bingham, C. B. 2007. Developing Theory through Simulation Methods. *Academy of Management Review* , Vol. **32**, No. 2, pp. 480-499.

Davis, K. 1960. Can Business Afford to Ignore Social Responsibilities. *California Management Review*, **11**: 70-76.

Davis, K. 1967. Understanding the social responsibility puzzle: What does the businessman owe to society? *Business Horizons*, **10**: 45-50.

Davis, K. 1973. The Case For and Against Business Assumption of Social Responsibilities. *Academy of Management Journal* **16**(2): 312-312.

Decker, O. S. 2004. Corporate social responsibility and structural change in financial services. *Managerial Auditing Journal*, **19**(6).

Declerck, M.D., M'Zali, B. 2012. Product market competition and corporate social responsibility. http://cenf.univ-paris1.fr/fileadmin/Chaire_CENF/Product_market_competition_and_CSR.pdf

Donaldson, T., & Preston, L. E. 1995. The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. *Academy of Management Review*, **20**(1): 65-91.

Du, S., Bhattacharya, C. B., & Sen, S. 2007. Reaping relational rewards from corporate social responsibility: The role of competitive positioning. *International Journal of Research in Marketing*, **24**(3): 224-241.

Dutton, J.E., Dukerich, J.M., Harquail, C.V. 1994. Organizational images and member identification. *Administrative Science Quarterly***, 39**: 239-263.

Eesley, C., Lenox, M.J. 2006. Firm responses to secondary stakeholder action. *Strategic Management Journal* **27**(8): 765-781.

Fernandez-Kranz, D., & Santalo, J. 2010. When necessity becomes a virtue: The effect of product market competition on corporate social responsibility. *Journal of Economics and Management Strategy*, **19**: 453–487.

Flammer, C. 2012. Does Product Market Competition Foster Corporate Social Responsibility? Available at SSRN: http://ssrn.com/abstract=2146280 or http://dx.doi.org/10.2139/ssrn.2146280

Fudenberg, D. & Tirole, J. 1991. *Game Theory*. The MIT Press.

Gardberg, N. A., & Fombrun, C. J. 2006. Corporate Citizenship: Creating Intangible Assets Across Institutional Environments. *Academy of Management Review*, **31**(2): 329-346.

Hillman, A. J., & Keim, G. D. 2001. Shareholder Value, Stakeholder Management, and Social Issues: What's the Bottom Line? *Strategic Management Journal*, **22**(2): 125-139.

Hull, C. E., & Rothenberg, S. 2008. Firm performance: the interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal*, **29**(7): 781-789.

Ioannou, I., & Serafeim, G. 2012. What Drives Corporate Social Performance? The Role of Nation-Level Institutions. *Journal of International Business Studies*. **43**: 834-864

Jonsson, S., Greve, H. R., & Fujiwara-Greve, T. 2009. Undeserved Loss: The Spread of Legitimacy Loss to Innocent Organizations in Response to Reported Corporate Deviance. *Administrative Science Quarterly*, **54**(2): 195-228.

Kacperczyk, A. (2009). With greater power comes greater responsibility? Takeover protection and corporate attention to stakeholders. *Strategic Management Journal*, **30**: 261–285.

Kotchen, M., & Moon, J.J. 2012. Corporate Social Responsibility and Irresponsibility. *The B.E. Journal of Economic Analysis & Policy*. **12**(1): 55.

Kreps, D. M., Milgrom, P., Roberts, J., & Wilson, R. 1982. Rational cooperation in the finitely repeated prisoners' dilemma. *Journal of Economic Theory*, **27**(2), 245-252.

Kreps, D. M., & Wilson, R. 1982. Reputation and imperfect information. *Journal of Economic Theory*, **27**(2), 253-279.

Mackey, A., Mackey, T. B., & Barney, J. B. 2007. Corporate Social Responsibility and Firm Performance: Investor Preferences and Corporate Strategies. *Academy of Management Review*, **32**(3): 817-835.

Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. 2007. Does It Pay To Be Good? A Meta-Analysis and Redirection of Research on the Relationship Between Corporate Social and Financial Performance, *Under Review*.

Margolis, J. D., & Walsh, J. P. 2003. Misery Loves Companies: Rethinking Social Initiatives by Business. *Administrative Science Quarterly*, **48**(2): 268-305.

McWilliams, A., & Siegel, D. 2000. Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? *Strategic Management Journal*, **21**(5): 603-609.

McWilliams, A., & Siegel, D. 2001. Corporate Social Responsibility: A Theory of the Firm Perspective. *The Academy of Management Review*, **26**(1): 117-127.

NYT. February 1, 2011. BP to Pay First Dividend Since Gulf of Mexico Spill, The New York Times.

Padgett, R.C. & Galan, J.I. (2010). The Effect of R&D Intensity on Corporate Social Responsibility *Journal of Business Ethics*, **93**(3): 407-418.

Porter, M. E., & Van der Linde, C. 1995. Toward a new conception of the environment-competitiveness relationship. *The Journal of Economic Perspectives*, **9**(4): 97-118.

Porter, M. E., & Kramer, M. R. 2006. Strategy & Society: The Link Between Competitive Advantage and Corporate Social Responsibility. *Harvard Business Review*, **84**(12): 78-92.

Porter, M. E., & Kramer, M. R. 2011. Creating Shared Value. *Harvard Business Review*, **89**(1/2): 62-77.

Schuler, D. A., & Cording, M. 2006. A Corporate Social Performance-Corporate Financial Performance Behavioral Model for Consumers. *Academy of Management Review*, **31**(3): 540-558.

Servaes, H., & Tamayo, A. 2013. The Impact of Corporate Social Responsibility on Firm Value: The Role of Customer Awareness. *Management Science*, **59**(5): 1045-1061.

Siegel, D. S., & Vitaliano, D. F. 2007. An Empirical Analysis of the Strategic Use of Corporate Social Responsibility. *Journal of Economics & Management Strategy*, **16**(3): 773-792.

Surroca, J., Tribó, J. A., & Waddock, S. 2009. Corporate responsibility and financial performance: the role of intangible resources. *Strategic Management Journal*, **31**(5): 463-490.

Van De Ven, B., & Jeurissen, R. 2005. Competing Responsibly. *Business Ethics Quarterly*, **15**(2): 299-317.

Vogel, D. 2005. *The Market for Virtue: The Potential and Limits of Corporate Social Responsibility*. Brookings Institution Press.

Waddock, S. A., & Graves, S. B. 1997. The Corporate Social Performance-Financial Performance Link. *Strategic Management Journal*, **18**(4): 303-319.

White, H. 1982. Maximum likelihood estimation of misspecified models. *Econometrica*, **50**(1): 1–25.

Table 1. Descriptive statistics

Variable	Obs	Mean	St. Dev.	Min	Max
CSR	3095	0.446	0.291	0.035	0.989
Log(CSR/Size)	3095	-3.298	0.770	-5.846	-1.787
No. of competitors	3095	18.765	11.201	1	40
No. of competitors squared	3095	477.553	455.955	1	1600
HHI	3095	0.366	0.162	0	0.852
HHI squared	3095	0.160	0.114	0	0.725
Avg. CSR of competitors	3095	0.446	0.125	0.066	0.942
Lag of avg. MBR of competitors	2508	3.656	1.717	-5.416	21.633
Lag of avg. R&D intensity of competitors	2508	3.182	4.905	0	19.197
Lag of avg. ROA of competitors	2508	-0.038	1.382	-10.495	23.538
Lag of ROA	2511	-0.002	6.825	-59.269	31.116
Market-to-book ratio (MBR)	3095	3.416	3.441	-5.416	30.178
Highly regulated industry	3095	0.204	0.403	0	1
Domestic	3095	0.676	0.468	0	1
Diversification	3095	0.291	0.418	0	1.386
R&D intensity	3095	3.128	6.173	0	34.355
Firm size (log of assets)	3095	9.250	1.438	5.232	14.598

Table 2. Correlations table

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) CSR	1						
(2) Log(CSR/Size)	0.92	1					
(3) HHI	0.10	0.08	1				
(4) HHI squared	0.12	0.10	0.95	1			
(5) Avg.CSR of competitors	0.19	0.19	0.23	0.29	1		
(6) Lag of avg. MBR of competitors	0.06	0.09	0.19	0.24	0.14	1	
(7) Lag avg. R&D int. of competitors	0.08	0.12	0.18	0.16	0.17	0.22	1
(8) Lag of avg. ROA of competitors	-0.02	-0.01	-0.08	-0.02	0.03	0.27	0.08

Table 3. Results of the main analysis (fixed effects)

	(1) CSR	(2) CSR	(3) CSR	(4) CSR/Size	(5) CSR/Size	(6) CSR/Size
HHI		**-0.438****	**-1.097***		**-1.522*****	**-2.854***
		(0.188)	**(0.573)**		**(0.533)**	**(1.616)**
HHI_squared			0.886			1.789
			(0.768)			(2.032)
ROA lag	0.001	0.001	0.001	0.003	0.003	0.003
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Firm size	0.051***	0.052***	0.050***			
	(0.02)	(0.02)	(0.02)			
Market-to-book ratio	0.002	0.002	0.002	0.004	0.004	0.004
	(0.002)	(0.002)	(0.002)	(0.007)	(0.007)	(0.007)
Domestic	0.002	0.001	0.001	-0.003	-0.007	-0.007
	(0.017)	(0.018)	(0.017)	(0.05)	(0.05)	(0.05)
Diversification	0.002	0.001	0.002	-0.042	-0.047	-0.047
	(0.04)	(0.04)	(0.04)	(0.134)	(0.132)	(0.131)
R&D intensity	0.002	0.002	0.002	0.013*	0.013**	0.013**
	(0.002)	(0.002)	(0.002)	(0.007)	(0.007)	(0.007)
Year 2004	0.102***	0.105***	0.107***	0.346***	0.357***	0.359***
	(0.01)	(0.01)	(0.01)	(0.026)	(0.026)	(0.027)
Year 2005	0.117***	0.122***	0.124***	0.373***	0.391***	0.393***
	(0.012)	(0.012)	(0.012)	(0.034)	(0.034)	(0.034)
Year 2006	0.109***	0.118***	0.120***	0.352***	0.384***	0.386***
	(0.014)	(0.014)	(0.014)	(0.039)	(0.041)	(0.04)
Year 2007	0.151***	0.163***	0.165***	0.469***	0.513***	0.515***
	(0.016)	(0.017)	(0.017)	(0.045)	(0.05)	(0.05)
Year 2008	0.167***	0.180***	0.182***	0.508***	0.553***	0.557***
	(0.017)	(0.018)	(0.018)	(0.048)	(0.051)	(0.051)
Constant	-0.143	0.005	0.118	-3.662 ***	-3.12***	-2.921***
	(0.173)	(0.186)	(0.198)	(0.069)	(0.201)	(0.307)
Observations	2,511	2,511	2,511	2,511	2,511	2,511
R-squared	0.132	0.137	0.138	0.112	0.119	0.119
Number of org_id	542	542	542	542	542	542

*** p<0.01, ** p<0.05, * p<0.1

This table reports the results of the main analysis with CSR (models 1-3) and logarithm of CSR/Size (Models 4-6) as dependent variables. HHI (Herfindahl index of industry concentration) is negative and highly significant, providing support for the more traditional view on the positive relationship of CSR of an individual firm and competition, while rebutting Campbell's proposition of an inverted U-shaped relationship (2007). Regressions include firm and year fixed effects, with 2003 as the base year of comparison (note the control for highly regulated industry is absorbed in fixed effects and therefore is omitted from this analysis). Robust standard errors are in parentheses.

Table 4. Instrumental variable analysis: GMM estimates

	(7) Avg. CSR of Competitors	(8) CSR *ivreg2*	(9) CSR *xtivreg2*	(10) Avg. CSR of Competitors	(11) Adj. CSR *ivreg2*	(12) Adj. CSR *xtivreg2*
Avg. CSR of Competitors		**1.672*** (0.305)**	**2.026** (0.863)**		**2.045** (0.801)**	**6.521** (2.576)**
Avg. R&D of competitors	0.005*** (0.001)			0.004*** (0.001)		
Avg. MBR of competitors	0.008*** (0.002)			0.006*** (0.002)		
ROA lag	-0.0001 (0.0003)	0.004*** (0.001)	0.001 (0.001)	-0.0001 (0.0003)	0.011*** (0.002)	0.003 (0.003)
Firm size	0.011*** (0.002)	0.089*** (0.005)	0.062*** (0.018)			
MBR	0.002*** (0.001)	0.006*** (0.002)	0.002 (0.002)	0.001* (0.001)	0.008* (0.005)	0.002 (0.006)
Highly regulated	0.056*** (0.006)	-0.015 (0.020)		0.051*** (0.005)	0.029 (0.049)	
Domestic	-0.021*** (0.006)	-0.065*** (0.018)	0.004 (0.019)	-0.022*** (0.006)	-0.189*** (0.04)	0.002 (0.058)
Diversification	0.009 (0.006)	0.052*** (0.017)	0.047 (0.049)	0.013** (0.006)	0.193*** (0.039)	0.108 (0.154)
R&D intensity	0.001** (0.001)	0.003** (0.001)	0.005** (0.002)	0.001* (0.0004)	0.010*** (0.004)	0.021** (0.008)
Year 2004	0.06*** (0.008)	-0.012 (0.032)	-0.030 (0.059)	0.062*** (0.008)	0.213*** (0.081)	-0.077 (0.174)
Year 2005	0.077*** (0.008)	-0.039 (0.034)	-0.058 (0.076)	0.077*** (0.008)	0.122 (0.088)	-0.184 (0.225)
Year 2006	0.081*** (0.008)	-0.046 (0.034)	-0.066 (0.077)	0.082*** (0.008)	0.122 (0.089)	-0.202 (0.226)
Year 2007	0.119*** (0.008)	-0.075* (0.043)	-0.111 (0.114)	0.122*** (0.008)	0.171 (0.114)	-0.357 (0.333)
Year 2008	0.104*** (0.009)	-0.033 (0.041)	-0.068 (0.102)	0.104*** (0.009)	0.201* (0.104)	-0.232 (0.298)
Constant	0.219*** (0.023)	-1.090*** (0.103)		0.334*** (0.011)	-4.328*** (0.297)	
Observations	2,508	2,508	2,479[a]	2,508	2,508	2,479 [a]

*** p<0.01, ** p<0.05, * p<0.1

[a] This includes 512 firms. The dependent variable for Models 8-9 is firm-level CSR, Models 10-11 use a logarithm of firm-level CSR divided by firm size. The instruments are lagged by one year. All regressions include year fixed effects; models 9 and 12 include firm fixed effects. Robust standard errors are in parentheses. This table provides support for hypothesis 1a.

Table 5. Calibrated parameters

	alpha	z-value		theta	z-value		beta	z-value		delta	z-value	
Business services	4.827	4.656	***	0.103	2.605	***	-3.464	-2.499	**	-4.063	-2.54	**
Chemicals	-2.701	-0.684	**	-0.073	-1.679	**	-5.717	-2.918	***	5.96	4.064	***
Chips/IT	9.895	4.112	***	0.017	0.468		0.398	0.207		5.377	4.474	***
Computers	-3.272	-0.901	**	0.036	3.228	***	2.13	0.839	**	-2.12	-1.14	**
Pharma	5.426	4.628	***	0.075	3.336	***	0.557	0.113		-6.039	-3.325	***
Energy	2.954	2.19	**	0.015	0.771	**	0.011	0.014		-6.237	-1.608	**
Insurance	-1.411	-0.395		-0.012	-0.232		-2.533	-1.763	**	-7.571	-2.23	**
Retail	1.313	0.519		0.008	0.257		-0.449	-0.31		1.186	0.396	
Telecom	5.97	0.894	**	0.018	0.514		-1.462	-1.179	**	-9.001	-2.393	**
Utilities	-0.646	-0.567		-0.016	-0.977	**	-0.14	-0.084		1.625	1.783	**
2003	-0.291	-0.082		0.039	1.115	**	-0.847	-1.052	**	6.791	4.581	***
2004	-2.753	-2.211	**	0.018	1.51	**	-1.096	-0.976	**	-3.321	-1.73	**
2005	6.491	1.922	**	0.066	5.323	***	-0.581	-0.401		-6.072	-2.32	**
2006	5.276	0.7	**	-0.006	-0.086		-2.017	-1.381	**	4.114	1.385	**
2007	0.237	0.079		0.048	1.406	**	-1.234	-1.439	**	-1.89	-0.601	
2008	-8.363	-1.484	**	-0.042	-1.411	**	-0.539	-0.581		-0.481	-0.156	
Size	-0.448	-0.218		-0.014	-0.313		0.61	2.189	**	0.681	0.223	
Leverage	1.426	0.357		0.057	1.23	**	-0.025	-0.595		-0.361	-0.045	
MBR	0.137	0.07		-0.014	-0.461		0.258	1.316	**	-0.336	-0.043	
R&D/Sales	6.541	2.419	**	0.042	1.429	**	-0.061	-0.353		1.734	0.233	
Intercept	-1.976	-1.171	**	0.046	2.871	***	-4.024	-3.119	***	-7.054	-2.138	**

*** p<0.01, ** p<0.05, * p<0.1

This table shows calibration results from specifications in Eq. 3 and Eq. 4, using the GMM procedure described in Eq. 6 and Eq. 7. For industry dummies, we use 11 sectors: banks, business services, chemicals, chips/IT, computers, pharmaceuticals, energy, insurance, retail, telecommunications and utilities. We regard banks as the base case to construct dummy variables. For year dummies, we use 'before 2002' and 2003 - 2008. We regard 'before 2002' as the base case for comparison. For firm specific information, we include logarithm of firm size, leverage, market-to-book ratio (MBR) and R&D/sales.

Table 6. Structural parameters

	alpha	theta	beta	delta
Bank	1,132.50	4.91	0.76	32.93
Business services	795.67	3.05	2.97	24.28
Chemicals	952.07	3.62	5.99	16.16
Chips/IT	1,297.44	2.4	0.11	11.69
Computers	1,241.18	2.82	1.99	0.1
Pharmaceuticals	1,643.82	3.08	0.66	4.2
Energy	685.1	2.94	0.46	27.32
Insurance	921.02	4.11	2.27	36.21
Retail	608.81	2.65	0.12	18.89
Telecommunications	907.31	3.51	0.62	31.94
Utilities	918.06	4.07	0.07	26.97

This table shows our structural parameters as of 2008 for each industry. We compute structural parameters $\{\tilde{\alpha},\tilde{\theta},\tilde{\beta},\tilde{\delta}\}$ for each industry and each year using industry-year average values for firm specific information from the calibrated parameters in Table 5.

Table 7. Simulation of market structure and industry CSR

	Av. no. of players	Current CSR	Number of the other identical players under Cournot competition (N)											
			0	1	2	3	4	5	6	7	8	9	10	Inf
Banks	29	1,394.18	37,297.94	456.18	343.18	305.36	286.43	275.05	267.47	262.05	257.98	254.82	252.29	229.49
Biz services	16	391.71	19,322.17	495.37	373.93	333.1	312.61	300.3	292.09	286.22	281.81	278.38	275.64	250.9
Chemicals	13	499.33	15,384.46	469.49	354.83	316.21	296.83	285.18	277.4	271.84	267.66	264.41	261.82	238.38
Chips/IT	28	808.42	15,170.03	1,040.20	793.76	709.69	667.29	641.72	624.63	612.4	603.21	596.06	590.33	538.57
Computers	14	455.77	121.67	74.53	66	62.43	60.47	59.23	58.37	57.75	57.27	56.89	56.59	53.72
Pharma	14	662.89	6,905.63	945.77	734.47	660.67	623.11	600.35	585.08	574.14	565.9	559.48	554.34	507.65
Energy	25	881.7	18,714.25	458.09	345.68	307.91	288.96	277.57	269.97	264.54	260.47	257.29	254.76	231.88
Insurance	20	597.81	33,350.84	438.06	329.63	293.32	275.14	264.22	256.94	251.74	247.83	244.8	242.37	220.48
Retail	17	589.41	11,502.92	450.14	340.94	304.06	285.53	274.38	266.93	261.61	257.61	254.5	252.02	229.56
Telecom	14	535.72	28,983.90	510.23	384.36	342.16	321.01	308.31	299.83	293.77	289.23	285.69	282.87	257.38
Utilities	20	810.56	24,761.51	447.18	336.9	299.92	281.39	270.26	262.83	257.52	253.54	250.44	247.96	225.63

This table is based on Eq. 9. The first column indicates industry sectors. The second column is the average number of firms in each sector from 2003-2008. The third column shows the aggregate industry CSR, the sum of CSR of each firm in each industry as of 2008. The fourth column shows the simulated industry CSR when N=0, a case of monopoly. From the fifth to 14th columns indicate the simulated industry CSR for N=1 to N=10. The last column is the CSR for N = Inf. The results of this analysis show that industry CSR declines with competition in all 11 sectors, providing support for hypothesis 2a.

Figure 1. Methodological process

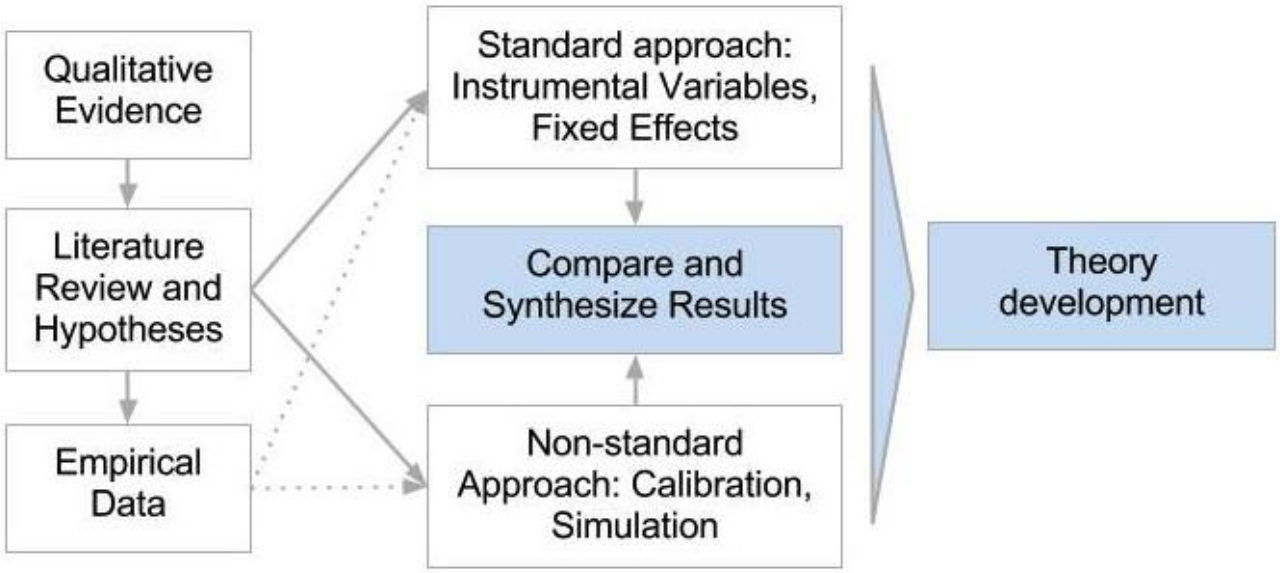
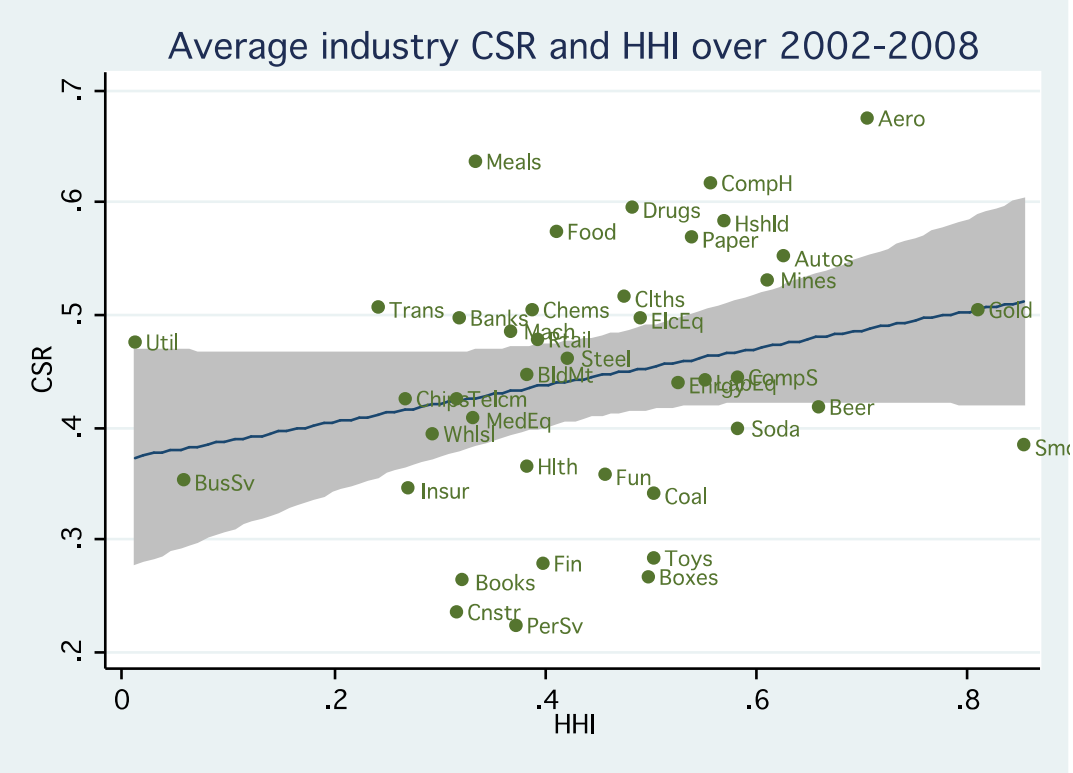


Figure 2. Average Herfindahl index (HHI) and CSR by industry



This figure demonstrates variation in average industry CSR and levels of competition. The trend is upward, suggesting that on average, average industry CSR tends to be higher in less competitive industries, such as aerospace, and gold mines, and less so for smoking companies. Average industry CSR is lowest in the least concentrated industries, such as various types of services (i.e. insurance, financial, business, and personal services). Yearly charts exhibit very similar patterns.

APPENDIX A.
Case of BP

To further demonstrate why it is important to consider economic conditions beyond institutional pressures towards CSR, we briefly discuss the most recent and visible case in regards to CSR – the BP oil spill. Causing harm to fish and wildlife, fisheries, food and health sectors, tourism, and other economic activities, the Deepwater Horizon oil spill has resulted in the largest environmental damage in the US history. Not surprisingly, BP admitted its mistakes in the disaster while its stock price has dropped significantly for two months since the spill (see Figure 3 below). Nevertheless, although the spill continued for three months (20 April - 15 July, 2010), there is no evidence that it has caused consumers to avoid BP's products. This is interesting for two reasons: first, because of the obvious conflict with the "Beyond Petroleum" image that BP created by engaging in wide CSR activities; second, because oil/gasoline products are arguably homogeneous, so CSR and firm reputation can be an important differentiating factor. However, not only did consumers not stop buying BP products, but also since July 2010, BP's stock has outperformed its competitors for the next six months (see Figure 4)[9]; in addition, BP has been doing relatively well: only a year after it announced a first dividend since the spill and plans to increase its total investments by $2 billion (NYT, February 1, 2011).

Obviously, there are several potential explanations for this result, however, one considers BP's market power: because BP is so powerful in the market, consumers may not have or recognize alternative choices. Moreover, the effect of market power is not an industry-specific phenomenon and to demonstrate that, we briefly discuss another similar case – that of Samsung Group (see Appendix B). For the sake of our argument, it is worth noting that consumers and financial markets may be apathetic to CSR disasters only apparently. Because BP is a leading player in the oil sector and Samsung has monopolistic power in the Korean market as well as in other business activities in Korea and abroad, consumers and financial markets may have no other choice but to forgive BP and Samsung.

The important question remains, however, as to how the firms in the same sector will respond to the seeming apathy or sympathy of consumers and financial markets. In a nutshell, why and how should firms think about their public image if the market does not seem to boycott the firm for irresponsible behavior under certain market structure? If consumers keep buying an irresponsible firm's products and financial markets forget about unethical behavior so quickly, will firms have any incentives to conduct socially responsible activities beyond managing their operational risks? Does it matter whether and why consumers buy the products from irresponsible firms? Will aggregate industry CSR increase in equilibrium if consumers are sensitive to irresponsible firms and request costly CSR? In essence, is there a contagion effect from the focal firm's CSR to other firms in its industry, and if so, does the market structure define its direction? i.e. will the aggregate industry CSR diminish or increase in response to a shift from monopoly to perfect competition?

[9] Even though this may reflect initial overreaction, compensation for the risk of ramification and ostensible apathy of financial markets to CSR-related disasters

A1. Cumulative Stock Returns of BP and its competitors

(Apr 01, 2010 - Jan, 14, 2011)

A2. Cumulative Stock Returns of BP and its competitors

(Jul 01, 2010 - Jan, 14, 2011)

BP: BP plc (ADR); RDS.A: Royal Dutch Shell plc (ADR); TOT: TOTAL S.A. (ADR); XOM: Exxon Mobil Corporation; CVX: Chevron Corporation

Source: http://www.google.com/finance

APPENDIX B.
Case of Samsung

In December of 2007 Samsung Group, the largest chaebol in Korea was involved in $200 million slush fund scandal. The top executives had to resign; Samsung officially dismantled its mighty Strategic Planning Office, which had been a de-facto headquarters for the entire business group and turned out to be the major secret hand in the scandal. Less than three years later, however, Samsung reinstated the Strategic Planning Office, chairman Lee and other top managers, and the Korean government gave presidential pardon to the notorious top executives. In fact, even before the slush fund scandal, Samsung had been involved in controversies, such as bribing presidential candidates, government officials and addressing the 2007 Korea oil spill. However, tangibly or intangibly, all of these controversies have had little effect on Samsung's ability to recruit new employees, increase sales, stock price and its power and prestige in Korea and abroad. Meanwhile, Samsung and its current chairman are the most admired firm and executive in Korea; while the Fortune Global 500 ranked Samsung Electronics 39th as the most profitable and 32nd as the biggest company in the world by revenues in 2010[10]. If social controversies have little influence on the firm, how can it have any incentive to conduct CSR seriously? Once again, since Samsung group is such a powerful firm in the market (and in the Korean society in general), Korean people might have no other choice but to ignore or to shrug off the matters. Then, a question arises as to how such practices will determine CSR behaviors of Samsung and other chaebols?

[10] http://money.cnn.com/magazines/fortune/global500/2010/index.html