Short-selling and firm performance on Corporate Social Responsibility: Evidence from a natural experiment

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ABSTRACT
In this paper, we test for a causal relationship between short-selling and firms’ performance on Corporate Social Responsibility (CSR). To establish causality, we use the exogenous variation in short-selling restrictions induced by the Pilot Program under Regulation SHO of 2004. The Pilot program decreased the costs of short-selling for randomly selected subset of firms which resulted in an increase in the threat of short-selling for these firms. Results from a sample of U.S. firms for the years 2002 - 2006 suggest that an increase in the likelihood of being subject to short-selling increases firm performance on CSR. We further test how the temporal orientation of firms’ institutional owners and different level of firms’ financing constraints moderate the relationship between short-selling and firm performance on CSR.

INTRODUCTION
In this paper, we examine the relationship between an increased threat of short-term-related pressures, the presence of short-sellers, and firms’ performance on CSR. Short-selling, the speculation of stock prices going down, does not represent a direct threat to firms, as short-sellers do not possess organizational control (Lamont, 2012). However, they can exert negative stock price pressures which can pose a threat to managers by creating opportunities for hostile takeovers (Shleifer and Vishny, 2003) or by causing reduction in managers’ compensation packages tied to performance (De Angelis et al., 2017). Thus, it is likely for managers to undertake actions in order to shield the firm and themselves from the enemy at the gate. On one hand, managers may increase firms’ CSR performance in order to build stronger relations with stakeholders, to alter the pool of investors and to deter external short-term pressures. On the other hand, managers may choose to cut CSR related projects in order to increase efficiency and meet short-term financial performance demands.

CSR activities are multifaceted and encompass diverse stakeholder interests. Prior literature suggest that managers respond to the demands of their most powerful and salient stakeholders (Mitchell et al., 1997; Agle et al., 1999). The stakeholder salience perspective posits that large equity holders, such as institutional investors, possess the power to influence firms’ objectives including investments in CSR (Neubaum and Zahra, 2006; Johnson and Greening, 1999). However, the research studying how institutional investors affect firms’ commitment to CSR has predominantly considered the percentage (or volume) of institutional investors’ ownership (e.g. Dyck et al., 2017). In our study, we acknowledge that institutional owners’ temporal orientation differs and we use this heterogeneity as a proxy for the temporal orientation of the firm owned by the institutional investor. More specifically, we follow a classification of institutional investors by Bushee (2001) and argue that firms will alter their engagement in CSR related activities as a response to an increased likelihood of being subject to a threat of short-term pressure based on the temporal orientation of their institutional owners.

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We make a similar argument for firms’ financial constraints. More specifically, firms’ response to the threat of being subject to short-selling will differ based on their level of access to financing. Looking at how firm financial constraints moderate firms’ responses to a higher threat of short-selling allows us to account for frictions that prevent managers from pursuing investment opportunities with positive payoffs in the long term but with short term costs (Shi et al., 2017).

Establishing a causal relationship between short selling and firms’ investments in CSR is difficult due to concerns of endogeneity. For example, if firms’ CSR performance affects short-selling, while CSR is affected by short-sellers targeting the firm, the effect of short-selling remains unidentified and endogenous. To overcome issues related to endogeneity, we chose an empirical context in which the cost of short-selling varies due to exogenous factors (e.g., factors that are not affected by the average CEO in a firm). More specifically, we exploit the variation in the cost of short-selling induced by the Pilot Program under Regulation SHO. In 2004, the SEC removed the uptick rule for 1000 randomly selected firms from the Russell 3000 index. The uptick rule is a trading restriction which prohibits short-selling to occur at a price level below the last trading price of the stock. Previous research shows that the presence of the uptick rule severely impedes short selling (Alexander and Peterson, 1999) and that firms would even list on other stock exchanges in order to get protection from the uptick rule (Lamont, 2012). The pilot program ended in July 2007 when the short-selling restrictions were lifted for all stocks. This setup allows us to use a Difference-in-difference (DiD) methodology to test for a causal relationship between the increased threat of short-selling and firms’ CSR investments.

Our findings suggest that as a result of the increased threat of short-term-related pressures, firms increase their CSR performance. Moreover, we provide causal evidence that the effect differs for firms based on the temporal orientation of institutional owners in firms. Short-term oriented firms subsequently decrease their performance on CSR, while long-term oriented firms increase their performance on CSR. We also find that the effect of the increased threat of short-termism is moderated by firms’ access to financing, where financially constrained firms decreasing their performance on CSR. In stark contrast, financially unconstrained firms subsequently perform better on CSR.

BACKGROUND
Short-selling, the speculation of stock prices going down, is a heavily debated topic among scholars and policy makers (Beber and Pagano, 2013; Boehmer and Wu, 2013; Harrison and Kreps, 1978; Miller, 1977). Although, management researchers have long looked at the effect of capital market investors on firm-level outcomes, such as innovation investments and acquisition decisions among others (Goranova et al., 2017), less attention has been paid to the influence of investors who sell the firms’ shares short (Shi et al., 2017; He and Tian, 2016). Examining this relationship is important as it provides a deeper understanding of how capital market investors, namely short-sellers, can affect the strategic decisions undertaken by firms.

On one hand, short sellers are seen as increasing the transparency and thus efficiency of capital markets, for example through uncovering and exposing fraudulent firm behavior like at Enron (Healy and Palepu, 2003) or more recently at Valeant Pharmaceuticals (Gandel, 2015). On another hand, the short-sellers are considered detrimental for firms’ financial health as short-sellers can increase downward stock pressures especially in times of economic turmoil.

Previous research shows that managers are sensitive to short-sellers and the threat they represent on firms’ stock prices (Grullon et al., 2015). Given this, we expect managers to undertake actions in order to shield the firm and their jobs from the potential downward pressure on stock prices. One channel of shielding firms from downward pressures on stock prices is to strengthen relations with stakeholders through better firm performance on CSR. Higher performance on CSR has been associated with lower firm financial volatility, faster growth over the long-run and the ultimate survival of the firm in times of crisis and instability (Ortiz-de Mandojana and Bansal, 2016).
The so-called insurance view of CSR (e.g., Godfrey 2009; Godfrey 2005) has theoretically argued and empirically shown that firms with higher institutional capital with stakeholders suffer less in case of negative events (Shiu et al., 2017). Hence, we formulate the following hypothesis:

**Hypothesis 1:** An increase in the threat of external short-term pressures leads to an increase in firms’ performance on CSR.

However, CSR activities encompass diverse stakeholder interests and prior literature has shown that managers primarily respond to the demands of their most powerful and salient stakeholders (Mitchell et al., 1997; Agle et al., 1999). When faced with external pressures to increase short-term firm performance, managers may shift their focus and align their actions with the expectations of their most salient stakeholders to avoid potential negative impact on the firm’s financial performance.

Empirical evidence suggests that institutional investors have a positive effect on firms’ CSR investments (Dyck et al., 2017). However, institutional investors are not a homogenous group and differ with regards to their temporal orientation. Some are long-term oriented and others short-term depending on the scale and scope of their portfolio holdings. Based on this heterogeneity in institutional investors’ temporal focus, which we use as a proxy for firms’ temporal orientation, we suggest a multidirectional effect of the effect of short-term-related external pressures on CSR. We follow Bushee (1998, 2001) and distinguish between transient, dedicated and quasi-indexing institutional investors. Transient institutional investors aim at maximizing short-term returns by holding diversified portfolios and actively trading company stocks. Therefore, transient institutional investors create pressure for myopic investment behaviour (Porter 1992). Moreover, due to their short-term orientation, transient institutional investors are the most likely group of investors to unload firm shares as a result of, for example, disappointing performance news (Bushee, 1998). Thus, the temporal orientation of salient stakeholders such as institutional investors moderates the effect on the relationship between an increased threat of a firms’ share price to be shortened and the firm’s performance on CSR. We therefore hypothesize:

**Hypothesis 2:** The effect of an increase in the threat of external short-term pressures on performance on CSR is moderated by the firms’ temporal orientation. Short-term oriented firms will reduce their performance on CSR as a result of the increased threat of external short-term-related pressures.

An important factor in moderating the effect of the increased threat of external short-term-related pressures on firms’ CSR investments is the firm’s access to financing. With other words, managers react to an external threat based on their firms’ ability to access financing. Managers of financially constrained firms may respond by tightening the budget and by putting a greater emphasis on achieving efficiency (Shi et al., 2017).

**Hypothesis 3:** The effect of an increase in the threat of external short-term pressures on CSR performance is moderated by firm’s financing constraints. Financially constrained firms will reduce their performance on CSR as a result of the increased threat of external short-term-related pressures.

**DATA AND VARIABLE DEFINITIONS**

Our final sample consists of firms listed in the Russell 3000 index which are also covered in Kinder, Lyndenberg, Domini & Co. (KLD) social performance database as of 2002. KLD is a widely used measure of CSR (Flammer and Bansal, 2017; Flammer, 2015; Cheng et al., 2013). Our final sample consists of 1682 firms, or 4496 firm-year observation for the period 2002 through 2006 (excluding 2004 the year of the shock as the Pilot was introduced in July 2004).
**Dependent Variables**

To measure firm’s investment in CSR we use the KLD index. Our main dependent variable is Net CSR index which is the difference between KLD strengths and KLD concerns. We follow recent suggestions in the CSR literature (e.g., Flammer and Kacperczyk, 2015; Kacperczyk, 2009; Mattingly and Berman, 2006) and look at CSR Strengths and CSR Concerns separately.

**Moderating Variables**

*Type of Institutional Ownership.* To classify institutional investors based on their temporal orientation, we follow Bushee (1998, 2001) where institutional investors differ with regards to the concentration of their holdings and the turnover of their portfolios. We use information on institutional holdings from Thompson Reuters database.

*Access to Finance.* We use a measure for firms’ financing constraints based on the WW index. The strength of the WW index lies in its underlying theoretical model that explains firm financial constraints which leads to stable parameters when applying the index to different data (Whited and Wu, 2006). An advantage of the WW approach is to avoid using Tobin’s Q and thus to reduce measurement error (Whited and Wu, 2006).

**Control Variables**

We use the standard accounting measures to control for firms’ size, profitability, Leverage, Tobin’s Q, cash ratio and capital intensity. *Firm Size* is the natural log of the market value of total assets which we calculate as the market value of common stock plus the book value of total liabilities. *Leverage* is long term debt plus short term debt to stockholders’ equity. *Tobin’s Q* is the market value of equity plus total assets less the book value of common equity to total assets. *Cash Ratio* is short term cash scaled by the book value of total assets. *Capital Intensity* is capital expenditures scaled by the book value of total assets.

**METHODOLOGY**

**Difference-in-Difference**

To test for a causal link between short selling and CSR, we use a Difference-in-difference estimation method which is a widely used method in the economics, finance and management literature to identify the effect of, for example, a policy change on firm behaviour. The estimation includes a treatment and a control group, and two time periods, one before and one after the intervention. Firms in the treatment group are affected by the intervention whereas firms in the control group are not affected by the intervention. *Treatment* is a dummy variable equal to 1 for firms in the Pilot program and 0 otherwise. *During* is a dummy variable equal to 1 from the year of the intervention. We use the Pilot program under Regulation SHO as a source of exogenous variation in the cost to short selling and estimate the following equation:

\[ Y_{it} = \beta_0 + \beta_1 \text{Treatment} + \beta_2 \text{Treatment} \times \text{During} + \beta_3 X_{it} + \mu_t + \epsilon_{it} \]  

The coefficient on the treatment variable, \( \beta_1 \), is mean difference in CSR performance between treated firms and firms in the control group prior to the intervention by the SEC. The coefficient captures any baseline differences that existed between the two groups before the intervention. The coefficient on the interaction term, \( \beta_2 \), captures the estimated change in CSR Performance between the two groups from the period before to the period after the intervention.
The coefficient on the vector of control variables is $\beta_3$. We include time dummies to account for yearly changes in the general business environment common to all firms. Standard errors are clustered by firms and years to account for serial correlation in the error term.

Extended Difference-in-Difference

We now extend the previous estimation specification to additionally account for institutional investors’ temporal orientation by including a three-way interaction between Treatment, During and PercTRA - percentage short-term oriented institutional investors. We estimate the following equation:

$$Y_{it} = \beta_0 + \beta_1 \text{Treatment} + \beta_2 \text{Treatment} \times \text{During} + \beta_3 \text{Treatment} \times \text{During} \times \text{PercTRA} + \beta_4 X_{it} + \mu_t + \epsilon_{it}$$

The coefficient $\beta_3$ captures the effect of an increased threat of short-selling on firm performance on CSR for firms where transient institutional ownership is prevailing relative to firms with non-transient institutional ownership. As in equation 1, we include a vector of control variables, time dummies and we cluster standard errors by firm and year.

To ensure the validity of our method we further tested whether the treatment and control group exhibit parallel trends in the period prior to the intervention. To do so, we calculated the change in Net CSR and CSR Strengths for treatment and control firms and then perform a two-sample t-test for which we fail to reject the null hypothesis (test statistic of 1.21). Thus, we cannot reject that there are no differences in the pre-treatment trends between treatment and control groups which suggests that the pivotal assumption of parallel trends holds.

RESULTS

Results from the DiD estimation following equation 1 suggest that firms increase their CSR performance as a result of the increased likelihood of being subject to short-selling. The positive and significant coefficient on Pilot*During ($\beta_2 = 0.071, p = 0.01$) in model 1 indicates that the CSR performance of treated firms increased by approximately 0.07 units relative to firms in the control group. The economic magnitude of the coefficient on Treatment*During is rather small which is only natural since in equation 1 we do not take into account firms’ heterogeneity with regards to temporal orientation and access to finance.

When we decompose the Net CSR measure on its two main components, CSR Strengths and CSR Concerns, the coefficient on Treatment*During is positive and significant for CSR Strengths. This result is in line with the results of the analysis in model 1. Firms affected by the removal of the uptick rule increase their performance on CSR relative to firms for which the rule was not removed. CSR Concerns are not affected.

We further investigated the individual components of Net CSR (corporate governance, environment, community, diversity, product, employee and human rights). Relative to firms in the control group, treated firms increase investments into CSR in the areas of community and diversity but decrease investments into CSR in the area of human rights.

Results from DiD Estimation with Type of Institutional Investors

Table 1 provides the results from the DiD estimation based on the temporal orientation of institutional owners (equation 2).

Insert TABLE 1 about here.

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The negative and statistically significant coefficient on $Treat*Dur*PercTRA$ in model 1 of Table 1 shows that treated firms with transient institutional investors decrease investments into CSR as a result of the threat of short-selling ($\text{Treat} \times \text{Dur} \times \text{PercTRA} = -2.161, p = 0.05$). Firms in the treatment group with short-term oriented institutional ownership decrease investments into CSR by 1.7 units ($-2.161 + 0.459$).

**Results from DiD Estimation with Slack Resources - Financial Constraints Measure (WW index)**

Table 2 provides the results from the DiD estimation based on firms' financial constraints following equation 2 where the three-way interaction term is $Treat*Dur*FC$.

The negative and statistically significant coefficient on $Treatment*During*FC$ in model 1 of Table 2 shows that financially constrained treated firms decrease investments into CSR as a result of the threat of short-selling by 0.5 units ($-0.960 + 0.416 = 0.544$).

**DISCUSSION AND CONCLUSION**

In this paper, we argue that firms alter their CSR investments as a result of increased threat of downward pressures on their share prices. More specifically, we hypothesize and find supportive evidence that firms increase investments in CSR as a result of an increase in the threat of external short-term pressures. The empirical context which we test for such a relationship allows us to make causal claims. Our results offer important contribution to recent empirical research studying the drivers of firms' CSR performance (Flammer et al., 2016; Liang and Renneboog, 2017). We further explore the boundary conditions of our findings through the moderating effects of the temporal orientation of institutional investors and firms' access to finance. More specifically, we provide evidence that firms react differently to the threat of short-term pressures depending on the prevailing orientation of the institutional investors holding their stock. These findings can help further our understanding of the role of capital market investors on firms' strategic decisions. In addition, our findings contribute to the institutional investors literature by showing that the temporal orientation of firms as measured by the temporal orientation of institutional owners affects firms' decisions to invest in CSR. We add to this literature by linking short-term institutional ownership to significantly lower performance on CSR. In addition, our findings contribute to the vibrant literature on external governance mechanisms (Aspara et al., 2014; McConnell and Servaes, 1990; Morck et al., 1988) by showing a causal link between external governance mechanisms, short-sellers, and firms' investment decisions.

**REFERENCES**


Hart, O. and Zingales, L. 2017. Companies should maximize shareholder welfare not market value.
He, J. J. and Tian, X. 2016. Do short sellers exacerbate or mitigate managerial myopia? Evidence from patenting activities.


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<th>(2) CSR Strengths</th>
<th>(3) CSR Concerns</th>
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<td>0.459**</td>
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<td></td>
<td>(0.20)</td>
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<td>-2.161***</td>
<td>0.163</td>
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<td>(0.90)</td>
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<td>(0.49)</td>
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<td>0.100</td>
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<td>log(Size)</td>
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<td>ROA</td>
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<td>-0.027</td>
<td>-0.838***</td>
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<td>(0.40)</td>
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<td>-1.179***</td>
<td>-0.417**</td>
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<tr>
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<td>(0.23)</td>
<td>(0.22)</td>
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<tr>
<td>TobinQ</td>
<td>0.145***</td>
<td>0.218***</td>
<td>0.059**</td>
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<tr>
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<td>(0.04)</td>
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<td>(0.02)</td>
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<tr>
<td>Cash Ratio</td>
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<td>0.869***</td>
<td>0.309*</td>
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<td></td>
<td>(0.25)</td>
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<td>(0.04)</td>
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<tr>
<td>Total Strengths</td>
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Clustered standard errors in parentheses
Significance level * p<0.1, ** p<0.05, *** p<0.01
TABLE 2: Difference in difference estimation with a measure of firm financial constraints - WW index

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<td>Treatment*Dur</td>
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Clustered standard errors in parentheses
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