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Three Essays on Capital Structure and Product Market Interactions

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THREE ESSAYS ON CAPITAL STRUCTURE AND PRODUCT MARKET INTERACTIONS

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DEDICATION

This work is dedicated to:

My husband, Yi Shen

My parents, Dianzeng Zheng & Lingping Duan

My parents-in-law, Jin Shen & Xiaomei Song

I love you all

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ABSTRACT

Capital structure can have important consequences for firm value. High leverage increases firms' probability of bankruptcy, and is shown to be the primary cause of financial distress. As suggested by a strand of literature on capital structure and product market interactions, high leverage is costly because financial weakness could induce unfavorable actions by product market participants such as customers and competitors. While the costs of high leverage are well documented in the extant literature, little is known on the factors that influence the costs of high leverage. This dissertation addresses this gap in the literature by examining how the costs of high leverage, measured by the sensitivity of firm sales growth to high leverage, are influenced by corporate social responsibility (CSR), creditor rights, and national culture.

The first essay examines the relation between CSR and the costs of high leverage. We find that CSR reduces losses in market share when firms are highly leveraged. Our main evidence persists when we use regression of discontinuity design (RDD) and difference-in-difference (DID) to address endogeneity. We also examine whether CSR separately mitigates the high leverage costs driven by customers and competitors. We find that CSR helps high-leveraged firms retain customers and guard against rival predation. Our results support the stakeholder value maximization view of CSR.

The second essay examines the impact of creditor rights on the costs of high leverage. We find that strong creditor rights increase the costs of high leverage. This result

lends support to the dark-side effects of strong creditor rights when a firm is highly leveraged. The negative impact of creditor rights on high leverage costs is more pronounced for the types of creditor protection that drive creditors' hold-up incentives as well as for firms located in countries with developed banking system (rather than bond market system), and firms with higher liquidation costs. When we explore the dark-side effects of creditor rights on specific players, we find that strong creditor rights intensify the adverse responses of customers and competitors. In an additional analysis, we find that creditor rights intensify the adverse responses of employees. Overall, our findings contribute to the debate on the role of creditor rights and shed light on the channels underlying the dark-side effects of creditor rights.

The third essay examines how national culture (specifically collectivism) influences the costs of high leverage. We find that these costs are mitigated in collectivist countries through two potential channels of influence: tight group structures and mental conditioning. This relation is stronger where high leverage costs are more pronounced and where legal systems are less developed. We extend our analysis to include employee and supplier stakeholder groups and find that collectivism helps highly leveraged firms retain employees and obtain trade credit from suppliers. Collectively, our findings suggest that national culture affects corporate financial outcomes by simultaneously influencing key stakeholders in the firm and its environment.

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CHAPTER 1

DOES CORPORATE SOCIAL RESPONSIBILITY REDUCE THE COSTS OF HIGH LEVERAGE? EVIDENCE FROM CAPITAL STRUCTURE AND PRODUCT MARKETS INTERACTIONS

1.1. INTRODUCTION

Research on capital structure and product markets interactions documents significantly negative effects of high leverage on product market performances (e.g., Opler and Titman, 1994; Campello, 2003, 2006). However, very little attention is paid to the mechanisms that may mitigate high leverage costs. In this paper, we fill this gap in the literature. We argue that corporate social responsibility (CSR) can mitigate the negative impact of high leverage on product market performances. Our study offers insights into the potentially important role of CSR in reducing the costs of high leverage due to a firm's conflicts with its stakeholders such as customers and competitors.

Stakeholders can impose significant costs on highly leveraged firms. For instance, high leverage leads to substantial losses in market share due to unfavorable actions by customers and competitors. Customers are reluctant to purchase from highly leveraged firms because these firms may renege on implicit contracts with customers by discontinuing product support or reducing product quality (Titman, 1984; Maksimovic and Titman, 1991; Matsa, 2011; Kini et al., 2016). Competitors may undertake predatory

attacks such as capital-intensive promotion activities (e.g., negative advertising campaigns, deep price discounts) against highly leveraged firms. As highly leveraged firms have difficulty accessing capital and face high cost of capital, they have less ability to withstand predatory attacks from competitors and can be forced to surrender substantial market share (Telser, 1966; Bolton and Scharfstein, 1990; Chevalier, 1995).[1]

We hypothesize that CSR plays a risk management role by protecting firms from stakeholders' unfavorable reactions in response to high leverage and thereby reduces the costs of high leverage. There are at least two reasons for this. First, CSR is associated with a halo effect (Hong and Liskovich, 2015; Lins et al., 2017) that increases trust between a firm and stakeholder groups such as customers. The halo effect of CSR provides a highly leveraged firm with insurance-like protection that tempers negative actions from customers and reduces competitors' incentives to exploit a highly leveraged firm's weak financial position. Second, high-CSR firms are perceived to have lower levels of risk (e.g., lower litigation risk) and have a wider investor base (Waddock and Graves, 1997; Hong and Kacperczyk, 2009; El Ghoul et al., 2011; Chava, 2014).[2] These firms thus have better

[1] In this paper, we follow Freeman (1984) and define stakeholders as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 40). Accordingly, we classify both customers and competitors as stakeholders.

[2] Waddock and Graves (1997) argue that firms attempting to shift costs to external stakeholders through socially irresponsible actions face a higher likelihood of future explicit claims. Hong and Kacperczyk (2009) document that "sin" firms (i.e., tobacco, alcohol, and gaming firms) face a higher risk of litigation. Hong and

access to financing and lower cost of capital (Merton, 1987; Heinkel et al., 2001), which mitigates the costs imposed on the firm by predatory attacks from competitors.

To examine the role of CSR for highly leveraged firms, we obtain firms' CSR scores from MSCI ESG STATS, which is the most extensive database on firms' CSR practices and has been widely used in recent finance studies on CSR (e.g., Bae et al., 2011; El Ghoul et al., 2011; Deng et al., 2013; Servaes and Tamayo, 2013; Di Giuli and Kostovetsky, 2014; Krüger, 2015; Hong and Liskovich, 2015; Lins et al., 2017; Jung et al., 2016). Following Campello (2006), we use the sensitivity of industry-adjusted sales growth to high leverage as a measure of high leverage cost, in which a more negative coefficient represents a higher cost. Industry-adjusted sales growth measures "the firm's sales growth relative to that of its industry rivals in a given year; this roughly gauges a firm's market share growth" (Campello, 2006, p. 148).

Using a sample of 2,739 U.S. firms over the 1996 to 2012 period, we find that CSR mitigates the costs of high leverage. Specifically, a one-standard-deviation increase in a firm's relative-to-rival CSR score reduces highly leveraged firms' losses in industry-adjusted sales growth by 1.1%, which is equivalent to recouping 70% of the costs of high

Kacperczyk (2009) argue that norm-constrained institutional investors tend to avoid "sin" stocks in their portfolios.

leverage (1.6%). Our main evidence is robust to using alternative proxies for CSR and leverage.

Identifying the causal effects of CSR on high leverage costs is challenging, as both CSR and high leverage costs are subject to endogeneity.[3] Both CSR and high leverage costs could be driven by unobserved firm-specific factors. For instance, firms with deep pockets or low cost of capital tend to invest more in CSR and these firms can withstand competition in distress, rather than CSR causally enhancing firms' competitiveness. Endogeneity could also come from reverse causality: a reduction in sales can force a firm to incur debt to cover expenses, while high-CSR firms somehow borrow less. We use two identification strategies to establish the causal effect of CSR on high leverage costs.[4] First, we use regression of discontinuity design (RDD), which allows us to create "locally" exogenous variation in CSR by making use of shareholder-sponsored CSR proposals that pass or fail by a small margin (Cuñat et al., 2012; Flammer, 2015a). Such close-call CSR proposals

[3] Previous studies (e.g., Opler and Titman, 1994; Campello, 2006) address endogeneity in the relation between leverage and sales growth. In addition to addressing the endogeneity of the high-leverage variable, we tackle endogeneity arising from the CSR variable.

[4] In our main analyses, we also mitigate endogeneity concerns by using the relative measurement method (Opler and Titman, 1994; Campello, 2003, 2006). Because peer firms' performance is beyond a focal firm's control, relative-to-peer measures are less likely to be endogenous. We also follow Campello (2006) and measure high leverage costs using long-term debt, which is less sensitive to short-term performance, and we use two-year lags between our high leverage and CSR measures and sales growth.

should be akin to random assignment of CSR to companies and allow for clean inference on the effect of CSR on high leverage costs. Second, we introduce a set of shocks that influence the costs of high leverage but are exogenous with respect to firms' CSR. Evidence of a more pronounced relationship between CSR and high leverage costs under those exogenous shocks should suggest that endogeneity biases do not drive our main results. We employ two sets of exogenous shocks: the reduction in import tariffs (Frésard, 2010; Valta, 2012) and exogenous economic and political conditions (Campello, 2003; Baker et al., 2015). The endogeneity test results consistently show that CSR causes a decrease in high leverage costs.

We next examine whether CSR reduces the costs of high leverage through the customer channel, the competitor channel, or both. We call the costs of high leverage due to unfavorable actions by customers and competitors *customer-driven costs* and *competitor-driven costs*, respectively. If the customer channel holds, we should find a stronger effect of CSR when customer-driven costs are higher—for example, when product specialization or customer switching costs are higher. Similarly, if the competitor channel holds, the effect of CSR should be more pronounced when competitor-driven costs are higher—for example, when competitors are financially robust (Campello, 2003; Campello and Fluck, 2006) or when highly leveraged firms are small and relatively easy to drive out of the market. Our results are consistent with these predictions, suggesting that the mitigating effects of CSR on the costs of high leverage operate through both the customer and competitor channels.

Our study makes contributions to at least two literatures. First, to the best of our knowledge, our study is the first to investigate the role of CSR in the unique setting of capital structure and product market interactions. While prior studies on capital structure and product market performances focus on the negative consequences of high leverage policies,[5] ours provides a mechanism to mitigate such negative effect of high leverage. Furthermore, our study allows us to identify specific channels through which CSR affects firm value. In related work, Deng et al. (2013) examine the effect of CSR on firm value in the setting of mergers, as the merger approval and integration processes are also influenced by various stakeholder groups. Our study builds on and extends their work by identifying how CSR influences two specific stakeholder groups, namely customers and competitors. We show that CSR reduces the adverse behavior of customers and competitors when firms are highly leveraged. This evidence on the risk management role of CSR improves our understanding of the mechanisms through which CSR influences firm value.

Second, our study contributes to the debate on whether CSR is value-enhancing or value-destroying. The value-enhancing view holds that CSR increases shareholder welfare by improving firm–stakeholder relationships. Research that substantiates this view finds

[5] For example, Chevalier (1995) finds that prices fall following leveraged buyouts (LBO) in local markets where competitors have low leverage, suggesting that low leverage rivals prey on LBO firms. Matsa (2011) finds that highly leveraged supermarket firms tend to degrade their products' quality. Kini et al. (2016) show that firms with higher financial leverage experience a greater probability of a product recall, as well as more frequent and severe recalls.

that firms with high customer awareness, high employee satisfaction, and fewer agency problems command higher valuations (Servaes and Tamayo, 2013; Edmans, 2011; Ferrell et al., 2016). CSR improves investors' perception of a firm's trustworthiness and thus mitigates market underreaction to earnings news (Jung et al., 2016). The adoption of close-call CSR proposals increases firm value by increasing labor productivity and sales growth (Flammer, 2015a). High-CSR firms undertake value-enhancing mergers and acquisitions (Deng et al., 2013), and they perform better during the 2008–2009 financial crisis (Lins et al., 2017). By contrast, the value-decreasing view holds that CSR activities are manifestations of agency problems. Studies supporting this view find that CSR activities reduce shareholder wealth by increasing opportunistic managers' ability to misuse corporate resources for their private gain (Friedman, 1970; Pagano and Volpin, 2005; Cronqvist et al., 2009; Masulis and Reza, 2015). Using the setting of capital structure and product market interactions, our study contributes to the debate by supporting the stakeholder value maximization view of CSR.

Our study proceeds as follows. Section 1.2 describes our sample, the main variables, and our empirical design. Section 1.3 presents the results. Section 1.4 concludes.

1.2. SAMPLE, MAIN VARIABLES, AND EMPIRICAL DESIGN

1.2.1. Sample Construction

The sample selection process begins with all U.S. firms in Compustat over the 1988 to 2012 period. We omit observations that have negative total assets and sales, missing

equity, or a long-term debt-to-asset ratio less than 0 or greater than 1. We next eliminate firm-years with asset or sales growth greater than 200% to control for outliers. We further exclude observations with a missing Fama–French (1997) 48-industry classification and observations from financial institutions, utilities, and industries that are not clearly defined (i.e., industries coded "almost nothing"). Based on the resulting sample, we compute both the absolute value and the industry-year mean of our main financial variables. To ensure that the industry-year mean is not biased toward outliers, we require that each industry-year contain at least four firms. These filters yield 123,667 firm-year observations representing 13,919 firms.

Next, we merge the Compustat sample with data from MSCI ESG STATS (formerly known as KLD STATS), which tracks firms' CSR ratings since 1991. Based on the MSCI ESG STATS data, we calculate the adjusted CSR scores and their industry-year means. We require a minimum of four CSR observations for each industry-year. Firm-years with missing values for variables in our main regression are excluded. We further merge our sample with data from the Center for Research in Security Prices (CRSP) to obtain annual risk-adjusted stock returns and data from I/B/E/S to obtain analyst forecast information used to compute firms' implied cost of equity.[6] The final sample comprises an

[6] In this step, we use a "left join" approach whereby we retain all observations in the Compustat-MSCI sample and add data from CRSP and I/B/E/S because, otherwise, the intersection of the four data sets would yield a limited number of observations. Note that while we drop observations with missing values in regressions in

unbalanced panel of 16,390 U.S. firm-year observations representing 2,739 firms over the 1996 to 2012 period.[7]

Table 1.1 presents the sample distribution by industry (using the Fama–French 48-industry classification) and year. Firms belonging to the Business Services (12.31%), Retail (8.93%), and Electronic Equipment (7.95%) categories dominate the sample. Turning to the distribution by year, the number of sample firms is steady at slightly over 300 per year over the 1996 to 2002 period before increasing to 622 in 2004 and 1,600 in 2005. The number of firms per year is then fairly stable at around 1,600 over the 2005 to 2012 period. Changes in the distribution by year are due to increased CSR coverage.

1.2.2. Main Variables

1.2.2.1. Corporate Social Responsibility

To measure a firm's CSR activities, we rely on MSCI ESG STATS. Information used to construct firms' CSR ratings comes from government agencies, non-governmental

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which the outcome variable is sales growth, we allow missing values in regressions using other outcome variables, as again we would otherwise face a limited number of observations. Thus, the number of observations for other outcome variables is fewer than 16,390, as shown in Table 1.2, Panel A (e.g., COE_t has 12,996 observations).

[7] For each firm-year observation, the number of CSR strength components in the human rights area is zero from 1991 to 1993 and, thus, CSR scores defined as described in Section 2.2 are missing during this period. Because the CSR data for our purposes start in 1994 and we lag these data two years in the baseline regression, our final sample starts in 1996.

organizations, global media publications, annual reports, regulatory filings, proxy statements, and company disclosures. MSCI ESG STATS coverage has expanded over time. Over the 1991 to 2000 period, it covered the S&P 500 and Domini Social Index. Since 2000, additional indexes have been included in its coverage, with the Russell 1000 Index added in 2001, the Large Cap Social Index added in 2002, and both the Russell 2000 Index and the Broad Market Social Index added in 2003.

MSCI ESG STATS tracks seven CSR areas: community, diversity, employee relations, environment, human rights, product characteristics, and corporate governance. Within each of these areas, a number of strength and concern factors are assigned a value of 0 or 1 (see Appendix A). For each firm-year, we calculate the scores for each CSR area by subtracting the number of concerns from the number of strengths. We then obtain the firm's raw CSR score, *CSR_NET*, by summing the scores across all areas except corporate governance.[8] This simple summation approach is widely used in the literature (El Ghoul et al., 2011; Jiao, 2010; Bae et al., 2011). However, Deng et al. (2013) note that comparing raw CSR scores can be problematic because the number of strengths and concerns in an area varies considerably over time. For example, in the employee relations area, the "Health and safety" factor is not available until 2003. To address this issue, we follow

[8] We exclude the corporate governance component to ensure that our CSR measure is not simply a proxy for governance effects. However, our results continue to hold when we include corporate governance, as shown in robustness tests.

Deng et al. (2013) and construct our main CSR measure, *CSR*, by dividing the raw strength and concern scores of each area by the number of factors in that area-year and then taking the difference between the adjusted strength and concern scores for that area. Appendix B provides detailed variable definitions.

1.2.2.2. The Costs of High Leverage

In a study revisiting Opler and Titman's (1994) finding that high leverage has a detrimental effect on relative-to-rival product market performance, Campello (2006) shows that in equilibrium, the negative product market effect of leverage arises only when leverage is sufficiently high. He finds that excessive indebtedness leads to unfavorable actions by customers and competitors, whereas moderate indebtedness is associated with improved relative-to-rival sales performance. We follow Campello (2006) and capture the costs of high leverage using the sensitivity of sales to high leverage. Specifically, we run the following model:

$$SALES\_G_{i,t} = a + \lambda_1 HLEV_{i,t-2} + \lambda_2 SIZE_{i,t} + \sum_{k=1}^{2} \lambda_{3k} PROFIT_{i,t-k} + \sum_{k=1}^{2} \lambda_{4k} INVESTMENT_{i,t-k} + \sum_{k=1}^{2} \lambda_{5k} SELLEXP_{i,t-k} + \varepsilon_{i,t}, \quad (1)$$

where *i* indexes firms and *t* indexes years. Sales growth, *SALES_G*, is assumed to reflect the actions of customers and competitors. We should observe a decrease in sales growth if customers abandon the firm or if the firm faces predation by competitors. *HLEV* is a dummy variable that takes a value of 1 if the firm's long-term debt ratio is in the top

three deciles of the overall sample in a given year. We use long-term debt in constructing our high leverage measure to mitigate concerns about reverse causality from sales growth to leverage because long-term debt is less likely to be adjusted in response to short-term performance (Campello, 2006). We further attempt to mitigate endogeneity by using a two-year lag between the high leverage measure and sales growth (Campello, 2006). The coefficient on *HLEV*, λ_1, captures the costs of high leverage, with a more negative value indicating higher costs.

The above model controls for several variables that are correlated with both sales growth and leverage, as their omission would lead to biased coefficients on *HLEV*. Our first control is firm size, *SIZE*, which is equal to the natural logarithm of total assets. Large firms tend to have higher debt capacity. At the same time, large firms tend to be mature firms, which grow at a slower pace. The second control variable is profitability, *PROFIT*, computed as operating earnings plus depreciation over total assets. High leverage may indicate that a firm cannot generate sufficient revenue to cover expenses. However, high leverage may discipline management (Jensen, 1986) and increase profitability, which can affect future sales growth through the firm's ability to retain earnings. Our third control variable is capital investment, *INV*, which is equal to capital expenditures over total assets. While a firm's capital investment depends on its debt burden, it contributes to future sales growth. The final control variable is the ratio of advertising and selling expenses to total sales, *SELLEXP*. Higher selling expenses should be positively related to future sales but

are also correlated with leverage (Chevalier and Scharfstein, 1996). All control variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. The reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. Appendix B provides detailed variable definitions.

1.2.3. Empirical Design

To examine the effect of CSR on the costs of high leverage, we augment the costs of high leverage model in Equation (1) by adding two terms: the interaction between *HLEV* and our proxy for CSR and the standalone CSR measure. The regression is as follows:

$$SALES\_G_{i,t} = b + \beta_1 CSR_{i,t-2} \times HLEV_{i,t-2} + \beta_2 HLEV_{i,t-2} + \beta_3 CSR_{i,t-2} + \beta_4 SIZE_{i,t} + \sum_{k=1}^{2} \beta_{5k} PROFIT_{i,t-k} + \sum_{k=1}^{2} \beta_{6k} INVESTMENT_{i,t-k} + \sum_{k=1}^{2} \beta_{7k} SELLEXP_{i,t-k} + \varepsilon_{i,t} . \quad (2)$$

In (2), β_1 measures the effect of *CSR* on the costs of high leverage. A positive (negative) value indicates that CSR activities reduce (increase) the costs of high leverage.

One main concern with the model described by Equations (1) and (2) is endogeneity bias. First, both CSR and high leverage could reflect unobserved firm characteristics such as corporate culture. Second, deteriorating sales performance could induce a firm to increase debt to cover expenses. To mitigate such concerns, in our main analyses, we adopt the relative measurement method (Opler and Titman, 1994; Campello, 2003, 2006),

whereby regression variables are determined in part by other firms' performance. Given that other firms' performance is outside a focal firm's control, relative-to-peers variables are less likely to be endogenous. Specifically, we measure *SALES_G*, *CSR*, and the control variables relative to their industry-year means, and we construct *HLEV* such that a firm is considered highly leveraged if, in a given year, its relative-to-mean leverage ratio is in the top three deciles. Moreover, as with *HLEV*, we use a two-year lag between *CSR* and sales growth. In additional tests, we address potential endogeneity by using RDD and difference-in-difference approaches.

Table 1.2, Panel A provides descriptive statistics for the key variables (before industry-year adjustments) used in Equations (1) and (2), and Panel B reports the pairwise correlations between these variables. The pairwise correlation coefficients among the control variables are low, suggesting that multicollinearity is not a primary concern.

1.3. RESULTS

In Section 1.3.1., we provide evidence first on the costs of high leverage and then on the role of CSR in mitigating the costs of high leverage. In Section 1.3.2., we address endogeneity concerns. In Section 1.3.3., we examine the extent to which the effect of CSR on the costs of high leverage is driven by the customer and competitor channels. Finally, in Section 1.3.4., we check the robustness of our results to alternative measures of high leverage and CSR.

1.3.1. CSR and the Costs of High Leverage

In this section, we first establish that the effect of high leverage on product market performance as measured by sales growth is negative. We then examine whether CSR mitigates this negative effect. Model 1 of Table 1.3 reports the results of regressing Equation (1) using ordinary least squares (OLS). The coefficient on the high-leverage dummy is significantly negative, indicating that high leverage is associated with reduced sales growth. Specifically, we find that firms with high leverage experience 1.6% lower relative-to-rival sales growth than other firms. The magnitude of this estimate is close to the -1.9% documented by Campello (2006) for a sample that ends before 2000. Because 90% of our sample observations correspond to the 2000 to 2012 period, our findings indicate that the costs of high leverage documented by Campello (2006) have persisted over the last decade.

Models 2 and 3 of Table 1.3 report the results of regressing Equation (2) using OLS. Model 2 regresses sales growth on *CSR*×*HLEV*, *HLEV*, and *CSR* after including the control variables and shows that CSR attenuates the costs of high leverage. Model 3, our baseline model, shows that CSR mitigates the costs of high leverage. Specifically, in Model 3, the coefficient estimate on *CSR*×*HLEV* is significantly positive at 0.025, suggesting that a one-standard-deviation increase in our industry-adjusted CSR score increases a highly leveraged firm's relative-to-industry sales growth two years ahead by 1.1%. Recall that in Model 1, the coefficient estimate on *HLEV*, the proxy for high leverage costs, is -0.016.

The effect of CSR is thus economically substantial, reducing the negative effect of high leverage on sales growth by 69% (0.011/0.016). Taken together, the results indicate that firms face lower costs of leverage if they adopt CSR, consistent with the risk management role of CSR.

Interestingly, we find that the standalone CSR term loads significantly negatively on sales growth. Note that the standalone CSR term captures the effect of CSR when firms have lower leverage and are financially healthy. Its negative coefficient suggests that the risk management benefit of CSR is limited and indeed outweighed by the costs of CSR investment when firms maintain low leverage and are financially healthy. We interpret these findings as evidence that CSR investment is like an insurance product. Firms pay insurance premiums in the form of CSR investment costs when they are financially healthy, and they receive the benefits of CSR insurance when they are in distress.

There are alternative interpretations of our results. One might argue that the negative effect of CSR on sales growth is a manifestation of agency problem with CSR investment and the positive interaction effect indicates the disciplining effect of high leverage, which curbs the agency problem and attenuates the negative effect of CSR. We argue that such interpretation is unlikely for several reasons. First, the discipline hypothesis of high leverage is inconsistent with our finding. The hypothesis predicts a positive relation between leverage and sales growth. We find the opposite relation, which is consistent with the idea that high leverage is costly rather than beneficial. Second, the agency view predicts

a negative effect of CSR on sales growth and an attenuated agency problem of CSR for highly leveraged firms. Thus, the total effect (main effect plus interaction effect) of CSR on sales growth for highly leveraged firms should be non-positive. On the contrary, we find that CSR increases sales growth for highly leveraged firms (Model 3 in Table 1.3). Third, the negative coefficient on the standalone CSR term is not robust when using the RDD and difference-in-difference approaches shown in Sections 3.2.1 and Section 3.2.2, respectively. For these reasons, we conclude that our findings are inconsistent with the agency view.

Another interpretation of our findings is that reduced sales growth in the presence of high leverage reflects efficient downsizing. Because firms with high leverage have to submit to the scrutiny of capital markets (Jensen, 1986), highly leveraged firms tend to shut down or otherwise divest themselves of unprofitable product lines. However, even unprofitable product lines could be of value to certain customers; for example, a low-price brand may be welcomed by low-income individuals. In this case, a high-CSR firm that cares about social welfare might choose to continue an unprofitable product line, resulting in worse firm performance. In other words, CSR prevents efficient downsizing, resulting in less sensitive changes in sales growth in the presence of high leverage. This alternative interpretation predicts that by impeding efficient downsizing, CSR negatively affects the performance of highly leveraged firms. Contrary to this prediction, in untabulated results we find that CSR helps highly leveraged firms increase stock returns and improve operating

performance. These results suggest that rather than negatively affecting firm performance by impeding efficient downsizing, CSR positively affects firm performance by reducing the costs of high leverage.

1.3.2. Endogeneity

Our main results show that CSR reduces the costs of high leverage. However, this evidence is subject to potential endogeneity problems arising from the *HLEV* and *CSR* variables. We use two identification strategies to establish the causal effect of CSR on high leverage costs in the following subsections.[9]

1.3.2.1. Regression of Discontinuity Design (RDD)

For our model to be free of endogeneity, we would need to randomly assign firms to groups with different levels of CSR and then observe the costs of high leverage across

[9] While not reported, we implement several additional tests to further mitigate endogeneity concerns. First, we employ the 2SLS approach. We use two instruments for CSR: 1) *BLUE* (following Deng et al., 2013), which is a dummy variable equal to 1 if a firm is headquartered in a Democratic state and 0 otherwise and 2) one-year lagged CSR. These instruments are relevant because "blue companies" are more likely to "go green" (Di Giuli and Kostovetsky, 2014) and firms' CSR policies tend to be sticky. To instrument for *HLEV*, we use two-year lagged values in the spirit of Campello (2003). Second, we use the system GMM approach developed by Blundell and Bond (1998). Third, we estimate firm-fixed effect regressions. In our baseline model, we do not add firm fixed effects due to the "stickiness" of CSR. As indicated by Wooldridge (2002) and Zhou (2001), fixed effects can generate imprecise estimates on the key explanatory variables that do not vary much over time. Nevertheless, the 2SLS, system GMM, and firm fixed effects model all consistently support our main evidence.

the groups. While such randomization is not available to the researcher, the RDD approach of Flammer (2015a) and Cuñat et al. (2012) allows us to create "locally" exogenous variation in CSR by making use of shareholder-sponsored CSR proposals that pass or fail by a small margin. The idea is that a firm that marginally passes a CSR proposal (e.g., 50.1%) should not be systematically different from a firm that marginally fails a similar CSR proposal (e.g., 49.9%) and, thus, such close-call CSR proposals should be akin to random assignment of CSR to companies and allow for clean inference on the effect of CSR on high leverage costs.

We gather information on CSR proposals from RiskMetrics and SharkRepellent databases. RiskMetrics traces shareholder proposals by S&P 1,500 companies and an additional 400–500 widely held companies from 1997 to 2011. SharkRepellent covers around 4,000 companies in the Russell 3000 index over the 2005 to 2012 period. To ensure that the proposals in our sample are related to CSR, we retain only those proposals identified by the type "SRI" (socially responsible initiative) in RiskMetrics or "Social/Environmental Issues" in SharkRepellent. Note that while the RDD approach can be implemented by restricting the sample to those proposals that pass or fail by a small margin, discarding all non-close proposals yields a small number of observations. An alternative approach suggested by Flammer (2015a) is to include polynomials that approximate a continuous relationship between the outcome variable and the CSR proposal vote. This approach makes use of the full sample of CSR proposals, mitigating the concern

about inferences from a small sample. Therefore, we conduct our RDD analysis using the approach with polynomials.[10]

Specifically, we run the following model[11]:

$$SALES\_G_{i,t} = \pi_1 HLEV_{i,t-2} \times CSR_{PASSED}{}_{i,t-2} + \pi_2 HLEV_{i,t-2} + \pi_3 CSR_{PASSED}{}_{i,t-2}$$

$$+P_l(v_{i,t}, \gamma_l) + P_r(v_{i,t}, \gamma_r) + Z_{i,t} + \varepsilon_{i,t}\,, \qquad (3)$$

where *SALES_G*, *HLEV*, and the control variables contained in *Z* are defined as before; CSR_{PASSED} is a dummy equal to 1 if the CSR proposal is adopted and 0 otherwise; $P_l(v_{i,t}, \gamma_l)$ is a flexible polynomial function for observations on the left-hand side of the majority threshold γ (i.e., 50%); $P_r(v_{i,t}, \gamma_r)$ is a flexible polynomial function for observations on the right-hand side of the majority threshold γ; and v is the percentage of votes on the CSR proposal. Similar to our baseline model, we use a two-year lag between CSR_{PASSED} and the outcome variable, sales growth. Standard errors are clustered at the firm level to account for within-firm dependence across observations.

[10] We also test the first RDD approach. Specifically, we restrict the sample to CSR proposals that pass or fail within a bandwidth of +-10%, +-7.5%, +-5%, and +-2.5% around our majority threshold of 50%. The results are qualitatively similar to those in Table 1.4, all consistently supporting our main finding that CSR reduces the costs of high leverage.

[11] We thank Caroline Flammer for providing code guidance on the RDD with interactions.

Table 1.4 reports the results. In Model 1, we follow Flammer (2015a) and use polynomials of order three on the left- and right-hand sides of the majority threshold without the inclusion of control variables. We find that the interaction term $CSR_{PASSED} \times HLEV$ loads significantly positively on *SALES_G*, with a significant coefficient estimate of 0.265. This finding suggests that the passage of CSR proposals is associated with a significant decrease in high leverage costs. In Model 2, we further add the control variables to Model 1. As pointed out by Flammer (2015a, p. 2558), "if the outcome of the vote is truly random, including these controls should not affect the coefficient on the pass dummy … since all predetermined characteristics should be orthogonal to the assignment of pass versus fail." We find that the coefficient estimate on $CSR_{PASSED} \times HLEV$ in Model 2 is close to that in Model 1 in both magnitude and significance level, supporting that our experiment is randomized. Models 3 and 4 repeat the previous analyses using polynomials of order four (Cuñat et al., 2012). Again, we find positive and significant estimates on $CSR_{PASSED} \times HLEV$. Taken together, the RDD results show that endogeneity does not drive our main results on the mitigating effect of CSR on high leverage costs.

1.3.2.2. Exogenous Shocks

In this set of endogeneity tests, we introduce a set of exogenous shocks to our model. These shocks influence the costs of high leverage but are exogenous with respect to firms' CSR. Evidence of a more pronounced relationship between CSR and high

leverage costs under exogenous shocks that magnify the costs of high leverage would suggest that endogeneity problems are not driving our main results. We employ a quasi-natural experiment as follows. A firm establishes its CSR policy two years before a base year. In the base year, the firm experiences an exogenous business shock. Because the firm's CSR precedes the exogenous shocks, it is not likely to be affected by these shocks. However, the exogenous shocks can influence the costs of high leverage. Building on this argument, we predict that the mitigating effect of CSR on the costs of high leverage is magnified after the advent of the exogenous shock.

We focus on two sets of exogenous shocks. First, we use the reduction in import tariffs (e.g., Frésard, 2010; Lileeva and Trefler, 2010; Valta, 2012). A tariff cut can increase stakeholders' sensitivity to high leverage, thus increasing the costs of high leverage. Bernard et al. (2006) show that lower trade barriers attract intensified competition from foreign rivals. Indeed, import tariff reductions are exogenous shocks that shift the competitive landscape of industries (Frésard, 2010). With reduced import tariffs, foreign rivals face lower costs of entering U.S. product markets, and therefore introduce a variety of goods and services to the U.S. markets (Valta, 2012). In this case, customers are more sensitive to high leverage, because in a more competitive environment they have more choices and do not have to stick with the original products regardless of the financial conditions of the firm. Competitors are also more reactive to a highly leveraged firm because the expanded pool of rivals increases the probability of predation.

Following prior studies, we use the industry-level import tariff data compiled by Feenstra (1996), Feenstra et al. (2002), and Schott (2010). These data cover the U.S. manufacturing industries (2000–3999 SIC range) over the 1972 to 2005 period. Following common practice (Frésard, 2010; Lileeva and Trefler, 2010; Valta, 2012; Flammer, 2015b) we define the "shock" when the reductions of tariff rates[12] exceed a certain threshold. In particular, we consider industry-years with a tariff reduction at least twice the average annual change in the same industry.[13] To identify the relation between CSR and high leverage costs after tariff shocks, we employ a difference-in-difference regression,[14] similar to Frésard (2010) and Valta (2012):

$$\begin{aligned} SALES\_G_{i,t} = {} & \alpha_i + \gamma_1 Post\_reduction_{j,t} \times CSR_{i,t-2} \times HLEV_{i,t-2} + \gamma_2 CSR_{i,t-2} \times HLEV_{i,t-2} \\ & + \gamma_3 Post\_reduction_{j,t} \times HLEV_{i,t-2} + \gamma_4 Post\_reduction_{j,t} \times CSR_{i,t-2} \\ & + \gamma_5 HLEV_{i,t-2} + \gamma_6 CSR_{i,t-2} + \gamma_7 Post\_reduction_{j,t} + \gamma_8 SIZE_{i,t} \\ & + \sum_{k=1}^{2} \gamma_{9k} PROFIT_{i,t-k} \end{aligned}$$

[12] The *ad valorem* tariff rate is computed as the duties collected by U.S. Customs divided by the free-on-board value of imports.

[13] The alternative choices of threshold (2.5, or 3 times) do not qualitatively influence our results, and thus are not reported for brevity.

[14] The sample period of the difference-in-difference regression is 1996–2012. The end of sample period is set later than the end of tariff data (2005) to allow time for the main effect to emerge. However, the results are qualitatively similar if the sample period is changed to end at 2005.

$$+\sum_{k=1}^{2} \gamma_{10k} INVESTMENT_{i,t-k} + \sum_{k=1}^{2} \gamma_{11k} SELLEXP_{i,t-k} + \varepsilon_{i,j,t} . \quad (4)$$

where *i*, *j* and *t* denote firm, industry and year. α_i is a vector of firm fixed effects. $Post\_reduction$ is a dummy equal to one if the tariff reduction has taken place in industry *j* by time *t* (Valta, 2012). Again, *SALES_G*, *CSR*, *HLEV*, and the control variables are defined as before. Similar to our main model, standard errors are clustered at the firm level.

The difference-in-difference result is reported in Table 1.5. The regression automatically treats all firm-years in industries that have not experienced a reduction in tariff as a control group. The coefficient of interest is the three-way interaction among $Post\_reduction$, *CSR*, and *HLEV* (γ_1), which represents the difference in CSR–high leverage costs sensitivity between firms that have experienced tariff reduction and those in the control group. In the difference-in-difference model, we find the estimate of the three-way interaction is 0.074, positive and significant at the 5% level. This finding implies that after the tariff shock, firms' CSR policy reduces extra stakeholder-related costs that could occur to highly leveraged firms in an exogenously modified competitive environment. This difference-in-difference result ensures that our main finding cannot be fully influenced by the endogeneity problems.

The second set of shocks we consider are exogenous economic and political conditions. During an economy-wide downturn, the viability of a highly leveraged firm becomes more uncertain, increasing unfavorable actions from both customers and

competitors. Following Campello (2003), we use changes in the unemployment rate and GDP. An increase in the unemployment rate or a decrease in GDP represents a negative shock to aggregate demand that adversely affects the product market environment, thus magnifying the costs of high leverage. We also use an annual policy uncertainty index from Baker et al. (2015). Greater policy uncertainty puts upward pressure on the cost of financing (Baker et al., 2015; Pástor and Veronesi, 2013), limiting the ability of highly leveraged firms to withstand attacks from competitors. We therefore expect the costs of high leverage to be greater under higher policy uncertainty.

To test the idea that the effect of CSR on the costs of high leverage is conditioned by the exogenous economic and political environment, we mainly rely on the two-step procedure of Campello (2003), who examines how continuous exogenous condition variables affect the main relation (the relation between CSR and high leverage costs in our setting). The results, which are untabulated for brevity, show that the effect of CSR on high leverage costs is more pronounced under bad exogenous conditions, lending further support to our main finding that CSR reduces the costs of high leverage.[15]

[15] We also test this idea using a good/bad exogenous condition dichotomy. Specifically, we re-run Equation (2) separately for firm-years partitioned into good and bad economic condition subsamples. We continue to find consistent results.

1.3.3. Channels through which CSR Reduces the Costs of High Leverage

The analyses so far present evidence on the combined effect of CSR on the costs of high leverage. The literature shows that customers and competitors each contribute to a decline in the performance of highly leveraged firms. In this subsection, we test whether this finding extends to our setting—that is, whether the effect of CSR on high leverage costs operates through both customers and competitors.

1.3.3.1. Customer Channel

If CSR reduces high leverage costs driven by customers, the effect of CSR should be stronger when customer-driven costs are higher. Research shows that customer-driven costs are higher under higher product specificity (Opler and Titman, 1994). When a customer purchases a specialized product, a large portion of the price paid is for implicit claims such as future servicing. However, because highly leveraged firms are likely to break implicit customer contracts, customers have incentives to avoid high-specificity products. We use two proxies for the degree of product specificity. First, following Titman and Wessels (1988), we use R&D expenditures. We classify a firm as a high-R&D (low-R&D) intensity firm in a given year if its R&D-to-sales ratio is greater (smaller) than 0.1% two years before the base year (Opler and Titman, 1994). High R&D expenditures suggest that the firm is likely to produce more specialized products. Second, we use the asset turnover ratio, which is measured as the ratio of total sales to total assets. We classify a firm as having high (low) asset turnover if its asset turnover ratio is above (below) the

sample median two years before the base year. A lower asset turnover ratio suggests that the firm has a longer production cycle (Long et al., 1993) and is hence likely to produce more specialized products.

Table 1.6 presents the results. Model 1 provides the baseline model from Table 1.3 for comparison. Models 2 and 3 show that the coefficient on *CSR*×*HLEV* is significantly positive at 0.027 for firms with high R&D intensity but insignificantly positive at 0.012 for firms with low R&D intensity. Models 4 and 5 show that the coefficient on *CSR*×*HLEV* is significantly positive at 0.034 for the low asset turnover subsample but is insignificantly positive at 0.009 for the high asset turnover subsample. These results imply that CSR mitigates customer-driven leverage costs as captured by measures of product specificity.

Customer-driven costs are also likely to be higher for firms that produce differentiated goods than for firms that produce standardized goods because differentiated products are associated with high switching costs, whereas standardized products allow customers to switch brands easily.[16] To classify goods as standardized versus

[16] To see this, consider Nokia cellphones that were offered only on the Symbian platform (i.e., differentiated products). In 2013, when Nokia stopped updating Symbian, thus breaking its implicit contracts with customers, its customers' cellphones lost value. Had Nokia instead allowed its cellphones to operate on multiple platforms (i.e., standardized products), its customers could have easily switched to the Android or Windows platform, reducing their losses.

differentiated, we follow Giannetti et al. (2011) and Rauch (1999) and partition the sample into industries with standardized goods versus industries with differentiated goods.[17]

Models 6 and 7 of Table 1.6 show that the effect of CSR is strong and significant for firms in industries producing differentiated goods but not for firms in industries producing standardized goods. These results lend further support to our finding that CSR reduces customer-driven leverage costs.

The mitigating effect of CSR on high leverage costs is also likely to be stronger when customers are more sensitive to firms' CSR activities. Lev et al. (2010) argue that corporate charitable contributions are more likely to influence sales for firms producing consumer rather than industrial goods. While consumer purchases are influenced by social forces and psychological factors, industrial purchases are formalized and follow well-defined procedures (Corey, 1991), and a firm's image is thus likely to play a more important role for consumers than for industrial buyers. Building on this argument, we predict that customers of consumer goods are more sensitive to the CSR activities of highly leveraged firms. We follow the methodology of Lev et al. (2010) to define high- and low-customer-sensitivity industries.[18]

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[17] According to Giannetti et al. (2011) and Rauch (1999), industries with differentiated goods have SIC2 codes 25, 27, 30, 32, 34, 35, 36, 37, 38, and 39, and industries with standardized goods have SIC2 codes 12, 14, 20, 22, 23, 24, 26, 28, 29, 31, and 33.

[18] According to Lev et al. (2010), high-customer-sensitivity industries are those with 4-digit SIC ranges

Models 8 and 9 of Table 1.6 report the results. We find, consistent with Lev et al. (2010), that the influence of CSR is strong and significant for firms in high-customer-sensitivity industries but not for firms in low-customer-sensitivity industries. These results again suggest that CSR reduces customer-driven costs.

To summarize, the above subsample tests show that CSR reduces high leverage costs for firms in which customer-driven costs are likely to be high, particularly for firms that produce high-specificity products, differentiated products, and consumer goods.

1.3.3.2. Competitor Channel

If CSR reduces the high leverage costs driven by competitors, the effect of CSR should be stronger when competitor-driven costs are higher. We expect competitor-driven costs to be high when highly leveraged firms face competitors that are financially robust. The rationale is that financially healthy competitors can afford to charge lower prices in an attempt to drive a highly leveraged firm out of the market (Campello, 2003; Campello and Fluck, 2006). Following prior research, we proxy for the financial condition of a firm's competitors using the industry-average level of debt. We classify an industry as a high-debt (low-debt) industry in a given year if its average long-term debt ratio is above (below)

[0,999], [2000,2399], [2500,2599], [2700,2799], [2830,2869], [3000,3219], [3420,3429], 3523, [3600,3669], [3700,3719], 3751, [3850,3879], [3880,3999], 4813, [4830,4899], [5000,5079], [5090,5099], [5130,5159], [5220,5999], [6000,6999], [7000,7299], and [7400,9999]. The remaining industries are classified as low-customer-sensitivity industries.

the overall sample median two years before the base year. We also expect competitor-driven costs to be high for highly leveraged firms that are small. Leveraged firms that are small suffer from more severe information asymmetry problems and hence have more difficulty accessing capital (Hovakimian et al., 2012). As a result, these firms can be more easily forced out of the market (Opler and Titman, 1994).

Table 1.7 presents the results. Model 1 again presents the baseline model from Table 1.3 for comparison. In Models 2 and 3 of Table 1.7, we find that the coefficient on *CSR*×*HLEV* is significantly positive for the low-debt industry subsample (0.031, *t*-statistic = 2.53) but insignificantly positive for the high-debt industry subsample (0.011, *t*-statistic = 1.11). Models 4 and 5 report the results for the subsamples partitioned by median market share two years before the base year, while Models 6 and 7 present the results for the subsamples partitioned by median total assets two years before the base year. Consistent with our predictions, we find that less competitive and smaller firms observe a more pronounced effect of CSR on high leverage costs. Specifically, the coefficient on *CSR*×*HLEV* is as large as 0.063 with a *t*-statistic of 3.53 for highly leveraged firms that face financially robust competitors, while it is only 0.010 with a *t*-statistic of 1.23 for firms that face competitors with a weaker financial position. Similarly, we find that the coefficient on *CSR*×*HLEV* is as large as 0.057 with a *t*-statistic of 3.02 for small firms, while it is only 0.014 with a *t*-statistic of 1.74 for large firms. These results together suggest

that the mitigating effect of CSR on high leverage costs also operates through the competitor channel.

1.3.4. Robustness Tests

In this subsection, we check whether our main results are robust to using alternative measures of *HLEV* and *CSR*. Recall that following Opler and Titman (1994), our primary measure of high leverage is a dummy equal to 1 if a firm's leverage ratio in a given year is in the top three deciles of the sample. To address concerns that the three-decile cutoff is arbitrary, we follow Opler and Titman (1994) and assign a value of 1 to top-decile firm-year observations and 0 to bottom-decile observations. Comparisons based on this definition are made between extremely high-leveraged firms and extremely low-leveraged firms, and thus the results should be more pronounced. As can be seen in Models 1 and 2 of Table 1.8, the coefficients on *HLEV* are two to three times those in the baseline models (-0.036 compared to -0.016; 0.068 compared to 0.025). These results suggest that 1) industry-adjusted sales growth is 3.6% lower on average for firms with extremely high leverage (top leverage decile) than for firms with extremely low leverage (bottom leverage decile) and 2) a one-standard-deviation increase in relative-to-industry CSR score increases industry-adjusted sales growth by 3% more for extremely high-leveraged firms compared to extremely low-leveraged firms.

Next, recall that we construct our primary high-leverage measure using long-term debt because it is less subject to adjustment and hence should be more exogenous than

short-term debt (Campello, 2006). However, Opler and Titman (1994) use the total debt ratio, which also incorporates short-term debt. Accordingly, we check whether our main results hold after replacing the long-term debt ratio with the total debt ratio. The results reported in Models 3 and 4 of Table 1.8 show that although the significance level declines, CSR continues to reduce the costs of high leverage.

In Models 5 and 6, we lag *CSR* and *HLEV* by three years rather than two to examine whether the full effects of high leverage take more time to emerge and, if so, whether the benefits of CSR persist long enough to reduce high leverage costs. This test is inspired by Campello (2006). The results show that the costs of high leverage are decreasing in horizon (-1% at a three-year lag versus -1.6% at a two-year lag), but the benefits of CSR are nonetheless similar (2.4% at a three-year lag versus 2.5% at a two-year lag).

Turning to alternative proxies for CSR, we first adopt different adjustments in computing our CSR measure. In Model 7 of Table 1.8, we use *CSR_NET* (El Ghoul et al., 2011; Jiao, 2010; Bae et al., 2011), the net strengths and concerns score for the six areas we consider. In Model 8, we follow Jo and Harjoto (2012) and adjust *CSR_NET* by the total number of strength and concern factors. Next, given that simple aggregation of the six areas does not account for the relative importance of each area, following Goss and Roberts (2011) we use principal component analysis to determine the weight of each dimension. Model 9 reports results using a measure of CSR based on the first principal components. We also address concerns related to whether all six of the areas considered affect firm

value. Hillman and Keim (2001) suggest that the CSR areas directly related to primary stakeholders—community, diversity, employee relations, environment, and product characteristics—have a greater effect on firm value. Accordingly, in Model 10, we construct our CSR measure on the basis of these five primary stakeholder-related areas. Finally, while we exclude the corporate governance issue area from our primary measure of CSR to rule out the possibility that our results are driven by governance effects, in Model 11 we report results using a CSR measure based on all seven CSR areas to facilitate comparison with other studies (e.g., Deng et al., 2013). We find that all of the alternatively defined CSR variables generate results in line with CSR reducing high leverage costs.

In additional tests that are untabulated, we first examine whether our main finding is affected by ownership changes of the CSR database. The CSR database was originally maintained by KLD before it was acquired by RiskMetrics Group in 2009 and then sold to MSCI Inc. in 2010. Because several factors were added or dropped in 2010 following these ownership changes, we re-run our analysis for the 1996 to 2009 period and find qualitatively similar results. We also re-run our baseline model using different industry specifications, including the Fama–French 5-, 10-, 12-, 17-, 30-, and 38-industry classifications and 3- and 4-digit SIC code classifications. We find consistent results that CSR leads to lower costs of high leverage.

1.4. CONCLUSION

Departing from traditional research on agency conflicts between shareholders and bondholders, a growing body of research on the costs of high leverage finds that two players—customers and competitors—can exert a significantly negative impact on the value of highly leveraged firms. In this paper we examine whether corporate social responsibility influences the behavior of these players favorably and thus mitigates the costs of high leverage.

Using a large sample of 16,390 firm-year observations representing 2,739 firms, we find that CSR reduces the costs of high leverage as captured by a loss in sales growth. CSR appears to provide a risk management benefit. We further find that CSR helps highly leveraged firms keep customers and guard against rival predation, which suggests that the effect of CSR operates through both customer and competitor channels.

Our study highlights the role of previously unexplored mechanisms through which CSR influences firm value and the strategic importance of CSR as a risk management instrument. Our study also contributes to the debate on whether "doing good" can help a firm "do well." Future research could further our understanding of the effect of CSR on firm value by extending our analysis to a wider set of stakeholders such as employees, suppliers, the community, and the government.

Table 1.1. Sample distribution by industry and year

Panel A. Sample distribution by industry

#	Industry	N	%
1	Agriculture	51	0.31
2	Food products	417	2.54
3	Candy & soda	45	0.27
4	Beer & liquor	101	0.62
5	Tobacco products	29	0.18
6	Recreation	102	0.62
7	Entertainment	228	1.39
8	Printing & publishing	204	1.24
9	Consumer goods	401	2.45
10	Apparel	344	2.10
11	Healthcare	200	1.22
12	Medical equipment	579	3.53
13	Pharmaceutical products	708	4.32
14	Chemicals	578	3.53
15	Rubber & plastic products	111	0.68
16	Textile	26	0.16
17	Construction materials	390	2.38
18	Construction	254	1.55
19	Steel works	280	1.71
20	Fabricated products	5	0.03
21	Machinery	827	5.05
22	Electrical equipment	288	1.76
23	Automobiles & truck	365	2.23
24	Aircraft	155	0.95
25	Shipbuilding & industrial metal mining	40	0.24
26	Defense	50	0.31
27	Precious metals	3	0.02
28	Non-metallic & industrial metal mining	72	0.44
29	Coal	59	0.36
30	Petroleum & natural gas	828	5.05
32	Communication	599	3.65
33	Personal services	248	1.51
34	Business services	2,017	12.31
35	Computers	757	4.62
36	Electronic equipment	1,303	7.95
37	Measuring & control equipment	442	2.70
38	Business supplies	370	2.26
39	Shipping containers	75	0.46
40	Transportation	348	2.12
41	Wholesale	608	3.71
42	Retail	1,463	8.93
43	Restaurants, hotels & motels	359	2.19
46	Real estate	61	0.37
	Total	16,390	100.00

Panel A. Sample distribution by industry

#	Industry	N	%
Panel B. Sample distribution by year			
Year		N	%
1996		340	2.07
1997		340	2.07
1998		331	2.02
1999		327	2.00
2000		322	1.96
2001		333	2.03
2002		345	2.10
2003		589	3.59
2004		622	3.79
2005		1,600	9.76
2006		1,619	9.88
2007		1,565	9.55
2008		1,575	9.61
2009		1,612	9.84
2010		1,678	10.24
2011		1,656	10.10
2012		1,536	9.37
Total		16,390	100.00

Notes: This table presents the Fama–French (1997) 48-industry and fiscal year distributions for our sample of 16,390 firm-year observations representing 2,739 unique firms.

Table 1.2. Descriptive statistics and correlation matrix

Panel A. Descriptive statistics

	N	Mean	SD	Minimum	Q1	Median	Q3	Maximum
$SALES\_G_t$	16,390	0.08	0.22	-0.98	-0.01	0.07	0.16	1.95
CSR_{t-2}	16,390	-0.14	0.48	-3.00	-0.40	-0.17	0.09	3.83
$HLEV_{t-2}$	16,390	0.29	0.45	0.00	0.00	0.00	1.00	1.00
$SIZE_t$	16,390	7.30	1.58	1.07	6.15	7.22	8.33	12.72
$PROFIT_{t-1}$	16,390	0.08	0.14	-2.66	0.05	0.09	0.13	0.38
$PROFIT_{t-2}$	16,390	0.08	0.14	-3.57	0.05	0.09	0.14	0.38
$INVESTMENT_{t-1}$	16,390	0.05	0.06	0.00	0.02	0.04	0.07	0.40
$INVESTMENT_{t-2}$	16,390	0.06	0.06	0.00	0.02	0.04	0.07	0.40
$SELLEXP_{t-1}$	16,390	0.31	0.45	0.02	0.13	0.24	0.38	10.72
$SELLEXP_{t-2}$	16,390	0.31	0.44	0.02	0.13	0.24	0.38	10.72

Panel B. Correlation matrix

	CSR_{t-2}	$HLEV_{t-2}$	$SIZE_{t}$	$PROFIT_{t-1}$	$PROFIT_{t-2}$	$INVESTMENT_{t-1}$	$INVESTMENT_{t-2}$	$SELLEXP_{t-1}$	$SELLEXP_{t-2}$
CSR_{t-2}	1.00								
$HLEV_{t-2}$	-0.07***	1.00							
$SIZE_{t}$	0.10***	0.17***	1.00						
$PROFIT_{t-1}$	0.07***	-0.06***	0.22***	1.00					
$PROFIT_{t-2}$	0.07***	-0.10***	0.18***	0.53***	1.00				
$INVESTMENT_{t-1}$	-0.02***	0.05***	0.07***	0.16***	0.19***	1.00			
$INVESTMENT_{t-2}$	-0.01	0.07***	0.06***	0.14***	0.14***	0.82***	1.00		
$SELLEXP_{t-1}$	0.05***	-0.10***	-0.25***	-0.41***	-0.33***	-0.11***	-0.10***	1.00	
$SELLEXP_{t-2}$	0.05***	-0.10***	-0.25***	-0.38***	-0.37***	-0.11***	-0.11***	0.91***	1.00
$SALES\_G_{t}$	0.00	-0.04***	0.02**	0.06***	-0.02**	0.04***	0.06***	0.06***	0.06***

Notes: Panel A reports the descriptive statistics for the key variables (before industry-year adjustments) used in Equation (1). Panel B provides the pairwise correlations between these variables. Appendix B provides the detailed variable definitions and data sources. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 1.3. CSR and the costs of high leverage

	$HLEV_{t-2}$	CSR_{t-2}	CSR_{t-2}
	(1)	(2)	(3)
$CSR_{t-2} \times HLEV_{t-2}$		0.023***	0.025***
		(3.00)	(3.28)
$HLEV_{t-2}$	-0.016***	-0.019***	-0.015***
	(-3.86)	(-4.61)	(-3.85)
CSR_{t-2}		-0.006	-0.010**
		(-1.17)	(-2.11)
$SIZE_t$	-0.000		0.000
	(-0.02)		(0.19)
$PROFIT_{t-1}$	0.064***		0.064***
	(3.11)		(3.13)
$PROFIT_{t-2}$	-0.006		-0.006
	(-0.29)		(-0.27)
$INVESTMENT_{t-1}$	0.323***		0.324***
	(3.75)		(3.78)
$INVESTMENT_{t-2}$	0.111		0.112
	(1.39)		(1.40)
$SELLEXP_{t-1}$	0.000		0.000
	(0.00)		(0.01)
$SELLEXP_{t-2}$	0.018		0.019
	(1.17)		(1.18)
CONSTANT	-0.009**	-0.003	-0.009**
	(-2.37)	(-1.44)	(-2.44)
N	16,390	16,390	16,390
R-squared	0.012	0.002	0.013

Notes: This table reports the results for the costs of high leverage (Model 1) and the effect of CSR on the costs of high leverage (Models 2 and 3) using OLS. The dependent variable is industry-adjusted sales growth (*SALES_G*). The main variables of interest are industry-adjusted CSR (*CSR*) and a dummy variable equal to 1 if the firm's long-term debt-to-assets ratio is in the top three deciles of the overall sample in the given year (*HLEV*). Additional variable definitions are provided in Appendix B. All of the control variables are adjusted to their industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the industry-year mean is not biased toward outliers, we require that each industry-year contain at least four firms. The sample period is 1996 to 2012. The reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 1.4. Endogeneity tests: Regression of discontinuity design (RDD)

	All Obs. (order = 3)		All Obs. (order = 4)	
	no controls	with controls	no controls	with controls
	(1)	(2)	(3)	(4)
$CSR_{PASSEDt-2} \times HLEV_{t-2}$	0.265***	0.223***	0.268***	0.232***
	(3.29)	(2.61)	(3.73)	(2.89)
$HLEV_{t-2}$	-0.275***	-0.220***	-0.277***	-0.229***
	(-3.56)	(-2.71)	(-4.10)	(-3.07)
$CSR_{PASSEDt-2}$	0.251	0.220	0.318	0.258
	(1.11)	(1.03)	(1.20)	(1.03)
N	1,527	1,527	1,527	1,527
R-squared	0.007	0.029	0.009	0.029

Notes: This table reports the RDD regression results. The dependent variable is industry-adjusted sales growth (*SALES_G*). CSR_{PASSED} is obtained from RiskMetrics and SharkRepellent and is a dummy variable equal to 1 if a CSR proposal is adopted and 0 otherwise. *HLEV* is a dummy variable equal to 1 if, in the given year, the firm's long-term debt-to-assets ratio is in the top three deciles of the overall sample. Additional variable definitions are provided in Appendix B. Models 1 and 2 (3 and 4) control for polynomials of order 3 (4) on the left and right sides of the majority threshold without and with control variables, respectively. All of the control variables are adjusted to their industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. The sample period is 1999 to 2014. Reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 1.5. Endogeneity tests: Exogenous shock of import tariff reduction

	Difference-in-difference
	(1)
$Post\text{-}reduction_t \times CSR_{t-2} \times HLEV_{t-2}$	0.074**
	(2.13)
$CSR_{t-2} \times HLEV_{t-2}$	-0.044
	(-1.42)
$Post\text{-}reduction_t \times HLEV_{t-2}$	-0.041
	(-0.83)
$Post\text{-}reduction_t \times CSR_{t-2}$	0.067**
	(-2.04)
$HLEV_{t-2}$	0.023
	(0.46)
CSR_{t-2}	0.043
	(1.35)
$Post\text{-}reduction_t$	0.060*
	(1.88)
$SIZE_t$	0.050***
	(5.12)
$PROFIT_{t-1}$	-0.109***
	(-2.69)
$PROFIT_{t-2}$	-0.039
	(-0.96)
$INVESTMENT_{t-1}$	-0.295*
	(-1.92)
$INVESTMENT_{t-2}$	-0.145
	(-0.93)
$SELLEXP_{t-1}$	0.075***
	(3.79)
$SELLEXP_{t-2}$	0.047*
	(1.84)
CONSTANT	-0.088**
	(-2.44)
Firm Fixed Effect	Yes
N	5,880

Notes: This table reports the difference-in-difference regression by introducing the exogenous shock of import tariff reduction. The dependent variable is industry-adjusted sales growth (*SALES_G*). *Post_reduction* is a dummy equal to 1 if the tariff reduction has taken place in industry *j* by time *t* (Valta, 2012). The main variables of interest are industry-adjusted *CSR* and *HLEV*, a dummy variable equal to 1 if, in the given year, the firm's long-term debt-to-assets ratio is in the top three deciles of the overall sample. Additional variable definitions are provided in Appendix B. The difference-in-difference model includes firm fixed-effect. All of the control variables are adjusted to their industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. The sample period is 1996 to 2012. Reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 1.6. CSR and the costs of high leverage: Customer channel

	Baseline Model	Firm R&D Intensity		Asset Turnover		Product Differentiation		Customer Sensitivity	
		High	Low	High	Low	Differentiated	Standardized	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$CSR_{t-2} \times HLEV_{t-2}$	0.025***	0.027**	0.012	0.009	0.034***	0.030**	0.018	0.029***	0.016
	(3.28)	(2.54)	(1.12)	(0.75)	(3.39)	(2.15)	(1.50)	(3.12)	(1.31)
$HLEV_{t-2}$	-0.015***	-0.012**	-0.022***	-0.014**	-0.021***	-0.012*	-0.023***	-0.014***	-0.017***
	(-3.85)	(-2.11)	(-3.90)	(-2.41)	(-4.03)	(-1.84)	(-3.05)	(-2.61)	(-2.91)
CSR_{t-2}	-0.010**	-0.016***	0.005	-0.000	-0.016**	-0.017**	-0.006	-0.008	-0.01
	(-2.11)	(-2.70)	(0.76)	(-0.07)	(-2.43)	(-2.26)	(-0.64)	(-1.27)	(-1.50)
$SIZE_t$	0.000	0.000	0.000	0.001	-0.001	0.003	-0.006**	0.000	0.000
	(0.19)	(0.00)	(0.22)	(0.77)	(-0.78)	(1.59)	(-2.39)	(0.12)	(-0.20)
$PROFIT_{t-1}$	0.064***	0.071***	0.050	0.060*	0.066***	0.023	0.077	0.113***	0.024
	(3.13)	(2.80)	(1.43)	(1.95)	(2.66)	(0.63)	(1.11)	(3.44)	(0.89)
$PROFIT_{t-2}$	-0.006	0.036	-0.077**	0.008	-0.019	-0.015	0.051	0.003	-0.018
	(-0.27)	(1.43)	(-2.18)	(0.31)	(-0.70)	(-0.43)	(0.71)	(0.08)	(-0.66)
$INVESTMENT_{t-1}$	0.324***	0.090	0.432***	0.135	0.410***	0.103	-0.057	0.307***	0.323***
	(3.78)	(0.71)	(3.85)	(1.15)	(3.68)	(0.59)	(-0.34)	(2.88)	(2.69)
$INVESTMENT_{t-2}$	0.112	0.018	0.161	0.244*	0.067	-0.034	-0.040	0.131	0.097
	(1.40)	(0.17)	(1.48)	(1.88)	(0.67)	(-0.24)	(-0.27)	(1.19)	(0.88)
$SELLEXP_{t-1}$	0.000	0.030*	-0.082**	0.009	0.000	0.020	0.028	0.032	-0.032*
	(0.01)	(1.68)	(-2.33)	(0.34)	(0.01)	(0.78)	(0.99)	(1.39)	(-1.65)
$SELLEXP_{t-2}$	0.019	0.011	0.047	0.008	0.019	0.014	-0.009	0.005	0.028
	(1.18)	(0.58)	(1.55)	(0.33)	(1.06)	(0.75)	(-0.28)	(0.21)	(1.36)
CONSTANT	-0.009**	-0.012**	-0.010*	-0.024***	0.006	-0.004	-0.002	-0.017***	-0.004
	(-2.44)	(-2.27)	(-1.82)	(-5.00)	(1.02)	(-0.64)	(-0.30)	(-3.68)	(-0.58)
N	16,390	8,653	7,737	6,692	9,698	5,711	3,267	7,520	8,870
R-squared	0.013	0.011	0.032	0.012	0.015	0.005	0.016	0.025	0.009

Notes: This table reports the results from re-running our analysis on the effects of CSR on high leverage costs using subsamples split by characteristics related to customer-driven costs of high leverage. The dependent variable is industry-adjusted sales growth (*SALES_G*). The main variables of interest are industry-adjusted *CSR* and *HLEV*, a dummy variable equal to 1 if, in the given year, the firm's long-term debt-to-assets ratio is in the top three deciles of the overall sample. Additional variable definitions are provided in Appendix B. All of the control variables are adjusted to their industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Model 1 repeats the results of the baseline model using the full sample. In Models 2 and 3, we proxy for the degree of product specialization using R&D expenditures. A firm is classified as a high-R&D (low-R&D) intensity firm in a given year if its R&D-to-sales ratio is greater (smaller) than 0.1% two years before the base year (Opler and Titman, 1994). In Models 4 and 5, we use the asset turnover ratio, which is measured as the ratio of total sales to total assets, to proxy for the degree of product specialization. A firm is classified as having high (low) asset turnover if its asset turnover ratio is above (below) the sample median two years before the base year. In Models 6 and 7, differentiated (standardized) refers to industries that produce differentiated (standardized) products. Following Giannetti et al. (2011) and Rauch (1999), industries with differentiated goods have SIC2 codes 25, 27, 30, 32, 34, 35, 36, 37, 38, and 39, while industries with standardized goods have SIC2 codes 12, 14, 20, 22, 23, 24, 26, 28, 29, 31, and 33. In Models 8 and 9, high (low) customer sensitivity refers to industries in which the predominant customer is a consumer (industrial buyer). Following Lev et al. (2010), high customer sensitivity industries have the SIC4 ranges [0,999], [2000,2399], [2500,2599], [2700,2799], [2830,2869], [3000,3219], [3420,3429], 3523, [3600,3669], [3700,3719], 3751, [3850,3879], [3880,3999], 4813, [4830,4899], [5000,5079], [5090,5099], [5130,5159], [5220,5999], [6000,6999], [7000,7299], and [7400,9999]; the remaining industries are defined as low customer sensitivity industries. To ensure that the industry-year mean is not biased toward outliers, we require that each industry-year contain at least four firms. The sample period is 1996 to 2012. The reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 1.7. CSR and the costs of high leverage: Competitor channel

	Baseline Model	Industry Debt Level		Competitive Position		Firm Size	
		High	Low	Strong	Weak	Large	Small
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$CSR_{t-2} \times HLEV_{t-2}$	0.025***	0.011	0.031**	0.010	0.063***	0.014*	0.057***
	(3.28)	(1.11)	(2.53)	(1.23)	(3.53)	(1.74)	(3.02)
$HLEV_{t-2}$	-0.015***	-0.025***	-0.011*	-0.021***	-0.016**	-0.011**	-0.019***
	(-3.85)	(-4.80)	(-1.72)	(-4.48)	(-2.31)	(-2.17)	(-2.79)
CSR_{t-2}	-0.010**	0.003	-0.020***	-0.006	-0.016*	-0.007	-0.006
	(-2.11)	(0.42)	(-3.49)	(-1.19)	(-1.71)	(-1.33)	(-0.68)
$SIZE_t$	0.000	-0.002	0.002	-0.007***	0.014***	0.001	0.025***
	(0.19)	(-1.30)	(1.30)	(-3.87)	(4.54)	(0.46)	(7.76)
$PROFIT_{t-1}$	0.064***	0.076**	0.060**	0.048*	0.060**	0.020	0.037
	(3.13)	(2.14)	(2.39)	(1.95)	(2.20)	(0.85)	(1.30)
$PROFIT_{t-2}$	-0.006	-0.094***	0.046*	0.033	-0.031	0.025	-0.042
	(-0.27)	(-2.60)	(1.93)	(1.29)	(-1.17)	(0.98)	(-1.51)
$INVESTMENT_{t-1}$	0.324***	0.439***	0.068	-0.152	0.531***	0.174	0.437***
	(3.78)	(3.80)	(0.58)	(-1.34)	(4.78)	(1.46)	(3.82)
$INVESTMENT_{t-2}$	0.112	0.134	0.085	0.367***	0.024	0.094	0.145
	(1.40)	(1.23)	(0.82)	(3.06)	(0.23)	(0.92)	(1.28)
$SELLEXP_{t-1}$	0.000	-0.062**	0.020	0.010	-0.004	-0.045**	0.015
	(0.01)	(-2.01)	(1.08)	(0.68)	(-0.21)	(-2.39)	(0.84)
$SELLEXP_{t-2}$	0.019	0.019	0.024	-0.002	0.028	0.043***	0.011
	(1.18)	(0.70)	(1.22)	(-0.12)	(1.33)	(2.60)	(0.55)
CONSTANT	-0.009**	-0.003	-0.018***	0.003	-0.013**	-0.029***	-0.004
	(-2.44)	(-0.40)	(-3.84)	(0.47)	(-2.54)	(-4.66)	(-0.72)
N	16,390	7,567	8,823	8,274	8,116	8,205	8,185
R-squared	0.013	0.032	0.012	0.013	0.022	0.009	0.026

Notes: This table reports the results from re-running our analysis on the effects of CSR on high leverage costs using subsamples split by characteristics related to the competitor-driven costs of high leverage. The dependent variable is industry-adjusted sales growth (*SALES_G*). The main variables of interest are industry-adjusted *CSR* and *HLEV*, a dummy variable equal to 1 if, in the given year, the firm's long-term debt-to-assets ratio is in the top three deciles of the overall sample. Additional variable definitions are provided in Appendix B. All of the control variables are adjusted to their industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Model 1 repeats the results of the baseline model using the full sample. In Models 2 and 3, we proxy for the financial condition of a firm's competitors using the industry-average debt level: an industry is classified as a high-debt (low-debt) industry in a given year if its average long-term debt ratio is above (below) the median of the overall sample two years before the base year (Campello, 2003; Campello and Fluck, 2006). In Models 4 and 5, strong (weak) competitive position refers to a market share ratio (total sales of the firm/total sales of the industry) that is higher (lower) than the sample median. In Models 6 and 7, large (small) firm size refers to total assets higher (lower) than the sample median. To ensure that the industry-year mean is not biased toward outliers, we require that each industry-year contain at least four firms. The sample period is 1996 to 2012. The reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 1.8. Robustness checks

	$HLEV_{t-2}$						CSR_{t-2}				
	Top Decile		Total Debt		Lag 3 Years		CSR_NET_{t-2}	Adjusted CSR	PCA	No HUM	Add CGOV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$CSR_{t-2} \times HLEV_{t-2}$		0.068***		0.016*		0.024**	0.005***	0.022***	0.010***	0.025***	0.021***
		(3.13)		(1.93)		(2.53)	(2.96)	(3.19)	(3.38)	(3.22)	(3.10)
$HLEV_{t-2}$	-0.036***	-0.034***	-0.021***	-0.021***	-0.010**	-0.010**	-0.016***	-0.013***	-0.015***	-0.016***	-0.015***
	(-3.42)	(-3.20)	(-4.80)	(-4.77)	(-2.30)	(-2.26)	(-3.87)	(-3.13)	(-3.80)	(-3.87)	(-3.78)
CSR_{t-2}		-0.029**		-0.006		-0.009	-0.002**	-0.021***	-0.001	-0.012**	-0.007
		(-2.48)		(-1.30)		(-1.54)	(-2.30)	(-4.42)	(-0.28)	(-2.40)	(-1.53)
$SIZE_t$	0.015***	0.016***	-0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
	(3.98)	(4.22)	(-0.01)	(0.10)	(0.18)	(0.32)	(0.32)	(0.66)	(0.11)	(0.25)	(0.07)
$PROFIT_{t-1}$	0.025	0.025	0.064***	0.064***	0.078***	0.078***	0.064***	0.065***	0.063***	0.064***	0.064***
	(0.79)	(0.77)	(3.14)	(3.15)	(3.61)	(3.61)	(3.13)	(3.21)	(3.09)	(3.13)	(3.12)
$PROFIT_{t-2}$	0.008	0.007	-0.008	-0.008	-0.009	-0.009	-0.005	-0.003	-0.006	-0.006	-0.006
	(0.23)	(0.22)	(-0.39)	(-0.38)	(-0.37)	(-0.36)	(-0.26)	(-0.17)	(-0.30)	(-0.27)	(-0.28)
$INVESTMENT_{t-1}$	0.494***	0.491***	0.322***	0.323***	0.271***	0.272***	0.324***	0.327***	0.322***	0.325***	0.324***
	(2.98)	(2.98)	(3.75)	(3.77)	(2.89)	(2.91)	(3.78)	(3.81)	(3.75)	(3.78)	(3.77)
$INVESTMENT_{t-2}$	0.035	0.043	0.113	0.115	0.125	0.127	0.113	0.120	0.107	0.113	0.111
	(0.21)	(0.25)	(1.42)	(1.44)	(1.45)	(1.47)	(1.42)	(1.50)	(1.34)	(1.41)	(1.38)
$SELLEXP_{t-1}$	0.001	0.001	0.000	0.000	-0.037**	-0.037**	0.000	0.001	0.000	0.000	0.000
	(0.03)	(0.02)	(0.02)	(0.03)	(-2.47)	(-2.45)	(0.02)	(0.06)	(0.01)	(0.02)	(0.01)
$SELLEXP_{t-2}$	0.022	0.023	0.018	0.018	0.062***	0.062***	0.019	0.019	0.018	0.019	0.019
	(0.64)	(0.67)	(1.16)	(1.17)	(3.74)	(3.74)	(1.19)	(1.24)	(1.16)	(1.19)	(1.18)
CONSTANT	-0.005	-0.006	-0.009**	-0.009**	-0.012***	-0.012***	-0.010**	-0.013***	-0.009**	-0.009**	-0.009**
	(-0.58)	(-0.70)	(-2.35)	(-2.39)	(-2.96)	(-2.98)	(-2.50)	(-3.37)	(-2.40)	(-2.47)	(-2.39)

N	3,980	3,980	16,390	16,390	13,387	13,387	16,390	16,390	16,390	16,390	16,386
R-squared	0.022	0.025	0.012	0.013	0.014	0.015	0.013	0.013	0.013	0.013	0.012

Notes: This table reports the results for our main analyses on the costs of high leverage and the effect of CSR on the costs of high leverage using alternative definitions of *HLEV* and *CSR*. The dependent variable is industry-adjusted sales growth (*SALES_G*). The main variables of interest are industry-adjusted *CSR* and *HLEV*, a dummy variable equal to 1 if, in the given year, the firm's long-term debt-to-assets ratio is in the top three deciles of the overall sample. Additional variable definitions are provided in Appendix B. All of the control variables are adjusted to their industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Models 1 and 2 assign a value of 1 to top-decile firm-year observations and 0 to bottom-decile observations. Models 3 and 4 replace the long-term debt ratio with the total debt ratio. Models 5 and 6 lag both *CSR* and *HLEV* by three years to reflect the alternative definitions shown in Campello (2006). In Model 7, we use *CSR_NET*. In Model 8, we follow Jo and Harjoto (2012) and adjust *CSR_NET* by the total number of strength and concern factors. Model 9 creates a comprehensive measure of *CSR* by adopting principal component analysis. In Model 10, we exclude the human rights area (Hillman and Keim, 2001). In Model 11, *CSR* is computed based on all seven areas in MSCI ESG STATS to facilitate comparison with other CSR studies (e.g., Deng et al., 2013). To ensure that the industry-year mean is not biased toward outliers, we require that each industry-year contain at least four firms. The sample period is 1996 to 2012. The reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

CHAPTER 2

THE DARK-SIDE EFFECTS OF CREDITOR RIGHTS: EVIDENCE FROM CAPITAL STRUCTURE AND PRODUCT MARKETS INTERACTIONS

2.1.INTRODUCTION

Since the seminal work of La Porta et al. (1998) on the relation between law and finance, a rich literature has documented the bright-side effects of the legal protection of creditor rights. Studies following this line of research show that strong creditor rights induce lenders to provide credit at more favorable terms, which relaxes financial constraints and stimulates innovation.[19] However, several recent papers suggest that creditor rights may also have dark sides. Strong creditor protection in bankruptcy can allow creditors to seize assets at the expense of shareholders and this threat of premature liquidation can lead firms to reduce the use of debt (Vig, 2013; Cho et al., 2014; Acharya et al., 2011), underinvest in innovative projects (Acharya and Subramanian, 2009), and intensify equity risk (Favara et al., 2012, 2017).

The literature on the dark-side effects of creditor rights is still in its infancy. Contributing to this strand of research, this paper explores the dark-side effects of creditors'

[19] See La Porta et al. (1997), Levine (1998, 1999), Djankov et al. (2007), Beck and Demirguc-Kunt (2005), Houston et al. (2010), Benmelech and Bergman (2011), Kyröläinen et al. (2013), Qian and Strahan (2007), and Bae and Goyal (2009).

legal rights in a new setting: capital structure and product market interactions. According to the literature of capital structure and product market interactions, high leverage is costly because it is associated with reduced firm market share due to unfavorable actions by customers and competitors (Opler and Titman, 1994; Campello, 2003, 2006).[20] We choose this context for two reasons. First, we focus on highly leveraged firms because the dark-side effects of creditor rights are more pronounced for financially weak firms. As Favara et al. (2017) point out, the effect of debt enforcement on underinvestment and risk-shifting problems intensifies as firms approach financial distress. Second, we focus on firms' product market performance because it provides a wider scope of view on the dark-side effects of creditor rights. To the best of our knowledge, we are the first to investigate the influence of creditor rights on product market participants: customers and competitors, besides the traditional studies on managers and shareholders (e.g., Vig, 2013; Cho et al., 2014; Acharya et al., 2011; Favara et al., 2017).

We expect that creditor rights amplify the costs of high leverage. For highly leveraged firms that are financially weak, creditors may try to maximize the value of their own claims by seizing and liquidating firm assets, even if the firm is viable and continuation would be preferred by other stakeholders (liquidation bias or hold-up problem; see Aghion et al., 1992; Pulvino, 1998; Strömberg, 2000; Ayotte and Morrison,

[20] For example, customers are reluctant to purchase from highly leveraged firms because these firms are associated with increased costs of future servicing and lower quality of products (Titman, 1984; Maksimovic and Titman, 1991; Matsa, 2011; Phillips and Sertsios, 2013; Kini et al., 2016); Competitors are likely to take predatory actions to drive the highly leveraged firm out of market (Telser, 1966; Bolton and Scharfstein, 1990; Chevalier, 1995).

2009). These so-called hold-up incentives of creditors can lead to adverse responses from stakeholders[21] (e.g. customers and competitors). For example, customers may protect themselves by not purchasing from these firms, anticipating the potential liquidation (Maksimovic and Titman, 1991; Titman, 1984), and competitors may be tempted to prey on these firms in their further weakened financial condition (Bolton and Scharfstein, 1990; Chevalier, 1995), leading to a decrease in firm sales. In sum, liquidation bias of strong creditor rights could intensify the loss of sales for highly leveraged firms.

To test for the effect of creditor rights on the costs of high leverage, we build on the framework of Campello (2006) and Opler and Titman (1994). Specifically, as our main dependent variable we use a firm's country-industry-adjusted sales growth. This variable captures the responses of customers and competitors. We regress sales growth on a high leverage dummy, and a more negative coefficient on this dummy implies higher costs of high leverage. To capture the extent of creditor protection we employ the Djankov et al. (2007) index, which is extensively used in prior literature (Brockman and Unlu, 2009; Bae and Goyal, 2009; Houston et al., 2010; Benmelech and Bergman, 2011). Based on a large sample of 203,920 firm-year observations representing 30,041 firms from 54 countries over the 1989–2010 period, we find that, in line with our prediction, creditor rights significantly increase the costs of high leverage: on average, an increase in creditor rights (from the 25th percentile to the 75th percentile) doubles the magnitude of the costs of high leverage (a 0.86% decrease in highly leveraged firms' country- and industry-adjusted sales growth).

[21] In this paper we classify both customers and competitors as stakeholders. This classification follows Freeman's (1984) definition of stakeholders as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 40).

This result implies that strong creditor rights intensify the responses of customers and competitors to a firm's high leverage.

Creditor rights and high leverage costs may be subject to endogeneity. To address the concern, we first introduce an exogenous shock of financial crisis. Financial crisis is not likely to change the creditor rights legal system of a country in the short term, but it has substantial influence on the hold-up incentives of creditors. Due to a tightened liquidity from the crisis, the survival of highly leveraged firms is further challenged. To minimize potential losses, creditors tend to hold up other stakeholders by quickly liquidating the firm or seizing firm assets regardless of the continuation value of the firm. As expected, we find that the dark-side effects of creditor rights are more pronounced during the financial crisis period, mitigating our concern for endogeneity. We also employ the 2SLS approach to address the endogeneity problem. The result further suggests that endogeneity is not likely a major problem in our study.

In subsample analysis, we find that among the different types of creditor rights protection, those that most drive creditors' hold-up incentives (*No Automatic Stay* and *No Management Stay*) have the strongest impact and significance. We similarly find that the relation between creditor rights and the costs of high leverage is more pronounced for firms located in countries with a banking system (rather than a bond market system), as these firms are subject to a higher degree of creditor control, and for firms with higher liquidation costs, as they can easily sell assets and reduce the chance of liquidation (Acharya et al., 2011).

When we separately consider how strong creditor protection affects customers and competitors, we find that the dark side of strong creditor rights is more pronounced for those customers and competitors that are more sensitive to high leverage. When we consider other stakeholder groups, we find that for highly leveraged firms, strong creditor protection increases employee exit but does not lead to a significant change in suppliers' behavior.

One may argue that our results can alternatively be explained by the bright-side effects of creditor rights. Specifically, the reduction in sale growth associated with high leverage could be a reflection of efficient downsizing because highly leveraged firms are subject to capital market scrutiny (Jensen, 1986), and creditor rights intensifying this effect suggests an accelerated process of efficient downsizing. According to this story, creditor protection plays a positive role because it provides more favorable financing terms (La Porta et al., 1997; Djankov et al., 2007; Qian and Strahan, 2007; Bae and Goyal, 2009) and brings in the monitoring role of capital markets. However, our results suggest that creditor rights negatively affect the issuance of capital and stock return of highly leveraged firms, which is against this alternative story. In sum, these findings further support the view that the dark-side effects of creditor rights prevail for firms that are highly leveraged.

Our study contributes to the literature in at least three ways. First, we outline the mechanisms through which the dark side of creditor rights operates. Recent studies generally focus on the suboptimal choices of managers, arguing that strong creditor rights impose private costs on managers, which managers try to reduce by decreasing the use of credit (Vig, 2013; Cho et al., 2014; Acharya et al., 2011), forgoing profitable investment opportunities (Acharya and Subramanian, 2009; Acharya et al., 2011), or taking excessive

risks (Favara et al., 2012, 2017). Our findings show that the dark side of creditor rights operates not only through its impact on the choices of managers but also through its impact on the choices of customers, competitors, and employees. Our results thus show that the dark side of creditor rights works through a number of channels. In this respect, the current study is also related to the work of Bae et al. (2016), who document that corporate social responsibility helps highly leveraged firms keep customers and guard against rival predation, and implies that firms located in a strong creditor protection environment may mitigate the dark-side effects of creditor rights by engaging in socially responsible activities.

Second, it adds to the ongoing debate on the role of creditor rights (La Porta et al., 1997; Djankov et al., 2007; Acharya et al., 2011; Vig, 2013; Cho et al., 2014; Adler et al., 2013). Contributing to a recent trend of studies investigating the dark side of creditor rights, we show that the effects of strong creditor rights are not uniformly good, at least when firms are highly leveraged. In this respect, our study is also consistent with Favara et al. (2017), who suggest more pronounced underinvestment and risk-shifting problems when firms are financially weak (particularly when approaching financial distress). Our finding has practical implications. In particular, high leverage could be especially costly for firms located in a country with strong creditor rights. Managers of firms in such countries may choose to issue less long-term debt and more short-term debt or callable debt, as the latter forms of debt allow a firm to quickly adjust for its financial condition to avoid the dark side of creditor rights.

Third, this paper contributes to the literature on the determinants of high leverage costs. Extant research examines corporate social responsibility (Bae et al., 2016) in a

single-country setting. We extend this literature to a global context and highlight the importance of understanding how the legal, regulatory, and institutional environment influence the costs of high leverage.

The reminder of the article proceeds as follows. Section 2 provides a brief review of the literature on the costs of high leverage and creditor rights and develops our main hypothesis. Section 3 describes the data, the key variables of interest, and methodology. Section 4 presents the results. Finally, Section 5 concludes.

2.2.LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Countries differ in the extent to which bankruptcy codes favor creditors vs managers, shareholders, or other stakeholders. Some countries with strong creditor rights (e.g., United Kingdom) allow creditors to replace managers to run the firm during reorganization, and give creditors privilege to access collateral or firm assets before shareholders, managers, or other stakeholders. However, in other countries (e.g., U.S.) creditors have very weak influence over the reorganization plan. Instead, managers are granted the exclusive rights to devise a reorganization plan.

Strong creditor rights can bring unintended consequences. The literature on the dark-side effects of creditor rights find that strong creditor rights lead to suboptimal financing and investment policies and excessive risks, which impair firm value. First, managers tend to avoid debt financing when they face threat of creditor takeover. Rajan and Zingales (1995, p. 1444) point out that strong creditor rights commit creditors "to penalizing management if the firm gets into financial crisis, thus giving management strong incentives to stay clear of it". Consistently, Vig (2013) studies a securitization reform in

India that allows secured creditors to bypass the lengthy and judicial process to seize and liquidate the assets of the defaulting firm. Vig (2013) finds that this reform leads to a substantial decrease in the use of secured debt by firms. Similarly, Cho et al. (2013) show a negative relation between creditor rights and long-term leverage across countries. They attribute this finding to managers avoiding the risk of losing control in the case of financial distress. Second, managers tend to adopt conservative investment policies that are value reducing. Acharya et al. (2011) argue that strong creditor rights induce managers to engage in overly conservative investments such as diversifying acquisitions. Acharya and Subramanian (2009) suggest that excessive liquidations accompanied by creditor-friendly code cause levered firms to shun innovation. Additionally, Favara et al. (2017) show that debt enforcement intensifies the underinvestment problem, particularly for financially distressed firms. Third, managers take excessive risks. A debt renegotiation favorable to creditors is associated with greater equity risk (Favara et al., 2012), and more severe risk-shifting problem for firms near default (Favara et al., 2017).

In a similar vein, these dark-side effects of creditor rights can also apply to the product market performances of highly leveraged firms. A firm can be viewed as a nexus of explicit and implicit contracts between firm claimants, including creditors, managers, and other firm stakeholders (Jensen and Meckling, 1976; Fama and Jensen, 1985). For firms that are financially healthy (underleveraged), creditors' interests are aligned with those of management and other firm stakeholders (e.g., customers, suppliers, employees), as the continuation of a healthy firm does not jeopardize the claims of each party. In this case, strong creditor rights do not pose a severe threat to other firm stakeholders and hence do not induce suboptimal responses from these parties. For financially weak firms, in

contrast, conflicts among claimants can become severe (Opler and Titman, 1994). For example, in an effort to protect their own claims, creditors may try to seize and liquidate firm assets, which would severely impair firm value and reduce the value of other stakeholders' claims.[22] In anticipation of such hold-up problems, customers may reduce or avoid purchases from highly leveraged firms (Maksimovic and Titman, 1991; Titman, 1984), and competitors may prey on the financially fragile firm (Bolton and Scharfstein, 1990; Chevalier, 1995), all of which work to further reduce a highly leveraged firm's performance. Creditor rights are thus likely to be accompanied by substantial deadweight losses due to the adverse behaviors of customers and competitors. This leads to our hypothesis:

Ceteris paribus, by intensifying the value-reducing actions of customers and competitors when a firm is highly leveraged, strong creditor rights increase the costs of high leverage.

2.3.DATA AND VARIABLES

2.3.1. Sample Construction

The primary data source for this study is Compustat, which provides annual financial accounting variables at the firm level. We obtain the creditor rights index from Djankov et al. (2007), who update the index of La Porta et al. (1998). To control for

[22] Pulvino (1998) shows that immediate liquidation of distressed firms' assets can leave claimants with only a fraction of the value of their assets and that liquidated assets may be sold at a discount to less productive users.

country-level macroeconomic conditions, we rely on World Development Indicators to obtain the change in countries' GDP per capita growth rate and inflation rate. We obtain information on debt enforcement, renegotiation failure, unemployment, the relative size of bank loans to public bonds, international trade freedom, and stock returns from Djankov et al. (2008), Favara et al. (2012), International Labour Organization (ILO), International Financial Statistics (IFS), and Economic Freedom of the World (EFW) from Fraser Institute, respectively.

To construct the sample, we begin with Compustat (North America and Global), which covers firms in 103 countries over the 1987–2010 period. We require that each firm-year observation has positive total assets and sales, non-missing equity, and a long-term debt-to-asset ratio within [0, 1]. To control for outliers, we eliminate firm-years that exhibit growth in assets or sales higher than 200%. Financial institutions, utilities, and firms not in clearly defined industries according to the Fama-French (1997) 48-industry classification are also excluded.[23] These filters lead to 463,583 observations from 49,786 unique firms. We next merge this sample with Djankov et al.'s (2007) creditor rights index. Based on the merged sample, we compute the country-industry-year means of the main financial variables. To ensure that the country-industry-year means are not biased toward outliers, we require that each country-industry have at least four observations. We further exclude firm-years with missing values for variables in the main regression and countries with fewer than 10 observations (i.e., Bangladesh, Croatia, Tunisia, and Venezuela). These filters result in a sample of 285,542 observations from 30,588 firms across 54 countries

[23] Specifically, we exclude firms with Fama-French 48-industry classifications 31, 44, 45, 47, and 48.

during the period 1989–2010. In a last step, we restrict the sample to observations with non-missing Fama and French (1997) industry data and we left-merge the resulting sample with the additional data sources.[24] The final sample contains 203,920 firm-year observations from 30,041 unique firms across 54 countries ranging over the 1989–2010 period. Appendix C summarizes the sample selection process.

2.3.2. Measuring Creditor Rights

Our main explanatory variable in this study is Djankov et al.'s (2007) creditor rights index (*CRIGHTS*), which measures the strength of creditors' legal rights against defaulting debtors. This index extends the original index of La Porta et al. (1998) to the period 1981–2004.[25] To capture how the strength of creditor protection influences the costs of high leverage in more recent years (i.e., 2005–2010), we apply the creditor rights index available in the last year of the Djankov et al. sample (i.e., in 2004) to the missing years in our sample.[26]

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[24] We left-merge the main sample with data from Djankov et al. (2008), ILO, IFS, EFW, and CSRP to maximize the number of observations, as the intersection of these data sets may otherwise yield a limited number of observations. Note that missing values for variables are excluded from the main regression but are allowed in other specifications to retain as much information as possible. For example, in Table 3 the number of observations in Model 5 ($UNEMPLOYG_t$) is 192,129 while the number of observations in our baseline models (Model 1 and 2) is 230,920.

[25] Djankov et al. (2007) also code bankruptcy procedures slightly differently. Nonetheless, the La Porta et al. (1998) and Djankov et al. (2007) measures are highly correlated.

[26] This adjustment is reasonable because there is a high degree of persistence in the creditor rights index (Djankov et al., 2007). Indeed, for this reason many papers use a cross-sectional creditor rights variable in

The index *CRIGHTS* captures the presence of four types of creditor protection in bankruptcy proceedings:

(1) whether the reorganization procedure requires creditors' consent, minimum dividends, or similar conditions for a debtor to file for reorganization (*Restrictions on Reorganization*);

(2) whether secured creditors are able to seize their collateral when a reorganization petition is approved (*No Automatic Stay*);

(3) whether secured creditors are paid first out of proceeds from liquidating a bankrupt firm (*Secured Creditors Paid First*);

(4) whether creditors or an administrator is appointed in place of management to run the firm during reorganization (*No Management Stay*).

A value of one is added to the *CRIGHTS* index for each of the above attributes that a country's law provides to secured creditors. The aggregate index thus ranges from zero to four, with a higher score indicating stronger creditor rights.

2.3.3. Measuring the Costs of High Leverage

To measure the costs of high leverage, we build on the framework of Campello (2006; Model 1 of Table 2.2), who models the effect of high leverage on relative-to-rival

their panel sample studies (e.g., Djankov et al., 2007; Brockman and Unlu, 2009; Cho et al., 2014). In unreported analysis, we find that our main findings are qualitatively unchanged if we instead use a cross-sectional creditor rights index.

sales growth, adapting it to a global setting. Specifically, we employ the following specification:

$$SALES\_G_{i,t} = a + \lambda_1 HLEV_{i,t-2} + \lambda_2 SIZE_{i,t} + \sum_{k=1}^{2} \lambda_{3k} PROFIT_{i,t-k} + \sum_{k=1}^{2} \lambda_{4k} INVESTMENT_{i,t-k} + \sum_{k=1}^{2} \lambda_{5k} SELLEXP_{i,t-k} + + \lambda_6 GDPG_{c,t} + \lambda_7 INFLATION_{c,t} + \varepsilon_{i,t}, \quad (1)$$

where *i*, *t*, and *c* index firms, years, and countries, respectively. *SALES_G* captures customer- and competitor-driven product market performance. To proxy for high leverage, we employ the dummy variable *HLEV* (high leverage), where a firm is classified as in high leverage in a given year if the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. A more negative coefficient on *HLEV* (λ_1) thus indicates that customers and competitors have more adverse responses to high leverage.[27] Note that we use a firm's long-term debt ratio as a basis for capturing high leverage to

[27] One may wonder why a firm would choose to have high leverage if it is associated with costly consequences. With this question in mind, we follow prior research (e.g., Opler and Titman, 1994) and assume that otherwise-identical firms choose different leverage ratios. This assumption is justified by Maksimovic and Zechner (1991), who argue that firms in the same industry are indifferent between a high-leverage/high-risk strategy and a low-leverage/low-risk strategy, or by Opler and Titman (1994), who argue that otherwise-identical firms may simultaneously choose a high-leverage/tax advantage strategy and a low-leverage/cheap assets acquisition strategy. This assumption is also supported empirically by our propensity score matching analysis, in which we match each high-leverage firm with a low-leverage firm with similar characteristics. We find that *HLEV* continues to load significantly negatively on *SALES_G*, with an impact of similar magnitude.

mitigate reverse causality between *SALES_G* and *HLEV*, as long-term debt is less subject to adjustment following firm forecasts of future performance than short-term debt (Campello, 2006). To isolate the impact of high leverage on sales growth, we follow Campello (2006) and control for *SIZE* (firm size), measured as the natural logarithm of total assets; *PROFIT* (profitability), measured as operating earnings plus depreciation divided by total assets; *INVESTMENT* (investment), measured as capital expenditures over total assets; and *SELLEXP* (sell expenses), measured as the ratio of advertising and selling expenses to total sales. To account for country-level macroeconomic influences, we further control for *GDPG* (GDP growth) and *INFLATION* (inflation). More detailed variable definitions are provided in Appendix D.

Following common practice (Opler and Titman, 1994; Campello, 2003, 2006), we adopt the relative measurement method when calculating the firm-level variables in Equation (1). In particular, a firm's *HLEV* is defined relative to its country peers,[28] and the other firm-level variables are subtracted from their country-industry-year means. This method helps strengthen the exogeneity of the firm-level regression variables because a firm has little control over the performance or strategies of its peers. To control for the influence of outliers, we winsorize *PROFIT*, *INVESTMENT*, and *SELLEXP* at the 1% and

[28] Defining a firm's *HLEV* relative to its country peers mitigates the concern of a high correlation between creditor rights and leverage (two components of the interaction term discussed in next subsection). As shown in Cho et al. (2014), creditor rights negatively affect a firm's use of debt. However, our model suggests that around 30% of firm-year observations are highly levered, which means that country-level variables such as creditor rights are not likely to significantly influence *HLEV*. Consistent with this view, Table 2 find that correlation between *CRIGHTS* and *HLEV* is insignificant.

99% levels. In addition, all reported *t*-statistics are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level.

2.3.4. Empirical Design

To test our main hypothesis, which posits that strong creditor rights increase the costs of high leverage by intensifying the adverse responses of customers and competitors, we run the following model:

$$SALES\_G_{i,t} = b + \beta_1 CRIGHTS_{c,t-2} \times HLEV_{i,t-2} + \beta_2 CRIGHTS_{c,t-2} + \beta_3 HLEV_{i,t-2} + \beta_4 SIZE_{i,t} + \sum_{k=1}^{2} \beta_{5k} PROFIT_{i,t-k} + \sum_{k=1}^{2} \beta_{6k} INVESTMENT_{i,t-k} + \sum_{k=1}^{2} \beta_{7k} SELLEXP_{i,t-k} + \beta_8 GDPGc_{,t} + \beta_9 INFLATION_{c,t} + \varepsilon_{c,i,t}, \quad (2)$$

where β_1 captures the effect of creditor rights on the costs of high leverage. Our hypothesis that the dark side of creditor rights intensifies the costs of high leverage suggests a negative coefficient on *CRIGHTS*×*HLEV* (i.e., $\beta_1 < 0$).

Table 2.1 presents descriptive statistics for the key variables (before country-industry-year adjustment) in Equation (2). Similar to prior studies (e.g., Cho et al., 2014), we find that the U.S. and Japan account for the largest percentage of firm-year observations (39% and 12%, respectively). In robustness tests, we show that these countries do not drive our results. Further, around 30% of firm-years in our sample are highly leveraged, consistent with our definition of *HLEV*. The results also reveal a large degree of variation in average sales growth, firm operating conditions, the macroeconomic indicators, as well as the strength of creditor protection. Table 2.2 reports pairwise correlation coefficients

between the key variables. We find a relatively low correlation between the control variables, reducing concerns that multicollinearity is affecting our results.[29]

Since one cannot directly observe the interaction between *CRIGHTS* and *HLEV* for highly leveraged firms, we provide suggestive evidence on this effect by running Equation (1) separately for five groups of countries as classified by their creditor rights scores and plotting the costs of high leverage (λ_1) for each group in an unreported figure. Consistent with our prediction, the figure shows that the costs of high leverage tend to increase the strength of creditor rights. In particular, the coefficient on *HLEV* is approximately zero for countries with a creditor rights score of zero, suggesting that weak creditor rights do not impact high leverage costs, while a medium degree of creditor protection (*CRIGHTS*=1 or 2) leads to a 0.5% decline in country-industry-adjusted sales growth and strong creditor protection (*CRIGHTS*=3 or 4) leads to a 1.3% decline in sales growth on average.

2.4.RESULTS

In this section, we first provide evidence on the dark-side effects of creditor rights on the costs of high leverage, and show that this finding passes a battery of endogeneity tests and robustness checks. We then run subsample tests in which we explore which

[29] An exception is the high correlation between the control variables and their own one-year lags. For example, the correlation between $SELLEXP_{t-1}$ and $SELLEXP_{t-2}$ is 0.84. However, we find that the multicollinearity problem is not severe. First, we examine the variance inflation factors (VIF) in the regression of Equation (2). We find a mean value of 2.17, which is substantially lower than the threshold value (10) of multicollinearity problems. Second, we replace the control variables with their six principal components and re-run the main regressions. The results are qualitatively similar.

groups of firms are likely to suffer more intense costs of high leverage under strong creditor rights. Next, we examine whether strong creditor protection leads to more adverse responses from customers and competitors as suggested by our theoretical arguments, as well as other stakeholder groups, in particular, employees and suppliers. Finally, we show that the main finding does not support the alternative explanation.

2.4.1. The Dark-side Effects of Creditor Rights on the Costs of High Leverage

Table 2.3, Models 1 and 2 present our baseline results on the dark-side effects of creditor rights. Model 1 reports OLS regression results for Equation (1), where we regress firm sales growth on the high-leverage dummy and controls. We find a significantly negative relation between the high-leverage dummy and sales growth, implying that high leverage (firm-years with a long-term debt ratio in the top three deciles of the country in which the firm is headquartered) is costly. Model 2 reports OLS regression results for Equation (2), where we add *CRIGHTS* and its interaction with *HLEV* to the model. We find a significantly negative coefficient on *CRIGHTS*×*HLEV*. Economically, an increase in the creditor rights index (from the 25th percentile to the 75th percentile) approximately doubles the magnitude of the high leverage costs (a further decrease of highly leveraged firms' relative-to-industry sales growth by 0.86% two years later). Taken together, the results show that high leverage leads to unfavorable reactions by customers and competitors, and that strong creditor rights magnify these costs associated with high leverage. These findings therefore support our main hypothesis.

In Table 2.3, Model 3, we examine whether the severity of high leverage affects the relative dark-side effects of creditor rights. We gauge the severity of high leverage by

adopting a more extreme cutoff in defining high leverage. Recall that our main proxy for high leverage is a dummy that captures whether in a given year a firm's leverage ratio is located in the top three deciles of the country in which the firm is headquartered. In Model 3, we follow Opler and Titman (1994) and use an extreme leverage dummy that assigns a value of one to the top decile firm-year observations and zero to the bottom decile observations in each country. Comparisons based on this definition are thus between extremely leveraged and extremely healthy firms. As can be seen, the magnitude of the coefficient on *CRIGHTS×HLEV* is greater than that in the baseline model (-0.0062 compared to -0.0043). This result suggests that the dark-side effects of creditor rights are more pronounced for firms that are extremely leveraged, further supporting the main hypothesis.[30]

2.4.2. Endogeneity Tests and Robustness Checks

Endogeneity. Endogeneity of creditor rights is not likely to be a major concern (Acharya et al., 2011). Reverse causality, for instance, is not likely because creditor rights are largely predetermined by a country's legal origin (La Porta et al., 1998) and it is hard to imagine that the high leverage costs of individual firms would influence a county's legal setting. However, the effect of creditor rights can be driven by unobserved country

[30] In unreported additional analysis, we revisiting Favara et al. (2017) using our research setting. Consistently, we find creditor rights to be negatively associated with capital expenditure and asset growth, and positively associated with asset volatility. The results suggest that creditor rights intensify the underinvestment and risk-shifting problems for highly leveraged firms, lending further support to the dark-side effects of creditor rights.

characteristics (Favara et al., 2017). We address this endogeneity concern of creditor rights by introducing the financial crisis analysis.

The 2008–2009 global financial crisis is an exogenous shock from the perspective of any single firm. While the financial crisis did not likely change the creditor rights legal system of a particular country in the short period, it did greatly modify the hold-up incentives of creditors. The unexpected liquidity scarcity from the crisis can threaten the survival of the firms that are highly leveraged. Therefore, powerful creditors may be biased toward actions that help preserve their own shares at the expense of other stakeholders, such as quick seizing of firm assets or liquidation. Consequently, one should expect even more pronounced negative consequences of creditor rights during the crisis period. To test this conjecture, we follow Lins et al. (2013) and define years 2008 and 2009 as the financial crisis period (*DURING CRISIS*). The following years in our sample are defined as *AFTER CRISIS*. Table 2.4 reports the results of financial crisis analyses. We include additional interaction terms between the crisis indicators, and creditor rights and high leverage variables. In line with our expectations, the results suggest that compared to the pre-crisis period, the dark-side effects of creditor rights have significantly intensified (nearly doubled) during the past global financial crisis, and are relatively weak after the financial crisis. Thus, we find supportive evidence that the negative effects of creditor rights on the costs of high leverage are not likely driven by unobserved factors.

In addition, endogeneity can be a problem for *HLEV*, as indicated by Opler and Titman (1994), because a decline in sales and profitability can induce firms to increase leverage. These problems are mitigated by our research design, however. First, we employ two-year lags between the high leverage measure and sales growth to mitigate reverse

causality. Second, we avoid capturing adjustments to firm leverage by measuring a firm's financial condition relative to its country peers, which it cannot control, and by using a firm's long-term debt ratio in calculating leverage, because it is harder for managers to adjust long-term debt than short-term debt (Campello, 2006). Nevertheless, we further address potential endogeneity of *HLEV* using the 2SLS approach and the system GMM technique developed by Blundell and Bond (1998); Table 2.5 reports the results. To instrument for *HLEV*, we employ its own values over the past two years, in the spirit of Campello (2003). In the first stage (Model 1), we obtain the fitted value of *HLEV* by regressing *HLEV* on a series of control variables and the two instrumental variables. The model shows a highly significant and positive correlation between each instrument and *HLEV*, implying that firms' financial policy tends to be sticky. The first-stage *F*-statistics reported at the bottom of the table are much larger than the threshold value of 10, confirming that the instruments are relevant. In Models 2 and 3, we report the second-stage results using the fitted values of *HLEV*. Consistent with our main results, the coefficients in both models load significantly negatively, lending further support to the idea that the dark-side effects of creditor rights dominate when a firm is highly leveraged. To examine the exogeneity of the instruments, we regress the residuals of the 2SLS models on the instruments and control variables. As indicated by the exogeneity test (*p*-value is 0.33 for Model 2 and 0.35 for Model 3), the instruments are jointly insignificant. This test cannot reject the null hypothesis of no correlation between the residuals and instruments, which suggests that our instruments are exogenous. In the system GMM models, $SALES\_G_{t-1}$ (one-year lagged sales growth) is added as an independent variable. Models 4 and 5 report the results. We continue to find that strong creditor rights significantly increase the costs

of high leverage. Taken together, the results indicate that endogeneity concerns are not likely to be driving our main results.[31]

Sample composition. As the descriptive statistics suggest, our sample is dominated by U.S. and Japanese firms, which together account for 51% of the observations. To reduce the influence of this uneven sample distribution, in Table 2.6 we repeat the baseline regressions after removing firms from the U.S. (Models 1 and 2), Japan (Models 3 and 4), and both countries (Models 5 and 6). Additionally, we employ weighted least squares, which assigns each country a weight equal to the reciprocal of its number of observations (Models 7 and 8). All of these models show consistent and highly significant results, which supports the view that high leverage induces agency conflicts among stakeholders and rival predation, and the costs of high leverage are greater under strong creditor rights.

Alternative definitions of key variables. In Table 2.7, we check the robustness of our baseline models to alternative measures of high leverage and creditor rights. First, as we discuss above, our main proxies for high leverage employ long-term debt because it is less subject to adjustment than short-term debt and therefore more exogenous (Campello, 2006). However, to facilitate comparison with earlier research (e.g., Opler and Titman,

[31] It is also worth noting that the coefficients in the 2SLS and system GMM models are somewhat larger than those in the baseline models. This means that our baseline models do capture some managerial leverage adjustments. Specifically, firms that face higher (lower) costs of high leverage are more likely to decrease (increase) their leverage. This endogeneity issue therefore leads to a higher proportion of firms with small high leverage costs in our high leverage sample, pushing the coefficient estimates toward zero. Nonetheless, the baseline models load significantly negatively, which suggests that our main effects are so strong that they overcome the offsetting effect of this endogeneity problem.

1994), in Models 1 and 2 of Table 2.7 we use the total debt ratio, which incorporates short-term debt. We find that the coefficient on *HLEV*×*CRIGHTS* is negative and significant (at the 1% level), ruling out concerns that our main results hinge on the particular measure of *HLEV*. Second, to check whether our results are sensitive to the lag structure of our variables, in Models 3 and 4 we lag *HLEV* and *CRIGHTS* by three years. We find that the effects of high leverage persist. Third, recent research suggests that the effect of investor protection depends not only on the rules and regulations offering such protection but also on the enforcement of those rules and regulations (e.g., Aggarwal et al., 2009). However, creditor rights may not be as strong as the rules suggest if enforcing those rights is time consuming, costly, and inefficient. To explore this possibility, in Models 5 to 7 we replace *CRIGHTS* with three alternative creditor protection indexes from Djankov et al. (2008) that capture different aspects of debt contract enforcement: the amount of time it takes for creditors' claims to be honored after a firm defaults (*TIME*), the estimated cost of insolvency proceedings (*COST*), and the efficiency with which the insolvency process is resolved in terms of the value losses (*EFFICIENCY*). The results show that the interactions between these three creditor rights enforcement proxies and the high leverage dummy enter significantly at the 1% level, implying that the costs of high leverage are higher if creditors can enforce their contracts quickly, at low cost, and with high value preservation.

Fourth, we adopt an alternative measure of creditor rights protection following Favara et al. (2012). Based on Djankov et al.'s (2008) survey, Favara et al. (2012) construct *RENEGOTIATION FAILURE* index, which gauges the difficulty shareholders will face if they attempt to renege on the outstanding debt, whether through a formal insolvency procedure or outside court. Higher value of the index suggests stronger protection of

creditors' rights. Appendix D shows the detailed definition of this index. Again, we find this alternative measure of creditor rights continues to intensify the costs of high leverage, suggesting that our findings are not likely to be driven by our particular use of key variables.

2.4.3. Subsample Tests

Thus far, our results consistently support the view that strong creditor rights help creditors seize assets and liquidate the firm that is highly leveraged, which intensifies adverse responses from customers and competitors. This argument suggests that the dark-side effects of creditor rights on the costs of high leverage should be more pronounced when creditors have greater power to seize assets and liquidate a highly leveraged firm. To test the conjecture, we conduct three types of subsample tests.

First, we posit that among the different components of creditor rights, those that most drive creditors' hold-up incentives have the greatest impact on the dark-side effects of creditor rights. As discussed above, we measure creditor rights using Djankov et al.'s (2007) creditor rights index, which incorporates four components: *Restrictions on Reorganization*, *No Automatic Stay*, *Secured Creditors Paid First*, and *No Management Stay*. Each component represents a different type of creditor protection. Because *No Automatic Stay* allows creditors to quickly seize firm assets and *No Management Stay* grants creditors discretionary rights to liquidate the firm at others' expense, we expect the significance of the dark-side effects of creditor rights to be most closely related to these two components. In Table 2.8, Model 1 replicates the baseline regression. Models 2 to 5 show that all four components of the creditor rights index lead to increased costs of high

leverage, but only *No Automatic Stay* and *No Management Stay* have a significant influence (at the 5% level or better). In addition, they have a stronger effect than the other two components (-0.0082 and -0.0090 compared with -0.0039 and -0.0035). Thus, consistent with our prediction, these results suggest that the types of creditor protection that drive creditors' hold-up incentives are more likely to intensify agency conflicts for highly leveraged firms.

Next, according to prior research (Brockman and Unlu, 2009; Nini et al., 2009), creditor rights are stronger for firms with a larger share of bank loans relative to public bonds. Bank loans typically contain covenants that are more detailed and comprehensive than public bonds, and hence can control or restrict nearly any dimension of corporate policy (Nini et al., 2009). These restrictive covenants reduce capital investment, suggesting potentially harmful influence of bank-dominated creditor controls. In addition, bank loans, compared to public bonds, can more efficiently enforce creditor rights. Diverse bond issues are accompanied by free-rider problems (Gertner and Scharfstein, 1991) because each individual creditor who enforces the rights bears the full costs but shares the benefits. In contrast, banks as concentrated lenders do not face these free-rider problems and are therefore associated with stronger creditor controls. In the same vein, Rajan (1992) argues that bank financing makes it easier for creditors to seize and liquidate assets, even when continuation of the firm would be efficient. Since firms can more easily access bank loans in better developed banking systems, taken together we expect the dark-side effects of creditor rights to be more pronounced for firms domiciled in better developed banking systems. We capture the relative importance of bank loans relative to bonds at the country level using the ratio of bank loans to public bonds, which is obtained from the World

Bank's Financial Development and Structure dataset.[32] We define an economy as a banking system (bond market system) if the two-year lag of the ratio of bank loans to public bonds is above (below or equal to) the median. Consistent with our conjecture, in Models 6 and 7 of Table 2.8 we find that the coefficient on *CRIGHTS*×*HLEV* is more pronounced for firms located in countries with a banking system (-0.0075) but is insignificant for firms located in countries with a bond market system (-0.0019). The results suggest that the dark-side effects of creditor rights are more pronounced when creditors have stronger power of control.

Last, the effect of legal creditor protection is contingent on firms' liquidation costs (Acharya et al., 2011; Favara et al., 2012). As suggested by prior research (Shleifer and Vishny, 1992; Pulvino, 1998), the liquidation of a firm is usually accompanied by a loss of firm value. According to Shleifer and Vishny (1992), firm value decreases because the firm's assets are transferred to well-financed industry outsiders who can make less efficient use of the assets. Firm liquidation may therefore fail to maximize proceeds to a liquidating firm's claimholders (Aghion et al., 1992). Liquidation costs are lower for firms with a higher share of tangible assets, as intangible assets such as brands and patents are less valuable to industry outsiders while tangible assets can be sold for closer to their fundamental value. Acharya et al. (2011) argue that these firms whose assets have high recovery value (or lower liquidation costs) can defer the likelihood of liquidation by selling assets and by using the proceeds to service debt. Since the dark-side effects of creditor

[32] The ratio of bank loans to public bonds is computed as the ratio of private credit by deposit money banks to GDP divided by private and public bond market capitalization to GDP.

rights are based on concerns that creditors may force a highly leveraged firm into immediate liquidation, the argument of Acharya et al. (2011) suggests a weaker negative effect of creditor rights for firms with lower liquidation costs. Following Favara et al. (2012), we use firms' *intangibility* of assets as a proxy for liquidation costs. *Intangibility* equals one minus the average of exit values per dollar of the various tangible assets, including receivables, inventories, cash, and net property, plant, and equipment, weighted by total asset (Berger et al., 1996). We classify a firm as a high-liquidation-cost (low-liquidation-cost) firm if its two-year lag of *intangibility* is above (below or equal to) the sample median. In Models 8 and 9 of Table 2.8 we find that the dark-side effects of creditor rights are strong for highly leveraged firms with high liquidation costs, but are insignificant for highly leveraged firms with low liquidation costs. The difference in the effect of creditor rights on the high-liquidation-cost and low-liquidation-cost firm samples is significant. These results are consistent with our prediction.

Overall, the subsample tests show that the relationship between creditor rights and the costs of high leverage is more pronounced if firms are domiciled in a country that ranks high in creditor rights terms that most drive creditors' hold-up incentives, if firms are domiciled in a country with developed banking system (compared to bond market system), or if firms have higher liquidation costs. These findings lend further support to our main finding that the dark-side effects of creditor rights dominate for highly leveraged firms.

2.4.4. Main Channels

The above main analysis jointly captures the actions of customers and competitors. In this subsection we consider each group separately. Turning to customers, prior research

shows that they are more sensitive to highly leveraged firms with high product specificity (Opler and Titman, 1994; Campello and Fluck, 2006). When a customer buys a highly specialized product, a large portion of the price paid is for implicit claims such as availability of future servicing. To the extent that strong creditor rights help creditors liquidate a highly leveraged firm, customers of high-product-specificity firms face greater risk and thus are expected to respond more negatively. We therefore expect that strong creditor rights increase the customer-driven costs of high leverage to a greater extent if the firm has higher product specificity. To proxy for the degree of product specificity, we employ R&D expenditures (Titman and Wessels, 1988). Specifically, we classify a firm as having high (low) product specificity if its R&D/sales ratio is above (below or equal to) the median for the overall sample two years ago. Table 2.9 shows the separate effects of creditor rights on customers' and competitors' responses to high leverage. In Models 2 and 3, we find that compared to our baseline model (Model 1), the coefficient on *CRIGHTS×HLEV* is pronounced for firms with high product specificity (-0.0065), but insignificant for firms with low product specificity. We further find that the difference in the coefficient on *CRIGHTS×HLEV* between the high-product-specificity and low-product-specificity samples is significant (*p*-value=0.058). Thus the results suggest that strong creditor rights increase high leverage costs through the channel of customers.

With respect to competitors' incentives, predation is more likely to take place if the highly leveraged firm is located in a more competitive environment. For example, Opler and Titman (1994) find that competitor-driven costs are higher in more concentrated industries. If strong creditor protection intensifies predation from competitors for highly leveraged firms, then we would expect this effect to be stronger in a more competitive

environment. We therefore expect that creditor rights increase the competitor-driven costs of high leverage to a greater extent if the highly leveraged firm is located in a more competitive environment. To proxy for a firm's competitive environment, we first use industry concentration following Opler and Titman (1994). We next extend Opler and Titman's (1994) definition to the global setting by classifying high-concentration (low-concentration) industries as country-industries with a four-firm concentration ratio in 2000 that is higher than (lower than or equal to) 0.4. Table 2.9, Models 4 and 5 show that creditor rights have a stronger impact on firms in more concentrated industries, consistent with our hypothesis. The concentration ratio computed using information from public firms, however, may fail to capture the degree of competitiveness in less developed countries, where many major companies choose not to list in a stock market. To address this concern, we employ proxy for competitive environment using international trade freedom, a measure of the degree to which a firm is free to trade internationally as assessed by Fraser Institute's Economic Freedom of the World. Higher values of this variable indicate lower tariffs, fewer trade barriers, and less restriction on foreign investment, and hence are associated with greater competition from international rivals. Models 6 and 7 show that for firms that potentially face high (low) international rival predation, creditor rights exhibit a stronger (weaker) ability to magnify the costs of high leverage. The difference tests at the bottom of Table 2.4 suggest that the effect of creditor rights is significantly different between high- and low-industry-concentration samples, and between high- and low-international-trade-freedom samples. Thus, we consistently find that strong creditor rights increase competitor-driven high leverage costs. In sum, the results in this subsection

suggest that the dark-side effects of creditor rights operate both through the channels of customers and competitors.

2.4.5. Additional Channels

The results so far indicate that creditor rights amplify the high leverage costs that arise from the adverse behaviors of customers and competitors. The focus on these two groups follows existing capital structure and product market performance literature (e.g., Maksimovic and Titman, 1991; Titman, 1984; Bolton and Scharfstein, 1990; Chevalier, 1995; Opler and Titman, 1994; Campello, 2003, 2006). However, the dark-side effects of creditor rights for firms in high leverage may extend beyond these two groups. In his theoretical paper showing that firm liquidation imposes costs on customers that are ultimately borne by the firm, Titman (1984) suggests that similar models could draw implications for other groups such as employees and suppliers. Motivated by these studies, in this section we examine the effects of strong creditor rights on the behaviors of employees and suppliers when a firm is highly leveraged.

Similar to customers, employees and suppliers have implicit and explicit claims on a firm. We therefore expect that, due to creditors' hold-up incentives, high leverage can also severely impair the welfare of employees and suppliers. For example, in the extreme case in which a highly leveraged firm discontinues operation, employees would lose their jobs and suppliers may not get paid. To protect themselves from such outcomes, employees may leave the firm and suppliers may be unwilling to do business with the firm. These responses would further increase the costs of high leverage. Since strong creditor rights increase creditors' hold-up incentives, we predict that strong creditor rights magnify these

costs. To test this conjecture, in Table 2.10 we re-run our main analysis after replacing sales growth (*SALES_G*) with employee growth (*EMPL_G*), which captures employees' incentives to stay, or accounts payable growth (*AP_G*), which captures suppliers' willingness to extend trade credit. In Models 1 and 3 we find that highly leveraged firms experience 1.38% lower relative-to-rival employee growth and 0.86% lower accounts payable growth. We thus find evidence of employee- and supplier-driven high leverage costs. In Models 2 and 4 we examine whether these costs are intensified by strong creditor rights. Model 2 shows that an increase in creditor rights score (from 25th percentile to 75th percentile) leads to an additional 0.5% loss in employee growth for highly leveraged firms. However, in Model 4 we find that *CRIGHTS*×*HLEV* loads insignificantly on *AP_G*. Taken together, these results show that strong creditor protection adversely influences employees' incentives to stay with a highly leveraged firm.

2.4.6. An Alternative Explanation

We argue that the results so far support the dark-side effects of creditor rights. That is, creditor rights amplify the high leverage costs by increasing the hold-up incentive of creditors towards stakeholders. Greater costs of high leverage reflect more adverse behaviors of stakeholders, and imply reduced firm value.

However, one may question whether the results can be alternatively explained by the bright-side view. For example, it is likely that reduced sales growth or employee growth associated with high leverage reflects the efficient downsizing. Highly leveraged firms have to shut down unprofitable product lines and lay off redundant labor because they are subject to the scrutiny of capital markets. In this case, strong creditor rights, which provide more favorable financing terms and facilitate financing in capital markets (La Porta et al.,

1997; Djankov et al., 2007; Qian and Strahan, 2007; Bae and Goyal, 2009), imply a higher extent of scrutiny and thus accelerate the efficient downsizing process. If this story holds, we should expect highly leveraged firms in countries with strong creditor protection to have better access to capital and to be associated with higher shareholder or firm value.

To investigate whether our main results are driven by this alternative story, we replicate the baseline model after replacing sales growth (*SALES_G*) with a set of variables reflecting firm performance. Specifically, we focus on *DEBTISSUE* (debt issuance), *EQUITYISSUE* (equity issuance), and *STOCKRETURN* (risk-adjusted stock returns). As can be seen from Models 1 to 3 of Table 2.11, highly leveraged firms from strong creditor rights countries are less likely to issue debt and equity, and tend to experience reduced risk-adjusted stock returns. These findings are contrary to the predictions from bright-side view of creditor rights. We conclude that these findings confirm our main story that the dark-side effects of creditor rights prevail for highly leveraged firms.

2.5. CONCLUSION

In an attempt to identify a potentially adverse consequence of creditor rights, in this paper we investigate the role of creditor rights on product market performances when firms have high leverage. High leverage leads to agency conflicts among firm stakeholders and predation by competitors. In this context, creditors have hold-up incentives to appropriate firm value from customers, employees, and other firm stakeholders, and thus trigger costly responses from these stakeholders as well as predatory behavior from competitors. We argue that strong creditor rights increase the costs of high leverage, and that the dark-side

effects of creditor rights operate through multiple channels: customers, competitors, and employees.

Based on 203,920 firm-year observations from 30,041 unique firms across 54 countries over the 1989 to 2010 period, we find that on average, an increase in creditor rights score from the 25th percentile to the 75th percentile doubles the magnitude of high leverage costs, consistent with the dark-side effects of creditor rights intensifying adverse responses from customers and competitors for firms that are highly leveraged. The negative impact of creditor rights on the high leverage costs is robust to endogeneity tests as well as alternative sample compositions and measures, and is more pronounced for the types of creditor protection that most drive creditors' hold-up incentives, for firms located in countries with developed banking system (rather than bond market system), for firms with higher liquidation costs, and for firms with customers or competitors more sensitive to high leverage. We also find that strong creditor protection increases employee exit for highly leveraged firms.

In sum, our paper shows that the dark-side effects of creditor rights operate not only through management but also through customers, competitors, and employees. Second, our paper highlights the importance of firm-specific characteristics such as a firm's financial health when considering the effect of strong creditor rights. Our results suggest that a more flexible (i.e., shorter-term) debt strategy may be optimal for firms operating in a strong creditor rights environment. Finally, our paper identifies strong creditor rights as a factor that influences high leverage costs, and is the first international study to shed light on the role of institutions in affecting the costs of high leverage.

Table 2.1 Descriptive statistics

Country	N	*SALES_G*	*CRIGHTS*	*HLEV*	*SIZE*	$PROFIT_{t-1}$	$PROFIT_{t-2}$	$INVESTMENT_{t-1}$	$INVESTMENT_{t-2}$	$SELLEXP_{t-1}$	$SELLEXP_{t-2}$	*GDPG*	*INFLATION*
Panel A. Descriptive statistics by country													
Argentina	120	0.07	1.00	0.29	5.23	0.04	0.04	0.04	0.04	0.18	0.17	1.99	12.06
Australia	4,716	0.10	3.00	0.33	3.54	-0.08	-0.05	0.07	0.07	0.59	0.46	1.63	3.63
Austria	320	0.10	3.00	0.36	5.65	0.07	0.07	0.06	0.07	0.07	0.06	1.43	1.48
Belgium	436	0.10	2.00	0.34	5.91	0.07	0.07	0.06	0.07	0.09	0.08	0.94	1.95
Brazil	1,545	0.13	1.00	0.32	5.93	0.05	0.05	0.06	0.07	0.21	0.20	2.18	8.12
Canada	8,101	0.13	1.09	0.30	4.90	0.01	0.02	0.09	0.10	0.35	0.34	1.21	2.22
Chile	747	0.10	2.00	0.34	5.67	0.08	0.08	0.06	0.06	0.19	0.19	2.50	5.98
China	12,329	0.20	2.00	0.29	5.41	0.06	0.06	0.07	0.07	0.19	0.17	9.84	4.29
Colombia	13	-0.11	0.00	0.31	5.50	0.07	0.08	0.04	0.04	0.17	0.16	-1.78	19.17
Denmark	734	0.05	3.00	0.26	5.24	0.07	0.08	0.06	0.06	0.17	0.15	0.79	2.38
Egypt	12	0.35	2.00	0.17	7.91	0.20	0.17	0.14	0.11	0.13	0.13	3.40	8.41
Finland	890	0.09	1.00	0.26	5.70	0.09	0.10	0.06	0.07	0.03	0.03	2.01	1.46
France	5,567	0.10	0.00	0.30	5.70	0.06	0.06	0.05	0.05	0.08	0.07	0.86	1.70
Germany	5,019	0.08	3.00	0.33	5.44	0.05	0.05	0.06	0.06	0.12	0.11	1.20	0.87
Greece	643	0.06	1.00	0.35	5.60	0.05	0.07	0.05	0.06	0.18	0.17	0.07	2.84
Hong Kong	1,044	0.14	4.00	0.28	5.39	0.06	0.07	0.05	0.05	0.23	0.22	3.88	-0.18
India	10,377	0.20	2.00	0.29	4.12	0.08	0.08	0.08	0.08	0.10	0.10	6.42	6.10
Indonesia	2,015	0.11	2.02	0.29	4.58	0.04	0.05	0.06	0.06	0.15	0.15	2.98	13.62
Ireland	239	0.11	1.00	0.31	5.73	0.04	0.04	0.04	0.05	0.30	0.29	2.29	1.79
Israel	629	0.13	3.00	0.26	4.83	0.02	0.02	0.04	0.04	0.35	0.33	2.14	2.28
Italy	1,583	0.09	2.00	0.31	6.20	0.05	0.05	0.04	0.04	0.04	0.03	0.08	2.17
Japan	24,917	0.07	2.83	0.23	6.08	0.04	0.04	0.04	0.04	0.21	0.21	0.74	-1.29
Jordan	14	0.19	1.00	0.64	5.59	0.10	0.09	0.07	0.07	0.05	0.05	4.95	9.17
Korea, Rep.	4,022	0.10	3.00	0.27	6.09	0.05	0.05	0.06	0.06	0.15	0.14	3.86	2.50
Kuwait	42	0.03	3.00	0.40	6.43	0.08	0.12	0.07	0.08	0.09	0.09	-4.50	7.63
Latvia	12	0.06	3.00	0.50	4.96	0.12	0.13	0.12	0.12	0.09	0.10	-1.80	7.72
Lithuania	20	0.13	2.00	0.25	4.46	0.12	0.14	0.08	0.09	0.10	0.10	2.88	4.63
Malaysia	5,238	0.10	3.00	0.30	4.23	0.04	0.05	0.04	0.05	0.14	0.13	3.00	4.18
Mexico	643	0.12	0.00	0.30	7.02	0.09	0.08	0.06	0.06	0.21	0.21	0.96	6.97
Morocco	14	0.12	1.00	0.29	5.91	0.19	0.19	0.10	0.11	0.04	0.03	3.76	2.15
Netherlands	1,145	0.08	3.00	0.32	6.10	0.08	0.08	0.06	0.06	0.10	0.10	1.82	2.24
New Zealand	283	0.10	4.00	0.25	4.48	0.07	0.07	0.05	0.06	0.12	0.10	0.55	2.99
Nigeria	30	0.18	4.00	0.23	4.91	0.13	0.15	0.14	0.12	0.13	0.12	8.85	10.74
Norway	901	0.14	2.00	0.21	5.35	0.05	0.04	0.07	0.08	0.04	0.05	0.68	4.68
Oman	145	0.21	0.00	0.26	3.55	0.10	0.09	0.06	0.05	0.11	0.11	2.10	8.65
Pakistan	880	0.09	1.00	0.29	4.04	0.09	0.10	0.07	0.07	0.08	0.07	1.79	12.11
Peru	222	0.17	0.00	0.31	5.23	0.12	0.12	0.06	0.06	0.15	0.15	4.10	3.30
Philippines	363	0.10	1.00	0.25	4.51	0.05	0.05	0.05	0.05	0.19	0.18	2.93	4.99
Poland	1,164	0.15	1.00	0.36	4.29	0.07	0.08	0.07	0.07	0.17	0.16	4.35	2.78
Portugal	147	0.09	1.00	0.33	7.02	0.08	0.07	0.06	0.06	0.03	0.03	0.99	2.58
Russian Fed.	351	0.20	1.97	0.38	7.87	0.12	0.13	0.11	0.11	0.12	0.12	4.02	13.95
Saudi Arabia	45	0.16	3.00	0.44	7.21	0.14	0.14	0.10	0.11	0.09	0.09	3.89	5.29
Singapore	3,396	0.14	3.00	0.25	4.38	0.06	0.07	0.05	0.06	0.14	0.13	4.08	1.77
South Africa	1,155	0.16	3.00	0.34	5.00	0.11	0.12	0.07	0.07	0.13	0.12	2.00	7.43
Spain	521	0.11	2.57	0.34	6.83	0.09	0.10	0.06	0.06	0.03	0.03	1.08	2.71
Sri Lanka	302	0.18	2.00	0.27	3.07	0.06	0.07	0.05	0.05	0.21	0.21	4.89	9.31
Sweden	2,139	0.12	1.00	0.29	4.61	0.03	0.03	0.04	0.04	0.26	0.26	1.80	1.68
Switzerland	1,722	0.09	1.00	0.27	6.15	0.08	0.09	0.05	0.05	0.12	0.11	1.12	0.96
Thailand	3,393	0.10	2.05	0.29	4.29	0.08	0.08	0.06	0.06	0.17	0.17	3.14	2.87
Turkey	357	0.10	2.00	0.33	5.83	0.10	0.11	0.07	0.07	0.12	0.12	1.87	14.49
United Arab Emir	53	0.09	2.00	0.32	5.89	0.11	0.12	0.08	0.07	0.10	0.10	-10.94	7.46
United Kingdom	13,826	0.10	4.00	0.32	4.98	0.05	0.05	0.06	0.06	0.27	0.27	1.93	2.26
United States	79,289	0.09	1.00	0.29	4.91	0.02	0.02	0.06	0.06	0.37	0.37	1.60	2.25
Vietnam	90	0.14	1.00	0.33	3.83	0.12	0.12	0.10	0.13	0.09	0.09	4.74	10.82
Panel B. Descriptive statistics for the full sample													
Mean		0.11	1.84	0.29	5.09	0.04	0.04	0.06	0.06	0.27	0.26	2.40	2.49
Min		-1.00	0.00	0.00	-6.91	-1.86	-1.86	0.00	0.00	0.00	0.00	-16.59	-21.44

Q1	-0.05	1.00	0.00	3.74	0.02	0.03	0.02	0.02	0.08	0.08	0.84	1.16
Median	0.08	1.00	0.00	5.06	0.07	0.07	0.04	0.04	0.17	0.16	2.18	2.23
Q3	0.23	3.00	1.00	6.40	0.11	0.12	0.07	0.08	0.30	0.30	3.28	3.33
Max	2.00	4.00	1.00	13.08	0.35	0.35	0.39	0.39	6.60	6.60	30.34	137.96
SD	0.31	1.05	0.45	2.08	0.21	0.20	0.06	0.07	0.51	0.48	3.25	3.29

This table reports the sample distribution by country, and summary statistics for all variables (before country-industry adjustments) in the main regression. The full sample includes 203,920 firm-year observations from 54 countries. Panel A presents the average of the key variables in the main regression by country. Panel B reports descriptive statistics of the full sample from 54 countries.

Table 2.2 Correlation matrix

	SALES_G	*CRIGHTS*	*HLEV*	*SIZE*	$PROFIT_{t-1}$	$PROFIT_{t-2}$	$INVESTMENT_{t-1}$	$INVESTMENT_{t-2}$	$SELLEXP_{t-1}$	$SELLEXP_{t-2}$	*GDPG*	*INFLATION*
	1											
CRIGHTS	0.01***	1										
HLEV	0.01***	-0.01**	1									
SIZE	0.06***	0.04***	0.22***	1								
$PROFIT_{t-1}$	0.11***	0.03***	0.02***	0.31***	1							
$PROFIT_{t-2}$	0.06***	0.03***	0.02***	0.30***	0.61***	1						
$INVESTMENT_{t-1}$	0.10***	-0.07***	0.13***	0.04***	0.10***	0.15***	1					
$INVESTMENT_{t-2}$	0.10***	-0.06***	0.12***	0.04***	0.09***	0.10***	0.66***	1				
$SELLEXP_{t-1}$	-0.01***	-0.08***	-0.08***	-0.26***	-0.49***	-0.43***	-0.03***	-0.02***	1			
$SELLEXP_{t-2}$	-0.01***	-0.09***	-0.08***	-0.26***	-0.45***	-0.49***	-0.04***	-0.02***	0.84***	1		
GDPG	0.19***	0.07***	-0.00	-0.04***	0.06***	0.03***	0.05***	0.06***	-0.07***	-0.07***	1	
INFLATION	0.07***	-0.10***	0.02***	-0.10***	0.03***	0.03***	0.09***	0.09***	-0.03***	-0.03***	0.24***	1

Notes: This table reports pairwise correlations for the key variables (before country-industry adjustments) in the main regression. Detailed descriptions of variable definitions and data sources are provided in Appendix C. ***, ** and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.3 The dark-side effect of creditor rights

		Main Findings	
	$SALES\_G_t$	$SALES\_G_t$	$SALES\_G_t$
	(1)	(2)	(3)
$CRIGHTS_{t-2}$* $HLEV_{t-2}$		-0.0043***	-0.0062**
		(-3.54)	(-2.14)
$HLEV_{t-2}$	-0.0081***	-0.0003	-0.0104
	(-4.83)	(-0.11)	(-1.54)
$CRIGHTS_{t-2}$		0.0043	0.0032
		(1.63)	(1.40)
$SIZE_t$	0.0104***	0.0104***	0.0166***
	(7.16)	(7.60)	(6.74)
$PROFIT_{t-1}$	0.1385***	0.1391***	0.1097***
	(16.48)	(16.80)	(7.31)
$PROFIT_{t-2}$	-0.0058	-0.0048	-0.0122
	(-1.32)	(-0.84)	(-1.20)
$INVESTMENT_{t-1}$	0.3730***	0.3729***	0.4339***
	(9.89)	(10.04)	(8.35)
$INVESTMENT_{t-2}$	0.1521***	0.1526***	0.1096**
	(5.45)	(5.63)	(2.50)
$SELLEXP_{t-1}$	0.0157*	0.0158*	0.0119*
	(2.01)	(1.97)	(1.83)
$SELLEXP_{t-2}$	0.0314***	0.0314***	0.0231***
	(4.80)	(5.48)	(4.50)
$GDPG_t$	0.0002	0.0001	-0.0008
	(0.26)	(0.15)	(-1.64)
$INFLATION_t$	0.0006	0.0007	0.0006
	(0.95)	(1.26)	(0.97)
CONSTANT	-0.0176***	-0.0257***	-0.0074
	(-4.36)	(-4.66)	(-1.26)
N	203,920	203,920	57,660
R-squared	0.0240	0.0241	0.0267

This table reports results on the effect of creditor rights on the costs of high leverage using OLS. The dependent variable is country-industry-adjusted sales growth (*SALES_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry mean is not biased toward outliers, we require each country-industry-year to contain at least 4 observations. We further remove countries with fewer than 10 observations. Model 1 revisits the finding that high leverage leads to costly reactions from customers and competitors (Table 2 of Campello (2006)). Models 2 and 3 examine the effect of creditor rights on the costs of high leverage. Model 3 creates an extremely high-leverage dummy by assigning the value of 1 to the top decile firm-year observations and 0 to the bottom decile observations in each country. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.4 Endogeneity tests: exogenous shock of financial crisis

	Financial Crisis (1)
DURING CRISIS*CRIGHTS$_{t-2}$ * HLEV$_{t-2}$	**-0.0047*** **(-1.87)**
AFTER CRISIS*CRIGHTS$_{t-2}$ * HLEV$_{t-2}$	**0.0043** **(0.77)**
*DURING CRISIS*CRIGHTS$_{t-2}$*	-0.0044 (-1.22)
DURING CRISIS HLEV$_{t-2}$*	0.0099* (1.69)
*AFTER CRISIS*CRIGHTS$_{t-2}$*	-0.0026 (-0.96)
AFTER CRISIS HLEV$_{t-2}$*	-0.0097 (-0.62)
CRIGHTS$_{t-2}$ HLEV$_{t-2}$*	-0.0040*** (-2.66)
During Crisis	0.0190** (2.38)
After Crisis	0.0199*** (3.45)
CRIGHTS$_{t-2}$	0.0044 (1.56)
HLEV$_{t-2}$	**-0.0006** **(-0.21)**
SIZE$_t$	0.0104*** (7.72)
PROFIT$_{t-1}$	0.1394*** (16.96)
PROFIT$_{t-2}$	-0.0047 (-0.84)
INVESTMENT$_{t-1}$	0.3729*** (10.04)
INVESTMENT$_{t-2}$	0.1523*** (5.63)
SELLEXP$_{t-1}$	0.0156* (1.98)
SELLEXP$_{t-2}$	0.0316*** (5.48)
GDPG$_t$	0.0003 (0.33)
INFLATION$_t$	0.0006 (1.21)
CONSTANT	-0.0286*** (-4.92)
N	203,920
R-squared	0.0245

This table reports results on the effect of creditor rights on the costs of high leverage after introducing the exogenous shock of financial crisis. The dependent variable is country-industry-adjusted sales growth (*SALES_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry mean is not biased toward outliers, we require each country-industry-year to contain at least 4 observations. We further remove countries with fewer than 10 observations. Model 1 includes the interaction terms between the crisis indicators, and creditor rights and high leverage variables. We follow Lins et al. (2013) and define 2008 and 2009 as the financial crisis period (*DURING CRISIS*). The following years in our sample are defined as *AFTER CRISIS*. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.5 Endogeneity tests: 2SLS and system GMM approaches

	2SLS (instrumented by $HLEV_{t-3}$ and $HLEV_{t-4}$)			SYSTEM GMM	
	First Stage	Second Stage			
	(1)	(2)	(3)	(4)	(5)
***CRIGHTS*$_{t-2}$×*HLEV*$_{t-2}$**			-0.0068*** (-2.97)		-0.0058** (-2.51)
$HLEV_{t-2}$		-0.0135*** (-5.08)	-0.0008 (-0.16)	-0.0200*** (-7.45)	-0.0088* (-1.77)
$CRIGHTS_{t-2}$			0.0068 (1.59)		0.0052*** (5.04)
$SIZE_t$	0.0160*** (6.54)	0.0112*** (7.78)	0.0111*** (7.83)	0.0143*** (26.74)	0.0143*** (26.77)
$PROFIT_{t-1}$	-0.0386*** (-5.53)	0.1303*** (13.34)	0.1315*** (14.51)	0.0856*** (10.27)	0.0861*** (10.30)
$PROFIT_{t-2}$	-0.1157*** (-9.51)	0.0059 (1.26)	0.0083 (1.58)	0.0065 (0.80)	0.0078 (0.95)
$INVESTMENT_{t-1}$	-0.1889*** (-4.01)	0.3235*** (8.44)	0.3220*** (8.46)	0.2218*** (9.51)	0.2244*** (9.59)
$INVESTMENT_{t-2}$	0.5334*** (5.68)	0.1488*** (4.07)	0.1489*** (4.10)	0.1221*** (6.07)	0.1221*** (6.04)
$SELLEXP_{t-1}$	-0.0160*** (-4.37)	0.0172 (1.30)	0.0172 (1.30)	0.0682*** (9.49)	0.0677*** (9.38)
$SELLEXP_{t-2}$	-0.0131*** (-3.23)	0.0324*** (3.65)	0.0321*** (3.64)	-0.0069 (-1.00)	-0.0062 (-0.90)
$GDPG_t$	-0.0008 (-1.08)	0.0000 (0.05)	-0.0001 (-0.11)	0.0000 (0.01)	-0.0001 (-0.32)
$INFLATION_t$	0.0017* (1.95)	0.0007 (0.55)	0.0010 (0.83)	0.0004 (1.22)	0.0005* (1.67)
$IV1\_HLEV_{t-3}$	0.5780*** (59.82)				
$IV2\_HLEV_{t-4}$	0.1570*** (22.25)				
$SALES\_G_{t-1}$				0.1090*** (20.38)	0.1090*** (20.38)
CONSTANT	0.0722*** (8.69)	-0.0255*** (-3.34)	-0.0385*** (-4.94)	-0.0210*** (-15.52)	-0.0306*** (-12.35)
N	157,850	157,850	157,850	150,346	150,346
R-squared	0.5147	0.0232	0.0236	23,581	23,581
First stage F statistic	75948.9				
Exogeneity test p value		0.33	0.35		

This table reports results of 2SLS and GMM regressions. The dependent variable is country-industry-adjusted sales growth (*SALES_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of

the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry-year mean is not biased toward outliers, we require each country-industry to contain at least 4 observations. We further remove countries with fewer than 10 observations. The first-stage regressions are reported in Model 1. Models 2 and 3 report the second-stage regression using the fitted values of *HLEV*. Models 4 and 5 report the system GMM results. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.6 Robustness checks: sample composition

	Sample Composition							
	Exclude U.S.		Exclude Japan		Exclude Japan & U.S.		Weighted Regression	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$CRIGHTS_{t-2} \times HLEV_{t-2}$		-0.0051***		-0.0039**		-0.0051**		-0.0053***
		(-3.08)		(-2.54)		(-2.62)		(-5.30)
$HLEV_{t-2}$	-0.0094***	0.0027	-0.0075***	-0.0008	-0.0092***	0.0025	-0.0063***	0.0006
	(-4.79)	(0.57)	(-4.20)	(-0.29)	(-3.98)	(0.46)	(-5.27)	(0.51)
$CRIGHTS_{t-2}$		-0.0003		0.0029		-0.0010		0.0084**
		(-0.14)		(1.49)		(-0.65)		(2.34)
$SIZE_t$	0.0090***	0.0090***	0.0111***	0.0111***	0.0104***	0.0105***	0.0112***	0.0111***
	(3.45)	(3.48)	(8.65)	(8.81)	(3.51)	(3.56)	(17.18)	(16.13)
$PROFIT_{t-1}$	0.1613***	0.1615***	0.1384***	0.1387***	0.1620***	0.1622***	0.1328***	0.1335***
	(11.12)	(11.15)	(16.48)	(16.71)	(10.34)	(10.37)	(147.47)	(113.20)
$PROFIT_{t-2}$	0.0002	0.0004	-0.0080*	-0.0076	-0.0065	-0.0062	-0.0013	-0.0002
	(0.02)	(0.04)	(-1.78)	(-1.63)	(-0.77)	(-0.73)	(-0.93)	(-0.12)
$INVESTMENT_{t-1}$	0.3575***	0.3576***	0.3897***	0.3898***	0.3857***	0.3856***	0.3823***	0.3816***
	(5.82)	(5.80)	(11.62)	(11.64)	(6.88)	(6.85)	(25.03)	(24.58)
$INVESTMENT_{t-2}$	0.1860***	0.1857***	0.1480***	0.1485***	0.1835***	0.1832***	0.1132***	0.1137***
	(8.07)	(8.14)	(5.25)	(5.27)	(7.33)	(7.39)	(6.41)	(6.32)
$SELLEXP_{t-1}$	0.0052	0.0051	0.0156*	0.0157*	0.0050	0.0049	0.0255***	0.0254***
	(0.76)	(0.76)	(1.98)	(1.99)	(0.74)	(0.73)	(8.75)	(8.94)
$SELLEXP_{t-2}$	0.0231**	0.0231**	0.0311***	0.0311***	0.0223**	0.0222**	0.0348***	0.0349***
	(2.16)	(2.15)	(4.65)	(4.69)	(2.08)	(2.06)	(27.89)	(28.28)
$GDPG_t$	0.0005	0.0005	0.0004	0.0003	0.0007	0.0007	-0.0016	-0.0019
	(0.71)	(0.67)	(0.41)	(0.30)	(0.98)	(0.95)	(-0.94)	(-1.21)
$INFLATION_t$	0.0003	0.0003	0.0012**	0.0012**	0.0008**	0.0007**	0.0007	0.0018
	(0.80)	(0.67)	(2.44)	(2.50)	(2.45)	(2.46)	(0.34)	(1.08)
CONSTANT	-0.0132***	-0.0122**	-0.0218***	-0.0265***	-0.0176***	-0.0151***	-0.0195***	-0.0320***
	(-4.38)	(-2.25)	(-8.94)	(-7.14)	(-9.09)	(-3.73)	(-3.65)	(-5.60)

N	124,631	124,631	179,003	179,003	99,714	99,714	203,920	203,920
R-squared	0.0217	0.0218	0.0250	0.0250	0.0230	0.0232	0.0287	0.0290

This table reports results for the main analyses on the costs of high leverage and the effect of creditor rights on the costs of high leverage using different sample compositions. The dependent variable is country-industry-adjusted sales growth (*SALES_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry-year mean is not biased toward outliers, we require each country-industry to contain at least 4 observations. We further remove countries with fewer than 10 observations. Models 1 and 2 remove firms from the U.S. Models 3 and 4 remove firms from Japan. Models 5 and 6 remove firms from both the U.S. and Japan. Models 7 and 8 employ weighted regressions where the weights equal the reciprocal of the number of observations in each country. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.7 Robustness checks: alternative definitions of key variables

	High leverage				*CRIGHTS*			
	Total Leverage		Lag Three Years		*TIME*	*COST*	*EFFICIENCY*	*RENEGOTIATION FAILURE*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
***CRIGHTS*$_{t-2}$×*HLEV*$_{t-2}$**		-0.0044**		-0.0042***	0.0069***	0.1032***	-0.0378***	-0.0195**
		(-2.62)		(-3.87)	(3.15)	(5.83)	(-4.80)	(-2.56)
HLEV$_{t-2}$	-0.0130***	-0.0048	-0.0079***	-0.0001	-0.0193***	-0.0168***	0.0219***	0.0029
	(-4.19)	(-1.39)	(-3.92)	(-0.08)	(-5.68)	(-7.28)	(3.49)	(0.70)
CRIGHTS$_{t-2}$		0.0043		0.0048	-0.0009	0.0494	-0.0293**	-0.0180**
		(1.60)		(1.15)	(-0.21)	(1.46)	(-2.35)	(-2.63)
SIZE$_t$	0.0103***	0.0103***	0.0111***	0.0110***	0.0112***	0.0112***	0.0112***	0.0112***
	(7.06)	(7.10)	(8.19)	(8.26)	(8.40)	(8.34)	(8.34)	(8.41)
PROFIT$_{t-1}$	0.1379***	0.1386***	0.1389***	0.1397***	0.1282***	0.1286***	0.1290***	0.1284***
	(16.71)	(17.14)	(13.23)	(14.07)	(17.35)	(16.48)	(16.31)	(16.22)
PROFIT$_{t-2}$	-0.0089*	-0.0077	0.0055	0.0069	0.0081	0.0085	0.0093*	0.0083
	(-2.00)	(-1.56)	(0.90)	(0.98)	(1.49)	(1.66)	(1.81)	(1.64)
INVESTMENT$_{t-1}$	0.3702***	0.3699***	0.3497***	0.3490***	0.3072***	0.3068***	0.3058***	0.3068***
	(9.77)	(9.79)	(9.82)	(9.83)	(7.82)	(7.80)	(7.77)	(7.74)
INVESTMENT$_{t-2}$	0.1520***	0.1523***	0.1416***	0.1420***	0.1352***	0.1337***	0.1328***	0.1336***
	(5.39)	(5.42)	(3.73)	(3.74)	(3.49)	(3.49)	(3.49)	(3.53)
SELLEXP$_{t-1}$	0.0155*	0.0156*	0.0157*	0.0158*	0.0142	0.0140	0.0136	0.0137
	(1.97)	(1.98)	(1.75)	(1.76)	(1.02)	(1.02)	(0.98)	(0.98)
SELLEXP$_{t-2}$	0.0309***	0.0309***	0.0372***	0.0371***	0.0353***	0.0349***	0.0343***	0.0347***
	(4.77)	(4.81)	(6.33)	(6.41)	(4.30)	(4.27)	(4.19)	(4.24)
GDPG$_t$	0.0002	0.0001	0.0001	-0.0000	-0.0009	-0.0015*	-0.0015**	-0.0015**
	(0.29)	(0.18)	(0.06)	(-0.05)	(-1.19)	(-1.95)	(-2.08)	(-2.54)
INFLATION$_t$	0.0006	0.0007	0.0008	0.0009	0.0000	-0.0004	-0.0011	0.0001
	(0.99)	(1.30)	(0.77)	(1.02)	(0.02)	(-0.26)	(-0.79)	(0.07)
CONSTANT	-0.0162***	-0.0243***	-0.0243***	-0.0333***	-0.0256***	-0.0294***	-0.0005	-0.0164*
	(-3.81)	(-4.21)	(-3.99)	(-4.59)	(-2.70)	(-3.61)	(-0.05)	(-1.98)
N	203,920	203,920	170,417	170,417	135,228	135,228	135,228	135,228

R-squared	0.0242	0.0244	0.0252	0.0254	0.0248	0.0251	0.0254	0.0251

This table reports results for the main analyses on the costs of high leverage and the effect of creditor rights on the costs of high leverage using alternative definitions of *HLEV* and *CRIGHTS*. The dependent variable is country-industry-adjusted sales growth (*SALES_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry-year mean is not biased toward outliers, we require each country-industry to contain at least 4 observations. We further remove countries with fewer than 10 observations. Models 1 and 2 replace the long-term debt ratio with the total debt ratio. In Models 3 and 4, *HLEV* is lagged for 3 years to reflect the alternative definitions shown in Campello (2006). In Models 5 to 7, $CRIGHTS_{t-2}$ is replaced by variables reflecting the time, cost and efficiency of enforcing creditor rights, which are from Djankov et al. (2008). In Model 8, $CRIGHTS_{t-2}$ is replaced by RENEGOTIATION FAILURE (Favara et al., 2012), which gauges the difficulty shareholders will face if they attempt to renege on the outstanding debt, whether through a formal insolvency procedure or outside court. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.8 Subsample tests

	Baseline	Restrictions on Reorganization	No Automatic Stay	Secured Creditor Paid First	No Management Stay	Financing System: banking	Financing System: bond market	Liquidation Costs: high	Liquidation Costs: low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CRIGHTS$_{t-2}$×HLEV$_{t-2}$	**-0.0043*** (-3.54)**	-0.0039 (-0.67)	-0.0082** (-2.54)	-0.0035 (-0.63)	-0.0090*** (-2.70)	**-0.0075*** (-3.53)**	**-0.0019 (-0.68)**	**-0.0079*** (-10.85)**	**-0.0040* (-1.67)**
HLEV$_{t-2}$	-0.0003 (-0.11)	-0.0072*** (-3.31)	-0.0056*** (-4.06)	-0.0049 (-0.99)	-0.0049*** (-3.16)	0.0083 (1.35)	-0.0042 (-1.15)	0.0097*** (5.75)	0.0043 (0.77)
CRIGHTS$_{t-2}$	0.0043 (1.63)	0.0095 (1.25)	0.0072 (1.51)	-0.0031 (-0.67)	0.0090* (1.79)	-0.0009 (-0.42)	0.0096*** (6.64)	0.0077** (2.13)	0.0008 (0.71)
SIZE$_{t}$	0.0104*** (7.60)	0.0104*** (7.58)	0.0104*** (7.56)	0.0104*** (7.52)	0.0104*** (7.51)	0.0098*** (3.28)	0.0111*** (8.12)	0.0087*** (8.50)	0.0159*** (20.68)
PROFIT$_{t-1}$	0.1391*** (16.80)	0.1388*** (16.60)	0.1389*** (16.76)	0.1386*** (16.46)	0.1392*** (16.83)	0.1701*** (10.34)	0.1328*** (31.07)	0.1464*** (30.47)	0.1308*** (12.85)
PROFIT$_{t-2}$	-0.0048 (-0.84)	-0.0052 (-0.93)	-0.0052 (-0.91)	-0.0057 (-0.98)	-0.0048 (-0.82)	0.0008 (0.08)	-0.0033 (-0.57)	-0.0158** (-2.14)	-0.0038 (-0.38)
INVESTMENT$_{t-1}$	0.3729*** (10.04)	0.3728*** (10.05)	0.3729*** (10.03)	0.3729*** (10.03)	0.3727*** (10.03)	0.3622*** (6.27)	0.3776*** (8.63)	0.3558*** (9.88)	0.3615*** (13.50)
INVESTMENT$_{t-2}$	0.1526*** (5.63)	0.1524*** (5.62)	0.1522*** (5.64)	0.1522*** (5.58)	0.1520*** (5.66)	0.1879*** (7.48)	0.0996*** (4.94)	0.1664*** (5.79)	0.1347*** (5.28)
SELLEXP$_{t-1}$	0.0158* (1.97)	0.0158* (1.96)	0.0157* (1.96)	0.0157* (1.96)	0.0157* (1.97)	0.0037 (0.54)	0.0267*** (9.68)	0.0207 (1.54)	0.0127* (1.83)
SELLEXP$_{t-2}$	0.0314*** (5.48)	0.0313*** (5.33)	0.0314*** (5.48)	0.0313*** (5.38)	0.0314*** (5.49)	0.0297* (1.84)	0.0275*** (3.96)	0.0212** (2.20)	0.0379*** (5.36)
GDPG$_{t}$	0.0001 (0.15)	-0.0002 (-0.30)	0.0003 (0.38)	0.0002 (0.32)	0.0003 (0.41)	0.0008 (0.98)	-0.0022 (-1.59)	-0.0004 (-0.41)	0.0001 (0.21)
INFLATION$_{t}$	0.0007 (1.26)	0.0004 (0.66)	0.0007 (1.18)	0.0005 (0.88)	0.0008 (1.49)	0.0007* (1.74)	0.0010 (1.45)	0.0013** (2.14)	0.0002 (0.77)
CONSTANT	-0.0257*** (-4.66)	-0.0184*** (-4.22)	-0.0203*** (-5.20)	-0.0147*** (-3.21)	-0.0216*** (-6.41)	-0.0155** (-2.62)	-0.0308*** (-11.86)	-0.0404*** (-6.27)	-0.0093*** (-3.21)
N	203,920	203,920	203,920	203,920	203,920	80,278	116,078	96,809	109,273

R-squared	0.0241	0.0241	0.0241	0.0240	0.0241	0.0229	0.0279	0.0263	0.0239
Difference Test ($CRIGHTS_{t-2}$* $HLEV_{t-2}$)						(6)-(7)	0.128	(8)-(9)	0.060*

This table reports results from running the regression of Equations (2) using OLS by splitting the samples by components of creditor rights, financing system, and liquidation costs. The dependent variable is country-industry-adjusted sales growth (*SALES_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry-year mean is not biased toward outliers, we require each country-industry to contain at least 4 observations. We further remove countries with fewer than 10 observations. Model 1 repeats the results of the baseline model in Table 2.3, Model 2. Models 2 to 5 separately report the four individual components of *CRIGHTS*. In Models 6 and 7, we define an economy as banking system (bond market system) if the two-year lag of the ratio of bank loans to public bonds (computed as the ratio of private credit by deposit money banks to GDP divided by private and public bond market capitalization to GDP) is above (below or equal to) the median. In Models 8 and 9, following Favara et al. (2012), we classify a firm with high liquidation costs if its *intangibles* measure (one minus the average of exit values per dollar of the various tangible assets, including receivables, inventories, cash, and net property, plant, and equipment, weighted by total asset) is above (below or equal to) median of the overall sample two years before the base year. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.9 Channels of the dark-side forces of creditor rights: customer and competitor

		Customer		Competitor			
	Baseline Model	Product Specificity		Industry Concentration		International Trade Freedom	
		high	low	high	low	high	low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CRIGHTS$_{t-2}$×HLEV$_{t-2}$	-0.0043***	-0.0065***	-0.0019	-0.0064***	-0.0013	**-0.0064*** **	**-0.0008**
	(-3.54)	(-2.77)	(-1.23)	(-5.04)	(-0.51)	**(-3.04)**	**(-0.29)**
HLEV$_{t-2}$	-0.0003	0.0023	-0.0071**	0.0073**	-0.0085**	0.0044	-0.0086
	(-0.11)	(0.44)	(-2.27)	(2.54)	(-2.05)	(0.99)	(-1.45)
CRIGHTS$_{t-2}$	0.0043	0.0073***	0.0019	-0.0005	0.0106***	0.0012	0.0017
	(1.63)	(5.07)	(1.20)	(-0.42)	(4.12)	(0.92)	(1.10)
SIZE$_t$	0.0104***	0.0093***	0.0119***	0.0084***	0.0126***	0.0082***	0.0115***
	(7.60)	(13.40)	(8.12)	(5.17)	(12.25)	(11.42)	(14.24)
PROFIT$_{t-1}$	0.1391***	0.1170***	0.1630***	0.1150***	0.1511***	0.1225***	0.1552***
	(16.80)	(11.89)	(16.25)	(13.05)	(15.81)	(11.53)	(12.02)
PROFIT$_{t-2}$	-0.0048	0.0130	-0.0139*	-0.0017	-0.0123	0.0037	-0.0193
	(-0.84)	(1.33)	(-1.68)	(-0.21)	(-1.13)	(0.38)	(-1.44)
INVESTMENT$_{t-1}$	0.3729***	0.1715***	0.4191***	0.3640***	0.3824***	0.3687***	0.3487***
	(10.04)	(4.52)	(10.25)	(10.55)	(6.88)	(10.00)	(11.52)
INVESTMENT$_{t-2}$	0.1526***	0.2286***	0.1292***	0.1369***	0.1471***	0.0930***	0.2110***
	(5.63)	(6.40)	(4.94)	(3.37)	(5.87)	(2.78)	(7.81)
SELLEXP$_{t-1}$	0.0158*	0.0262***	0.0091	0.0142***	0.0141	0.0052	0.0093
	(1.97)	(3.21)	(1.03)	(2.85)	(1.23)	(0.60)	(1.13)
SELLEXP$_{t-2}$	0.0314***	0.0326***	0.0267***	0.0294***	0.0330**	0.0367***	0.0254***
	(5.48)	(4.02)	(3.20)	(7.19)	(2.57)	(4.37)	(2.98)
GDPG$_t$	0.0001	-0.0006	0.0001	-0.0008	0.0004	-0.0021***	0.0007**
	(0.15)	(-1.15)	(0.20)	(-1.31)	(0.33)	(-3.56)	(2.26)
INFLATION$_t$	0.0007	0.0004	0.0005	0.0005**	0.0014	-0.0011*	0.0002
	(1.26)	(0.82)	(1.33)	(2.53)	(1.09)	(-1.77)	(0.65)
CONSTANT	-0.0257***	-0.0357***	-0.0169***	-0.0140***	-0.0394***	-0.0134***	-0.0127***
	(-4.66)	(-10.29)	(-6.33)	(-6.50)	(-8.12)	(-4.19)	(-3.30)
N	203,920	72,555	131,365	77,216	100,468	65,224	75,437

R-squared	0.0241	0.0206	0.0280	0.0197	0.0284	0.0210	0.0223
Difference Test ($CRIGHTS_{t-2}$* $HLEV_{t-2}$)		(2)-(3)	0.058*	(4)-(5)	0.058*	(8)-(9)	0.045**

This table reports results from re-running the regression of the effect of creditor rights on the costs of high leverage using subsamples split by characteristics related to customer-driven and competitor-driven costs of high leverage. The dependent variable is country-industry-adjusted sales growth (*SALES_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry-year mean is not biased toward outliers, we require each country-industry to contain at least 4 observations. We further remove countries with fewer than 10 observations. Model 1 repeats the results of the baseline model using the full sample. In Models 2 and 3, we classify a firm as a high (low) product specificity firm if its R&D/sales ratio is above (below or equal to) median of the overall sample two years before the base year. In Models 4 and 5, high (low) industry concentration refers to country-industries with a four-firm concentration ratio in 2000 higher (lower) than 0.4. In Models 6 and 7, high (low) international trade freedom refers to country-years with an international trade freedom index above (below or equal to) median of the overall sample two years before the base year. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.10 Additional channels of the dark-side forces of creditor rights: employee and supplier

	Employee		Supplier	
	Employee Growth		Account payable growth	
VARIABLES	$EMPL\_G_t$	$EMPL\_G_t$	AP_G_t	AP_G_t
	(1)	(2)	(3)	(4)
$CRIGHTS_{t-2}$×$HLEV_{t-2}$		**-0.0025****		**0.0005**
		(-2.25)		**(0.20)**
$HLEV_{t-2}$	-0.0137***	-0.0095***	-0.0086***	-0.0093**
	(-11.54)	(-2.78)	(-4.20)	(-2.38)
$CRIGHTS_{t-2}$		0.0025***		0.0025***
		(2.97)		(2.75)
$SIZE_t$	0.0044***	0.0043***	0.0071***	0.0070***
	(5.02)	(5.05)	(3.63)	(3.58)
$PROFIT_{t-1}$	0.1776***	0.1780***	0.1632***	0.1637***
	(17.99)	(18.00)	(16.95)	(17.21)
$PROFIT_{t-2}$	0.0059	0.0066	0.0212***	0.0219***
	(0.86)	(0.93)	(2.76)	(2.86)
$INVESTMENT_{t-1}$	0.2343***	0.2340***	0.2150**	0.2146**
	(12.66)	(12.60)	(2.59)	(2.59)
$INVESTMENT_{t-2}$	0.0267***	0.0270***	0.1119***	0.1116***
	(2.88)	(2.92)	(6.02)	(6.02)
$SELLEXP_{t-1}$	0.0108***	0.0109***	0.0101	0.0101
	(4.52)	(4.47)	(1.35)	(1.36)
$SELLEXP_{t-2}$	0.0217***	0.0217***	0.0225***	0.0225***
	(4.88)	(4.87)	(4.70)	(4.73)
$GDPG_t$	-0.0002	-0.0002	0.0003*	0.0003
	(-0.88)	(-1.06)	(1.85)	(1.49)
$INFLATION_t$	-0.0000	0.0001	0.0005*	0.0005**
	(-0.10)	(0.35)	(1.68)	(2.63)
CONSTANT	-0.0055***	-0.0100***	-0.0075***	-0.0121***
	(-3.23)	(-8.65)	(-3.71)	(-8.01)
N	142,428	142,428	196,993	196,993
R-squared	0.0279	0.0280	0.0098	0.0098

This table reports results on our analyses on the additional channels of the dark-side forces of creditor rights. The dependent variables are country-industry-adjusted employee growth (*EMPL_G*) and country-industry-adjusted account payable growth (*AP_G*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry-year mean is not biased toward outliers, we require each country-industry to contain at least 4 observations. We further remove countries with fewer than 10 observations. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 2.11 Alternative explanation: creditor rights and firm performance

VARIABLES	$\underline{DEBTISSUE_t}$	$\underline{EQUITYISSUE_t}$	$\underline{STOCKRETURN_t}$
	(1)	(2)	(3)
$\boldsymbol{CRIGHTS_{t-2} \times HLEV_{t-2}}$	-0.0068***	-0.0037**	-0.0058***
	(-2.70)	(-2.62)	(-3.72)
$HLEV_{t-2}$	0.0008	0.0084***	-0.0013
	(0.11)	(3.81)	(-0.59)
$CRIGHTS_{t-2}$	0.0154***	0.0026	0.0017
	(3.58)	(1.34)	(0.38)
$SIZE_t$	0.0079***	-0.0035***	0.0168***
	(5.91)	(-4.25)	(9.94)
$PROFIT_{t-1}$	0.0302	-0.1680***	0.1860***
	(1.14)	(-9.69)	(9.77)
$PROFIT_{t-2}$	0.0330	-0.1288***	0.0050
	(1.10)	(-13.40)	(0.52)
$INVESTMENT_{t-1}$	0.5618***	0.2441***	-0.1217***
	(7.54)	(6.25)	(-2.68)
$INVESTMENT_{t-2}$	0.0063	0.0616***	-0.0160
	(0.24)	(3.16)	(-0.37)
$SELLEXP_{t-1}$	-0.0367	0.0432***	-0.0132
	(-1.62)	(4.41)	(-1.47)
$SELLEXP_{t-2}$	0.1154***	0.0054	0.0059
	(4.20)	(0.85)	(0.74)
$GDPG_t$	0.0057	-0.0003	0.0007
	(1.23)	(-0.46)	(1.26)
$INFLATION_t$	0.0004	0.0002	0.0003
	(0.75)	(1.38)	(0.91)
CONSTANT	-0.0582***	-0.0110***	0.0212
	(-2.97)	(-3.08)	(1.43)
N	200,088	158,092	168,596
R-squared	0.0038	0.1298	0.0140

This table examines the relation between creditor rights and firm performance for highly leveraged firms using OLS. The dependent variables comprise country-industry-adjusted debt issuance (*DEBTISSUE*), country-industry-adjusted equity issuance (*EQUITYISSUE*), and country-industry-adjusted stock returns (*STOCK*). The main variables of interest are creditor rights (*CRIGHTS*) and a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered. (*HLEV*). Additional variable definitions are provided in Appendix D. All control variables are adjusted to their country-industry-year means and are winsorized at the 1% and 99% levels to mitigate the influence of outliers. To ensure that the country-industry-year mean is not biased toward outliers, we require each country-industry to contain at least 4 observations. We further remove countries with fewer than 10 observations. The merged data cover 54 countries for the period 1989–2010. The *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

CHAPTER 3

COLLECTIVISM AND THE COSTS OF HIGH LEVERAGE

3.1. INTRODUCTION

A growing body of literature examines the role of national cultural values in influencing corporate financial policy choices and financial outcomes. For example, cultural values impact stock price synchronicity (Eun, Wang, and Xiao, 2015), capital structure and dividend policies (e.g., Chui, Lloyd, and Kwok, 2002; Li et al., 2011; El Ghoul et al., 2016; Shao, Kwok, and Guedhami, 2010), corporate risk-taking (Li et al., 2013), ownership structure (e.g., Guiso, Sapienza, and Zingales, 2008; Holderness, 2016; Boubakri et al., 2016), and research and development expenditures (Shao, Kwok, and Zhang, 2013). According to these studies, culture affects financial decisions through beliefs or values that condition individuals' (investors or managers) perceptions, preferences, and behaviors.[33] However, little is known about how culture shapes simultaneously key

[33] Culture also affects financial outcomes by influencing legal institutions (e.g., Stulz and Williamson, 2003; Licht, Goldschmidt, and Schwartz, 2005).

stakeholders[34] in and around the firm and influences financial outcomes.[35] In this paper we examine the impact of the national culture dimension of collectivism over individualism—an interdependent relationship between self and group (Hofstede, 2001)—on the interactions between capital structure and product market competition.

Prior literature on capital structure and product market interactions suggests that high leverage leads to substantial stakeholder-induced dead-weight costs. On the one hand, high leverage can lead to lower sales, as customers anticipate that a highly leveraged firm will face strong incentives to cut costs by reneging on warranties, for example, or reducing product quality (Maksimovic and Titman, 1991; Titman, 1984). On the other hand, high leverage can induce predatory attacks from competitors (Bolton and Scharfstein, 1990; Opler and Titman, 1994; Chevalier, 1995). We argue that under the condition of high leverage, where the coordination function of formal institutions (e.g., laws) is less efficient,[36] collectivism can reduce these costs of high leverage. In particular, the tight

[34] Following Freeman (1984), we define stakeholders as those entities who can affect or are affected by the actions and performance of the firm. This definition includes entities with implicit or explicit contracts with the firm, such as customers, suppliers, and employees, as well as those who have no contracting relationship with the firm, but exert influences on the firm, such as competitors.

[35] According to Maksimovic (1995), firms' financial outcomes are influenced by different classes of stakeholders.

[36] As we discuss below, the ties between a firm and its customers generally take the form of implicit contracts, which have little legal standing, and thus regulators have limited ability to constrain opportunism on the part of highly leveraged firms. Further, because a firm typically has no

group structures in collectivist countries can reduce a highly leveraged firm's incentives to break implicit contracts with customers through increased monitoring of the firm, and can reduce competitors' incentives to take predatory actions against a highly leveraged firm by reducing the success of predatory attacks. The mental conditioning of a collectivist culture can further constrain customers and competitors from taking actions that would harm a highly leveraged firm. Overall, we expect collectivist countries to experience lower costs of high leverage in the form of market share losses.

To capture the extent to which a given country is collectivist, we employ Hofstede's (2001) widely used collectivism/individualism index. Next, we define high leverage as a dummy that is equal to one in a given year if the firm's long-term debt ratio is in the top three deciles in the country in which the firm is headquartered. To capture the costs of high leverage, we follow Campello (2006) and use the sensitivity of industry-adjusted sales growth to high leverage. Industry-adjusted sales growth measures "the firm's sales growth relative to that of its industry rivals in a given year; this roughly gauges a firm's market share growth" (Campello, 2006, p. 148).[37] Following Campello (2006), we regress industry-adjusted sales growth on the high leverage dummy; a more negative coefficient

contractual relationship with its competitors, regulators have even less ability to restrict opportunism on the part of highly leveraged firms' competitors.

[37] Positive (negative) industry-adjusted sales growth implies that the firm's market share is increasing (decreasing).

on the high leverage dummy would indicate more adverse actions from customers and competitors and thus greater costs associated with maintaining high leverage.

Using a large sample of 158,612 firm-year observations from 46 countries over the 1989–2010 period, we document significantly lower costs of high leverage for countries with higher collectivism scores. In subsample analysis we find that the impact of collectivism on high leverage costs is more pronounced for firms that are likely to experience more severe costs of high leverage, namely, firms that are not cross-listed in the U.S., firms with high product specificity, and firms with financially healthy rivals. In addition, we find a stronger impact of collectivism on high leverage costs in countries with weak formal institutions. Taken together, these results support the view that collectivism decreases the costs of high leverage.

To determine whether our findings on the relation between collectivism and high leverage costs operate through the tight group structures or the mental conditioning associated with collectivist countries, we conduct several additional tests. We find that collectivist countries on average have a higher prevalence of business groups, consistent with the tight group structures channel. We further find that the mitigating effect of collectivism on high leverage costs persists in samples with a low prevalence of business groups, and that collectivism constrains customers and competitors from taking unfavorable actions that will harm a highly leveraged firm, consistent with the mental conditioning channel.

Next, we consider whether collectivism mitigates high leverage costs through stakeholder groups other than customers and competitors. While Titman (1984) suggests

that his model of customer-driven leverage costs could be applied to other stakeholders such as suppliers and employees, to date there is little empirical evidence on supplier- and employee-driven leverage costs. We find that both supplier- and employee-driven leverage costs are significant, and that the beneficial role of collectivism extends to both channels. Economically, an increase in collectivism score from the 25th percentile to the 75th percentile increases highly leveraged firms' relative-to-industry sales growth by 1%, relative-to-industry employee growth by 1.14%, and relative-to-industry accounts payable growth by 2.14%.

One could be concerned that our analysis above suffers from potential endogeneity of collectivism and high leverage costs. Endogeneity could arise if omitted factors determine both collectivism and high leverage costs. In addition, to the extent that declining sales can force a firm to incur debt to cover expenses, our estimates may be biased and inconsistent, which would lead to spurious inferences. To tackle these concerns, we conduct instrumental variables estimation using the "license to drop pronouns" as an instrument for collectivism and the two-year lagged high-leverage dummy as an instrument for high leverage. Our results continue to hold. In additional robustness tests, we address concerns related to an unbalanced sample, variable measurement, and alternative explanations. We find that none of these alternative explanations drives the negative relation between collectivism and high leverage costs.

Our study contributes to the growing literature on culture and finance (Guiso, Sapienza, and Zingales, 2008; Chui, Titman, and Wei, 2010; Gorodnichenko and Roland, 2011; Eun, Wang, and Xiao, 2015; Karolyi, 2016). Prior studies suggest that culture shapes

firms' financial outcomes by influencing investors' and managers' subjective perceptions, preferences, and behaviors. For example, trust affects investors' perception of the risk of being cheated and, hence, their inclination to participate in the stock market (Guiso, Sapienza, and Zingales, 2008); individualism fosters investors' overconfidence and self-attribution bias that generate momentum trading strategies (Chui, Titman, and Wei, 2010); cultural tightness externally constrains investors' deviant behavior from a country's social norms and collectivism internally guides investors not to differentiate their behaviors from those of others, leading to similar trading behaviors and, hence, higher stock return co-movements (Eun, Wang, and Xiao, 2015); conservativism conditions managers to be self-disciplined, reducing the need for leverage as a disciplinary device for managers (Chui, Lloyd, and Kwok, 2002; El Ghoul et al., 2016). Our findings extend this literature by showing that in addition to conditioning investors' or managers' behavior, culture imposes informal constraints on the preferences and behaviors of a range of key stakeholders, such as upstream suppliers, downstream customers, external competitors, and internal employees, and hence affect firm-level outcomes. Unlike most prior studies on culture and finance, the unique setting of the interactions between capital structure and product market competition facilitates the task of analyzing the role of national culture in conditioning the behavior of a firm's key stakeholders.

Our paper also contributes to the literature on capital structure and product market performance. Prior studies mainly focus on the consequences of high leverage policies, with little attention paid to the factors that mitigate high leverage costs. In particular, our study is related to that of Bae et al. (2016), who find for a sample of U.S. firms that corporate social responsiblity alleviates customer dissatisfaction and competitor predation

associated with high leverage. To the best of our knowledge, ours is the first international study to show that informal institutions can influence the costs of high leverage. Our findings suggest that national culture as captured by collectivism versus individualism affects firms' interactions with key stakeholders, such as customers and competitors, and mitigates the costs of high leverage. Our paper also adds to the literature on the costs of high leverage (e.g., Opler and Titman, 1994; Campello, 2003, 2006) by documenting the costs driven by various types of stakeholders. Extant research has traditionally focused on the behavior of customers (e.g., Matsa, 2011; Kini, Shenoy, and Subramaniam, 2016) and competitors (e.g., Bolton and Scharfstein, 1990; Chevalier, 1995) of highly-levered firms. Our study provides the first empirical analysis of the behavior of these previously studied stakeholders (i.e., customers and competitors) as well as other relatively overlooked stakeholders (i.e., employees and suppliers).[38]

The rest of this paper is organized as follows. Section 3.2 reviews related literature and develops our hypotheses. Section 3.3 describes our sample, variables, and empirical design. Section 3.4 provides results on the relation between collectivism and the costs of high leverage. Section 3.5 concludes the paper.

[38] One notable exception is Cohn and Wardlaw (2016) who find higher employee injury rates with increased leverage.

3.2. RELATED LITERATURE AND HYPOTHESIS

3.2.1. The Costs of High Leverage

Prior literature shows that high leverage is costly because it triggers a series of behavioral changes among customers and competitors that adversely affect the highly leveraged firm's product market performance.

3.2.1.1. Customer-driven High Leverage Costs (Agency Cost Theory)

According to Coase (1937), a firm consists of interconnecting contracts among different stakeholder groups, for example, shareholders, debtholders, customers, suppliers, and employees. However, for all of these contracts, agency problems can arise: because the residual claims on a firm's assets can generally be sold without the permission of the other contracting parties, managers can dispossess other contracting parties of their residual claims (Jensen and Meckling, 1976). Such agency problems are especially severe in highly leveraged firms. The model of Maksimovic and Titman (1991) shows that in firms that take high leverage, shareholders have a strong preference for the firm to retain cash flows in an effort to avoid bankruptcy. A highly leveraged firm might therefore stop honoring its warranties or may produce lower-quality products. Anticipating these problems associated with high leverage, customers may avoid purchasing from these firms (Opler and Titman, 1994). High leverage can therefore lead to a customer-driven loss in market share.

3.2.1.2. Competitor-driven High Leverage Costs (Predation Theory)

Predation theory (Telser, 1966; Bolton and Scharfstein, 1990; Chevalier, 1995) suggests that a highly leveraged firm is vulnerable to attacks from competitors. The rationale is as follows. Because of of capital market frictions, a highly leveraged firm faces

reduced access to capital as well as higher costs of capital, hence becoming less competitive. This provides an opportunity for financially healthy competitors to take advantage of this situation by lowering prices and intensively advertising their products in an effort to attract customers from the highly leveraged firm. If the leveraged firm can quickly obtain new capital, it can defend its market share by mimicking the predatory firm's price reduction or advertising campaign. However, in the face of financial constraints, highly leveraged firms generally cannot raise sufficient capital to fight back and, as a result, surrender a large part of their market share to the predator. High leverage can therefore also lead to a competitor-driven loss of market share.

3.2.2. Collectivism and the Costs of High Leverage

Culture refers to those "beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation" (Guiso, Sapienza, and Zingales, 2006, p. 23), or the "unwritten codes of conduct" (North, 1990, p. 4) that define appropriate decisions and behaviors in a country. The influence of culture on economic activities goes beyond that of legal institutions, as formal institutions cannot fully eliminate opportunistic behaviors due to incomplete contracts (Hart and Moore, 1988; Williamson, 1998). Consistent with this view, North (1990) observes that the informal constraints imposed by culture exhibit a stronger influence than formal laws in shaping choices in daily interactions. We expect the greater influence of culture to hold in the context of high leverage. As we discuss above, a highly leveraged firm has incentives to opportunistically renege on its implicit contracts with customers (e.g., maintaining product quality, honoring warranties). Since implicit contracts cannot be enforced, culture is expected to play a more

important role than legal institutions in shaping leveraged firms' behaviors. Similarly, a highly leveraged firm's competitors have incentives to take predatory actions against the firm. Because a firm typically has no contractual relationship with its competitors, legal institutions have even less ability to constrain such actions, and thus culture is also expected to play a more important role in shaping the behaviors of highly leveraged firms' competitors.

Hofstede (2001) suggests that a country's culture can be captured by four value dimensions: collectivism/individualism, power distance, uncertainty avoidance, and masculinity. In this paper we focus on the collectivism/individualism dimension as it is a fundamental driver of cultural differences across countries (Markus and Kitayama, 1991; Triandis, 2001) and, as we argue below, it has a theoretical link to high leverage. According to Hofstede (2001, p. 225), individualist countries are characterized by loose ties between individuals, whereas in collectivist countries people are integrated into in-groups that provide support in exchange for loyalty. Miller (1994) further describes individualist countries as having a focus on meeting the individual's preferences and needs, while in collectivist countries people are expected to fulfill their duty to others and an individual's interest is subsumed under the collective interest. Agents in individualist countries also attempt to change the outer environment by expressing their inner attributes (Markus and Kitayama, 1991), tend to be overconfident in their decision-making (Gelfand et al., 2002), and respond more to calculative incentives than moral incentives (Etzioni, 1975; Hofstede, 2001), whereas agents in collectivist countries tend to suppress their inner attributes, avoid standing out, and are more morally driven.

Building on the theory of incomplete contracts and the value traits of collectivist countries, we argue that collectivism reduces the costs of high leverage by constraining opportunistic behaviors on the part of both highly leveraged firms and their competitors through two channels: tight group structures and mental conditioning. We discuss these channels in the context of customer-driven and competitior-driven costs below.

3.2.2.1. Collectivism and Customer-driven Costs

As we discuss above, agency cost theory suggests that high leverage increases a firm's incentives to expropriate customers and thus decreases customers' willingness to purchase. We argue that collectivism can mitigate such expropriation and thus reduce customer-driven high leverage costs.

In collectivist countries, people are integrated into cohesive in-groups (Hofstede, 2001) wherein people build trust, share information, and bond their interests. Various in-group structures can be observed in the business world. In Japan, for instance, keiretsus are sets of firms with interlocking business relationships that center on a main bank that provides financing [see, for example, Berglöf and Perotti (1994) and Hoshi, Kashyap, and Scharfstein (1990)]. Inter-firm relationships in a keiretsu are cemented through cross-shareholdings among the main bank, the firm, and the firm's trading partners (Gerlach, 1992)[39] and through frequent information sharing, for example, at monthly council meetings. These strong connections facilitate extensive intragroup sales. Similarly, in

[39] Gerlach (1992) estimates that the intragroup holdings of the 20 largest owners range from 33% to 74%.

Korean chaebols, which are the dominant business structure in Korea,[40] firms operate as business units of a large corporation. Among these "business units" exist extensive reciprocal shareholding agreements, cross-debt guarantees, internal sales, and information sharing [see, for example, Bae, Cheon, and Kang (2008)].[41]

The tight group structures prevalent in collectivist countries play an important role in disciplining firm behavior. Because of strong business ties through, for example, large cross-holdings of shares, in-group firms actively monitor potentially opportunistic behaviors by financially distressed firms (Berglöf and Perotti, 1994). Sanctions would be imposed on a highly leveraged firm if it discontinued after-sales service to customers or if it decreased product quality. The monitoring and sanctioning mechanism of tight group structures can thus lead a highly leveraged firm to choose not to behave opportunistically. Consistent with this view, Hoshi, Kashyap, and Scharfstein (1990) show that a typical tight group structure, such as a Japanese keiretsu, substantially reduces distress costs among affiliated firms. We therefore expect that the tight group structures associated with

[40] The top 30 chaebols account for 62.5% of total assets and 72.6% of gross sales of all listed firms in Korea (Bae, Cheon, and Kang, 2008).

[41] In yet another example, Fisman and Wang (2010) find evidence of "coinsurance relationships" between listed firms and non-listed firms in China. Under this arrangement the listed firm, which has better access to finance, serves as guarantor on loans for the non-listed firm. In turn, if the listed firm has consecutive negative earnings and is at risk of delisting, the non-listed firm may return the favor by paying a higher premium on purchased goods or services (e.g., through transfer pricing or trade favors).

collectivism lead to a negative relation between collectivism and customer-driven high leverage costs.

Turning to the mental conditioning channel, collectivist cultures emphasize a group's or community's goals (Markus and Kitayama, 1991). Since an individual's goals typically collide with the group's goals (Schwartz, 1994), individuals in collectivist countries are conditioned to suppress their own objectives to serve the collective interest (Markus and Kitayama, 1991). We argue that this mental conditioning reduces agency costs between a highly leveraged firm and its customers.[42] On the one hand, a focus on others' interests will constrain a highly leveraged firm from acting opportunistically at the cost of customers. On the other hand, customers with collectivist mental conditioning will view survival of the highly leveraged firm as a goal of their own and thus be more patient with a highly leveraged firm that cannot quickly fulfill its warranty or product quality obligations. For example, when Mazda experienced severe financial difficulties in the 1970s, other firms in the same keiretsu—the Sumitomo group—asked their employees to buy a new Mazda car.

[42] In related work, high embeddedness in Schwartz' (1994) framework [the analog of Hofstede's (2001) collectivism dimension] is found to reduce manager-shareholder or controlling shareholder–minority shareholder agency problems (Shao, Kwok, and Guedhami, 2010) as well as the agency costs of debt (Chui, Kwok, and Zhou, 2016).

3.2.2.2. Collectivism and Competitor-driven Costs

We next argue that collectivism can mitigate predatory behaviors of highly leveraged firms' competitors and thus reduce competitor-driven costs. Tight group structures in collectivist countries provide highly leveraged firms a defense against competitive attacks, which reduces competitors' incentives to pursue predatory activities. As discussed above, tight in-group ties through, for example, cross-holdings of shares, bond the interests of the firms in a group. If a highly leveraged firm were to face price competition from an out-group firm, the other firms in the group are likely to provide financial capital to the leveraged firm to help it protect its market share by mimicking the price reduction. Anticipating in-group support of the highly leveraged firm, competitors are less likely to prey in the first place. We therefore expect that the tight group structures associated with collectivism lead to a negative relation between collectivism and competitor-driven costs.

The mental conditioning associated with collectivism should also reduce competitors' predation behavior and in turn competitor-driven costs, for three reasons. First, Markus and Kitayama (1991) and Li et al. (2013) suggest that while individualistic managers favor decision rules that are based on their own judgment, demonstrate their autonomy, and make them stand out, managers in collective countries avoid standing out. Since predatory strategies signal a firm's attempt to change the business environment by distinguishing itself from rivals, which may be viewed as violating the cultural norm and lead the firm to being out-grouped, firm managers in collectivist countries are less likely to take predatory actions against highly leveraged firms.

Second, while individualism is strongly associated with an overconfidence bias (Heine et al., 1999; Odean, 1998; Markus and Kitayama, 1991), whereby people believe that their abilities are above average and that they can achieve better outcomes than others, collectivism favors constant self-monitoring and self-adjustment (Church et al., 2006), which reduces the cognitive biases caused by overconfidence (Biais et al., 2005). In the high leverage context, predation is risky. On the one hand, it can increase economic profits through an increase in market share. On the other hand, the firm could lose its investments in this strategy if it fails to drive the highly leveraged firm out of the market. Based on the argument that competitors in collectivist countries demonstrate less overconfidence bias, competitors in collectivist countries are less likely to prey on highly leveraged firms.

Third, using Etzioni's (1975) terminology, Hofstede (2001) argues that individualism is associated more with calculative involvement while collectivism is associated more with moral involvement. Hofstede (2001) finds that survey respondents in individualist countries tend to support the statements "a corporation is not responsible for its employees" and "for getting ahead in industry, knowing influential people is usually more important than ability" (Hofstede, 2001, p. 219)—statements that reflect more calculative involvement. Applying this rationale to predation theory, we argue that while preying on a financially weak firm is a potentially economically beneficial strategy, it may be perceived as unethical. In weighing the benefits against the costs, firms in individualist countries will stress the calculative side, justifying predation as in line with natural selection or creative destruction, while firms in collectivist countries will put more emphasis on moral involvement and thus view predatory activities as taking advantage of the weak. As a result, the mental conditioning of competitors in collectivist countries is

expected to further constrain them from taking predatory actions against the highly leveraged firms.

Based on the above discussions, our main hypothesis is that, *ceteris paribus*, collectivism is associated with lower costs of high leverage.

3.3. SAMPLE, VARIABLES, AND EMPIRICAL DESIGN

3.3.1. Sample Construction

To examine the impact of culture on the costs of high leverage, we compile data from six sources:

(1) Compustat, which we use to construct firm-level financial variables;

(2) Hofstede (2001), which we use to obtain cultural indexes;

(3) The World Development Indicators (WDI) database, which we use to construct country-level economic development variables;

(4) Djankov et al. (2008), which we use to obtain a country's revised anti-director rights index;

(5) International Country Risk Guide (ICRG), which we use to obtain a country's law and order index;

(6) Fraser Institute's Economic Freedom of the World (EFW), which we use to construct a country's legal system and property rights index.

To construct the sample, we start with Compustat North America and Global for the period 1987–2010. We exclude firm-year observations if total assets and sales are negative, if the equity value is missing, or if the long-term debt-to-asset ratio is below 0 or beyond 1. We also omit firm-years with asset growth or sales growth higher than 200% to control for outliers. Following prior research, we remove financial firms (SIC codes between 6000

and 6999) and utilities (SIC codes between 4900 and 4999). To further ensure that our measures of industry or country means are not biased by outliers, we require that each country-industry-year has no fewer than four observations and that each country has no fewer than ten observations. These filters lead to an initial sample of 380,181 observations representing 41,062 unique firms from 76 countries. Next, we merge this sample with Hofstede's (2001) cultural indexes, WDI, Djankov et al. (2008), ICRG, and EFW to obtain our main explanatory and conditioning variables. We exclude firm-years with missing values for variables in the main regression. The final sample comprises an unbalanced panel of 158,612 observations representing 27,930 firms from 46 countries over the period 1989–2010.

3.3.2. Measuring National Culture

Our measure of national culture comes from Hofstede (2001), whose framework is extensively applied in prior finance studies (Chui, Titman, and Wei, 2010; Gorodnichenko and Roland, 2011; Eun, Wang, and Xiao, 2015) and is arguably the most influential of the various cultural classifications in cross-cultural research (Kirkman, Lowe, and Gibson, 2006). As we discuss above, we employ Hofstede's individualism/collectivism index (IDV) as our main measure of national culture. This index captures the strength of ties among people in a community. The index is based on a survey of IBM employees that asked them to rate 1) work-life balance, 2) physical working conditions (good ventilation and lighting, adequate work space, etc.), 3) job security, and 4) degree of variety and adventure on the job. Higher ratings in areas 1) and 4) and lower ratings in areas 2) and 3) suggest higher individualism (lower collectivism). For ease of interpretation, we construct

collectivism (*COL*) as an index equal to (100% – *IDV*/100). In supplementary tests we also include Hofstede's (2001) power distance (*PDI*), uncertainty avoidance (*UAI*), and masculinity (*MAS*) dimensions.

3.3.3. Measuring the Costs of High Leverage

Campello (2006) finds a negative relation between high leverage and relative-to-rival sales growth.[43] We extend Campello's (2006) model to measure the costs of high leverage in a cross-country setting. Specifically, we estimate the following specification:

$$SALES\_G_{i,t} = a + \lambda_1 HLEV_{i,t-2} + \lambda_2 SIZE_{i,t} + \sum_{k=1}^{2} \lambda_{3k} PROFIT_{i,t-k} + \sum_{k=1}^{2} \lambda_{4k} INVESTMENT_{i,t-k} + \sum_{k=1}^{2} \lambda_{5k} SELLEXP_{i,t-k} + \lambda_6 DEVELOPED_c + \lambda_7 GDPG_{c,t} + \lambda_8 INFLATION_{c,t} + \lambda_9 LEGAL_{c,t} + \varepsilon_{i,t}, \quad (1)$$

where *i* indexes firms, *c* indexes countries, and *t* indexes years. Our outcome variable, *SALES_G*, captures both the purchasing behavior of customers and the predation behavior of competitors. We expect a decrease in sales growth if customers choose not to purchase from a highly leveraged firm or if competitors attempt to take over the market share of the highly leveraged firm. Our measure of high leverage, *HLEV*, is a dummy variable equal to one in a given year if the firm's long-term debt ratio is in the top three

[43] Campello's (2006) main model, which is used to test a non-monotonic relation between leverage and sales growth, is not our focus. Rather, because we are interested in the effect of high leverage, we use the model in Campello (2006) that revisits the work of Opler and Titman (1994).

deciles in the country in which the firm is headquartered.[44] A more negative coefficient on *HLEV* (λ_1) would thus indicate greater costs of high leverage.[45] Note that if firms anticipate greater costs of high leverage, they may adjust their debt financing downward. In this case, reverse causality problems could arise. Two features of our model mitigate this concern. First, since firms can more readily adjust short-term debt compared to long-term debt, we rely only on the long-term debt ratio when calculating *HLEV* [following Campello (2006)]. Second, *HLEV* dummy is lagged two years relative to the year in which *SALES_G* is measured (the base year), which implies that debt adjustment in response to firm

[44] Measuring a firm's *HLEV* relative to its country peers alleviates the concern that our findings may reflect the influence of collectivism on leverage (e.g., El Ghoul et al., 2016). In our study, nearly 30% of firm-year observations in each country in our sample are considered highly leveraged, suggesting that country-level variables such as national culture are not likely to influence *HLEV*.

[45] One might wonder why a firm would choose to have high leverage if high leverage is costly. With this in mind, we follow prior research (e.g., Opler and Titman, 1994) and assume that otherwise identical firms choose different leverage ratios. This assumption is justified by Maksimovic and Zechner (1991), who argue that firms in the same industry are indifferent between a high leverage/high-risk strategy and a low leverage/low-risk strategy, and by Opler and Titman (1994), who argue that otherwise identical firms may simultaneously choose a high leverage/tax advantage strategy and a low leverage/cheap assets acquisition strategy. This assumption also finds empirical support in our propensity score matching analysis, where we match each high-leverage firm to a low-leverage firm that shares similar characteristics. To preview the results, *HLEV* continues to load significantly negatively on *SALES_G* with an impact of similar magnitude.

performance is less likely to take place. The firm-level control variables come from Campello (2006). Specifically, we control for firm size (*SIZE*), the natural logarithm of total assets; profitability (*PROFIT*), operating earnings plus depreciation divided by total assets; investment (*INVESTMENT*), capital expenditures over total assets; and selling expenses (*SELLEXP*), the ratio of advertising and selling expenses to total sales. As country-level controls, we include a developed country indicator (*DEVELOPED*), GDP growth (*GDPG*), inflation (*INFLATION*), and the strength of a country's legal regime (*LEGAL*) to account for potential macroeconomic influences.

Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating the firm-level variables in Equation (1). Specifically, a firm's *HLEV* is measured relative to its country peers,[46] and the other firm-level variables are constructed relative to their country-industry-year means. This method accounts for the fact that firm-level variables are determined in part by peer performance or financial condition. Since peer performance is beyond a given firm's control, relative-to-peer variables are less subject to endogeneity (Campello, 2003, 2006). To control for the influence of outliers, we winsorize *PROFIT*, *INVESTMENT*, and

[46] Employing the relative measurement method to measure *HLEV* mitigates concerns about a high correlation between collectivism and leverage (Chui, Lloyd, and Kwok, 2002), the two components of the interaction term discussed in Section 3.4. As Table 1 Panel A suggests, for each country around 30% of firm-year observations are highly levered, which means that country-level variables such as collectivism are not likely to significantly influence *HLEV*. Consistent with this view, Table 1 Panel C shows that the correlation between *COL* and *HLEV* is minimal (0.01).

SELLEXP at the 1% and 99% levels. In addition, to mitigate concerns that observations from the same firm are autocorrelated across years, we cluster *t*-statistics at the firm level.

3.3.4. Empirical Design

To investigate the impact of national culture, in particular, collectivism, on the costs of high leverage, we augment Equation (1) by adding *COL* and its interaction with *HLEV*. Specifically, we run the following model:

$$\begin{aligned} SALES\_G_{i,t} = {} & b + \beta_1 COL_c \times HLEV_{i,t-2} + \beta_2 COL_c + \beta_3 HLEV_{i,t-2} + \beta_4 SIZE_{i,t} \\ & + \sum_{k=1}^{2} \beta_{5k} PROFIT_{i,t-k} + \sum_{k=1}^{2} \beta_{6k} INVESTMENT_{i,t-k} \\ & + \sum_{k=1}^{2} \beta_{7k} SELLEXP_{i,t-k} + \beta_8 DEVELOPED_c + \beta_9 GDPG_{c,t} \\ & + \beta_{10} INFLATION_{c,t} + \beta_{11} LEGAL_{c,t} + \varepsilon_{i,t}. \quad (2) \end{aligned}$$

We are interested in the coefficient on *COL*×*HLEV* (β_1). If collectivism reduces the costs of high leverage as we predict, β_1 should be positive and significant.

Table 3.1 presents descriptive statistics for the key variables in our analysis (before country-industry-year adjustment) by country (Panel A) and for the full sample (Panel B). The sample distribution in Panel A exhibits a fair amount of variation. Similar to other cross-country studies, we find that the U.S. and Japan account for the largest percentage of firm-year observations (26.8% and 15.3%, respectively). However, in robustness tests we show that this unbalanced sample does not drive our main findings. Table 3.1 Panel C presents pairwise correlation coefficients between the variables used in our analysis. We find that the correlations between the variables in Equation (2) are relatively low, suggesting that multicollinearity is not a serious issue in our tests.

3.4. RESULTS

Building on extant literature, in Section 3.1 we conduct our main analysis on the effects of collectivism on customer- and competitor-driven high leverage costs. To shed more light on the relationship between collectivism and the high leverage costs, we also conduct subsample tests and examine the channels through which collectivism influences the costs of high leverage. In Section 3.2 we extend our analyses by examining whether collectivism influences high leverage costs through a wider set of stakeholder groups, in particular, whether collectivism impacts high leverage costs through internal employees and upstream suppliers in addition to external competitors and downstream customers. In Section 3.3 we conduct robustness tests.

3.4.1. Collectivism and the Costs of High Leverage

3.4.1.1. Main Analysis

Model 1 of Table 3.2 presents ordinary least squares (OLS) regression results for Equation (1). We find that the control variables exhibit significant coefficients that are consistent with our expectations: firm size, profitability, investment, and selling expenses tend to be positively related to sales growth while the developed country indicator is negatively related to sales growth. More importantly for our purposes, we find that the high leverage dummy enters the regression with a negative coefficient that is statistically significant at the 1% level, which implies that high leverage (firm-years with a long-term debt ratio in the top three deciles of the country in which the firm is headquartered) is costly.

In Models 2 through 5 of Table 3.2, we examine how a country's culture as captured by collectivism influences the costs of high leverage. Model 2 reports OLS regression results for Equation (2). We find a positive and significant coefficient on *COL×HLEV*. Economically, increasing collectivism from the first to the third quartile is associated with a 1% increase in highly leveraged firms' relative-to-industry sales growth two years later. This finding supports our hypothesis that the costs of high leverage are lower in collectivist countries.

In Model 3 we run a horserace using all four of Hofstede's (2001) cultural dimensions to address concerns that collectivism may capture other cultural values. We continue to find that *COL×HLEV* enters the regression with a positive and statistically significant coefficient at the 1% level. In contrast, the interaction terms for the other cultural dimensions (*PDI×HLEV*, *UAI×HLEV*, and *MAS×HLEV*) load insignificantly. These results suggest that collectivism is the only cultural dimension that affects the costs of high leverage.

Finally, in Models 4 and 5, we examine whether our main effect holds using a more extreme measure of high leverage. Recall that our main measure of high leverage is a dummy equal to one if a firm's leverage ratio in a given year is in the top three deciles of the full sample. To address the concern that the three-decile cutoff might be arbitrary, we follow Opler and Titman (1994) and assign the value of one to top decile leverage observations and zero to bottom decile observations. Comparisons based on this definition are thus between extremely high-leveraged firms and extremely low-leveraged firms. We expect that under this more extreme definition of high leverage, the effect of collectivism

on high leverage costs should be more pronounced. As can be seen in Models 5 and 6, extremely high-leveraged firms experience larger losses in market share, and collectivism exerts greater ability to mitigate the losses associated with extreme high leverage (the magnitude of the coefficient on *COL×HLEV* more than doubles compared to the baseline model, going from 0.022 to 0.049). These findings lend further support to our hypothesis that collectivism is associated with lower costs of high leverage.

3.4.1.2. Subsample Tests

Our main theoretical argument holds that in an incomplete contracts environment, collectivism allows firms with high leverage to retain customers and constrains the predatory actions of the highly leveraged firms' competitors. Taking this argument further, we posit that the effect of collectivism on the costs of high leverage should be greater for firms whose customers and competitors are more sensitive to the condition of high leverage. We test this conjecture in Table 3.3 using three proxies for greater high leverage costs: cross-listing, asset turnover, and industry debt level. Model 1 in Table 3.3 replicates earlier results for ease of comparison.

First, firms cross-listed on major U.S. markets bond themselves to higher governance and disclosure standards (Stulz, 1999) and thus enjoy increased access to capital (Lins, Strickland, and Zenner, 2005). As a result, these firms should experience lower customer- and competitor-driven costs, while the costs of high leverage should be higher for non-cross-listed firms. We therefore expect the cost-reducing impact of collectivism to be greater for non-cross-listed firms. We define a non-U.S. firm as cross-listed (not-cross-listed) if two years before the base year it has (does not have) a Central

Index Key (CIK) code, which is used to identify corporations registered with the U.S. Securities and Exchange Commission. In line with our expectation, Models 2 and 3 of Table 3.3 report a larger and significant coefficient on *COL*×*HLEV* for non-listed firms, but a smaller and insignificant coefficient for cross-listed firms.[47]

Second, firms that produce highly specialized products tend to experience higher customer-driven costs. When customers purchase highly specialized products, they have more to lose if the firm fails to honor its implicit contracts. Because highly leveraged firms face strong incentives to renege on their implicit contracts, customers of these firms are particularly likely to avoid purchasing from these firms. To proxy for the degree of product specialization, we use the asset turnover ratio, which is given as the ratio of total sales to total assets. A lower asset turnover ratio indicates a longer production cycle (Long, Malitz, and Ravid, 1993), which suggests more specialized products. A firm is classified as having low (high) product specialization if its asset turnover ratio is above (below) the sample median two years before the base year. Consistent with our expectation, Models 4 and 5 of Table 3.3 show that the impact of collectivism on high leverage costs is indeed stronger in the low asset turnover subsample.

Third, firms' competitor-driven costs are larger if their competitors are financially healthy (Campello, 2003), as financially sound competitors can more easily raise capital to

[47] Care should be taken in interpreting this result. As shown at the bottom of Table 4.3, the difference in the coefficients on *COL*×*HLEV* between listed and non-listed firms is not statistically significant.

fund predatory activities (e.g., reducing prices). Following Campello (2003) and Campello and Fluck (2006), we employ the industry debt level to proxy for the financial condition of a firm's competitors. In particular, we classify the industry peers of a highly leveraged firm as financially unhealthy (healthy) if the industry average long-term debt ratio is greater than (less than or equal to) the median of the overall sample two years before the base year. As expected, the influence of collectivism on high leverage costs is stronger for industries with more aggressive competitor predation (Model 7) and insignificant for industries with low competitor predation (Model 6).

We also posit that in weak legal environments, where contracts cannot efficiently regulate the behaviors of market participants, collectivism exerts greater influence on the costs of high leverage. To a certain extent, high leverage costs reflect contracting costs: customer-driven costs arise because highly leveraged firms may renege on implicit contracts with customers, and competitor-driven costs arise because imperfect financing contracts limit the ability of highly leveraged firms to raise external funds, which induces competitors to take predatory actions. Under incomplete contracts (Hart and Moore, 1988; Williamson, 1998), the degree to which these contracting costs can be reduced depends on a country's contracting environment, which includes both formal institutions, such as rule of law and property rights protection, and informal institutions, such as national culture. A country's legal systems and culture can serve as substitutes in regulating the behaviors of economic agents and hence in reducing the costs of high leverage. For example, in countries with a highly developed legal framework, firms' implicit contracts with customers (e.g., promises on product quality) may turn into explicit contracts (warranties on products sold), in which case high leverage costs would be regulated largely by the legal

system. In contrast, in a country with a weak legal system, culture becomes more important in mitigating high leverage costs. We test this idea in Table 3.4 using two proxies for the strength of a country's legal system: the law and order index from ICRG and the legal system and property rights index from EFW.

A country is defined as having a strong (weak) legal system if its law and order index is greater than (less than or equal to) the median of the overall sample two years before the base year. Similarly, a country is defined as having a good (bad) legal system and secure (insecure) property rights if the legal system and property rights index is greater than (less than or equal to) the median of the overall sample two years before the base year. Models 2 to 5 of Table 3.4 show that, consistent with our expectation, the effects of collectivism on high leverage costs are significant and more pronounced for firms in countries with weak legal systems, but are insignificant for firms in countries with better developed legal systems.[48]

[48] One could argue that these results are an outcome of the effect of national culture on the effectiveness of a country's legal system (Stulz and Williamson, 2003; Licht, Goldschmidt, and Schwartz, 2005). In unreported tests, we repeat our split sample anlysis using the residuals from regressing legal protection proxies on collectivism and a set of controls. Our results remain unaffected.

3.4.1.3. How Collectivism Affects High Leverage Costs: Tight Group Structures and Mental Conditioning

Our theoretical motivation is based on the idea that the tight group structures and the mental conditioning associated with collectivism drive our main finding on the relation between collectivism and high leverage costs. In this section we provide empirical evidence on these two channels.

Collectivism fosters integrated firm networks. The tight group ties of firms in these networks can reduce a highly leveraged firm's incentives to break implicit contracts with customers through increased monitoring of the firm, and can reduce competitors' incentives to take predatory actions against a highly leveraged firm by reducing the success of predatory attacks. To shed light on whether our main effect operates through the tight group structures channel, we examine whether higher levels of collectivism are associated with tighter group structures as proxied by the prevalence of business groups (*BUSINESSG*), which, following Masulis, Pham, and Zein (2011), is defined as the percentage of all listed firms in a country that belong to a business group. Building on Masulis, Pham, and Zein's (2011) model, we regress *BUSINESSG* on *COL* and a set of control variables.[49] The results reported in Table 3.5 indicate positive and significant

[49] Following Masulis, Pham, and Zein (2011), the control variables include measures related to the restriction of private benefits (*Investor Protection* and *News Circulation*), economic deveopment (*Log GDP*), capital availability (*Savings to GDP* and *Political Stability*), and other regulatory factors (*Consolidation Tax, Intra-group Tax,* and *Takeover Index*).

relations between collectivism and the prevalence of business groups. These fidnings suggest that collectivist countries are indeed associated with tight group structures, in line with the tight group structures channel.

Collectivism also conditions the minds of customers and competitors to support values likely to constrain customers and competitors from taking actions that will harm a highly leveraged firm. To examine this channel, we conduct two tests. First, we examine whether the effect of collectivism on high leverage costs persists in samples with a low prevalence of business groups. Specifically, we rank countries in descending order according to the prevalence of business groups, and then re-run our baseline regressions for Equation (2) after dropping the observations belonging to the top 25%, 50%, and 75% of countries. In Table 3.6 we find that the effect of collectivism on high leverage costs persists, which suggests that collectivism operates through some channel in addition to the tight group structures channel, for example, through the mental conditioning channel. Next, we directly examine whether collectivism influences the value traits that mentally condition customers and competitors. Data on the value traits "attentive to others", "avoid standing out", "overconfidence bias", and "calculative & moral involvement" come from the 1990, 1995, 1999, 2005, and 2010 waves of the World Values Survey (WVS).[50]

[50] To capture the value trait "attentive to others", we rely on whether survey respondents indicate that responsibility is a quality that children should be encouraged to learn at home (*Child responsibility*). To capture the value trait "avoid standing out", we rely on whether survey respondents indicate that they feel upset when somebody criticizes them (*Upset when criticized*). We expect that in countries where people are more sensitive to external judgement, people tend to

Consistent with the mental conditioning channel, in Table 3.7 we find that collectivism is significantly positively correlated with the value traits "attentive to others" and "avoid standing out", and significantly negatively correlated with value traits "overconfidence bias" and "calculative & moral involvement".

Taken together, our findings in this section suggest that the beneficial effect of collectivism on the costs of high leverage operates through both the tighter group structures and the mental conditioning associated with collectivist cultures.

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avoid standing out. To capture the value trait "overconfidence bias", we rely on whether survey respondents indicate that the described person's view on "adventure and taking risks are important" (*Taking risk*) is very much like them (1), not at all like them (6), or somewhere in between. We invert this scale so that a higher risk-taking assessment corresponds to greater overconfidence bias. To capture the degree of calculative versus moral involvement in decision-making, we construct two proxies based on whether survey respondents indicate that "keeping money that you have found" (*Keep money found*) or "failing to report damage you've done accidentally to a parked vehicle" (*Not report car damage*) can always be justified (10), never be justified (1), or somewhere in between. A higher value indicates that people tend to have more calculative (less moral) involvement in decision-making. We regress these proxies for value traits on *COL* and a set of respondent- and country-level control variables. Respondent-level control variables include *MALE*, *AGE*, *EDUCATION*, and *INCOME*. Country-level control variables include *Law and Order*, *Efficient Judiciary*, *GDPG*, and *INFLATION*. In addition, we control for WVS wave dummies and adjust standard errors for heteroskedasticity and clustering at the country level.

3.4.2. Other Stakeholder Groups

So far, our results suggest that collectivism reduces costs of high leverage driven by customers (downstream stakeholders) and competitors (external stakeholders). Our focus on these two particular stakeholder groups builds upon the extant high leverage costs literature, that has generally overlooked the potential role of other stakeholders (e.g., Maksimovic and Titman, 1991; Titman, 1984; Bolton and Scharfstein, 1990; Chevalier, 1995; Opler and Titman, 1994; Campello, 2003, 2006). However, while Titman (1984) and Maksimovic and Titman (1991) model the behavior of customers, they argue that their analyses can be applied to other stakeholder groups such as employees (internal stakeholders) and suppliers (upstream stakeholders).[51] Accordingly, in this section we extend our analysis on the relation between collectivism and the costs of high leverage to include these stakeholder groups. In particular, in the spirit of Titman (1984) and Maksimovic and Titman (1991), we extend the "customer" story to the costs of high leverage that are driven by employees and suppliers.

Like customers, employees and suppliers are less likely to do business with highly leveraged firms because they have strong incentives to retain more cash flows by cutting those costs not guaranteed in explicit contracts. Focusing on employees, high leverage can be costly because highly leveraged firms may cut job training, the quality of the work

[51] Titman (1984) argues that liquidation can impose costs on employees and suppliers, in addition to customers. Similarly, Maksimovic and Titman (1991) suggest that while high leverage negatively impacts a firm's ability to assure product quality, their analysis is applicable to many other types of implicit contracts, such as those with suppliers or employees.

environment, or salaries and benefits in an effort to increase cash flows.[52] High leverage is therefore expected to induce employees to leave a firm. We conjecture that this effect is stronger for more talented employees in labor-intensive industries because their contracts contain more implicit components such as training and quality of facilities. Turning to suppliers, high leverage can be costly because a highly leveraged firm can have unstable or lower demand for a supplier's products, or may have difficulty making timely payments on trade credit.[53] High leverage should therefore induce suppliers to extend less trade credit to the firm.

Also, as in the case of customers, we posit that collectivism mitigates unfavorable actions on the part of employees and suppliers for highly leveraged firms, which results in lower costs of high leverage. For example, tight group structures reduce agency conflicts between a highly leveraged firm and its employees and suppliers, and mental programming that emphasizes other stakeholders' interests reduces the tendency to behave opportunistically towards employees and suppliers. Accordingly, we hypothesize that, in addition to its effects on the actions of downstream customers and external competitors,

[52] For example, according to the *Washington Post* (October 28, 2004, E07), "Delta is seeking $1 billion in pay and benefit cuts from its pilots" because "without the cuts, it would have to file for bankruptcy court protection."

[53] For example, according to *The Economist* (January 22, 2002), "Kmart's suppliers became nervous as they saw the cash run out. Fleming, which supplies food and groceries to the discount chain's 2,100 stores, stopped making shipments. Other vendors kept their delivery trucks away."

collectivism mitigates high leverage costs through its effects on the actions of internal employees and upstream suppliers.

To test this conjecture, we re-run our main analysis by replacing the dependent variable *SALES_G* with stakeholder performance variables as follows:

$$EMPLOYEE\_G_{i,t} \text{ or } AP\_G_{i,t}$$
$$= c + \eta_1 HLEV_{i,t-2} + \eta_2 SIZE_{i,t} + \sum_{k=1}^{2} \eta_{3k} PROFIT_{i,t-k}$$
$$+ \sum_{k=1}^{2} \eta_{4k} INVESTMENT_{i,t-k} + \sum_{k=1}^{2} \eta_{5k} SELLEXP_{i,t-k} + \eta_6 DEVELOPED_c$$
$$+ \eta_7 GDPG_{c,t} + \eta_8 INFLATION_{c,t} + \eta_9 LEGAL_{c,t} + \varepsilon_{i,t}, \quad (3)$$

$$EMPLOYEE\_G_{i,t} \text{ or } AP\_G_{i,t}$$
$$= d + \gamma_1 COL_c \times HLEV_{i,t-2} + \gamma_2 COL_c + \gamma_3 HLEV_{i,t-2} + \gamma_4 SIZE_{i,t}$$
$$+ \sum_{k=1}^{2} \gamma_{5k} PROFIT_{i,t-k} + \sum_{k=1}^{2} \gamma_{6k} INVESTMENT_{i,t-k}$$
$$+ \sum_{k=1}^{2} \gamma_{7k} SELLEXP_{i,t-k} + \gamma_8 DEVELOPED_c + \gamma_9 GDPG_{c,t}$$
$$+ \gamma_{10} INFLATION_{c,t} + \gamma_{11} LEGAL_{c,t} + \varepsilon_{i,t}. \quad (4)$$

Under the employee dimension, we examine employee growth (*EMPLOYEE_G*), which captures employees' willingness to work for a firm. We classify an industry as a high (low) labor intensity industry in a given year if it has a wage-to-capital ratio greater than (smaller than or equal to) the median of all industries two years before the base year. In Models 1 through 4 of Table 3.8, we find that high leverage is negatively associated with relative-to-industry employee growth. Additionally, an increase in collectivism from the 25th to the 75th percentile allows highly leveraged firms to reduce relative-to-industry

employee growth losses by 1.14% (2.63% for high labor intensity industries, 0.86% for low labor intensity industries). These results suggest that employees tend to leave a highly leveraged firm, but are less likely to do so if the firm is in a high collectivism country.

Under the supplier dimension, we examine accounts payable growth (*AP_G*), which captures suppliers' incentives to extend trade credit. In Model 5 we find that high leverage significantly lowers accounts payable growth. This result suggests that suppliers are less willing to extend trade credit to highly leveraged firms. Model 6 further shows that increasing collectivism from the 25th to the 75th percentile is associated with 2.14% higher relative-to-industry accounts payable growth for highly leveraged firms, which indicates that collectivism significantly attenuates suppliers' reluctance to extend trade credit.

Taken together, the results in this section are consistent with collectivism reducing high leverage costs driven by downstream (customers) and external (competitors) stakeholder groups, as well as internal (employees) and upstream (suppliers) stakeholder groups. These findings suggest that national culture affects financial outcomes by simultaneously influencing various stakeholders in the firm and its environment.

3.4.3. Robustness Tests

Our previous analysis shows that collectivism reduces high leverage costs. However, one could be concerned that this finding is due to endogeneity, the unbalanced sample composition, the choice of measures used in the analysis, or alternative explanations. In this section we conduct robustness tests to address these concerns.

3.4.3.1. Endogeneity

A primary concern with our analysis above is potential endogeneity problems. First, on the collectivism side, reverse causality could occur if firms operating in countries with specific characteristics actively shape their institutional environment. However, because culture changes at a slow pace, on the order of centuries (Williamson, 2000), it is unlikely that individual firms' high leverage costs influence the extent to which a country is collectivist. In addition, unobserved institutional factors that correlate with collectivism may also affect high leverage costs. Second, on the *HLEV* side, a reduction in sales and profitability can force a firm to take higher leverage to cover expenses. To the extent any of these effects hold, our results could reflect a spurious negative correlation between collectivism and the costs of high leverage.

As we discuss above, in our main analyses we attempt to mitigate potential endogeneity by using the relative measurement method (Opler and Titman, 1994; Campello, 2003, 2006). Relative-to-peer measures are more likely to be exogenous because peer firms' performance is beyond a focal firm's control. In addition, we measure high leverage costs using long-term debt, which is less sensitive to short-term performance (Campello), and we use two-year lags between the high leverage and CSR measures and sales growth. However, to further address these concerns, in this section we employ the 2SLS approach. Following Licht, Goldschmidt, and Schwartz (2007), we use the license to drop pronouns (*PRONOUN DROP*) as an instrument for collectivism. Kashima and Kashima (1998) argue that a language that allows pronouns to be omitted from a conversation reduces the conceptual differentiation between a person and the context, and that this contextualization of the person is positively associated with collectivism. Based

on this argument, *PRONOUN DROP* satisfies the relevance condition of an instrument. Further, *PRONOUN DROP* likely satisfies the exclusion condition because grammar rules cannot plausibly affect firms' high leverage costs, other than through collectivism. As an instrument for *HLEV*, we follow Campello (2003) and use two-year lagged *HLEV*.

Models 1 and 2 of Table 3.9 report the first-stage regression results. We obtain the fitted values of collectivism by regressing *COL* on the control variables and the instruments for *COL* and *HLEV*. We obtain the fitted values of *HLEV* using an analogous approach. We find that *PRONOUN DROP* enters significantly positively on collectivism and the instrument for *HLEV* loads significantly positively on *HLEV*, consistent with our predictions. The first-stage *F*-statistics reported at the bottom of Table 3.9 are much larger than the threshold value of 10 (37,623.43 for *HLEV* and 66,602.86 for *COL*), further confirming the relevance of our instruments.

Models 3 through 8 of Table 3.9 report the second-stage regression results. Here we use the fitted values of *COL* and *HLEV* instead of the original variables. Consistent with our OLS findings, the results confirm the existence of high leverage costs driven by customers, competitors, employees, and suppliers. Moreover, the results continue to show that collectivism can reduce these costs of high leverage. Economically, an increase from the 25th to the 75th percentile in collectivism score increases highly leveraged firms' relative-to-industry sales growth by 1.17%, relative-to-industry employee growth by 1.30%, and two-year lagged relative-to-industry accounts payable growth by 2.61%.

Note that in Models 3 through 8 we also conduct statistical tests of instrument exogeneity. First, we run a regression of the residuals of the 2SLS models on the

instruments and control variables. We find that the p-values of the exogeneity tests are all larger than 10%, suggesting that the instruments are jointly insignificant. Second, we conduct a J-test of over-identifying restrictions and again find p-values larger than 10%. Neither set of tests can reject the null hypothesis that there is no correlation between the residuals and instruments, which confirms the exogeneity of our instrumental variables.

Taken together, the results in this section show that our main findings survive endogeneity checks.

3.4.3.2. Sample Composition

Similar to other cross-country studies, our sample is unbalanced across countries. As shown in Table 3.1, U.S. and Japanese firms account for the largest percentage of firm-year observations at 26.8% and 15.3%, respectively. To mitigate concerns that our main findings are driven by sample composition biases, in Table 3.10 we separately re-estimate our baseline regressions after excluding U.S. firms (Row 1), Japanese firms (Row 2), and firms from both countries (Row 3).[54] In addition, we run a weighted regression (Row 4) in which each country is assigned a weight equal to the reciprocal of its number of observations. The results show significant positive loadings of *COL*×*HLEV* on *SALES_G*, *EMPLOYEE_G*, and *AP_G* and thus mitigate concerns about sample composition biases.

[54] In unreported tests, we exclude countries with fewer than 100 observations. Our results remain qualitatively unchanged.

3.4.3.3. Alternative Proxies

We next consider whether our main evidence on the link between collectivism and the costs of high leverage is sensitive to alternative proxies for high leverage and collectivism. Recall that our main measure of high leverage is two-year lagged *HLEV*. When we instead lag *HLEV* by three years (Table 3.10, Row 5), we find that while the impact of collectivism weakens after three years, it is still significant.

Turning to alternative proxies for *COL*, we first use the Institutional Collectivism (*Coll*) measure from the GLOBE database constructed by House et al. (2004) (Table 3.10, Row 6). We also use the collectivism index of Tang and Koveos (2008) (Table 3.10, Row 7), who update Hofstede's index by incorporating the changing economic environment within each country. Results based on both of these alternative measures of collectivism are in line with collectivism reducing the costs of high leverage.

3.4.3.4. Alternative Explanation

An alternative explanation for our main empirical results is firm exit bias. Firms that go out of business cannot be tracked by Compustat. As a result, the surviving firms are usually good performers with low costs of high leverage. If either *COL* or *HLEV* is highly correlated with firms' exit rate, then the observed relation between collectivism and high leverage costs could simply reflect firm exit bias.

To address this concern, in Table 3.11 we examine the mean rate of firm exit based on Compustat data item DLRSN (reason for deletion). We find that highly leveraged firms are more likely to exit the sample. This means that, if anything, our high leverage sample should be biased toward better-performing (i.e., surviving) firms, which works against

documenting a negative relation between high leverage and sales growth. These findings suggest that our evidence on high leverage costs cannot be explained by firm exit bias.

Next, we investigate whether the relation between collectivism and high leverage costs is driven by firm exit bias. We find that firms in high collectivism countries have a significantly lower probability of exiting the sample. The high collectivism sample is therefore biased toward low-performing firms, which works against documenting a negative relation between collectivism and high leverage costs. This suggests that the relation between collectivism and high leverage costs is not affected by firm exit bias.

Another alternative explanation is product market structure. Culture may be correlated with product market structure if, for instance, industries in high (low) collectivism countries are less (more) competitive. In less competitive environments, customers may have limited choices and may tend to stick with the original products regardless of the financial conditions of the firm. Consequently, our evidence of lower costs of high leverage in high collectivism countries may simply reflect less competition.

To test whether our results are driven by this explanation, in Table 3.12 we further control for product market structure variables as well as their interactions with high leverage. We employ two types of market structure variables. In Model 1, we use the natural logarithm of the Four-Firm concentration ratio (*FFC*), which captures the total market share of the four largest firms in an industry. In Model 2, we use the logarithm of the Herfindahl-Hirschman index (*HHI*), which captures the degree of market concentration. We find that the interaction terms *FFC*×*HLEV* and *HHI*×*HLEV* load insignificantly, suggesting that the product market structure explanation is not likely to

hold. More importantly, our main interaction term *COL*×*HLEV* is positive and statistically significant at the 1%, consistent with our main evidence.

Overall, the results in this section reinforce our main finding that collectivism mitigates the costs of high leverage.

3.5. CONCLUSION

Prior research suggests that high leverage is costly because firms have incentives to take opportunistic actions that result in a loss of customers, and the financial weakness of highly leveraged firms induces competitors to take predatory actions that result in reduced sales growth. In this study, we investigate whether collectivism mitigates the market share losses of high leverage.

We argue that due to incomplete contracting, national culture as captured by collectivism is an important determinant of the costs of high leverage. First, collectivism leads to the formation of tight group structures that can mitigate opportunistic behaviors by highly leveraged firms through increased monitoring and can mitigate opportunistic behaviors by competitors by decreasing the chance that such actions are successful. Second, collectivism mentally constrains customers and competitors from taking actions that would harm the highly leveraged firm.

Based on a large sample of 158,612 firm-year observations from 46 countries over the 1989–2010 period, we find that collectivism reduces highly leveraged firms' relative-to-industry market share (i.e., sales growth) losses, suggesting that customer- and competitor-driven high leverage costs are lower in collectivist countries. In addition,

subsample tests show that the impact of collectivism on the costs of high leverage is more pronounced for firms that are more vulnerable to high leverage costs and for firms in countries that have less developed legal systems, lending further support to our main finding. We next confirm that our main finding is driven by the two posited channels: tight group structures and mental conditioning. Building on extant theoretical models of high leverage, we additionally examine whether high leverage costs are also driven by employees and suppliers and whether collectivism reduces high leverage costs for this wider set of stakeholders. Using the extended model, we find that collectivism helps highly leveraged firms retain customers, guard against rival predation, retain employees, and obtain trade credit from suppliers. These findings persist after addressing endogeneity concerns and are not sensitive to accounting for the unbalanced sample composition, considering alternative measures of culture, or addressing alternative explanations.

Table 3.1 Descriptive statistics

Country	N	$SALES\_G_t$	$EMPLOYEE\_G_t$	AP_G_t	COL_c	PDI_c	UAI_c	MAS_c	$HLEV_i$	$SIZE_i$	$PROFIT_{i,t-1}$	$PROFIT_{i,t-2}$	$INVESTMENT_{i,t-1}$	$INVESTMENT_{i,t-2}$	$SELLEXP_{i,t-1}$	$SELLEXP_{i,t-2}$	$DEVELOPED_c$	$GDP_{c,t}$	$INFLATION_{c,t}$	$LEGAL_{c,t}$
Panel A. Descriptive statistics by country																				
Argentina	197	0.09	0.02	0.11	0.54	0.49	0.86	0.56	0.30	4.99	0.05	0.04	0.04	0.04	0.18	0.18	0.00	2.37	11.81	5.85
Australia	4460	0.10	0.08	0.08	0.10	0.36	0.51	0.61	0.31	3.50	-0.08	-0.06	0.07	0.07	0.60	0.47	1.00	1.55	3.76	22.72
Austria	496	0.11	0.04	0.12	0.45	0.11	0.70	0.79	0.34	5.90	0.07	0.08	0.07	0.07	0.07	0.07	1.00	1.26	1.61	15.00
Belgium	640	0.11	0.05	0.09	0.25	0.65	0.94	0.54	0.32	5.89	0.08	0.08	0.06	0.07	0.09	0.09	1.00	0.82	2.04	15.00
Brazil	1602	0.17	0.09	0.20	0.62	0.69	0.76	0.49	0.33	5.99	0.06	0.06	0.06	0.07	0.21	0.21	0.00	2.59	8.19	10.21
Canada	5352	0.14	0.06	0.14	0.20	0.39	0.48	0.52	0.26	4.86	0.00	0.01	0.09	0.10	0.39	0.37	1.00	1.02	2.46	23.64
Chile	858	0.11	-0.03	0.16	0.77	0.63	0.86	0.28	0.34	5.65	0.08	0.08	0.06	0.06	0.19	0.20	0.00	2.81	6.25	19.83
China	12210	0.20	0.08	0.22	0.80	0.80	0.30	0.66	0.29	5.41	0.06	0.06	0.07	0.07	0.19	0.17	0.00	9.84	4.30	4.42
Colombia	44	0.15	0.21	0.18	0.87	0.67	0.80	0.64	0.32	6.02	0.08	0.10	0.05	0.06	0.18	0.19	0.00	2.29	9.70	4.47
Denmark	832	0.08	0.02	0.11	0.26	0.18	0.23	0.16	0.28	5.22	0.07	0.08	0.06	0.07	0.18	0.16	1.00	0.46	2.55	24.00
Finland	986	0.10	0.04	0.10	0.37	0.33	0.59	0.26	0.24	5.58	0.09	0.10	0.06	0.07	0.04	0.04	1.00	1.65	1.43	21.00
France	4618	0.10	0.05	0.10	0.29	0.68	0.86	0.43	0.30	5.66	0.06	0.06	0.05	0.05	0.09	0.08	1.00	0.63	1.85	17.24
Germany	4572	0.09	0.03	0.11	0.33	0.35	0.65	0.66	0.34	5.38	0.04	0.05	0.05	0.06	0.12	0.12	1.00	1.17	0.92	17.64
Greece	784	0.06	0.04	0.09	0.65	0.60	1.12	0.57	0.36	5.58	0.06	0.07	0.05	0.06	0.18	0.17	1.00	0.29	2.84	8.68
Hong Kong	1218	0.15	0.07	0.13	0.75	0.68	0.29	0.57	0.30	5.40	0.07	0.08	0.05	0.06	0.23	0.21	0.00	3.92	-0.30	24.40
Hungary	40	0.10	-0.01	0.23	0.20	0.46	0.82	0.88	0.48	5.91	0.08	0.09	0.09	0.10	0.21	0.21	1.00	2.85	5.48	8.07
India	10002	0.20	0.08	0.18	0.52	0.77	0.40	0.56	0.28	4.14	0.08	0.08	0.08	0.08	0.10	0.10	0.00	6.40	6.17	20.00
Indonesia	1909	0.12	0.01	0.16	0.86	0.78	0.48	0.46	0.28	4.59	0.06	0.05	0.06	0.06	0.15	0.15	0.00	3.77	11.60	10.55
Ireland	311	0.08	0.02	0.04	0.30	0.28	0.35	0.68	0.34	5.82	0.02	0.03	0.05	0.06	0.28	0.28	0.00	1.88	2.11	30.00
Israel	798	0.12	0.07	0.13	0.46	0.13	0.81	0.47	0.28	4.96	0.03	0.03	0.04	0.04	0.32	0.32	0.00	2.15	2.08	20.00
Italy	1623	0.09	0.04	0.11	0.24	0.50	0.75	0.70	0.33	6.19	0.05	0.06	0.04	0.05	0.05	0.04	1.00	0.02	2.17	8.28
Jamaica	14	0.01	0.03	0.00	0.61	0.45	0.13	0.68	0.29	4.65	0.20	0.21	0.04	0.04	0.17	0.17	0.00	-1.42	11.73	8.76
Japan	24217	0.07	0.02	0.06	0.54	0.54	0.92	0.95	0.23	6.07	0.04	0.04	0.04	0.04	0.21	0.20	1.00	0.74	-1.30	22.51
Korea, Rep.	3696	0.10	0.13	0.12	0.82	0.60	0.85	0.39	0.24	6.06	0.05	0.06	0.06	0.06	0.15	0.15	0.00	3.97	2.51	21.68
Luxembourg	109	0.13	0.04	0.11	0.40	0.40	0.70	0.50	0.35	7.64	0.08	0.08	0.06	0.06	0.18	0.18	1.00	0.99	3.36	12.00
Malaysia	5100	0.10	0.05	0.11	0.74	1.04	0.36	0.50	0.31	4.24	0.04	0.05	0.04	0.05	0.14	0.13	0.00	3.01	4.19	19.09
Mexico	699	0.11	0.07	0.13	0.70	0.81	0.82	0.69	0.31	7.02	0.08	0.08	0.06	0.06	0.20	0.20	0.00	0.85	5.89	7.51
Morocco	52	0.08	.	0.13	0.54	0.70	0.68	0.53	0.40	5.20	0.13	0.12	0.07	0.09	0.11	0.09	0.00	3.33	2.11	10.05
Netherlands	1048	0.08	0.02	0.09	0.20	0.38	0.53	0.14	0.34	6.33	0.07	0.08	0.05	0.06	0.11	0.12	1.00	1.15	2.33	15.00
New Zealand	387	0.11	0.05	0.14	0.21	0.22	0.49	0.58	0.25	4.24	0.07	0.06	0.06	0.07	0.13	0.10	1.00	0.52	2.98	22.44
Norway	993	0.14	0.06	0.15	0.31	0.31	0.50	0.08	0.21	5.35	0.05	0.04	0.07	0.08	0.04	0.05	1.00	0.58	4.91	21.00
Pakistan	935	0.10	0.02	0.13	0.86	0.55	0.70	0.50	0.30	4.09	0.10	0.10	0.07	0.07	0.08	0.07	0.00	1.97	12.51	12.23
Peru	395	0.16	0.01	0.21	0.84	0.64	0.87	0.42	0.30	5.06	0.11	0.11	0.05	0.06	0.15	0.16	0.00	4.30	3.33	10.84
Philippines	587	0.10	0.01	0.10	0.68	0.94	0.44	0.64	0.25	4.34	0.06	0.06	0.05	0.05	0.17	0.16	0.00	3.04	4.69	9.45
Poland	1355	0.15	0.11	0.12	0.40	0.68	0.93	0.64	0.36	4.36	0.07	0.09	0.07	0.08	0.18	0.17	1.00	4.31	2.76	8.78
Portugal	273	0.09	0.04	0.12	0.73	0.63	1.04	0.31	0.41	6.47	0.07	0.07	0.05	0.05	0.04	0.03	1.00	0.66	2.44	12.50

Russian Fed.	432	0.22	0.08	0.20	0.61	0.93	0.95	0.36	0.38	7.66	0.12	0.13	0.10	0.11	0.13	0.13	0.00	4.11	13.86	15.87
Singapore	3359	0.14	0.08	0.12	0.80	0.74	0.08	0.48	0.26	4.36	0.06	0.07	0.05	0.06	0.15	0.14	0.00	4.09	1.76	25.27
South Africa	1318	0.15	0.05	0.14	0.35	0.49	0.49	0.63	0.34	5.06	0.11	0.11	0.07	0.07	0.13	0.12	0.00	2.03	7.46	11.73
Spain	626	0.11	0.06	0.12	0.49	0.57	0.86	0.42	0.36	6.77	0.08	0.09	0.05	0.06	0.05	0.04	1.00	0.42	2.68	23.81
Sweden	2190	0.12	0.03	0.12	0.29	0.31	0.29	0.05	0.28	4.66	0.02	0.03	0.04	0.04	0.27	0.27	1.00	1.63	1.75	21.00
Switzerland	1589	0.10	0.03	0.10	0.32	0.34	0.58	0.70	0.26	6.15	0.08	0.08	0.05	0.05	0.12	0.12	1.00	1.05	1.14	15.48
Thailand	3130	0.11	0.05	0.13	0.80	0.64	0.64	0.34	0.28	4.33	0.08	0.09	0.06	0.06	0.16	0.16	0.00	3.62	3.06	12.14
Turkey	502	0.13	0.06	0.21	0.63	0.66	0.85	0.45	0.33	5.98	0.09	0.09	0.06	0.07	0.14	0.14	0.00	2.29	12.89	12.99
United Kingdom	9564	0.10	0.03	0.08	0.11	0.35	0.35	0.66	0.34	4.97	0.03	0.04	0.05	0.06	0.30	0.30	1.00	1.39	2.35	28.61
United States	42490	0.08	0.03	0.10	0.09	0.40	0.46	0.62	0.28	5.25	0.01	0.01	0.06	0.06	0.40	0.40	1.00	1.04	2.29	16.07
Argentina	197	0.09	0.02	0.11	0.54	0.49	0.86	0.56	0.30	4.99	0.05	0.04	0.04	0.04	0.18	0.18	0.00	2.37	11.81	5.85

Panel B. Descriptive statistics for the full sample

Mean	0.11	0.03	0.11	0.39	0.53	0.56	0.62	0.28	5.24	0.04	0.04	0.06	0.06	0.25	0.25	0.69	2.43	2.59	17.88
Min	-1.00	-0.64	-1.00	0.09	0.11	0.08	0.05	0.00	-6.91	-1.75	-1.75	0.00	0.00	0.00	0.00	0.00	-11.73	-6.01	3.00
Q1	-0.05	-0.05	-0.14	0.09	0.40	0.40	0.52	0.00	3.92	0.03	0.03	0.02	0.02	0.07	0.07	0.00	0.83	0.89	15.00
Median	0.09	0.01	0.07	0.33	0.50	0.46	0.62	0.00	5.19	0.07	0.07	0.04	0.04	0.15	0.15	1.00	1.91	2.29	18.00
Q3	0.24	0.09	0.30	0.54	0.68	0.81	0.66	1.00	6.50	0.11	0.11	0.07	0.07	0.28	0.28	1.00	3.76	3.70	22.50
Max	2.00	1.27	2.00	0.87	1.04	1.12	0.95	1.00	13.08	0.35	0.35	0.39	0.39	6.00	6.00	1.00	13.57	52.85	30.00
SD	0.31	0.23	0.44	0.27	0.19	0.23	0.19	0.45	2.03	0.20	0.19	0.06	0.07	0.49	0.46	0.46	3.53	3.28	6.10

Panel C. Correlation matrix

$SALES\_G_t$	1.00																		
$EMPLOYEE\_G_t$	0.43***	1.00																	
AP_G_t	0.37***	0.31***	1.00																
COL_c	0.03***	0.01	0.01*	1.00															
PDI_c	0.04***	0.02***	0.02***	0.75***	1.00														
UAI_c	-0.02***	-0.02***	-0.04***	0.55***	0.27***	1.00													
MAS_c	-0.05***	-0.03***	-0.05***	0.29***	0.13***	0.66***	1.00												
$HLEV_t$	0.01	0.01*	-0.01**	-0.03***	-0.01***	-0.04***	-0.05***	1.00											
$SIZE_t$	0.07***	0.07***	0.03***	0.07***	-0.00	0.18***	0.11***	0.23***	1.00										
$PROFIT_{t-1}$	0.10***	0.16***	0.08***	0.09***	0.06***	0.04***	-0.01***	0.02***	0.33***	1.00									
$PROFIT_{t-2}$	0.05***	0.10***	0.04***	0.09***	0.06***	0.03***	-0.01***	0.02***	0.31***	0.63***	1.00								
$INVESTMENT_{t-1}$	0.09***	0.09***	0.04***	-0.07***	-0.02***	-0.13***	-0.14***	0.12***	0.05***	0.12***	0.16***	1.00							
$INVESTMENT_{t-2}$	0.10***	0.07***	0.05***	-0.08***	-0.03***	-0.14***	-0.16***	0.13***	0.05***	0.11***	0.11***	0.69***	1.00						
$SELLEXP_{t-1}$	-0.01**	-0.04***	-0.01***	-0.19***	-0.14***	-0.11***	-0.01*	-0.09***	-0.29***	-0.54***	-0.48***	-0.05***	-0.05***	1.00					
$SELLEXP_{t-2}$	0.00	-0.03***	-0.01**	-0.19***	-0.14***	-0.12***	-0.01**	-0.09***	-0.28***	-0.51***	-0.54***	-0.06***	-0.05***	0.88***	1.00				
$DEVELOPED_c$	-0.07***	-0.03***	-0.05***	-0.58***	-0.68***	0.22***	0.28***	-0.01	0.09***	-0.07***	-0.07***	-0.06***	-0.06***	0.10***	0.10***	1.00			
$GDPG_{c,t}$	0.21***	0.10***	0.13***	0.22***	0.31***	-0.18***	-0.16***	-0.01**	-0.06***	0.06***	0.01***	0.02***	0.04***	-0.05***	-0.05***	-0.43***	1.00		
$INFLATION_{c,t}$	0.06***	0.03***	0.05***	-0.08***	0.18***	-0.50***	-0.57***	0.03***	-0.13***	0.04***	0.03***	0.14***	0.14***	0.00	0.00	-0.53***	0.28***	1.00	
$LEGAL_{c,t}$	-0.03***	-0.00	-0.04***	0.13***	-0.10***	0.13***	0.33***	-0.00	0.01**	0.02***	0.02***	-0.04***	-0.04***	-0.05***	-0.06***	0.19***	-0.06***	-0.37***	1.00

This table reports the summary statistics. Panel A presents the average of the key variables in the main regression by country. Panel B reports descriptive statistics for the full sample. Panel C shows the correlation matrix for the key variables in the main regression. The full sample comprises 158,612 firm-year observations from 46 countries.

Table 3.2 Collectivism and the costs of high leverage

	Top 3 Deciles			Top 1 Decile	
		COL_c	ALL	COL_c	ALL
	(1)	(2)	(3)	(4)	(5)
$COL_c \times HLEV_{t-2}$		**0.022*** (3.49)**	**0.029*** (2.90)**	**0.049*** (4.23)**	**0.048** (2.40)**
COL_c		0.007 (1.26)	-0.024*** (-2.95)	-0.009 (-0.85)	-0.023 (-1.37)
$PDI_c \times HLEV_{t-2}$			**-0.013 (-0.90)**		**0.004 (0.13)**
PDI_c			0.024*** (2.71)		0.023 (1.17)
$UAI_c \times HLEV_{t-2}$			**-0.001 (-0.11)**		**-0.016 (-1.00)**
UAI_c			0.020*** (3.52)		0.015 (1.21)
$MAS_c \times HLEV_{t-2}$			**-0.011 (-1.28)**		**0.014 (0.79)**
MAS_c			0.017*** (2.88)		-0.007 (-0.54)
$HLEV_{t-2}$	**-0.009*** (-5.29)**	-0.017*** (-5.79)	-0.006 (-0.71)	-0.041*** (-6.89)	-0.043*** (-2.61)
$SIZE_t$	0.011*** (20.37)	0.011*** (20.45)	0.011*** (20.47)	0.017*** (15.54)	0.017*** (15.48)
$PROFIT_{t-1}$	0.144*** (18.04)	0.145*** (18.09)	0.145*** (18.11)	0.110*** (8.36)	0.110*** (8.36)
$PROFIT_{t-2}$	-0.013* (-1.65)	-0.012 (-1.56)	-0.012 (-1.53)	-0.015 (-1.14)	-0.015 (-1.14)
$INVESTMENT_{t-1}$	0.323*** (15.13)	0.322*** (15.07)	0.321*** (15.02)	0.356*** (9.19)	0.356*** (9.19)
$INVESTMENT_{t-2}$	0.175*** (9.18)	0.173*** (9.04)	0.173*** (9.06)	0.146*** (4.21)	0.146*** (4.20)
$SELLEXP_{t-1}$	0.010 (1.53)	0.010 (1.49)	0.010 (1.49)	0.010 (1.15)	0.010 (1.15)
$SELLEXP_{t-2}$	0.036*** (5.76)	0.036*** (5.71)	0.036*** (5.69)	0.028*** (3.16)	0.028*** (3.15)
$DEVELOPED_c$	-0.013*** (-5.31)	-0.006* (-1.70)	-0.017*** (-3.54)	-0.002 (-0.26)	-0.003 (-0.29)
$GDPG_{c,t}$	-0.000 (-0.79)	-0.000 (-0.85)	-0.000 (-0.11)	-0.002*** (-2.97)	-0.001** (-2.46)
$INFLATION_{c,t}$	-0.000 (-1.58)	-0.000 (-0.40)	-0.000 (-0.27)	-0.001 (-1.37)	-0.001 (-1.51)
$LEGAL_{c,t}$	-0.000 (-0.11)	0.000 (0.03)	0.000 (0.53)	-0.001** (-2.54)	-0.001** (-2.34)
CONSTANT	-0.003 (-0.75)	-0.011** (-2.07)	-0.028*** (-3.99)	0.024** (2.27)	0.014 (0.98)
N	158,612	158,612	158,612	46,950	46,950

R-squared	0.023	0.024	0.024	0.025	0.026

This table reports OLS regression results for Equations (1) and (2). The dependent variable is *SALES_G*, firm sales growth, which is influenced by customers and competitors. The independent variables include the proxy for collectivism, high leverage, and firm- and country-level controls. Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating firm-level variables. Specifically, a firm's *HLEV* is measured relative to its country peers, and the other firm-level variables are constructed relative to their country-industry-year means. Model 1 presents results for Equation (1) on the costs of high leverage. Models 2 and 3 present results for Equation (2) on the effect of collectivism on the costs of high leverage. Models 4 and 5 repeat Models 2 and 3 using a more extreme definition of high leverage that assigns a value of one to the top decile firm-year observations and a value of zero to the bottom decile observations. Comparisons based on this definition are between extremely high-leveraged firms and extremely low-leveraged firms. *t*-statistics in parentheses are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3.3 Subsample tests: the costs of high leverage

	Baseline Model	Cross Listing		Customer Asset Turnover		Competitor Industry Debt Level	
		yes	no	high	low	high	low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$COL_c \times HLEV_{t-2}$	**0.022*** (3.49)**	**0.015 (0.49)**	**0.031*** (3.36)**	**0.017* (1.94)**	**0.040*** (4.47)**	**0.015 (1.63)**	**0.033*** (3.27)**
COL_c	0.007 (1.26)	-0.028 (-0.81)	-0.003 (-0.44)	0.044*** (6.44)	-0.042*** (-5.18)	0.000 (0.04)	0.031*** (3.82)
$HLEV_{t-2}$	-0.017*** (-5.79)	-0.031** (-2.09)	-0.023*** (-4.39)	-0.012*** (-3.20)	-0.031*** (-6.61)	-0.013*** (-3.65)	-0.028*** (-4.91)
$SIZE_t$	0.011*** (20.45)	0.009*** (3.94)	0.012*** (16.65)	0.009*** (13.79)	0.011*** (13.86)	0.009*** (13.54)	0.013*** (16.55)
$PROFIT_{t-1}$	0.145*** (18.09)	0.119*** (3.22)	0.166*** (14.40)	0.181*** (16.88)	0.133*** (11.80)	0.129*** (11.66)	0.160*** (13.95)
$PROFIT_{t-2}$	-0.012 (-1.56)	-0.029 (-0.74)	-0.010 (-0.86)	0.014 (1.47)	-0.038*** (-3.08)	-0.003 (-0.25)	-0.019* (-1.68)
$INVESTMENT_{t-1}$	0.322*** (15.07)	0.532*** (4.09)	0.289*** (11.98)	0.226*** (7.96)	0.383*** (12.80)	0.371*** (12.42)	0.265*** (8.77)
$INVESTMENT_{t-2}$	0.173*** (9.04)	0.283** (2.43)	0.190*** (8.74)	0.138*** (5.19)	0.186*** (7.11)	0.126*** (4.84)	0.225*** (8.00)
$SELLEXP_{t-1}$	0.010 (1.49)	-0.032 (-1.30)	0.010 (1.21)	0.028* (1.93)	0.004 (0.60)	0.005 (0.53)	0.012 (1.42)
$SELLEXP_{t-2}$	0.036*** (5.71)	0.043* (1.65)	0.023*** (2.79)	0.046*** (3.13)	0.028*** (4.01)	0.046*** (4.83)	0.025*** (2.97)
$DEVELOPED_c$	-0.006* (-1.70)	-0.029* (-1.90)	-0.005 (-1.36)	0.009* (1.84)	-0.017*** (-3.60)	-0.015*** (-2.78)	0.008* (1.86)
$GDPG_{c,t}$	-0.000 (-0.85)	0.000 (0.06)	0.000 (0.04)	0.001** (2.44)	-0.001** (-1.97)	0.001*** (2.74)	-0.001** (-2.55)
$INFLATION_{c,t}$	-0.000 (-0.40)	0.001 (0.99)	-0.000 (-0.60)	-0.000 (-0.02)	-0.000 (-0.78)	-0.001 (-1.31)	-0.000 (-0.26)

$LEGAL_{c,t}$	0.000	-0.001	-0.000	-0.000*	0.000	-0.000	-0.000
	(0.03)	(-0.94)	(-0.03)	(-1.83)	(0.28)	(-1.03)	(-1.36)
CONSTANT	-0.011**	0.016	-0.006	-0.039***	0.028***	0.006	-0.029***
	(-2.07)	(0.56)	(-0.76)	(-5.14)	(3.52)	(0.65)	(-3.61)
N	158,612	7,074	109,048	78,517	80,095	71,775	86,837
R-squared	0.024	0.038	0.022	0.031	0.022	0.025	0.024
difference test (*p*-value)		0.314		0.039**		0.096*	

This table reports OLS regression results for Equation (2) using different subsamples related to the costs of high leverage. The dependent variable is *SALES_G*, firm sales growth, which is influenced by customers and competitors. The independent variables include the proxy for collectivism, high leverage, and firm- and country-level controls. Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating firm-level variables. Specifically, a firm's *HLEV* is measured relative to its country peers, and the other firm-level variables are constructed relative to their country-industry-year means. Model 1 repeats the results of the baseline model using the full sample. In Models 2 and 3, we define a non-U.S. firm as cross-listed (not cross-listed) if two years before the base year it has (does not have) a Central Index Key (CIK) code, which is used to identify corporations registered with the U.S. Securities and Exchange Commission. In Models 4 and 5, a firm is classified as having a low (high) degree of product specialization if its asset turnover ratio is above (below) the sample median two years before the base year. In Models 6 and 7, industries with a high (low) debt level make up those with an average long-term debt ratio above (below or equal to) the median of the overall sample two years before the base year. *t*-statistics in parentheses are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3.4 Subsample tests: legal environment

	Baseline	Law and Order		Legal system and Property rights	
		high	low	high	low
	(1)	(2)	(3)	(4)	(5)
$COL_c \times HLEV_{t-2}$	**0.022*** (3.49)**	**-0.022 (-0.73)**	**0.026*** (3.40)**	**0.003 (0.26)**	**0.025*** (2.93)**
COL_c	0.007 (1.26)	0.036* (1.77)	-0.012* (-1.90)	0.031*** (3.02)	-0.017** (-2.52)
$HLEV_{t-2}$	-0.017*** (-5.79)	-0.010* (-1.72)	-0.019*** (-4.81)	-0.013*** (-3.37)	-0.018*** (-3.75)
$SIZE_t$	0.011*** (20.45)	0.011*** (12.27)	0.010*** (17.08)	0.010*** (14.80)	0.011*** (14.96)
$PROFIT_{t-1}$	0.145*** (18.09)	0.136*** (11.86)	0.153*** (13.87)	0.152*** (15.13)	0.130*** (10.10)
$PROFIT_{t-2}$	-0.012 (-1.56)	-0.015 (-1.24)	-0.011 (-1.08)	-0.017* (-1.70)	-0.003 (-0.21)
$INVESTMENT_{t-1}$	0.322*** (15.07)	0.291*** (6.97)	0.338*** (13.96)	0.299*** (8.86)	0.344*** (12.71)
$INVESTMENT_{t-2}$	0.173*** (9.04)	0.158*** (4.16)	0.182*** (8.49)	0.137*** (4.49)	0.207*** (8.67)
$SELLEXP_{t-1}$	0.010 (1.49)	0.008 (0.95)	0.011 (1.15)	0.011 (1.44)	0.005 (0.47)
$SELLEXP_{t-2}$	0.036*** (5.71)	0.033*** (3.73)	0.038*** (4.30)	0.034*** (4.29)	0.040*** (3.87)
$DEVELOPED_c$	-0.006* (-1.70)	-0.002 (-0.13)	-0.006 (-1.58)	0.016** (2.21)	-0.010** (-2.41)
$GDPG_{c,t}$	-0.000 (-0.85)	-0.002** (-2.22)	0.000 (1.39)	-0.001 (-1.02)	0.001* (1.67)
$INFLATION_{c,t}$	-0.000 (-0.40)	-0.000 (-0.13)	0.000 (0.73)	-0.001 (-0.75)	0.000 (0.20)
$LEGAL_{c,t}$	0.000 (0.03)	0.000 (0.41)	0.001*** (2.93)	-0.000 (-0.73)	0.001*** (4.09)
CONSTANT	-0.011** (-2.07)	-0.028 (-1.39)	-0.012** (-1.98)	-0.035*** (-2.96)	-0.010 (-1.57)
N	158,612	45,420	113,192	73,689	84,923
R-squared	0.024	0.025	0.023	0.026	0.022
difference test (*p*-value)		0.063**		0.066*	

This table reports OLS regression results for Equation (2) using different subsamples related to the legal environment. The dependent variable is *SALES_G*, firm sales growth, which is influenced by customers and competitors. The independent variables include the proxy for collectivism, high leverage, and firm- and country-level controls. Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating firm-level variables. Specifically, a firm's *HLEV* is measured relative to its country peers, and the other firm-level variables are constructed relative to their country-industry-year means. Model 1 repeats the results of the baseline model using the full sample. In Models 2 and 3, a country is defined as having a strong (weak) legal system if its law and order index is greater than (less than or equal to) the median of the overall sample two years before the base year. In Models 4 and 5, a country is defined as having a good (bad) legal system and secure (insecure) property rights if the legal system and property rights index is greater than (less than or equal to) the median of the overall sample two years before the base year. *t*-statistics in parentheses are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3.5 Collectivism and prevalence of business group

	Cross-sectional Regression		Panel Regression	
	(1)	(2)	(3)	(4)
COL	**22.191****	**18.986***	**22.649*****	**19.486*****
	(2.16)	**(1.89)**	**(11.75)**	**(10.42)**
Investor Protection	2.343	4.131	1.963***	4.199***
	(0.94)	(1.33)	(4.25)	(7.34)
News Circulation	-0.018	-0.024	-0.022***	-0.024***
	(-0.80)	(-1.19)	(-5.50)	(-6.64)
Log GDP	-2.446	0.680	-1.365***	1.614***
	(-0.82)	(0.18)	(-2.71)	(2.68)
Savings to GDP	-0.260		-0.248***	
	(-0.61)		(-3.09)	
Political Stability		-7.409		-8.758***
		(-0.93)		(-6.28)
Consolidation Tax	-3.188	-5.668	-3.551***	-6.004***
	(-0.72)	(-1.34)	(-4.30)	(-7.78)
Intra-group Tax	-2.381	-0.710	-2.693***	-0.622
	(-0.73)	(-0.30)	(-4.49)	(-1.42)
Takeover Index	-27.021*	-34.923**	-26.687***	-35.351***
	(-1.90)	(-2.35)	(-10.07)	(-12.96)
CONSTANT	69.568**	41.288	61.190***	33.066***
	(2.12)	(1.25)	(10.14)	(5.81)
N	27	28	540	560
R-squared	0.646	0.643	0.637	0.647

This table reports OLS regressions results on the influence of collectivism on the prevalence of business group. The dependent variable is *BUSINESSG*, defined as the percentage of all listed firms in a country that belong to a business group. *COL* is constructed based on Hofstede (2001) and meaures the extent of collectivism in a country. *Investor Protection* is the principal component of revised anti-director rights, an enforcement index, and corporate disclosure. *News Circulation* is the total average circulation of daily newspapers per 1000 inhabitants. *Log GDP* is the natural logarithm of GDP. *Savings to GDP* is the ratio of total domestic savings over GDP. *Political Stability* is the perceived likelihood that the government will be overthrown or destabilized for unconstitutional or violent reasons. *Consolidation Tax* is a dummy variable indicating whether a parent firm can consolidate its subsidiary in which the parent has an ownership stake of less than 90%. *Intra-group Tax* is a measure of country's tax law regulating intra-group transactions. *Takeover Index* gauges the extent of fair and equitable treatment of all shareholders in the takeover process and the transparency of this process. Models 1 and 2 follow the cross-sectional regression setting in Masulis, Pham, and Zein (2011), in which the control variables are measured in the year 2001. Models 3 and 4 employ panel regressions, which consider the time-variant features of the control variables. The panel regressions cover 28 countries over the 1991–2010 period. *t*-statistic in parentheses is based on standard errors that are heteroscedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 3.6 Collectivism and the costs of high leverage: drop countries according to the rank of business group prevalence

	Full Sample	Drop Top 25%	Drop Top 50%	Drop Top 75%
	(1)	(2)	(3)	(4)
COL×HLEV$_{t-2}$	**0.022*** (3.50)**	**0.016** (2.27)**	**0.029*** (2.72)**	**0.044*** (3.03)**
COL	0.007 (1.26)	0.024*** (3.72)	0.053** (2.04)	-0.113 (-0.80)
HLEV$_{t-2}$	-0.017*** (-5.79)	-0.015*** (-5.04)	-0.016*** (-4.89)	-0.032*** (-3.79)
SIZE$_t$	0.011*** (20.44)	0.010*** (18.73)	0.012*** (16.51)	0.011*** (6.74)
PROFIT$_{t-1}$	0.145*** (18.09)	0.146*** (17.63)	0.132*** (13.31)	0.145*** (5.82)
PROFIT$_{t-2}$	-0.012 (-1.56)	-0.009 (-1.05)	-0.005 (-0.51)	0.011 (0.46)
INVESTMENT$_{t-1}$	0.322*** (15.07)	0.304*** (12.18)	0.409*** (12.54)	0.462*** (9.42)
INVESTMENT$_{t-2}$	0.173*** (9.04)	0.176*** (7.82)	0.155*** (5.32)	0.253*** (5.62)
SELLEXP$_{t-1}$	0.010 (1.49)	0.009 (1.37)	0.006 (0.69)	-0.008 (-0.43)
SELLEXP$_{t-2}$	0.036*** (5.71)	0.037*** (5.63)	0.051*** (6.31)	0.059*** (3.49)
DEVELOPED	-0.000 (-0.85)	-0.001*** (-2.95)	-0.002*** (-4.05)	-0.002* (-1.66)
GDPG$_t$	-0.006* (-1.70)	0.009** (1.97)	0.028 (1.50)	-0.053 (-1.12)
INFLATION$_t$	-0.000 (-0.40)	-0.000 (-1.04)	0.001 (1.51)	0.001 (0.70)
LEGAL$_t$	0.000 (0.03)	-0.001*** (-2.98)	-0.001*** (-3.07)	-0.002 (-0.78)
CONSTANT	-0.011** (-2.07)	-0.019*** (-2.78)	-0.036* (-1.67)	0.096 (0.80)
N	158,612	132,777	73,247	22,381
R-squared	0.024	0.025	0.030	0.030

This table shows results from the regressions of Equation (2) using OLS after dropping the top 25%, 50%, 75% of the observations that are ranked by the prevalence of business groups. The dependent variable is *SALES_G*, firm sales growth, which is influenced by customers and competitors. The independent variables include the proxy for collectivism, high leverage, and firm- and country-level controls. Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating firm-level variables. Specifically, a firm's *HLEV*

is measured relative to its country peers, and the other firm-level variables are constructed relative to their country-industry-year means. Model 1 repeats the results of the baseline model using the whole sample. In Models 2 through 4, we rank the countries in descending order according to the prevalence of business groups, and then re-run our baseline regressions for Equation (2) after dropping the observations belonging to the top 25% (Model 2), 50% (Model 3), and 75% (Model 4) ranking countries. *t*-statistic in parentheses is based on standard errors that are heteroscedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 3.7 Collectivism and value traits

	Attentive to Others	Avoid Standing Out	Overconfidence Bias	Calculative & Moral Involvement	
	Child responsibility	Upset when criticized	Taking risk	Keep money found	Not report car damage
	(1)	(2)	(3)	(4)	(5)
COL	**1.687*** **	**1.038*** **	**-0.967*** **	**-5.574*** **	**-0.718*** **
	(3.13)	**(6.67)**	**(-2.88)**	**(-36.19)**	**(-5.86)**
MALE	-0.070***	-0.156**	0.505***	0.259**	0.189
	(-3.08)	(-2.34)	(12.71)	(2.45)	(1.40)
AGE	0.253***	-0.262***	-0.955***	-1.000***	-1.024***
	(5.01)	(-3.73)	(-10.21)	(-3.63)	(-4.22)
EDUCATION	0.094***	0.003	0.056***	0.019	0.106***
	(6.61)	(0.09)	(3.35)	(0.53)	(7.86)
INCOME	0.019	0.016	0.052***	0.003	0.001
	(1.52)	(0.62)	(5.16)	(0.28)	(0.04)
Law and Order	0.140***	-0.088***	-0.063	0.117***	0.149***
	(3.28)	(-4.13)	(-1.06)	(6.88)	(11.02)
Efficient Judiciary	0.032	-0.186***	-0.093*	-0.810***	-0.318***
	(0.60)	(-8.19)	(-1.84)	(-21.11)	(-10.90)
GDPG	-0.001	0.000	0.010	0.000	-0.000
	(-0.11)	(0.11)	(0.58)	(0.00)	(-0.00)
INFLATION	0.000	-0.000	0.022	-0.000	0.000
	(1.02)	(-0.13)	(1.44)	(-0.00)	(0.00)
N	535,228	35,490	188,189	30,205	30,005

This table shows OLS regressions examining the influence of collectivism on different value traits. To capture the value trait "attentive to others", we rely on whether survey respondents think that "feeling of responsibility" is a quality that children can be encouraged to learn at home (*Child responsibility*). To capture the value trait "avoid standing out", we rely on whether survey respondents feel upset because somebody criticized them (*Upset when criticized*). We expect that in countries where people are more sensitive to external judgement, people would tend to avoid standing out. To capture the value trait "overconfidence bias", we rely on whether the survey respondents think the described person's view on "adventure and taking risks are important" (*Taking risk*) is very much like them (1), not at all like them (6), or something in between. We revert the scale so that people with overconfidence bias tend to take more risks. To capture the degree of calculative or moral involvement in decision-making, we construct two proxies. The two proxies are respectively based on whether survey respondents think that "keeping money that you have found" (*Keep money found*) or "failing to report damage you've done accidentally to a parked vehicle" (*Not report car damage*) can always be justified (10), never be justified (1), or something in between. The higher value indicates that people tend to have more calculative (less moral) involvement in decision-making. Our proxies for the value traits come from the 1990, 1995, 1999, 2005, and 2010 waves of the World Values Survey. *COL* is constructed based on Hofstede (2001) and meaures the extent of collectivism in a country. *MALE* is a dummy variable equal to 1 if the survey respondent is male. *AGE* is the natural logarithm of a respondent's age. *EDUCATION* reflects the highest education level a respondent attained. *INCOME* reflects self-evaluated scale of household income by a survey respondent.

Law and Order gauges the strength of the legal system, and the extent to which the citizens of a country are willing to rely on the established institutions to make and implement laws and adjudicate disputes. *Efficient Judiciary* is the assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms". *GDPG* is the annual percentage growth rate of GDP per capita. Wave dummies are included but not reported for brevity. *t*-statistic in parentheses is based on standard errors that are heteroscedasticity-consistent and allow for clustering at the country level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 3.8 Collectivism and the costs of high leverage driven by employees and suppliers

	Employee ($EMPL\_G_t$)				Supplier (AP_G_t)	
	Total sample		High labor intensity	Low labor intensity		
	(1)	(2)	(3)	(4)	(5)	(6)
$COL_c \times HLEV_{t-2}$		**0.025*** (3.75)**	**0.059*** (2.58)**	**0.019* (1.80)**		**0.048*** (5.44)**
COL_c		0.007 (1.36)	-0.011 (-0.81)	0.002 (0.14)		0.000 (0.04)
$HLEV_{t-2}$	**-0.018*** (-10.92)**	-0.025*** (-9.05)	-0.031*** (-7.38)	-0.021*** (-4.07)	**-0.013*** (-5.84)**	-0.032*** (-8.05)
$SIZE_t$	0.005*** (9.89)	0.005*** (9.97)	0.005*** (8.02)	0.005*** (5.49)	0.009*** (13.52)	0.009*** (13.72)
$PROFIT_{t-1}$	0.168*** (21.92)	0.169*** (21.94)	0.170*** (19.16)	0.148*** (8.71)	0.150*** (15.46)	0.151*** (15.53)
$PROFIT_{t-2}$	-0.003 (-0.36)	-0.002 (-0.29)	-0.005 (-0.63)	-0.005 (-0.28)	0.021** (2.18)	0.022** (2.24)
$INVESTMENT_{t-1}$	0.240*** (10.59)	0.239*** (10.52)	0.160*** (4.64)	0.322*** (9.07)	0.242*** (7.93)	0.241*** (7.87)
$INVESTMENT_{t-2}$	0.043** (1.96)	0.041* (1.87)	0.054* (1.65)	0.030 (0.88)	0.118*** (4.10)	0.113*** (3.92)
$SELLEXP_{t-1}$	0.006 (1.05)	0.005 (1.01)	-0.002 (-0.24)	0.017* (1.82)	0.006 (0.97)	0.006 (0.90)
$SELLEXP_{t-2}$	0.023*** (4.23)	0.023*** (4.16)	0.032*** (4.71)	0.005 (0.56)	0.025*** (4.00)	0.025*** (3.93)
$DEVELOPED_c$	-0.008*** (-2.58)	0.001 (0.21)	-0.003 (-0.29)	-0.001 (-0.14)	-0.009*** (-2.88)	-0.002 (-0.35)
$GDPG_{c,t}$	-0.000 (-0.63)	-0.000 (-0.58)	-0.001 (-0.92)	0.000 (0.17)	-0.000 (-0.17)	-0.000 (-0.20)
$INFLATION_{c,t}$	-0.001* (-1.66)	0.000 (0.04)	0.000 (0.27)	0.000 (0.09)	-0.000 (-0.13)	0.000 (0.65)

$LEGAL_{c,t}$	0.000	0.000	0.000	-0.000	0.000	0.000
	(0.69)	(0.36)	(0.20)	(-0.23)	(0.72)	(0.86)
CONSTANT	0.002	-0.008	-0.002	-0.004	0.000	-0.007
	(0.41)	(-1.30)	(-0.13)	(-0.32)	(0.00)	(-0.91)
N	101,065	101,065	49,950	26,647	152,908	152,908
R-squared	0.028	0.029	0.032	0.024	0.010	0.010
difference test (*p*-value)			0.058*			

This table reports results OLS regression results for Equations (3) and (4). The dependent variables are *EMPLOYEE_G* (employee growth) or *AP_G* (accounts payable growth). The independent variables include the proxy for collectivism, high leverage, and firm- and country-level controls. Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating firm-level variables. Specifically, a firm's *HLEV* is measured relative to its country peers, and the other firm-level variables are constructed relative to their country-industry-year means. We classify an industry as a high (low) labor intensity industry in a given year if it has a wage-to-capital ratio greater than (smaller than or equal to) the median of all industries two years before the base year. *t*-statistics in parentheses are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3.9 Endogeneity tests

	First Stage		Second Stage					
	$HLEV_{t-2}$	COL_c	$SALES\_G_t$		$EMPLOYEE\_G_t$		AP_G_t	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
COL_c(fitted)×$HLEV_{t-2}$(fitted)				**0.026****		**0.029****		**0.058*****
				(2.22)		**(2.32)**		**(3.63)**
COL_c (fitted)				0.066***		0.027***		0.026***
				(8.43)		(3.40)		(2.60)
$HLEV_{t-2}$(fitted)			**-0.017*****	-0.014**	**-0.018*****	-0.015**	**-0.016*****	-0.041***
			(-6.54)	(-2.47)	**(-7.40)**	(-2.58)	**(-4.66)**	(-5.20)
$SIZE_t$	0.018***	0.003***	0.011***	0.011***	0.005***	0.005***	0.008***	0.008***
	(30.95)	(6.44)	(20.40)	(20.02)	(9.52)	(9.45)	(12.23)	(12.26)
$PROFIT_{t-1}$	-0.041***	-0.023***	0.134***	0.138***	0.175***	0.177***	0.145***	0.148***
	(-5.73)	(-10.15)	(13.61)	(13.98)	(19.76)	(19.88)	(12.06)	(12.25)
$PROFIT_{t-2}$	-0.117***	-0.034***	-0.002	0.005	0.010	0.013	0.043***	0.047***
	(-13.72)	(-13.36)	(-0.16)	(0.49)	(1.21)	(1.60)	(3.65)	(3.94)
$INVESTMENT_{t-1}$	-0.191***	-0.007	0.279***	0.275***	0.233***	0.231***	0.203***	0.201***
	(-7.66)	(-0.90)	(11.21)	(11.07)	(9.17)	(9.09)	(5.48)	(5.41)
$INVESTMENT_{t-2}$	0.593***	0.006	0.182***	0.177***	0.044*	0.042*	0.123***	0.117***
	(23.10)	(0.90)	(8.26)	(8.04)	(1.83)	(1.74)	(3.51)	(3.32)
$SELLEXP_{t-1}$	-0.018***	0.004***	0.005	0.005	0.016**	0.016**	0.007	0.006
	(-4.85)	(2.88)	(0.59)	(0.51)	(2.10)	(2.07)	(0.93)	(0.84)
$SELLEXP_{t-2}$	-0.012***	0.010***	0.038***	0.035***	0.021***	0.020**	0.023***	0.021***
	(-2.87)	(5.98)	(4.35)	(4.10)	(2.61)	(2.46)	(2.90)	(2.67)
$DEVELOPED_c$	-0.005	-0.207***	-0.025***	0.012***	-0.015***	0.008	-0.020***	0.005
	(-1.34)	(-62.18)	(-8.29)	(2.71)	(-3.87)	(1.42)	(-4.94)	(0.75)
$GDPG_{c,t}$	0.000	0.002***	-0.001**	-0.001**	-0.000	-0.000	-0.001*	-0.001**
	(1.17)	(10.61)	(-2.27)	(-2.47)	(-1.19)	(-1.21)	(-1.72)	(-2.11)
$INFLATION_{c,t}$	0.001***	-0.008***	-0.001***	0.001	-0.001***	0.000	-0.001	0.001
	(2.87)	(-22.89)	(-4.18)	(1.49)	(-3.38)	(0.65)	(-1.41)	(1.20)
$LEGAL_{c,t}$	0.000	-0.002***	0.000	0.000*	0.000	0.000	0.000	0.000
	(1.40)	(-14.33)	(0.64)	(1.93)	(1.23)	(0.31)	(1.50)	(0.43)
$IV1\_HLEV_{t-3}$	0.574***	-0.001						

	(145.41)	(-1.61)						
IV2_HLEV$_{t-4}$	0.156***	0.000						
	(39.99)	(0.06)						
IV3_PRONOUN DROP$_c$	-0.018***	0.348***						
	(-6.79)	(148.62)						
CONSTANT	0.078***	0.420***	0.001	-0.060***	0.002	-0.033***	0.002	-0.029***
	(13.93)	(131.15)	(0.27)	(-8.39)	(0.30)	(-3.73)	(0.39)	(-2.90)
N	118,635	118,635	118,635	118,635	81,571	81,571	115,257	115,257
R-squared	0.518	0.870	0.023	0.025	0.029	0.030	0.010	0.010
First stage F statistic	37,623.43	66,602.86						
F statistic of exogeneity			0.23	0.07	0.17	0.10	0.72	0.43
Exogeneity test p value			0.79	0.98	0.84	0.96	0.49	0.73
J-statistic			0.69	0.21	0.51	0.30	2.16	1.29
J-statistic p value			0.41	0.65	0.48	0.58	0.14	0.26

This table reports results of 2SLS instrumental variable regressions. Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating firm-level variables. Specifically, a firm's *HLEV* is measured relative to its country peers, and the other firm-level variables are constructed relative to their country-industry-year means. Models 1 and 2 present the first-stage results. Following Licht, Goldschmidt, and Schwartz (2007), we use the license to drop pronouns (*PRONOUN DROP*) as an instrument for collectivism. To instrument for *HLEV*, we follow Campello (2003) and use two-year lagged *HLEV*. Models 3 through 8 report the second-stage results. *t*-statistics in parentheses are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3.10 Robustness tests: sample composition and alternative measures

	SALES G_t		*EMPLOYEE* G_t		*AP* G_t	
	$COL_c \times HLEV_{t-2}$	COL_c	$COL_c \times HLEV_{t-2}$	COL_c	$COL_c \times HLEV_{t-2}$	COL_c
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Sample Composition						
(1) Exclude U.S.	**0.034*** **	0.001	**0.028** **	0.008	**0.045*** **	-0.003
	(3.89)	(0.07)	**(2.85)**	(1.04)	**(3.83)**	(-0.28)
(2) Exclude Japan	**0.024*** **	-0.024***	**0.030*** **	-0.002	**0.050*** **	-0.009
	(3.65)	(-3.09)	**(3.48)**	(0.29)	**(5.40)**	(0.94)
(3) Exclude Japan & U.S.	**0.036*** **	-0.040***	**0.032** **	-0.010	**0.048*** **	-0.021
	(4.06)	(-3.95)	**(2.95)**	(-0.78)	**(4.01)**	(-1.60)
(4) Weighted Regression	**0.012***	0.014**	**0.022*** **	0.008	**0.048*** **	0.001
	(1.66)	(1.98)	**(2.82)**	(0.94)	**(4.86)**	(0.08)
Panel B. Alternative Proxy for High Leverage						
(5) Lag Three Years	**0.013** **	0.022***	**0.016** **	0.016***	**0.039*** **	0.012*
	(2.13)	(9.24)	**(2.32)**	(3.11)	**(4.40)**	(1.68)
Panel C. Alternative Proxies for Collectivism						
(6) *COL_TK* (Updated Hofstede by Tang and Koveos 2008)	**0.016** **	0.045***	**0.033*** **	0.009	**0.031*** **	0.018*
	(2.17)	(5.55)	**(3.73)**	(1.05)	**(2.97)**	(1.78)
(7) *INST_COL* (Globe)	**0.007***	0.000	**0.012*** **	-0.004	**0.015*** **	-0.002
	(1.77)	(0.10)	**(2.60)**	(-1.28)	**(2.81)**	(-0.58)

This table reports results from a series of robustness tests. Only coefficients of *COL*×*HLEV* and *COL* are reported for brevity. In Panel A, we re-estimate our baseline regressions after excluding U.S. firms (Row 1), Japanese firms (Row 2), and firms from both countries (Row 3). In addition, we run a weighted regression in which each country is assigned a weight equal to the reciprocal of its number of observations (Row 4). In Panel B, the robustness test employs an alternative proxy for high leverage. In Panel C, the robustness tests employ alternative proxies for collectivism. *t*-statistic in parentheses is based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 3.11 Robustness tests: firm exit bias

Mean Rate of Firm Exit	Bankruptcy	Merger	Others	**All**
	(1)	(2)	(3)	**(4)**
Panel A. Split by High Leverage				
[1] Yes	0.43%	3.66%	1.98%	**6.07%**
[2] No	0.28%	3.52%	1.59%	**5.40%**
Panel B. Split by Collectivism				
[3] High	0.06%	1.15%	0.61%	**1.82%**
[4] Low	0.58%	5.89%	2.77%	**9.24%**
[1]-[2] Difference between High and Low Leverage Sample (*p*-value)				
	0.000***	0.159	0.000***	**0.000*** **
[3]-[4] Difference between High and Low Collectivism (*p*-value)				
	0.000***	0.000***	0.000***	**0.000*** **

This table reports the mean rate of firm exit due to reasons documented in Compustat Global data item DLRSN (Reason for deletion). Mean rate of Bankruptcy is the proportion of firm-year observations that exit Compustat because of bankruptcy or liquidation (DLRSN=02 or 03). Mean rate of Merger is the proportion of firm-year observations that exit Compustat because of acquisition or merger (DLRSN=01). Mean rate of Others is the proportion of firm-year observations that exit Compustat for reasons other than bankruptcy or merger (DLRSN=04-07, 09 or 10). Mean rate of All is the proportion of firm-year observations that exit Compustat for reasons listed in Models 1 to 3 (DLRSN=01-07, 09 or 10). Panel A presents the mean rate of firm exit split by high leverage. A firm is assigned to the high (low) leverage subsample if *HLEV*=1 (0) two years before the base year. Panel B presents the mean rate of firm exit split by high and low collectivism samples. Countries with high (low) collectivism have a collectivism score above (below or equal to) the median of the overall sample. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

Table 3.12 Robustness tests: market structure explanation

	(1)	(2)
COL×HLEV$_{t-2}$	**0.0237*** **	**0.0222*** **
	(3.39)	**(3.49)**
COL	0.0040	0.0067
	(0.62)	(1.28)
FFC$_{t-2}$×HLEV$_{t-2}$	-0.0026	
	(-1.27)	
FFC$_{t-2}$	-0.0023*	
	(-1.82)	
HHI$_{t-2}$×HLEV$_{t-2}$		-0.0004
		(-0.24)
HHI$_{t-2}$		-0.0001
		(-0.11)
HLEV$_{t-2}$	-0.0209***	-0.0185***
	(-5.61)	(-3.11)
Controls	Yes	Yes
N	127,437	158,612
R-squared	0.0237	0.0236

This table reports OLS regression results for Equations (2) and further control for market structure variables and their interactions with *HLEV*. The dependent variable is *SALES_G*, firm sales growth, which is influenced by customers and competitors. The independent variables include the proxy for collectivism, high leverage, and firm- and country-level controls. *FFC* is the natural logarithm of the Four-Firm concentration ratio, which is the total market share of the four largest firms in an industry. *HHI* is the natural logarithm of the Herfindahl-Hirschman index, which captures the degree of market concentration. Consistent with common practice (Opler and Titman, 1994; Campello, 2003, 2006), we use the relative measurement method when calculating firm-level variables. Specifically, a firm's *HLEV* is measured relative to its country peers, and the other firm-level variables are constructed relative to their country-industry-year means. Model 1 additionally controls for *FFC* and its interaction with *HLEV*. Model 2 additionally controls for *HHI* and its interaction with *HLEV*. t-statistics in parentheses are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

CHAPTER 4

CONCLUSION

This dissertation investigates how multi-layers of governance or institutional factors influence firms' costs of taking high leverage.

The literature on capital structure and product market interactions (Opler and Titman, 1994; Chevalier, 1995) suggests that high leverage is costly. The reason is that financial weakness could induce unfavorable actions by product market participants such as customers and competitors. While the costs of high leverage are well documented in the extant literature, little is known about the factors that influence the costs of high leverage, which is crucial for understanding the impact on firm value. The three essays, respectively, examine three factors that are embedded in the analytical framework of Williamson, the 2009 Nobel Prize winner in Economics. Williamson (2000) explains different level of factors that influence economic behavior. The framework consists of four levels, with each imposing constraints on the level immediately below. The bottom level (Level 4) consists of resource allocation and employment. This is where incentive alignment is analyzed. Therefore, the costs of high leverage, which arise from the conflicts of incentives, lie in this level. Level 3 highlights the governance structure factors. Essay 1 in Chapter 1 examines corporate social responsibility (CSR), which is shown to play a governance role that reduces financing costs (El Ghoul et al., 2011). Level 2 is where legal rules are located. Property rights and contract law are important features of this level. Essay 2 in Chapter 2 focuses on creditor rights protection. The top level (Level 1) consists of culture, norms, or

traditions that serve as informal constraints on credible contracting. In this level, Essay 3 in Chapter 3 studies national culture, particularly the most critical dimension of culture: collectivism (Hofstede, 2001).

Chapter 1 examines whether CSR affects firms' interactions with customers and competitors, and reduces the costs of high leverage. In a recent survey of 285 company executives, 80% indicate that corporate social responsibility (CSR) is important for firms' long-term performance. Despite its perceived importance, however, whether CSR creates value is subject to debate. Using a large sample of 16,390 firm-year observations for 2,739 firms over the 1996–2012 period, we find that CSR reduces losses in market share for highly leveraged firms. In particular, CSR helps highly leveraged firms keep customers and guard against rival predation. Our findings support the value-enhancing view of CSR and highlight an additional mechanism through which CSR can add value.

Chapter 2 explores the influence of creditor rights on the costs of high leverage. Based on a large sample of 203,920 firm-year observations representing 30,041 firms from 54 countries over the 1989-2010 period, we find evidence that strong creditor rights increase the costs of high leverage. This result is consistent with the dark-side effects of strong creditor rights when a firm is highly leveraged. The negative impact of creditor rights on high leverage costs is more pronounced for the types of creditor protection that drive creditors' hold-up incentives as well as for firms facing more severe costs of high leverage, firms located in countries where bank loans are relatively more prevalent than bond issues, and firms with higher liquidation costs. When we explore the dark-side effects of creditor rights on specific players, we find that strong creditor rights intensify the adverse responses of customers, competitors, and employees. The novelty of this essay is

that it highlights the importance of firm-specific characteristics such as a firm's financial health when considering the effect of strong creditor rights. More specifically, the results suggest that a more flexible (i.e., shorter-term) debt strategy may be optimal for firms operating in a strong creditor rights environment. In addition, this essay identifies strong creditor rights as a factor that influences high leverage costs, and is the first international study to shed light on the role of institutions in affecting the costs of high leverage.

Chapter 3 examines how collectivism influences the costs of high leverage. In this essay, we hypothesize that these costs should be less pronounced in collectivist countries, which are characterized by tight group structures and group-oriented values. Using a large sample of 158,612 firm-year observations from 46 countries over the 1989–2010 period, the results suggest that collectivism reduces customer- and competitor-driven market share losses for high-leveraged firms. This effect is stronger where the costs of high leverage are higher and where legal systems are less developed. When we extend the analysis to include employee and supplier stakeholder groups, the results indicate that collectivism helps high-leveraged firms retain employees and obtain trade credit from suppliers. These findings are robust to accounting for potential endogeneity and alternative explanations. This essay highlights a condition – high leverage – under which collectivism improves firm value.

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APPENDIX A – CHAPTER 1 MSCI ESG STATS

	Concerns	Strengths
Community	Investment controversies Negative economic effect Indigenous peoples relations Tax disputes Other concerns	Charitable giving Innovative giving Non-U.S. charitable giving Support for housing Support for education Indigenous peoples relations Volunteer programs Other strengths
Diversity	Controversies Non-representation Other concerns	CEO Promotion Board of directors Work/life benefits Women and minority contracting Employment of the disabled Gay and lesbian policies Other strengths
Employee relations	Union relations Health and safety concern Workforce reductions Retirement benefits concern Other concerns	Union relations No-layoff policy Cash profit sharing Employee involvement Retirement benefits strength Health and safety strength Other strengths
Environment	Hazardous waste Regulatory problems Ozone-depleting chemicals Substantial emissions Agricultural chemicals Climate change Other concerns	Beneficial products and services Pollution prevention Recycling Clean energy Communications Property, plant, and equipment Other strengths
Human rights	South Africa Northern Ireland Burma concern Mexico Labor rights concern Indigenous peoples relations Other concerns	Positive record in South Africa Indigenous peoples relations strength Labor rights strength Other strengths
Product characteristics	Product safety Marketing/contracting concern Antitrust	Quality R&D/innovation Benefits to economically disadvantaged

	Other concerns	Other strengths

Notes: We consider six CSR areas from MSCI ESG STATS to construct firms' *CSR* and *CSR_NET* (as defined in Appendix B): community, diversity, employee relations, environment, human rights, and product characteristics. This table lists the specific strength and concern factors that MSCI assesses in each area.

APPENDIX B – CHAPTER 1 VARIABLE DEFINITIONS

Variable	Definition	Source: Authors' calculations based on
Panel A. Corporate social responsibility variables		
CSR_NET	Raw CSR score, computed based on six CSR areas in MSCI ESG STATS: community, diversity, employee relations, environment, human rights, and product characteristics. Within each of these areas, various strength and concern factors are assigned a value of 0 or 1. For each firm-year, we calculate a score for each CSR area that is equal to the number of strengths minus the number of concerns. We then sum the scores of the six areas.	MSCI ESG STATS
CSR	Adjusted CSR score, computed based on six CSR areas in MSCI ESG STATS: community, diversity, employee relations, environment, human rights, and product characteristics. For each firm-year, we divide the raw strength and concern scores of each area by the number of factors in that area. We then take the difference between the adjusted strength and concern scores for that area.	As above
CSR_{PASSED}	Dummy variable equal to 1 if, in the given year, the CSR proposal is adopted, and 0 otherwise.	RiskMetrics& SharkRepellent
IV1_BLUE	Instrument for CSR equal to 1 if a firm's headquarters is in a blue state and 0 otherwise. Blue states are those whose residents vote predominantly for the Democratic party's presidential candidate.	270towin.com
IV2_CSR	Instrument for *CSR*, defined as one-year lagged *CSR*.	MSCI ESG STATS
Panel B. High-leverage variables		
HLEV	High-leverage dummy variable equal to 1 if, in the given year, the firm's long-term debt ratio (= long-term debt/total assets) is in the top three deciles of the overall sample (across industries and over time).	Compustat data
IV1_HLEV	Instrument for *HLEV* defined as one-year lagged *HLEV*.	As above
IV2_HLEV	Instrument for *HLEV* defined as two-year lagged *HLEV*.	As above
Panel C. Outcome variable		
SALES_G	Sales growth, equal to (*SALES* – *SALES* in previous year)/*SALES* in the previous year. *SALES* is total sales.	Compustat data
Panel D. Other variables		
SIZE	Natural logarithm of total assets.	As above
PROFIT	Profitability, equal to (operating earnings + depreciation)/total assets.	As above
INVESTMENT	Investment, equal to capital expenditures/total assets.	As above
SELLEXP	Selling expenses, equal to (advertising + selling, general, & administrative expenses)/total sales.	As above

Post_reduction	Dummy variable equal to one if the tariff reduction has taken place in industry *j* by time *t* (Valta, 2012). Tariff reduction is defined as a "shock" when the reductions of import tariff rates exceed a certain threshold. In particular, we consider industry-years with a tariff reduction at least twice the average annual change in the same industry.	Feenstra (1996), Feenstra et al. (2002), and Schott (2010)
PU	Policy uncertainty, equal to the raw policy uncertainty index from Baker et al. (2015) weighted by year (or quarter) and then scaled by 100. The raw policy uncertainty index contains three components: count of newspaper articles containing key terms related to political uncertainty; the dollar effect of tax provisions set to expire in the near future; and dispersion in the economic forecasts of CPI and government spending.	Baker et al. (2015)

APPENDIX C – CHAPTER 2 SAMPLE CONSTRUCTION

Step	Firm-years	Countries	Firms	Years
Start with Compustat Global database. Drop observations if total assets and sales are negative, equity value is missing, long-term debt-to-asset ratio is below 0 or beyond 1, sales growth or asset growth is larger than 200%. Drop observations from financial institutions, utility firms, and industries that are not clearly defined (Fama-French 48-industry classification: 31, 44, 45, 47, and 48).	463,583	103	49,786	1987-2010
Merge with creditor rights index from Djankov et al. (2007). Drop country-industries with fewer than 4 observations. Merge with World Development Indicators to obtain GDP and Inflation information. Drop observations with missing values in $SALES\_G_t$, $HLEV_{t-2}$, $SIZE_t$, $PROFIT_{t-1(t-2)}$, $INVESTMENT_{t-1(t-2)}$, $SELLEXP_{t-1(t-2)}$, $GDPG_t$ and $INFLATION_t$. Remove countries with fewer than 10 observations.	285,542	54	30,588	1989-2010
Keep observations with non-missing Fama and French (1997) industry classification. Left merge with debt enforcement data from Djankov et al. (2008). Left merge with renegotiation failure index from Favara et al. (2012). Left merge with International Labour Organization to obtain unemployment rate. Left merge with International Financial Statistics to compute the relative size ratio of bank loans to public bonds. Left merge with Fraser Institute's Economic Freedom of the World to obtain international trade freedom index.	203,920	54	30,041	1989-2010

APPENDIX D – CHAPTER 2 VARIABLE DEFINITIONS

Variable	Definition	Source: Authors' calculations based on
Panel A. Creditor rights variables		
CRIGHTS	creditor rights index, the sum of four binary variables. A score of one is assigned if an automatic stay on the assets of the firm is not imposed upon filing the reorganization petition (No Automatic Stay), if secured creditors are ranked first in the distribution of the proceeds payment as opposed to government or workers (Secured Creditor Paid First), if the reorganization procedure imposes restrictions, such as creditors' consent or minimum dividends for a debtor to be able to file for reorganization (Restrictions on Reorganization), and if management does not retain administration of its property pending the resolution of the reorganization process (No Management Stay). This index ranges from 0 to 4.	Djankov et al. (2007)
Panel B. High leverage variables		
HLEV	a dummy variable equal to 1 if in the given year the firm's long-term debt ratio is in the top three deciles of the country in which the firm is headquartered, and 0 otherwise.	Compustat Global
Panel C. Control variables		
SIZE	natural logarithm of total assets	Compustat Global
PROFIT	profitability, =(operating earnings + depreciation) / total assets	Compustat Global
INVESTMENT	investment, =capital expenditures / total assets	Compustat Global
SELLEXP	sell expenses, =(advertising + selling expenses) / total sales	Compustat Global
GDPG	annual percentage growth rate of GDP per capita (%)	World Development Indicators
INFLATION	annual inflation rate (%)	World Development Indicators
Panel D. Other variables		
CAPEX_SALES	capital expenditure ratio, =capital expenditures / total sales	Compustat Global
ASSET_G	asset growth, =(total assets – total assets at previous year) / total assets at previous year	Compustat Global
ASSET_VOL1	first measure of asset volatility, computed based on Bharath and Shumway (2008)	Bharath and Shumway (2008)
ASSET_VOL2	second measure of asset volatility, computed based on Hillegeist et al. (2004)	Hillegeist et al. (2004)
SALES_G	sales growth, =(*SALES* – *SALES* at previous year) / *SALES* at previous year. *SALES* denotes total sales.	Compustat Global
UNEMPLOYG	annual percentage growth rate of unemployment rate for each country	International Labour Organization
TIME	time of enforcing creditor rights, represented by the estimated duration from the moment of default to the point at which the secured creditor receives payment	Djankov et al. (2008)
COST	costs of enforcing creditor rights, represented by the estimated cost of the insolvency proceeding, reported as a percentage of the value of the insolvency assets. Costs include court/bankruptcy authority costs, attorney fees, bankruptcy administrator fees, accountant fees, notification and publication fees, assessor or inspector fees, asset storage and preservation costs, auctioneer fees, government levies and other associated insolvency costs.	Djankov et al. (2008)
EFFICIENCY	efficiency of enforcing creditor rights, represented by the present value of the terminal value of the firm after bankruptcy costs, or (100**GC*+70*(1-*GC*)-100**c*) / (1+*r*)^*t*. *GC* is equal to 1 if the firm continues as a going concern and 0 otherwise, c denotes *COST* discussed above, *t* is *TIME* discussed above, and *r* is the nominal lending rate.	Djankov et al. (2008)

RENEGOTIATION FAILURE	renegotiation failure index, the average of the following binary variables: 1) secured creditors may seize and sell their collateral without court approval, 2) secured creditors may enforce their security in or out of court, 3) the entire firm's assets can be treated as collateral, 4) an insolvency or liquidation order cannot be appealed, 5) an insolvency case is suspended until the appeal is resolved, 6) the firm is allowed to enter liquidation without attempting reorganization, 7) secured creditors may enforce their security upon commencement of the insolvency proceedings, 8) a defaulting firm must cease operation upon commencement of insolvency proceedings, 9) management does not remain control during insolvency proceedings, 10) secured creditors have the right to approve the appointment of the insolvency administrator, 11) secured creditors may dismiss the insolvency administrator, 12) secured creditors have direct vote on the reorganization plan.	Constructed by Favara et al. (2012) based on Djankov et al. (2008)
EMPL_G	employee growth, =(*EMP*-*EMP* at previous year) / *EMP* at previous year, *EMP* is the number of employees	Compustat Global
AP_G	annual percentage growth rate of accounts payable (*AP*), =(*AP* - *AP* at previous year)/*AP* at previous year, representing suppliers' incentives to extend trade credit	Compustat Global
DEBTISSUE	debt issuance, =(change of total assets – change of common / ordinary equity – change of deferred taxes) / total assets at previous year	Compustat Global
EQUITYISSUE	equity issuance, =(sale of common and preferred stock – purchase of common and preferred stock) / total assets at previous year	Compustat Global
STOCKRETURN	cumulative annual risk-adjusted stock return, $= annual\ stock\ return - risk\ free\ rate - \beta_{mkt} market\ premium - \beta_{smb} SMB - \beta_{hml} HML$	Compustat Global and Fama and French (1993)