Private benefits extraction and the opposing effects of income smoothing on private debt contracts ◊

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This Draft: October 19, 2011

First Draft: November 16, 2010

Abstract

We provide evidence that one of the most prevalent discretionary accounting actions, income smoothing, affects private debt contract design in a manner that that is fundamentally distinct from the effects of other accounting attributes. In particular, lenders use their understanding of the threat of private benefits extraction in the contracting environment to assess the likelihood that smoothing reflects signaling versus garbling. Smoothing is negatively associated with cost of debt within environments that have low threat of private benefits extraction, consistent with lenders viewing smoothing as signaling about the smoothness of economic earnings in such settings. In contrast, smoothing is positively associated with cost of debt within environments where the ability of insiders to extract private benefits is less well controlled, consistent with lenders viewing smoothing as garbling to facilitate extraction of private benefits in such settings.

JEL Classification: F34; G15; G32; G34; M41

Keywords: Income smoothing; Private benefits; Debt contracts

◊ We thank Edwige Cheynel, Ted Goodman, Trevor Harris, Mark Lang, Yun Lou, Mark Maffett, Cliff Smith, Chris Williams, Jason Wei, Joanna Wu, Jerry Zimmerman, and participants at the 2011 Oakland University International Conference on Credit Analysis and Risk Management and the 2011 American Accounting Association Annual Meeting for helpful comments and suggestions. We are grateful to Ryan Ball and Florin Vasvari for providing an initial matching table between Dealscan and Worldscope.
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1. Introduction

Financial reports are one of the most important elements in the information set of banks when they design debt contracts (Standard & Poor's 2009; Tirole 2008). Prior research has shown that specific outputs of firm's accounting system (e.g., profitability) are incorporated into private debt contract design both through direct effects on loan terms and through incorporation in financial covenants. However, it is less clear whether and how banks incorporate information imbedded in underlying attributes of firms' accounting systems in contract design (Armstrong et al. 2010), particularly with respect to attributes that reflect managerial discretion.

In this study we examine whether income smoothing by borrowers prior to debt contract initiation affects private loan contracting terms. We follow Fudenberg and Tirole (1995) and define income smoothing as the exercise of managerial discretion to manipulate the time profile of earnings to reduce the variability of a firm's reported income stream. Smoothing is frequently mentioned by managers as a key objective of their discretionary accounting behavior (Graham et al. 2005). Moreover, recent research highlights the importance of understanding the implications of income smoothing. For example, Dechow et al. (2010) opine that whether smoothness indicates greater decision usefulness is an open question. Lang and Maffett (2011) point out that, while international evidence suggests that earnings smoothing leads to a higher cost of equity capital, research is needed on the relation between smoothing and cost of debt.

Income smoothing is a desirable attribute to examine in the context of our motivating question. Unlike most other commonly studied discretionary accounting attributes, there are competing economic forces that may differentially affect the relation between income smoothing and loan contracting terms such as cost of debt. This allows us to construct tests that more likely identify whether lenders actually use information in accounting attributes. For example, there is very little conceptual debate concerning the directional relation between "accruals quality" and cost of debt. According to extant literature, higher accruals quality corresponds to greater transparency, which yields lower information asymmetry and lower cost of debt. However, it is difficult to identify empirically whether this association is causal. In contrast, there are two distinct theoretical explanations for earnings smoothing with directly opposing implications for the relation between smoothing and cost of debt. According to the 'signaling' explanation, managers smooth income to reveal private information about underlying economic earnings and its volatility. According to the 'garbling' explanation, managers smooth income to obscure information to facilitate the extraction of private benefits. Thus, we use exogenous variation in the threat of private benefits extraction in the contracting environment to identify differences in equilibrium lending outcomes in response to observed smoothing.[1]

If cost of debt is indeed affected directly by observable income smoothing, the signaling and garbling explanations yield directionally opposing predictions concerning this effect. The signaling explanation suggests that income smoothing is associated with lower firm risk and therefore, through this lens, smoothing should be associated with lower cost of debt (Trueman and Titman, 1988). In contrast, according to the garbling explanation income smoothing is associated with higher risk of private benefit extraction, which should be associated with higher cost of debt (Fudenberg and Tirole, 1995). Accordingly, our key conjecture is that the effect of observed smoothing on cost of debt is driven by lenders' assessment of the likelihood that observed smoothing reflects signaling vs. garbling, and that this assessment is a function of the

[1] We use the term 'private benefits' as a general term that encompasses several concepts, including empire building, rent extraction, and expropriation. This conceptualization of private benefits is summarized in Tirole (2001) as "[Insiders] may collect private benefits by building empires, enjoying perks, or even stealing from the firm by raiding its pension fund, by paying inflated transfer prices to affiliated entities, or by engaging in insider trading. Last, they may entrench themselves by investing in mature or declining industries that they are good at running, by taking risk that is either excessive (as when their position is endangered) or insufficient (as when it is secure), or by bending over backwards to resist a takeover."

threat of private benefits extraction in the contracting environment. That is, we expect lenders to more likely interpret smoothing as garbling (signaling) in environments where it is easier (harder) for borrowers to extract private benefits. We develop a highly simplified analytical model that nonetheless illustrates the key forces that drive our predictions.

We focus our study on private loan contracts instead of public debt because it is in the private loan setting where we expect the signaling versus garbling tension to be most pronounced. Borrowers in public debt markets are likely to have already established solid credit reputations (e.g., Diamond 1991). Therefore, lenders are less likely to interpret observed smoothing as attempts to extract private benefits in public debt settings.

By definition, our concept of income smoothing refers to discretionary action taken by firm management. Therefore, in constructing our measure of income smoothing, we attempt to separate the fundamental component of observed smoothness from its discretionary component (Dechow et al. 2010). Specifically, to measure income smoothing, we follow Lang et al. (2011) and Lang and Maffett (2011b) and use the average of the within-country rank of the discretionary components of two alternative firm-level earnings smoothness measures: 1) the ratio of earnings volatility to cash flow volatility and 2) the correlation between accruals and cash flow, where the discretionary components are the residuals from regressions of each smoothness measure on a set of candidate fundamental smoothness determinants.

Our motivation for utilizing an international sample is that doing so allows us to exploit exogenous country-level variation in the threat of private benefits extraction. Specifically, in our main tests we use the country-level anti-self-dealing index from Djankov et al. (2008), as private benefits extraction is more likely to occur in countries that place fewer barriers on self-dealing transactions. While this measure is constructed in the context of minority shareholder protection from insider wealth expropriation, it directly captures our construct of interest, in contrast to creditor rights measures which instead capture the efficiency of the bankruptcy and collection systems. For example, $1 extracted by insiders from minority shareholders shrinks resources available to satisfy debtholder claims by $1. Consistent with our predictions, we provide evidence that income smoothing is negatively associated with cost of debt in countries characterized by low threat of private benefits extraction, and positively associated with cost of debt in settings characterized by high threat of private benefits extraction. Our inferences are robust to several alternative proxies for the country-level threat of private benefits extraction. As expected, we find no similar results using country-level creditor rights measures.

It is unlikely that smoothing is perceived as signaling (garbling) for *all* firms in a low (high) threat country. Our logic suggests that within a country, firm-specific threat of private benefits extraction likely influences the relation between smoothing and cost of debt. Although pursuing an analysis based on firm-level governance characteristics naturally raises endogeneity concerns, we repeat our tests using measures of *firm-level* variation in the threat of private benefits extraction within a given country. Specifically, we measure firm-level threat using the percentage of blockholder ownership (e.g., Barclay and Holderness 1989), and we employ an alternative U.S. sample so that we can utilize the Bebchuk et al. (2009) managerial entrenchment index. In both analyses, we find results consistent with our primary findings. That is, within countries smoothing is negatively (positively) associated with cost of debt for firms with relatively low (high) threat of private benefits extraction.

We recognize that lenders have loan contracting terms other than cost of debt at their disposal that may likewise be affected by income smoothing, such as collateral requirements, covenants, and maturity. Moreover, the set of terms attached to a given loan contract may reflect a complex set of negotiated tradeoffs among these terms. Therefore, in all analyses where we examine cost of debt, we control for numerous additional loan-level variables. Further, we examine directly whether these alternative loan terms are affected by the interaction between income smoothing and private benefit extraction threat. In summary, results from these additional analyses suggest that lenders incorporate information about observed smoothing primarily through loan spread.

This study extends the literature that examines how features of accounting information affect debt contracting. Importantly, we provide evidence that lenders infer information from the discretionary action of earnings smoothing in a way that shapes debt contracts. Our results document a connection between income smoothing and lenders' view of agency costs in a way that helps establish causality. This evidence allows us to address a call from Armstrong et al. (2010) to provide evidence on the association and causal relation between accounting attributes, agency costs and debt contracting. This study also contributes to the literature that examines the consequences of earnings smoothness. We answer the call of Dechow et al. (2010) to provide evidence on whether smoothness indicates greater decision usefulness. To our knowledge, our study is the first to show that income smoothing can (predictably) have both detrimental and beneficial effects within the same setting (i.e., debt contracting). That is, extant studies that provide evidence that smoothing has only one effect (i.e., either detrimental or beneficial) are presenting an incomplete picture.

The remainder of our paper is organized as follows: Section 2 discusses background and motivation. Section 3 develops our predictions. Section 4 describes our research design. Section 5 discusses our data and sample construction, and provides descriptive statistics for the variables underlying our analyses. Section 6 presents our empirical results, along with a discussion of several additional considerations including measurement error in the smoothing variable and alternative smoothing motivations. Section 7 concludes. Appendix A presents the simplified model we construct to illustrate the relevant economic forces that drive our predictions.

2. Background and motivation

Although the literature that examines the effects of accounting attributes on debt contracting is growing, we currently know comparatively little about which attributes of the accounting system are most valuable to lenders (Armstrong et al. 2010). Income smoothing is a desirable attribute to examine in this context. Fudenberg and Tirole (1995) characterize "income smoothing" as the process of manipulating the time profile of earnings or earnings reports to make the reported income stream less variable. Unlike most other commonly studied discretionary accounting attributes, there are contradicting economic forces that may differentially affect the relation between income smoothing and loan contracting terms (e.g., Fudenberg and Tirole 1995; Trueman and Titman 1988). The existence of these competing forces allows us to better identify whether lenders actually use the information in the smoothing attribute.

Income smoothing has been of interest in the accounting literature as early as Gordon (1964), but the determinants and consequences of smoothing are still not well understood (Dechow et al., 2010). Extant literature focuses on two alternative explanations for such smoothing. The first explanation suggests that income smoothing is an efficient mechanism for insiders to communicate private information about future earnings to convey their perception of the riskiness of the firm by providing a more representative current period earnings number (hereafter referred to as the "signaling explanation") (e.g., Beidleman 1973; Barnea et al. 1975; Ronen and Sadan 1981; Demski 1998). The second explanation suggests that income smoothing by insiders represents intentional garbling of information (hereafter referred to as the "garbling explanation").[2] Under this explanation, insiders smooth income to hide their actions and avoid interventions by outsiders to facilitate private benefits extraction, e.g., protect their jobs (Fudenberg and Tirole 1995) and extract private benefits of control (Leuz et al. 2003).

In line with the signaling explanation, Graham et al. (2005) provide survey evidence that managers' primary smoothing motivation is to convey future growth prospects and lower investor risk perception. Further consistent with the signaling explanation, Hunt et al. (2000) provide evidence in a U.S. setting that income smoothing enhances the contemporaneous relation between stock price and earnings. Likewise, using a U.S. sample, Tucker and Zarowin (2006) find that the change in the current stock price of firms with more earnings smoothing contains more information about future earnings than does the change in current stock price of firms with lower smoothing. On the other hand, Fudenberg and Tirole (1995) show theoretically that insiders use income smoothing to hide their actions and prevent outside intervention, thereby facilitating private benefit extraction. Defond and Park (1997) find empirical evidence of opportunistic smoothing that appears to be motivated by management concerns about job security, consistent with the theory in Fudenberg and Tirole (1995). International evidence presented in Leuz et al. (2003) suggests that income smoothing is more pronounced in countries where the country-level institutions do a relatively poor job in limiting insiders' ability to extract private benefits, which is also consistent with the garbling explanation.

Bharath et al. (2008) find that better accruals quality is associated with a lower cost of debt. Although often used as alternative proxies for "accounting quality", accruals quality and smoothing capture two distinct constructs (Dechow et al. 2010). Intuitively, whereas accruals

[2] We recognize that motivations for smoothing exist aside from signaling or garbling, such as tax minimization. Consideration of other such smoothing motivations does not affect the key logic of our study, as discussed in Section 6.6.2.

quality is unambiguously a beneficial attribute, the same cannot be said for smoothing. As is implicit in the signaling vs. garbling debate, smoothing can be either beneficial *or* detrimental. Indeed, it is this tension that forms the key logic of our study. Moreover, the explanation in Bharath et al. (2008) about the relation between accounting attributes and cost of debt is through an information asymmetry channel. We claim that the mechanisms through which smoothing works include agency and default channels (i.e., revealing private benefit extraction behavior of borrowers and private information about their probability of default), which are fundamentally distinct from the information asymmetry channel.

Using a U.S. sample, Zhang (2008) finds that lenders offer lower interest rates to borrowers with more accounting conservatism. Although not the main focus of her study, Zhang (2008) also finds that overall earnings smoothness is associated with lower cost of debt. However, the interpretation of her findings relating to smoothness is difficult, as she does not isolate the discretionary component of smoothing from innate smoothness (Dechow et al. 2010). Accordingly, it is unclear whether the negative relation she documents stems from lenders' interpretation of managerial discretionary behavior or more fundamental risk characteristics that are captured by fundamental smoothness. Unlike these prior studies, we hypothesize that the relation between the accounting attribute we study and cost of debt is predictably different across an exogenous characteristic of the contracting environment. Accordingly, any conclusions we draw concerning the effect of the accounting attribute on cost debt is less subject to concerns about correlated omitted variables or alternative explanations.

3. Development of predictions

The implications of income smoothing on cost of debt are not straightforward. As discussed above, the signaling explanation suggests that smoothing is an attempt by management to convey information about the stability of economic earnings. In contrast, the garbling explanation suggests that smoothing is an attempt not to convey information, but to minimize the potential for outside intervention, thereby facilitating the extraction of private benefits. If lenders perceive that smoothing is indeed a signal about inherent smoothness of unobservable economic earnings, then we expect a negative relation between smoothing and cost of debt capital because smoothness of economic earnings is negatively associated with probability of default (Merton 1974). It is relatively likely that lenders will have this perception in environments with a low threat of private benefits extraction, where laws and enforcement mechanisms impose relatively harsh consequences on insiders who are caught extracting private benefits. Alternatively, if lenders are wary that smoothing reflects an attempt by insiders to garble earnings to facilitate the extraction of private benefits, we expect a positive relation between smoothing and cost of debt because by definition, private benefits extraction increases loss given default. It is relatively likely that lenders will have this perception in environments with a high threat of private benefits extraction, where laws and enforcement mechanisms are less punitive with respect to private benefit extraction. We therefore predict that the relation between income smoothing and cost of debt is a function of the threat of private benefits extraction by insiders, where the direction of the relation flips across environments.[3]

To fix intuition, in Appendix A we present a highly simplified model that nonetheless captures the key forces that drive our predictions. To summarize, we consider a self-interested firm manager who must choose whether to extract private benefits and whether to smooth reported income, understanding that she will subsequently need a loan to fund a project. Prior to making those choices, the manager is endowed with private information about whether economic

[3] This relation is expected if private benefit extraction by insiders affects one of the two determinants of default risk - probability of default or loss given default. It is likely that this is the case because extraction of private benefits reduces the resources of the firm.

earnings are smooth or not, and is further endowed with the ability or inability to smooth reported earnings, where both endowments are unobservable to the lender. At the time of the lending decision, the lender sets the interest rate based on two observables: the threat of private benefit extraction in the contracting environment and whether the borrower smoothed earnings.

We make several assumptions. First, we assume that a high (low) extraction threat environment is characterized by light (severe) punishment if the manager is caught extracting private benefits, and a light (severe) punishment if the manager is caught misrepresenting her true type concerning the smoothness of economic earnings (which we assume is detectable in the future with some positive probability). Further, we assume that if the manager extracts private benefits she has a relatively high (low) probability of being caught if she does not (does) smooth reported income. Based on this structure, we analyze which managerial strategies are dominated under the assumption that the manager maximizes her own payoff, where her payoff is the sum of four terms: the return on the project if it succeeds, the private benefits she extracts, the expected costs of getting caught if she extracts private benefits, and the expected costs of misrepresenting her true type if she so chooses. We show that when the threat of private benefits extraction is high, if the manager smooths (does not smooth) income the lender knows that the manager extracted (did not extract) private benefits. Further, the lender is unable to infer whether true economic earnings are smooth or not. That is, in the high threat environment smoothing reveals that private benefits were extracted, but is not informative about whether economic earnings are actually smooth or not. Our prediction that smoothing is positively associated with loan spread in countries with high threat of private benefits extraction follows immediately, because extraction of private benefits increases expected loss given default. We next show that when the threat of private benefits extraction is low, the manager will never extract private benefits, and if the manager smooths (does not smooth) income the lender knows the firm has (does not have) smooth economic earnings. That is, in the low threat environment there is no private benefits extraction, and smoothing reveals that the firm has relatively smooth economic earnings. Our prediction that smoothing is negatively associated with loan spread in countries with low threat of private benefits extraction follows immediately, because smooth economic earnings lowers the probability of default.

Of course, expected costs of default may affect loan contract terms other than price, such as maturity and collateral requirements. Although not part of the main scope of our analysis, we examine the relation between smoothing and these alternative contract terms. If lenders protect themselves from private benefits extraction by shortening loan maturities, we would expect to see a negative relation between discretionary smoothness and loan maturity in high threat environments. Similarly, if lenders further protect themselves by imposing collateral requirements, we expect to see a positive relation between discretionary smoothness and loan collateralization in high threat environments. However, it is possible that lenders protect themselves against the threat of private benefit extraction exclusively through pricing mechanisms, in which case we would observe no variation in the relation between smoothness and these alternative contract terms across environments.

4. Research design

4.1. Income smoothing

Observed earnings smoothness is comprised of smoothness that is driven by the natural business processes and operating cycle of a firm and the application of non-discretionary accounting regulations to those processes (i.e., fundamental smoothness), as well as smoothness that is driven by managerial discretion (i.e., discretionary smoothness, or smoothing).Therefore, the distinction between fundamental smoothness and discretionary smoothing is critical (Dechow et al. 2010). Clearly, the construct of interest in both our paper and the more general literature that relates to signaling versus garbling motivations for smoothing is discretionary smoothing.

A key empirical challenge is disentangling observed smoothness into its fundamental and discretionary components. To do so, we follow the approach used in Lang and Maffett (2011b) and Lang et al. (2011). First, we compute two alternative measures of overall earnings smoothness for firm *i* in period *t*, which we denote $SMTH1_{i,t}$ and $SMTH2_{i,t}$. *SMTH1* is the negative of the ratio of the standard deviation of operating earnings to the standard deviation of operating cash flows, where both earnings and cash flows are scaled by lagged total assets prior to computation of the standard deviations.[4] Larger values of *SMTH1* indicate more income smoothing. *SMTH2* is the negative of the correlation between accruals and operating cash flows (both scaled by lagged total assets) over the three to five year period ending in year *t*, where higher values of *SMTH2* indicate more earnings smoothness.

Second, we regress *SMTH1* and *SMTH2* on a set of proposed fundamental determinants of earnings smoothness using the following pooled estimations:

$$SMTH1_{i,t} = \varphi_0 + \sum_{f=1}^{9} \varphi_f Z_{i,t}^f + \varepsilon_{i,t} \qquad (1)$$

$$SMTH2_{i,t} = \varphi_0 + \sum_{f=1}^{9} \varphi_f Z_{i,t}^f + \varepsilon_{i,t} \qquad (2)$$

where $Z_{i,t}^f$ is the following vector of nine fundamental smoothness determinants: total assets ($TA_{i,t}$), a measure of firm size; leverage ($LEV_{i,t}$), to capture differences in financing choices; book-to-market ratio ($BM_{i,t}$), to capture asset tangibility and expected earnings growth; three-to-

[4] We compute operating cash flow as net income before extraordinary items minus accruals. We compute accruals as the change in current assets less the change in current liabilities less the change in cash plus the change in current debt less depreciation and amortization. The standard deviations are estimated using no fewer than three and no more than five annual observations ending in year *t*.

five year standard deviation of firm *i*'s annual sales ($STDSALES_{i,t}$), to capture underlying operating volatility; percentage of years firm *i* experienced negative operating earnings in the three-to-five year period ending in year *t* ($PCT\_LOSS_{i,t}$), to capture differences in accrual properties of loss observations; operating cycle ($OPCYCLE_{i,t}$); sales growth ($SG_{i,t}$), to capture growth opportunities; operating leverage ($OPLEV_{i,t}$), to capture capital intensity; and cash flow from operations ($COPSS_{i,t}$), to capture general profitability level.[5] When estimating Eqs. (1) and (2), we further include industry and year fixed effects to capture different accrual properties across industries, and to control for macro-economic cycles. We define discretionary smoothing (fundamental smoothness) as the residual (predicted value) from Eqs. (1) and (2), denoted $DSMTH1_{i,t}$ and $DSMTH2_{i,t}$ ($FSMTH1_{i,t}$ and $FSMTH2_{i,t}$), respectively.

Next, we construct the firm-year measure of income smoothing, $DSMTH_{i,t}$, as the average of firm *i*'s within-country percentile rank values of *DSMTH1* and *DSMTH2*:

$$DSMTH_{i,t} = \frac{(PCTILE\_DSMTH1_{i,t} + PCTILE\_DSMTH2_{i,t})}{2}. \quad (3)$$

By construction, *PCTILE_DSMTH1* and *PCTILE_DSMTH2* each ranges from 0 to 99. Accordingly $DSMTH_{i,t}$ ranges between 0 and 99.[6] We similarly construct a firm-year measure of fundamental smoothness, $FSMTH_{i,t}$, as the average of firm *i*'s within-country percentile rank values of *FSMTH1* and *FSMTH2*. Finally, we similarly define an aggregate measure of observed smoothness (which includes both the discretionary and fundamental components), $SMTH_{i,t}$, as the average of firm *i*'s within-country percentile rank value of *SMTH1* and *SMTH2*.

[5] Detailed variable definitions are presented in Appendix B.
[6] Lang, et al. (2011) conduct numerous construct validity tests on this smoothing measure, as described in that study's Appendix.

4.2. *General empirical setup*

To test our predictions concerning the relation between cost of debt, income smoothing, and the threat of private benefits extraction in the contracting environment, we estimate the following empirical model with nation and year fixed effects:[7]

$$SPREAD_{i,l} = \beta_0 + \beta_1 THREAT_i + \beta_2 DSMTH_{i,t} + \beta_3 THREAT * DSMTH_{i,t} + \boldsymbol{\alpha X_{i,t}} + \boldsymbol{\alpha Y_{i,l}} + \varepsilon_{i,l}, \quad (4)$$

where *SPREAD* is the loan spread over LIBOR for firm *i*'s loan facility *l*. *THREAT* is an indicator that equals one (zero) if firm *i*'s environment suggests a high (low) threat of private benefits extraction. Although our primary test uses a country-level threat measure, we conduct supplemental analyses using firm-level threat measures. We describe our alternate *THREAT* measures in the following section. *DSMTH* is firm *i*'s income smoothing computed for the most recent fiscal year-end prior to entering the debt contract.

$\boldsymbol{X_{i,t}}$ is a vector of firm-level control variables, where *t* references the most recent fiscal year-end prior to loan inception: *SIZE* (natural log of total assets in U.S. dollars), *BM* (book to market ratio), *LEV* (leverage, measured as the ratio of total liabilities to total assets), *ROA* (return on assets, measured as the ratio of earnings before interest and taxes to total assets), *TANG* (asset tangibility, measured as the ratio of property plant and equipment to total assets), and *STDRET* (standard deviation of firm *i*'s monthly returns). $\boldsymbol{Y_{i,l}}$ is a vector of loan-level control variables for firm *i*'s loan facility *l*: *SECURE* (an indicator that equals one if the loan requires collateral), *LMATURITY* (natural log of loan maturity in months), *LFACILITY* (natural log of the loan facility face amount in U.S. dollars), and *NCOV* (the number of financial covenants attached to the loan package that contains facility *l*). All variables are more fully defined in Appendix B.

[7] We cluster standard errors by both calendar month-year and nation. We do not cluster by firm, because firm clustering is not an issue in our sample. For example, the median number of sample observations per firm is two.

Our two central predictions concern β_2 and β_3. Specifically, $\beta_2 < 0$ would be consistent with our prediction that the signaling interpretation of smoothing is dominant in environments with low threat of private benefits extraction, such that observed smoothing is associated with decreased cost of debt. $(\beta_2 + \beta_3) > 0$ would be consistent with our prediction that garbling effects dominate signaling effects in high threat environments, such that observed smoothing is associated with an increased cost of debt.

4.3. Threat of private benefits extraction

By definition, private benefits extraction by firm insiders is detrimental to all external capital providers. Expropriation of firm assets by insiders leaves fewer resources inside the firm to satisfy the claims of both creditors and minority shareholders. Therefore, we desire a measure that broadly captures the ability of insiders to extract private benefits from the firm, rather than a measure that captures more specific incentive conflicts between insiders and particular firm stakeholders. To capture this broad threat of private benefits extraction in the contracting environment, for our primary test we use the country-level anti-self-dealing index of Djankov et al. (2008). This index, computed for 72 countries, focuses on private enforcement mechanisms (e.g., disclosure, approval and litigation) that govern a hypothetical self-dealing transaction. Higher (lower) values of the index imply more (less) protection against expropriation by corporate insiders. We define an indicator variable $PBTHREAT\_CL_{i,t}$ that equals one if the anti-self-dealing index of firm *i*'s country is below the sample observation median (suggesting a relatively high threat of private benefits extraction), and equals zero otherwise.

We also construct a firm-level threat measure for our primary sample, $PBTHREAT\_FL_{i,t}$, which is an indicator that equals one if firm *i*'s percentage of closely held shares is in the top quartile of sample observations (i.e., greater than 45.75%), and equals zero otherwise. Finally, we conduct a separate analysis using a U.S. sample to take advantage of the managerial entrenchment index of Bebchuk et al. (2009), a U.S. firm-level composite measure of the potential for the threat of private benefit extraction using six Investor Responsibility Research Center (IRRC) provisions (accordingly, the measure ranges from zero to six). We construct an indicator $ENTRENCH_{i,t}$ that equals one if firm i's entrenchment index in year t is greater than three, and equals zero otherwise.

We note that extant literature offers several institutional measures of creditor protection. For example, Djankov et al. (2007), develop a country-level debt enforcement index, which reflects the ability of creditors to enforce their claims once a firm becomes insolvent. Although such measures are expected to directly affect cost of debt, they do not directly relate to the threat of private benefits extraction. For example, enhanced ability of lenders to take control of a firm after bankruptcy should reduce cost of debt. However, these creditor protections would do nothing to alleviate that lender's concern that managers may expropriate firm assets, which would leave the lenders with higher loss given default (e.g., Amiram, 2011). Therefore, such measures do not directly capture our construct of interest. Stated differently, we are interested in measuring the ability of insiders to extract private benefits, not the ability to enforce debt contracts.

5. Data and descriptive statistics

We obtain data on bank loans made to publicly traded companies from Loan Pricing Corporation's Dealscan. The most primitive unit of observation is a loan facility, where multiple facilities can be included in a loan package between a borrower and lender. Because each loan facility within a package can have different pricing characteristics, we use a loan facility as our base unit of observation. We collect accounting and stock price data from Worldscope and Datastream, respectively, and convert all non-ratio variables into U.S. dollars.[8]

Our sample begins with the intersection of these data sources, where we match Dealscan and Worldscope observations by company name.[9] For each Dealscan loan observation, we match the most recent borrower accounting data available at the time of loan initiation. We eliminate short-term loans (i.e., we keep in the sample only loans with maturity greater than one year), and delete observations where the borrower is a bank or utility (two digit ICB codes 70, 83, 85, and 87). We next eliminate observations that have missing values for loan characteristics (i.e., spread, maturity, number of covenants, face amount), accounting data, or stock return data that are necessary for construction of the smoothness measures and our analyses, as described below. We eliminate observations in countries for which Djankov et al. (2008) did not compute the anti-self-dealing index. Finally, we truncate all continuous variables used in our analyses at the lower 1% and upper 99% values by country-fiscal year. This leaves us with 1,817 facility-level observations for loans to 639 distinct non-U.S. borrowers across twenty countries (hereafter referred to as the 'non-U.S. sample'). The final sample includes loan facilities with initiation dates ranging from 1996 to 2009. We do not include observations from the U.S. in our primary tests because of the disproportionate number of U.S. observations. However, in Section 6.5 we report results from a separate robustness analysis using a U.S. sample.

Table 1 presents details of the sample country distribution. The country distribution of firms and facility-level observations are similar, with Taiwan and the United Kingdom representing a large fraction of the sample (22% and 31% of facility-level observations,

[8] We refer the interested reader to Appendix A in Lang, Maffett and Owens (2010) for a detailed description of the initial Worldscope/Datastream sample construction.

[9] We are grateful to Ryan Ball and Florin Vasvari for providing an initial matching table between Dealscan and Worldscope.

respectively), where both countries are classified as having low threat of private benefit extraction. Among countries classified as having high threat of private benefit extraction, France and Germany are prominent within the sample (11% and 4% of facility-level observations, respectively). We acknowledge that our sample composition reflects potential selection bias driven by two requirements: firms must exist in both Dealscan and Datastream, and we must be able to obtain valid matches across the two datasets. This may limit the generalizability of our results to interactions between relatively large banks and large borrowers. Further, as the data only allow us to examine loans that were actually issued, we note that our sample may underrepresent firms in countries where borrower access to credit is limited because of generally poor contracting environments. However, these datasets and limitations are standard in this literature (e.g., Qian and Strahan, 2007).

[Insert Table 1 here]

Table 2 presents descriptive statistics for firm and loan-level variables. Mean total assets in U.S. dollars is $3.8 billion (corresponding to mean logged assets of 14.01). Mean book-to-market ratio is 0.71, and mean leverage ratio is 0.59. The median sample loan has a 100 basis point spread over LIBOR, a face amount of U.S. $140 million, a five-year maturity, no collateral requirements and no financial covenants.[10]

[Insert Table 2 here]

Table 3 presents a correlation matrix for facility-level observations. Focusing on Pearson correlations for discussion, the correlation between discretionary smoothing and overall smoothness is substantially larger than the correlation between fundamental smoothness and

[10] When Dealscan reports no covenant data for a given loan package, we make the assumption that the number of covenants on the loan package is zero. While this assumption is common in the literature, Drucker and Puri (2009) points out that this assumption is questionable. Throughout the study, inferences are unchanged if we do not include the number of covenants in our analyses.

overall smoothness (e.g., 0.89 and 0.35, respectively). This pattern is consistent with overall smoothness being driven by discretion to a greater extent than by innate characteristics, or may reflect the difficulty in identifying the fundamental determinants of smoothness. We note that there is no significant correlation between discretionary smoothing and any loan term. This suggests that either income smoothing does not materially affect debt contracting terms, or that there is a more textured relation that is being obscured by additional forces present in the sample. Our forthcoming multivariate analysis suggests the latter.

[Insert Table 3 here]

6. Empirical results

6.1. Country-level threat of private benefit extraction

Table 4 presents results from estimation of Eq. (4), where we use the country-level measure of the threat of private benefits extraction based on the anti-self-dealing index of Djankov et al. (2008) (*PBTHREAT_CL*). Column (3) presents results from the full specification, which tests our two key predictions. As predicted, β_2 is significantly negative (coefficient estimate of -0.16 with a t-statistic of -2.45), which documents a negative association between income smoothing and cost of debt for firms within countries characterized by a low threat of private benefits extraction, consistent with the signaling explanation of smoothing. In stark contrast, the interaction between smoothing and the high threat indicator (β_3) is significantly positive (coefficient estimate of 0.46 with a t-statistic of 3.86), resulting in a significantly positive total coefficient on firm-level smoothing in high threat countries of 0.30 ($\beta_2 + \beta_3$). As predicted, this provides evidence of a positive association between smoothing and cost of debt for firms within countries characterized by a high threat of private benefits extraction, consistent with the garbling explanation of smoothing.

The results for the firm-level control variables are generally consistent with our expectations. The fundamental (i.e., nondiscretionary) component of smoothing (*FSMTH*) is negatively associated with cost of debt in both low and high threat environments (significant coefficient in low threat countries of -0.20, and an insignificant interaction coefficient of -0.02, which provides evidence of no differential effects of *FSMTH* across environments). This is consistent with the fundamental component of smoothness reflecting lower business risk. Larger (*SIZE*) and more profitable (*ROA*) firms have lower cost of debt. Firms with more leverage (*LEV*) and volatility (*STDRET*) have higher cost of debt. Consistent with Bharath et al. (2008), there is a negative relation between loan amount (*LFACILITY*) and spread, and a positive association between maturity (*LMATURITY*) and spread. Further consistent with Bharath et al. (2008) and Berger and Udell (1990), there is a strong positive relation between collateral requirement (*SECURE*) and loan spread. These relations reflect a complex set of unobservable tradeoffs in the loan contracting process.

In terms of economic significance, there is a material difference in the effects of discretionary smoothness across the low and high threat environments. In the low threat group, movement across the interquartile range of *DSMTH* results in an approximate 7 basis point decrease in loan spread (i.e., interquartile range of 44 times the coefficient estimate of –0.16), which represents a 7% decrease in spread relative to the median sample spread. In the high threat group, movement across the interquartile range of *DSMTH* results in an approximate 13 basis point *increase* in loan spread (i.e., interquartile range of 44 times the total coefficient estimate of 0.30), which represents a 13% increase in loan spread relative to the median spread.[11]

[Insert Table 4 here]

[11] These effects are economically significant, with magnitudes comparable to effects documented in Bharath, et al. (2008). Specifically, Bharath, et al. (2008) finds a 14 basis point increase in loan interest spread over LIBOR in going from firms in the worst to best quintiles of accounting quality.

Column (2) reports results from a more naive specification of the relation between smoothing and cost of debt, where we do not partition based on private benefit extraction threat. Consistent with the univariate evidence discussed previously, column (2) reports an insignificant relation between smoothing and cost of debt. However, we now know from column (3) that this insignificance simply reflects the contrasting negative and positive relations across environments. Accordingly, without considering the forces we reveal, researchers may inappropriately conclude that there is no relation between smoothing and cost of debt.

We repeat our main tests using two alternate proxies for the country-level threat of private benefit extraction, although these measures are available for fewer countries than the Djankov et al. (2008) anti-self-dealing index. First, we use the block premium from Dyck and Zingales (2004), where high (low) block premium implies high (low) threat of private benefit extraction. According to that study, the premium paid in a transfer of block shares captures the willingness of insiders to pay for the resulting opportunity to extract private benefits. Second, we use the enforcement measure from Jackson and Roe (2009), where high (low) enforcement implies low (high) extraction threat. According to that study, enforcement is more relevant than laws on the books for the ability of insiders to extract private benefits. Untabulated results are qualitatively consistent using either alternate proxy.

6.2. Private benefits extraction vs. creditor rights

As previously discussed, our construct of interest is not creditor rights in the event of default, as such creditor protections would do nothing to alleviate a lender's concern that managers may expropriate firm assets prior to default, which would leave the lenders with fewer recoverable assets in default. To illustrate this distinction, we repeat our primary analysis after *replacing PBTHREAT_CL* with $WEAKCRDRTS_{i,t}$, an indicator variable that equals one if firm *i*'s

La Porta et al. (1998) country-level creditor rights index is below the sample observation median, and equals zero otherwise. We then repeat our primary analysis after *adding WEAKCRDRTS* and its interactions to our main specification of Eq. (4).

As reported in column (1) of Table 5, there is no relation between discretionary smoothing and cost of debt in countries with strong creditor rights, as indicated by the insignificant coefficient on *DSMTH* of –0.04 (t-statistic of –0.35). Further, there is no difference in this insignificant relation in countries with weak creditor rights, as indicated by the insignificant interaction variable *DSMTH*WEAKCRDRTS* (t-statistic of –0.03). Stated differently, partitioning the sample based on creditor rights is equivalent to partitioning the sample on noise, and suggests the same non-relation between smoothing and cost of debt as suggested by the naive specification in column (2) of Table 4. As reported in column (2) of Table 5, our primary inferences with respect to *PBTHREAT_CL* are unaltered after controlling for creditor rights.

[Insert Table 5 here]

6.3. Income smoothing vs. accruals quality

As previously discussed, Bharath et al. (2008) provide evidence that better accruals quality is associated with a lower cost of debt. In this section, we repeat our primary analysis after controlling for accruals quality not only to provide evidence that our results are not implied by the Bharath et al. (2008) findings, but more importantly to illustrate that accruals quality and smoothing predictably capture two distinct constructs (Dechow et al. 2010). Consistent with the approach in Bharath et al. (2008), we construct a measure of accruals quality based on the approach of Dechow and Dichev (2002). Specifically, we regress $ACCRUALS_{i,t}$ scaled by lagged total assets ($TA_{i,t-1}$) on $COPSS_{i,t-1}$, $COPSS_{i,t}$, and $COPSS_{i,t+1}$ within two-digit industries, and compute the firm-level standard deviation of the residuals so obtained using at least three but no more than five years of data. We define our measure of accruals quality, $AQ_{i,t}$, as negative one times the standard deviation of firm *i*'s residuals, so that *AQ* is increasing in accruals quality. The additional data requirements necessary to compute *AQ* substantially reduce our sample size to 976 facility-level observations.

Column (1) of Table 6 reports the results of repeating our primary specification of Eq. (4) using the reduced sample of 976 observations. Inferences remain consistent with our primary findings. That is, β_2 is significantly negative and β_3 is significantly positive. However, we lose statistical significance on the positive total coefficient on smoothing in high threat environments (coefficient estimate of 0.10). More importantly, our primary inferences remain consistent after adding *AQ* and its interaction with *PBTHREAT_CL*, as reported in column (2). Specifically, β_2 remains significantly negative and β_3 remains significantly positive, consistent with the asymmetric relation between smoothing and cost of debt that we document. Column (2) also reveals a significantly negative relation between *AQ* and cost of debt, where the relation does not differ across low and high threat environments, as confirmed by the insignificant coefficient on *AQ*PBTHREAT_CL*. Two points are noteworthy. First, this finding provides evidence that the relation that Bharath et al. (2008) document in the U.S. between accruals quality and loan spread also obtains in a non-U.S. sample. Second, and more importantly, the finding that accruals quality has a symmetric relation with cost of debt across low and high threat environments while smoothing has an asymmetric relation with cost of debt across environments clearly illustrates the different constructs captured by these two accounting properties, as we expected.

[Insert Table 6 here]

6.4. Non-price loan terms

Although our key interest in this paper is the relation between smoothness and the cost of debt capital, we analyze whether income smoothing differentially affects several non-price loan terms that lenders may adjust to reflect perceived borrower risk across environments, including maturity, collateral requirements, and financial covenants. To do so, we use the basic variable structure of Eq. (4), while changing the dependent variable and estimation approach as appropriate. For example, to examine whether smoothing affects loan maturity, we estimate an OLS model of the form used in Eq. (4) with *LMATURITY* as the dependent variable. To examine whether smoothing affects collateral requirements, we estimate a logistic model where *SECURE* is the dependent variable. To examine whether smoothing affects the use of financial covenants, we estimate a Tobit model where *NCOV* is the dependent variable.

To summarize, we find no statistically significant evidence that the threat of private benefits extraction in the contracting environment affects the relation between smoothing and any of these non-price loan terms. That is, in all specifications *DSMTH*PBTHREAT_CL* is insignificant, which provides evidence that our primary results with respect to *SPREAD* are not driven by tradeoffs among non-price loan terms.

6.5. Firm-level threat of private benefits extraction

Our primary results provide evidence that, on average, the signaling interpretation of firm-level income smoothing dominates in low threat countries and the garbling interpretation of firm-level income smoothing dominates in high threat countries, where lenders adjust cost of debt to reflect these interpretations. However, because these are on-average results, our results do *not* imply that income smoothing provides lower cost of debt benefits for *all* firms in low threat countries or higher cost of debt for *all* firms in high threat countries. Stated differently, it is likely that there are firms in low (high) threat countries that engage in smoothing for purposes of garbling (signaling). To the extent that lenders make this distinction among firms within a given country, it is likely that there are firm-specific cases in low (high) threat countries where discretionary smoothness leads to an increased (decreased) cost of debt.

A key feature of the research design used in our primary analysis is that we exploit exogenous country-level variation in threat of private benefit extraction. One issue with pursuing a within-country analysis based on firm-level threat characteristics is that within a country, firm-level governance characteristics are likely to be endogenous (i.e., a firm can choose both smoothness *and* governance structure). However, to provide initial evidence on whether firm-level extraction threat is related to the association between smoothness and cost of debt capital, we estimate Eq. (4) using a firm-level measure of the threat of private benefits extraction. That is, we replace *PBTHREAT_CL* with $PBTHREAT\_FL_{i,t}$, which is an indicator that equals one if firm *i*'s percentage of closely held shares is in the top quartile of sample observations (i.e., greater than 45.75%), and equals zero otherwise.

Column (1) of Table 7 presents results of this analysis, which are remarkably similar to results from our primary analysis using country-level threat measures. These results provide evidence that the effect we document in our primary analysis likewise operates within country based on firm-level threat characteristics. That is, β_2 is significantly negative (coefficient estimate of −0.18 with a t-statistic of −2.11), which documents a negative association between income smoothing and cost of debt for firms that themselves have low threat of private benefits extraction. Moreover, there is a significantly positive total coefficient on firm-level smoothing in high-threat firms of 0.45 ($\beta_2 + \beta_3$), which provides evidence of a positive association between smoothing and cost of debt for firms that themselves have high threat of private benefits extraction. Intuitively, whereas our primary analysis in Table 4 suggests that smoothing firms in the U.K (a low threat country) tend to have lower cost of debt and smoothing firms in Germany (a high threat country) tend have higher cost of debt on average, the results in Table 5 suggests that *within* either the U.K. or Germany, smoothing firms with low (high) threat have lower (higher) cost of debt.

[Insert Table 7 here]

We repeat our firm-level threat analysis for a separate sample of U.S. firms (the U.S. is a low threat country, having an anti-self dealing index of 0.65) for which Bebchuk et al. (2009) compute a time-varying firm-level entrenchment index ranging from zero to six, which we use as an alternate proxy for the firm-level threat of private benefits extraction. Specifically, we construct an indicator $ENTRENCH_{i,t}$ that equals one if firm i's entrenchment index in year t is greater than three, and equals zero otherwise. The U.S. sample we use in this analysis consists of 6,033 facility-level observations across 1,453 distinct borrowers. As reported in column (2) of Table 7, inferences from the U.S. analysis mirror those from our primary analysis.

6.6. Additional considerations

6.6.1. Measurement error in smoothness proxies

Extant literature presents tests that lend construct validity to the smoothing measure we use in this study (e.g., Lang and Maffett 2011b; Lang et al. 2011). However, as with any study, our proxy for discretionary smoothing may contain significant measurement error. Given that measurement error typically introduces attenuation bias in coefficient estimates, any such measurement error would work against our finding significant relations between smoothing and cost of debt. A separate but related concern is whether the relation between smoothing and cost of debt is driven by correlated omitted variables related to default risk. We view this as an unlikely explanation for our results. In order for omitted risk variables to be the driver of our results, it would be necessary for default risk to be negatively associated with smoothing in low extraction threat environments, but positively associated with smoothing in high extraction threat environments. Moreover, our control variables include many of the components used in Altman's Z-score, thereby implicitly controlling for default risk. However, we join Dechow et al. (2010) in encouraging future research to seek better methods for disentangling fundamental and discretionary components of observed earnings smoothness.

6.6.2. Smoothing motivations

Although we position our study within the signaling versus garbling framework of smoothing, we recognize that there exist other smoothing motivations, such as removing risk from earnings-based compensation contracts and tax minimization. However, it is unlikely that these motivations differ across high and low expropriation threat environments in a manner that would affect our inferences. Relatedly, smoothing may be accomplished by methods aside from accounting choice, such as real operational decisions (Fudenberg and Tirole 1995) or hedging via derivative use (Barton 2001). In our framework, smoothing that results from these activities is likely captured by the discretionary smoothing component. We do not attempt to disentangle the sources of discretionary smoothing. Because smoothing via these alternative mechanisms can be used to either signal or garble (just as smoothing via accounting decisions can), the logic of our study applies regardless of the discretionary smoothing mechanism.

7. Conclusion

In this study we examine whether income smoothing by borrowers prior to debt contract initiation affects private loan contracting terms. Unlike most other commonly studied discretionary accounting attributes, there are competing economic forces that may differentially affect the relation between income smoothing and loan contracting terms such as cost of debt. This allows us to construct tests that more likely identify whether lenders actually use information in accounting attributes. Specifically, there are two distinct theoretical explanations for earnings smoothing with directly opposing implications for the relation between smoothing and cost of debt. According to the signaling explanation, managers smooth income to reveal private information about underlying economic earnings and its volatility. According to the garbling explanation, managers smooth income to obscure information to facilitate the extraction of private benefits.

Consistent with our predictions, we provide evidence that income smoothing is negatively associated with cost of debt in countries characterized by low threat of private benefits extraction, and positively associated with cost of debt in settings characterized by high threat of private benefits extraction. Our inferences are robust to several alternative proxies for the country-level threat of private benefits extraction.

It is unlikely that smoothing is perceived as signaling (garbling) for *all* firms in a low (high) threat country. Although we are sensitive to endogeneity concerns when using firm-level governance measures, we repeat our tests using measures of *firm-level* variation in the threat of private benefits extraction within a given country and find results consistent with our primary findings. That is, within countries smoothing is negatively (positively) associated with cost of debt for firms with relatively low (high) threat of private benefits extraction.

This evidence allows us to address a call from Armstrong et al. (2010) to provide evidence on the association and causal relation between accounting attributes, agency costs and debt contracting. This study also contributes to the literature that examines the consequences of earnings smoothness. We answer the call of Dechow et al. (2010) to provide evidence on whether smoothness indicates greater decision usefulness. To our knowledge, our study is the first to show that earnings smoothing can be (predictably) both detrimental and beneficial within the same setting (i.e., debt contracting).

Appendix A
Simplified model of key predictions

A.1. Setup

Consider an existing firm with a self-interested manager, in the sense of the classic agency problem. That is, the manager has an incentive to maximize her own payoff. Because we want to isolate the conflict between the manager and debtholders, we assume for simplicity that the manager owns 100% of her firm's equity. At time $t = 0$, the manager knows that at time $t = 1$, she will require additional financing in the amount \$$K$ to fund a project, which we assume will be obtained in the form of debt with interest rate I.[12] At time $t = 2$, the project outcome is realized, with probability of success (failure) PD (1-PD). If successful, the project has a gross percentage return R greater than the risk-free rate (which we normalize to zero for convenience), the lender is repaid, and the firm continues. If the project fails, the firm defaults and the lender receives gross recovery rate V as a percentage of K.

At time $t = 0$, nature endows the manager with two key things that are unobservable to the lender. First, with probability $P\alpha \in (0,1)$ the manager receives private information that the firm's economic earnings are less volatile than reported cash flows suggest (thus, setting up the possibility that the manager can signal using income smoothing, assuming she has the ability to smooth). Without loss of generality, we characterize firms in binary fashion as either having smooth economic earnings (denoted as α_1) or not (denoted as α_0). Further, we assume that smooth economic earnings lowers probability of default, i.e. $0 < PD_{\alpha 1} < PD_{\alpha 0} < 1$ (Merton, 1974). Second, with probability $P\lambda \in (0,1)$ nature endows the manager with the ability to

[12] Debt can be the optimal financing source for a variety of reasons, e.g., tax benefits.

smooth reported income.[13] Without loss of generality, we simply characterize managers in binary fashion as either able to smooth (denoted as λ_1) or unable to smooth (denoted as λ_0) (e.g., Trueman and Titman, 1988).[14] Accordingly, there are four types of managers across these two unobservable dimensions, which we denote as follows: $\theta_{\alpha\lambda} = \{\alpha_1\lambda_1; \alpha_1\lambda_0; \alpha_0\lambda_1; \alpha_0\lambda_0\}$. For example, type $\theta_{\alpha\lambda} = \alpha_1\lambda_0$ refers to a manager that knows economic earnings are relatively smooth, but is unable to smooth reported income to signal that information.

At a time between $t = 0$ and $t = 1$ (for simplicity we will call it $t = 0.5$), the manager makes two choices and then reports financial results (i.e., earnings, cash flows and accruals). First, the manager chooses to either extract private benefits or not extract private benefits, understanding that she will pursue a loan at t=1.[15] Without loss of generality, we assume if private benefits are extracted, they are extracted as a percentage $B \in (0,1)$ of the loan K, such that the total amount extracted is \$($B \cdot K$). For notational convenience we denote the choice to extract private benefits as B_1 and the choice to not extract private benefits as B_0. We characterize the firm's environment as having either low threat (*LT*) or high threat (*HT*) of private benefits extraction (which is observable to capital providers), where low (high) threat of extraction is an environment where there are heavy (light) penalties if caught (we denote the probability of being caught stealing as *PC*). We capture this threat with a punishment parameter $\gamma \in \{\gamma_{LT}, \gamma_{HT}\}$ that reflects the percentage of the amount extracted that must be paid by the manager if she is caught stealing, where $1 < \gamma_{HT} < \gamma_{LT} < \infty$. That is, the expected cost to the manager of extracting private

[13] Under certain values of other model parameters that can be characterized, the introduction of this "ability" parameter is not necessary. However, it makes the intuition of the model easier to follow.

[14] Alternatively, we could assume differences in smoothing ability across a continuum, or differences in manager-specific costs of smoothing.

[15] Given the assumption that the firm owns 100% of the firm's equity, there is no incentive to extract private benefits unless resources are obtained from external parties.

benefits is $\$\left(\gamma \cdot B \cdot K \cdot PC\right)$. We assume that the minimum punishment if caught is repayment of the amount extracted plus a slap on the wrist, i.e., $\gamma_{HT} = 1 + \varepsilon$, where $\varepsilon \to 0$. Heavier penalties that characterize low threat environments include more substantial fines, jail time, etc. Although we could characterize the point above which the punishment is high enough, for simplicity we assume that if you get caught stealing in a low threat environment you receive the death penalty, i.e., $\gamma_{LT} \to \infty$.

Second, if the manager has the ability to smooth income (i.e., type λ_1), the manager chooses to smooth income (S = 1, denoted S_1) or not (S = 0, denoted S_0) at time t = 0.5. This choice is made with the manager's understanding that there is a positive probability at t = 2 that both α and λ will be revealed, and that there will be an associated cost of lying (L > 0) if the manager had the ability to smooth (λ_1) but lied about her true type α (i.e., α_1 and S_0, or α_0 and S_1). Consistent with our characterization of costs of private benefits extraction, we assume that $L_{HT} < L_{LT}$. Although we could characterize the point below (above) which the cost is low (high) enough, for simplicity we set $L_{HT} = \varepsilon \to 0$ ($L_{LT} \to \infty$). We assume that if the manager chooses to extract private benefits, income smoothing reduces the probability of being caught (Fudenberg and Tirole, 1995). Further, for simplicity we assume that if the manager extracts private benefits but does not smooth, she will be caught. That is, $0 < PS_{S1} < PS_{S0} = 1$. After the manager chooses B and S at t = 0.5, she reports financials.

A.2. The manager's choice of private benefits extraction and smoothing

Based on our binary exposition, there are four B-S choice combinations, which we denote $\theta_{BS} = \{B_0S_1; B_0S_0; B_1S_1; B_1S_0\}$. At time t = 0.5, the manager chooses θ_{BS} to maximize her payoff, subject to her endowed (unobservable) type $\theta_{\alpha\lambda} = \{\alpha_1\lambda_1; \alpha_1\lambda_0; \alpha_0\lambda_1; \alpha_0\lambda_0\}$ and (observable)

$\gamma \in \{\gamma_{LT}, \gamma_{HT}\}$. Table A1 outlines the payoff structures to the manager under each scenario. Note that the manager's general payoff equals the sum of four terms:

$$(1-PD)\cdot K\cdot(R-I)+(PD\cdot B\cdot K)-(\gamma\cdot B\cdot K\cdot PC)-L. \tag{A1}$$

The first term is the expected payoff if the project succeeds. The second term is the expected payoff if the project fails (i.e., the manager receives the amount of private benefits extracted). The third term is the expected cost of extracting private benefits. The fourth term is the expected cost of lying about whether the manager has smooth economic earnings (e.g., Desai et al., 2006). Consider a manager operating in a high threat of extraction environment, as depicted in Panel A. For endowment $\theta_{\alpha\lambda}=\alpha_1\lambda_1$, choice 2 dominates choice 4 (because the sum of terms two and three is negative), choice 3 dominates choice 1 (because the sum of terms two and three is positive). The determination of whether choice 2 or 3 is optimal depends on the net benefit of private benefit extraction (the sum of terms two and three in choice 3) relative to the interest rate differential reflected in the first term in both choices. Continuing across the other endowment possibilities, if follows that the optimal choice for $\theta_{\alpha\lambda}=\alpha_1\lambda_0$ is 2, for $\theta_{\alpha\lambda}=\alpha_0\lambda_1$ is 2 or 3, and for $\theta_{\alpha\lambda}=\alpha_0\lambda_0$ is 2. As depicted in Panel B, following the same approach in analyzing the manager's choice in the low extraction threat environment, the optimal choice for $\theta_{\alpha\lambda}=\alpha_1\lambda_1$ is 1, $\theta_{\alpha\lambda}=\alpha_1\lambda_0$ is 2, for $\theta_{\alpha\lambda}=\alpha_0\lambda_1$ is 2, and for $\theta_{\alpha\lambda}=\alpha_0\lambda_0$ is 2. This structure is understood by the lender, who will use these insights when choosing the interest rate *I*.

A.3. The lender's pricing decision

At time $t = 1$, the lender chooses the interest rate *I* to charge the firm on the loan amount \$*K*. Theoretically, *I* will be increasing in expected cost of default, i.e., (probability of default)*(loss given default). Literature has established that smoother economic earnings imply lower probability of default (e.g., Merton 1974). That is, $PD_{\alpha 1} < PD_{\alpha 0}$. Further, it is straightforward that managerial extraction of private benefits from capital providers increases loss given default, i.e., decreases the recovery rate in the event of default (*V*). That is, $V_{B1} < V_{B0}$. Accordingly, the lender would like to base *I* on the smoothness of economic earnings and the extent of managerial private benefit extraction, but neither factor is directly observable at the contracting date. Therefore, the lender will base *I* on the observable private benefit extraction threat (γ) and smoothing (*S*), which may reflect either signaling or garbling. Based on our binary characterizations, there are four possible interest rates, which we denote as $I_{\gamma S} = \left\{ I_{\gamma_{HT} S0}; I_{\gamma_{HT} S1}; I_{\gamma_{LT} S0}; I_{\gamma_{LT} S1} \right\}$.

Consider the high extraction threat environment. It follows from the analysis outlined in Panel A of Table A1 that if the manager smooths income (S_1), the lender knows that the manager extracted private benefits.[16] Further, if the manager does not smooth income (S_0), the lender knows the manager did not steal. In either case (S_1 or S_0), the lender will assess that the firm has smooth economic earnings (α_1) with probability $P\alpha$ and that the firm does not have smooth economic earnings (α_0) with probability ($1 - P\alpha$). It is straightforward to then show that $I_{\gamma_{HT}, S1} > I_{\gamma_{HT}, S0}$ because $V_{B1} < V_{B0}$. Our prediction that smoothing is positively associated with loan spread in countries with high threat of private benefits extraction follows immediately.

Consider the low extraction threat environment. It follows from the analysis outlined in Panel B of Table A1 that the manager will never extract private benefits. If the manager smooths income (S_1), the lender knows the firm has smooth economic earnings (α_1) with probability 1.0.

[16] We make an implicit assumption that lenders will have the expectation that if managers extracted private benefits before loan initiation, they did so in anticipation of receiving the loan at $t = 1$, from which they can "cover" their private benefits extraction at $t = 0.5$, which equates to extracting private benefits from the loan itself.

If the manager does not smooth income (S_0), the lender does not know whether the firm has smooth economic earnings or not, and assesses the probability of smooth economic earnings at less than 1.0. It is then straightforward to show that $I_{\gamma_{LT},S1} < I_{\gamma_{LT},S0}$, because $PD_{\alpha 1} < PD_{\alpha 0}$. Our prediction that smoothing is negatively associated with loan spread in countries with low threat of private benefits extraction follows immediately.

Table A1
Model-based predictions of managerial private benefits extraction and smoothing choice

This table outlines payoffs to a manager who chooses whether to extract private benefits and smooth reported income prior to obtaining a loan to undertake a project. B_0 (B_1) denotes her choice to not extract (extract) private benefits. S_0 (S_1) denotes her choice to not smooth (smooth) reported income. α_0 (α_1) denotes her endowment of private information that economic earnings are not smooth (smooth). λ_0 (λ_1) denotes her endowment of the inability (ability) to smooth reported income. The general structure of her payoff is $(1-PD)\cdot K\cdot(R-I)+(PD\cdot B\cdot K)-(\gamma\cdot B\cdot K\cdot PC)-L$. PD is the probability of project default. K is the dollar amount borrowed. R is the project's gross percentage return. I is the interest rate charged by the lender. B is the amount of private benefits she extracts. γ is the punishment parameter for extracting private benefits. PC is the probability of getting caught extracting private benefits. L is the cost of lying about her type α. * denotes non-dominated strategies under each possible threat/endowment combination.

Panel A: Payoffs to manager in high threat of private benefits extraction $\gamma_{HT}=1+\varepsilon$; $L_{HT}=\varepsilon$; $PC_{S1}=\varepsilon; PC_{S0}=1$	
Endowment: $\theta_{\alpha\lambda}=\alpha_1\lambda_1$ (has smooth economic earnings and can smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$	$(1-PD_{\alpha1})\cdot K\cdot(R-I_{HT,S1})+0-0-0$
Choice 2: $\theta_{BS}=B_0S_0$ *	$(1-PD_{\alpha1})\cdot K\cdot(R-I_{HT,S0})+0-0-\varepsilon$
Choice 3: $\theta_{BS}=B_1S_1$ *	$(1-PD_{\alpha1})\cdot K\cdot(R-I_{HT,S1})+PD_{\alpha1}\cdot B\cdot K-(1+\varepsilon)\cdot B\cdot K\cdot\varepsilon-\varepsilon$
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha1})\cdot K\cdot(R-I_{HT,S0})+PD_{\alpha1}\cdot B\cdot K-(1+\varepsilon)\cdot B\cdot K\cdot 1-\varepsilon$
Endowment: $\theta_{\alpha\lambda}=\alpha_1\lambda_0$ (has smooth economic earnings but cannot smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$	N/A (cannot have S_1 for type λ_0)
Choice 2: $\theta_{BS}=B_0S_0$ *	$(1-PD_{\alpha1})\cdot K\cdot(R-I_{HT,S0})+0-0-0$
Choice 3: $\theta_{BS}=B_1S_1$	N/A (cannot have S_1 for type λ_0)
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha1})\cdot K\cdot(R-I_{HT,S0})+PD_{\alpha1}\cdot B\cdot K-(1+\varepsilon)\cdot B\cdot K\cdot 1-0$
Endowment: $\theta_{\alpha\lambda}=\alpha_0\lambda_1$ (does not have smooth economic earnings but can smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$	$(1-PD_{\alpha0})\cdot K\cdot(R-I_{HT,S1})+0-0-\varepsilon$
Choice 2: $\theta_{BS}=B_0S_0$ *	$(1-PD_{\alpha0})\cdot K\cdot(R-I_{HT,S0})+0-0-0$
Choice 3: $\theta_{BS}=B_1S_1$ *	$(1-PD_{\alpha0})\cdot K\cdot(R-I_{HT,S1})+PD_{\alpha0}\cdot B\cdot K-(1+\varepsilon)\cdot B\cdot K\cdot\varepsilon-\varepsilon$
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha0})\cdot K\cdot(R-I_{HT,S0})+PD_{\alpha0}\cdot B\cdot K-(1+\varepsilon)\cdot B\cdot K\cdot 1-0$
Endowment: $\theta_{\alpha\lambda}=\alpha_0\lambda_0$ (does not have smooth economic earnings and cannot smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$	N/A (cannot have S_1 for type λ_0)
Choice 2: $\theta_{BS}=B_0S_0$ *	$(1-PD_{\alpha0})\cdot K\cdot(R-I_{HT,S0})+0-0-0$
Choice 3: $\theta_{BS}=B_1S_1$	N/A (cannot have S_1 for type λ_0)
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha0})\cdot K\cdot(R-I_{HT,S0})+PD_{\alpha0}\cdot B\cdot K-(1+\varepsilon)\cdot B\cdot K\cdot 1-0$

Table A1, continued

General structure of manager's payoff: $(1-PD)\cdot K\cdot(R-I)+(PD\cdot B\cdot K)-(\gamma\cdot B\cdot K\cdot PC)-L$

Panel B: Payoffs to manager in low threat of private benefits extraction $\gamma_{LT}=\infty$; $L_{LT}=\infty$; $PC_{S1}=\varepsilon; PC_{S0}=1$	
Endowment: $\theta_{\alpha\lambda}=\alpha_1\lambda_1$ (has smooth economic earnings and can smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$ *	$(1-PD_{\alpha 1})\cdot K\cdot(R-I_{LT,S1})+0-0-0$
Choice 2: $\theta_{BS}=B_0S_0$	$(1-PD_{\alpha 1})\cdot K\cdot(R-I_{LT,S0})+0-0-\infty$
Choice 3: $\theta_{BS}=B_1S_1$	$(1-PD_{\alpha 1})\cdot K\cdot(R-I_{LT,S1})+PD_{\alpha 1}\cdot B\cdot K-\infty\cdot B\cdot K\cdot\varepsilon-0$
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha 1})\cdot K\cdot(R-I_{LT,S0})+PD_{\alpha 1}\cdot B\cdot K-\infty\cdot B\cdot K\cdot 1-\infty$
Endowment: $\theta_{\alpha\lambda}=\alpha_1\lambda_0$ (has smooth economic earnings but cannot smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$	N/A (cannot have S_1 for type λ_0)
Choice 2: $\theta_{BS}=B_0S_0$ *	$(1-PD_{\alpha 1})\cdot K\cdot(R-I_{LT,S0})+0-0-0$
Choice 3: $\theta_{BS}=B_1S_1$	N/A (cannot have S_1 for type λ_0)
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha 1})\cdot K\cdot(R-I_{LT,S0})+PD_{\alpha 1}\cdot B\cdot K-\infty\cdot B\cdot K\cdot 1-0$
Endowment: $\theta_{\alpha\lambda}=\alpha_0\lambda_1$ (does not have smooth economic earnings but can smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$	$(1-PD_{\alpha 0})\cdot K\cdot(R-I_{LT,S1})+0-0-\infty$
Choice 2: $\theta_{BS}=B_0S_0$ *	$(1-PD_{\alpha 0})\cdot K\cdot(R-I_{LT,S0})+0-0-0$
Choice 3: $\theta_{BS}=B_1S_1$	$(1-PD_{\alpha 0})\cdot K\cdot(R-I_{LT,S1})+PD_{\alpha 0}\cdot B\cdot K-\infty\cdot B\cdot K\cdot\varepsilon-\infty$
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha 0})\cdot K\cdot(R-I_{LT,S0})+PD_{\alpha 0}\cdot B\cdot K-\infty\cdot B\cdot K\cdot 1-0$
Endowment: $\theta_{\alpha\lambda}=\alpha_0\lambda_0$ (does not have smooth economic earnings and cannot smooth reported income)	
Choice 1: $\theta_{BS}=B_0S_1$	N/A (cannot have S_1 for type λ_0)
Choice 2: $\theta_{BS}=B_0S_0$ *	$(1-PD_{\alpha 0})\cdot K\cdot(R-I_{LT,S0})+0-0-0$
Choice 3: $\theta_{BS}=B_1S_1$	N/A (cannot have S_1 for type λ_0)
Choice 4: $\theta_{BS}=B_1S_0$	$(1-PD_{\alpha 0})\cdot K\cdot(R-I_{LT,S0})+PD_{\alpha 0}\cdot B\cdot K-\infty\cdot B\cdot K\cdot 1-0$

Appendix B
Variable definitions

$ACCRUALS_{i,t}$	change in current assets (WS-*WC02201*) minus change in cash (WS-*WC02001*) minus change in current liabilities (WS-*WC03101*) plus change in short-term debt (WS-*WC03051*) minus depreciation and amortization (WS-*WC01151*)
$ACCRUALSS_{i,t}$	$ACCRUALS_{i,t}$ scaled by $TA_{i,t-1}$
$AQ_{i,t}$	negative one times the standard deviation of firm i's residuals from a regression of $ACCRUALSS_{i,t}$ on $COPSS_{i,t-1}$, $COPSS_{i,t}$ and $COPSS_{i,t+1}$ using no fewer than three nor more than five residuals.
$AVG\_COPSS_{i,t}$	average *COPSS* over the three-to-five year horizon ending in year *t*
$AVG\_SG_{i,t}$	average *SG* over the three-to-five year horizon ending in year *t*
$BM_{i,t}$	total assets (WS-*WC02999*) minus total liabilities (WS-*WC03351*), divided by market value of equity (WS-*MV*)
$COPSS_{i,t}$	net income before extraordinary items (WS-*WC01551*) minus *ACCRUALS*, scaled by *TA* at *t*-1
$DSMTH_{i,t}$	average percentile ranking (by country) of *DSMTH1* and *DSMTH2*
$DSMTH1_{i,t}$	residual from the panel regression of $SMTH1_{i,t}$ on industry (two-digit WS-*ICB*) and fiscal year fixed effects and the following variables for fiscal year *t*: *LASSETS*, *LEV*, *BM*, *STDSALES*, *PCT_LOSS*, *OPCYCLE*, *OPLEV*, *AVG_SG* and *AVG_COPSS*
$DSMTH2_{i,t}$	the residual from the panel regression of $SMTH2_{i,t}$ on industry (two-digit WS-*ICB*) and fiscal year fixed effects and the following variables for fiscal year *t*: *LASSETS*, *LEV*, *BM*, *STDSALES*, *PCT_LOSS*, *OPCYCLE*, *OPLEV*, *AVG_SG* and *AVG_COPSS*
$ENTRENCH_{i,t}$	an indicator that equals one if firm *i*'s Bebchuk et al. (2009) entrenchment index in year *t* is greater than three, and equals zero otherwise.
$FACILITY_{i.l}$	face amount of the loan facility (DL-*facilityamt*), in millions of U.S. dollars
$FSMTH_{i,t}$	average percentile ranking (by country) of *FSMTH1* and *FSMTH2*

$FSMTH1_{i,t}$	predicted value from the panel regression of $SMTH1_{i,t}$ on industry (two-digit WS-*ICB*) and fiscal year fixed effects and the following variables for fiscal year *t*: *LASSETS*, *LEV*, *BM*, *STDSALES*, *PCT_LOSS*, *OPCYCLE*, *OPLEV*, *AVG_SG* and *AVG_COPSS*
$FSMTH2_{i,t}$	predicted value from the panel regression of $SMTH2_{i,t}$ on industry (two-digit WS-*ICB*) and fiscal year fixed effects and the following variables for fiscal year *t*: *LASSETS*, *LEV*, *BM*, *STDSALES*, *PCT_LOSS*, *OPCYCLE*, *OPLEV*, *AVG_SG* and *AVG_COPSS*
$LEV_{i,t}$	total liabilities (WS-*WC03351*) divided by total assets (WS-*WC02999*)
$LFACILITY_{i,l}$	natural logarithm of *FACILITY*
$LMATURITY_{i,l}$	natural logarithm of *MATURITY*
$LOSS_{i,t}$	an indicator variable that equals one if net income before extraordinary items (WS-*WC01551*) is less than zero, and equals zero otherwise
$MATURITY_{i,l}$	loan facility term in months (DL-*maturity*)
$NCOV_{i,l}$	number of distinct financial and net worth covenants attached to the facility's loan package
$NIEXS_{i,t}$	net income before extraordinary items (WS-*WC01551*) scaled by *TA* at *t*-1
$OPCYCLE_{i,t}$	natural logarithm of ((average accounts receivable/sales)*360 + (average inventory/cost of goods sold)*360); accounts receivable (WS-*WC02051*), sales (WS-*WC01001*), inventory (WS-*WC02101*), cost of goods sold (WS-*WC01051*)
$OPLEV_{i,t}$	property, plant and equipment (WS-*WC02501*), divided by *TA*
$PBTHREAT\_CL_{i,t}$	country-level indicator of the threat of private benefits extraction; an indicator that equals one if the Djankov et al. (2008) anti-self-dealing index of firm *i*'s country is below the sample observation median, and equals zero otherwise
$PBTHREAT\_FL_{i,t}$	firm-level indicator of the threat of private benefits extraction; an indicator that equals one if firm *i*'s percentage of closely held shares is in the top quartile of sample observations (i.e., greater than 45.75%), and equals zero otherwise
$PCT\_LOSS_{i,t}$	percentage of years where *LOSS* = 1 over the three-to-five year horizon ending in year *t*

$ROA_{i,t}$	net income before extraordinary items (WS-*WC01551*) divided by *TA*
$SECURE_{i,l}$	an indicator variable that equals one if a loan facility requires collateral, and equals zero otherwise (DL-*secured*)
$SG_{i,t}$	percentage change in sales (WS-*WC01001*) from year *t*-1 to *t*
$SIZE_{i,t}$	natural log of total assets (WS-*WC02999*) in U.S. dollars
$SMTH_{i,t}$	the average percentile ranking (by country) of *SMTH1* and *SMTH2*
$SMTH1_{i,t}$	(standard deviation of *NIEXS* divided by the standard deviation of *COPSS*) multiplied by -1, where the standard deviations are computed over the three-to-five year horizon ending in year *t*
$SMTH2_{i,t}$	correlation between *COPSS* and ($ACCRUALS/TA_{t-1}$) multiplied by -1, where the correlation is computed over the three-to-five year horizon ending in year *t*
$SPREAD_{i,l}$	interest rate on the loan facility in excess of LIBOR, in basis points (DL-*allindrawn*)
$STDRET_{i,l}$	standard deviation of monthly return (computed from DS-*ret_index*) for firm *i* over the twelve-month horizon immediately preceding loan facility *l*
$STDSALES_{i,t}$	standard deviation of sales (WS-*WC01001*) over the three-to-five year horizon ending in year *t*
$TA_{i,t}$	total assets (WS-*WC02999*)
$TANG_{i,t}$	property, plant and equipment (WS-*WC02501*), divided by *TA*
$WEAKCRDRTS_{i,t}$	an indicator variable that equals one if firm *i*'s La Porta et al. (1998) country-level creditor rights index is below the sample observation median, and equals zero otherwise

Note: Variables prefixed by DS-, WC- and DL- are the mnemonic identifiers of the raw data items obtained from Datastream Advance, Worldscope (a component of Datastream Advance), and LPC's Dealscan, respectively. Subscripts *i*, *t*, and *l* refer to firm, fiscal year, and loan facility, respectively.

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Table 1
Sample country composition

Table 1 presents the country distribution of the sample firms and facility-level observations used in our analyses. Anti-self-dealing index (Djankov et al. 2008) takes values in the range zero to one, where higher values indicate a lower threat of private benefit extraction. A country is classified as having high (low) threat of private benefits extraction if its anti-self-dealing index is below (above) the sample observation median. For simplicity, we follow prior research (e.g., Daske et al. 2008) and refer to Hong Kong as a country.

	Firms		**Facilities**		**Anti-Self**	
NATION	**N**	**%**	**N**	**%**	**Dealing Index**	***PBTHREAT_CL***
AUSTRALIA	14	2.2	29	1.6	0.76	0
BRAZIL	2	0.3	2	0.1	0.27	1
CANADA	69	10.8	160	8.8	0.64	0
FRANCE	72	11.3	281	15.5	0.38	1
GERMANY	28	4.4	90	5.0	0.28	1
HONG KONG	25	3.9	44	2.4	0.96	0
INDIA	18	2.8	33	1.8	0.58	0
ITALY	8	1.3	12	0.7	0.42	1
KOREA (SOUTH)	23	3.6	71	3.9	0.47	1
MEXICO	5	0.8	7	0.4	0.17	1
NETHERLANDS	8	1.3	15	0.8	0.20	1
SINGAPORE	8	1.3	9	0.5	1.00	0
SOUTH AFRICA	2	0.3	6	0.3	0.81	0
SPAIN	12	1.9	19	1.1	0.37	1
SWEDEN	4	0.6	4	0.2	0.33	1
TAIWAN	143	22.4	377	20.8	0.56	0
UNITED KINGDOM	198	31.0	658	36.2	0.95	0
Total	**639**	**100.0**	**1,817**	**100.0**		

Table 2
Sample descriptive statistics

Table 2 presents descriptive statistics for the 1,817 facility-level observations used in our main analysis. Variable definitions are presented in Appendix B.

Variable	Mean	Std	P1	P25	Median	P75	P99
SMTH	50.382	27.967	2.500	25.000	51.500	75.500	97.500
FSMTH	51.841	24.117	4.000	34.000	55.000	70.500	94.000
DSMTH	49.496	26.130	2.000	27.500	52.000	71.500	96.000
SPREAD	134.413	108.854	19.000	55.000	100.000	200.000	525.000
FACILITY	462.163	987.631	0.183	23.164	140.000	440.767	4708.474
LFACILITY	4.301	2.563	-1.699	3.143	4.942	6.089	8.457
MATURITY	64.216	21.929	24.000	60.000	60.000	75.000	144.000
LMATURITY	4.105	0.346	3.178	4.094	4.094	4.317	4.970
SECURE	0.254	0.436	0.000	0.000	0.000	1.000	1.000
NCOV	0.569	0.929	0.000	0.000	0.000	1.000	4.000
SIZE	14.006	1.477	11.015	12.967	13.923	14.982	17.689
BM	0.714	0.480	0.009	0.380	0.612	0.942	2.117
LEV	0.591	0.149	0.265	0.491	0.588	0.680	0.980
ROA	0.080	0.068	-0.109	0.044	0.076	0.114	0.235
NETWTH	11.396	19.601	0.037	0.666	2.761	12.073	86.318
TANG	0.389	0.245	0.015	0.178	0.362	0.565	0.935
STDRET	0.106	0.052	0.031	0.070	0.097	0.129	0.292

Table 3
Correlation matrix for facility-level variables
Table 3 reports Pearson (Spearman) correlations among variables in our sample of 1,817 facility-level observations above (below) the diagonal. Correlations that are significant at the 10% level or better are presented in bold italics. Variable definitions are presented in Appendix B.

Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*
SMTH (1)		***0.345***	***0.888***	***-0.040***	***-0.050***	-0.008	***-0.043***	-0.021	***-0.125***	***0.041***	***0.045***	***0.081***	0.033	***-0.085***	***-0.056***	***-0.185***
FSMTH (2)	***0.337***		***-0.046***	***-0.077***	-0.029	0.029	***-0.080***	-0.005	***-0.067***	***-0.080***	***-0.065***	***0.253***	***0.049***	***-0.180***	***-0.188***	***-0.393***
DSMTH (3)	***0.885***	***-0.050***		0.012	-0.034	-0.014	0.004	-0.017	***-0.091***	***0.081***	***0.067***	-0.016	0.013	-0.014	0.012	-0.013
SPREAD (4)	-0.020	***-0.077***	0.028		***0.061***	***0.316***	***0.340***	-0.018	***-0.225***	***-0.075***	***0.078***	0.010	0.025	***-0.043***	***0.108***	***0.068***
LFACILITY (5)	***-0.049***	-0.009	-0.037	***-0.115***		***0.039***	***-0.161***	***-0.250***	***0.563***	***-0.369***	***0.245***	***0.165***	***0.230***	-0.029	***-0.213***	-0.007
LMATURITY (6)	-0.007	0.002	-0.006	***0.353***	0.021		***0.205***	***-0.114***	***-0.111***	***-0.119***	0.035	***0.127***	***0.098***	***-0.048***	***-0.091***	***-0.133***
SECURE (7)	***-0.042***	***-0.074***	0.004	***0.333***	***-0.158***	***0.226***		***0.194***	***-0.149***	0.016	***-0.080***	***-0.075***	***-0.087***	-0.008	-0.032	0.037
NCOV (8)	-0.026	-0.011	-0.011	***-0.061***	***-0.363***	***-0.157***	***0.153***		***-0.039***	***0.101***	***-0.072***	***-0.120***	***-0.141***	-0.003	***0.092***	***0.087***
SIZE (9)	***-0.131***	***-0.051***	***-0.101***	***-0.340***	***0.589***	***-0.126***	***-0.134***	***-0.076***		-0.036	***0.248***	***-0.120***	***0.317***	0.013	***-0.134***	***0.084***
BM (10)	0.019	***-0.053***	***0.043***	***-0.051***	***-0.358***	***-0.133***	0.008	***0.214***	***-0.041***		***-0.237***	***-0.303***	***0.069***	***0.142***	***0.122***	***0.153***
LEV (11)	***0.061***	***-0.064***	***0.082***	***0.044***	***0.254***	***0.074***	***-0.074***	***-0.159***	***0.258***	***-0.277***		***-0.231***	***0.133***	***-0.190***	***0.041***	***0.127***
ROA (12)	0.032	***0.218***	***-0.067***	***0.041***	***0.179***	***0.134***	***-0.043***	***-0.151***	***-0.085***	***-0.401***	***-0.200***		0.005	***0.053***	***-0.222***	***-0.580***
NETWTH (13)	0.010	***0.081***	-0.018	0.036	***0.460***	***0.122***	***-0.081***	***-0.349***	***0.425***	***-0.043***	***0.137***	***0.134***		***-0.161***	***-0.161***	***-0.067***
TANG (14)	***-0.100***	***-0.182***	-0.032	***-0.052***	***-0.066***	***-0.067***	-0.001	***0.057***	0.026	***0.171***	***-0.174***	***0.058***	***-0.100***		0.037	0.036
STDRET (15)	-0.027	***-0.122***	0.025	***0.154***	***-0.264***	***-0.109***	***-0.049***	***0.140***	***-0.192***	***0.134***	-0.028	***-0.150***	***-0.282***	***0.076***		***0.272***
LOSS (16)	***-0.185***	***-0.369***	-0.014	***0.071***	0.010	***-0.123***	0.037	***0.076***	***0.076***	***0.111***	***0.100***	***-0.515***	***-0.092***	0.036	***0.220***	

Table 4
Country level threat of private benefits extraction

Table 4 presents results of OLS estimation of Eq. (4) using 1,817 firm-loan observations. *SPREAD* is the loan interest rate over LIBOR in basis points. *PBTHREAT_CL* is an indicator that equals one (zero) if a firm is in a country with high (low) threat of private benefits extraction. *DSMTH* is a rank variable increasing in firm-level discretionary smoothing. All variables are further defined in Appendix B. Country and year fixed effects are included but not reported. Robust t-statistics based on standard errors clustered by country and calendar-month-year are reported in parentheses. *, **, and *** indicate significance (two-sided) at the 10%, 5% and 1% levels, respectively.

Dep. Var.:	*SPREAD*	*SPREAD*	*SPREAD*
Column:	(1)	(2)	(3)
Intercept	-64.356	-63.033	-59.219
	(-0.86)	(-0.83)	(-0.79)
SMTH	-0.150		
	(-1.48)		
PBTHREAT_CL			-38.420
			(-1.09)
DSMTH		**-0.040**	**-0.160** **
		(-0.38)	**(-2.45)**
DSMTH*PBTHREAT_CL			**0.464** ***
			(3.86)
FSMTH		-0.213 **	-0.202 ***
		(-1.99)	(-2.99)
*FSMTH*PBTHREAT_CL*			-0.024
			(-0.08)
SIZE	-15.641 ***	-15.392 ***	-15.169 ***
	(-6.89)	(-6.71)	(-6.33)
BM	19.803 ***	18.969 ***	18.719 ***
	(3.96)	(3.74)	(3.26)
LEV	33.885 ***	30.280 **	26.418 **
	(2.80)	(2.34)	(1.99)
ROA	-122.265 *	-112.716	-111.844 *
	(-1.88)	(-1.51)	(-1.65)
TANG	2.051	-1.246	0.411
	(0.21)	(-0.13)	(0.05)
STDRET	206.178 ***	191.265 **	203.108 **
	(2.62)	(2.26)	(2.37)
NCOV	3.659	3.782	3.888
	(1.05)	(1.07)	(1.08)
LFACILITY	-10.059 ***	-10.175 ***	-10.176 ***
	(-2.92)	(-2.91)	(-2.90)
LMATURITY	71.677 ***	72.335 ***	72.412 ***
	(3.22)	(3.29)	(3.34)
SECURE	63.902 ***	63.225 ***	62.813 ***
	(3.09)	(3.01)	(3.00)
DSMTH+DSMTH*PBTHREAT_CL			**0.304** **
Adj. R^2	0.440	0.440	0.442

Table 5
Threat of private benefits extraction vs. creditor rights

Table 5 presents results of OLS estimation of Eq. (4) using 1,817 firm-loan observations. *SPREAD* is the loan interest rate over LIBOR in basis points. *PBTHREAT_CL* is an indicator that equals one (zero) if a firm is in a country with high (low) threat of private benefits extraction. *WEAKCRDRTS* is an indicator that equals one (zero) if a firms is in a country with weak creditor rights. *DSMTH* is a rank variable increasing in firm-level discretionary smoothing. All variables are further defined in Appendix B. Country and year fixed effects are included but not reported. Robust t-statistics based on standard errors clustered by country and calendar-month-year are reported in parentheses. *, **, and *** indicate significance (two-sided) at the 10%, 5% and 1% levels, respectively.

Dep. Var.:	*SPREAD*	*SPREAD*
Column:	(1)	(2)
Intercept	-58.006	-55.569
	(-0.78)	(-0.73)
PBTHREAT_CL		33.152
		(1.57)
WEAKCRDRTS	-122.144 ***	-80.254 ***
	(-5.66)	(-4.30)
DSMTH	**-0.040**	**-0.127** **
	(-0.35)	**(-2.07)**
DSMTH*PBTHREAT_CL		**0.508** ***
		(3.88)
DSMTH*WEAKCRDRTS	**-0.004**	**-0.102**
	(-0.03)	**(-1.44)**
FSMTH	-0.331	-0.331 *
	(-1.45)	(-1.69)
*FSMTH*PBTHREAT_CL*		-0.081
		(-0.26)
*FSMTH*WEAKCRDRTS*	0.210	0.257
	(1.01)	(1.14)
SIZE	-15.177 ***	-14.898 ***
	(-6.74)	(-6.25)
BM	19.101 ***	18.946 ***
	(3.75)	(3.32)
LEV	28.246 **	23.647 *
	(2.10)	(1.70)
ROA	-109.509	-111.633
	(-1.50)	(-1.64)
TANG	-2.996	-1.863
	(-0.27)	(-0.18)
STDRET	191.005 **	202.910 **
	(2.26)	(2.44)
NCOV	3.514	3.505
	(1.02)	(1.00)
LFACILITY	-10.165 ***	-10.147 ***
	(-2.89)	(-2.90)
LMATURITY	72.461 ***	72.666 ***
	(3.32)	(3.36)
SECURE	63.389 ***	63.100 ***
	(3.05)	(3.04)
DSMTH+DSMTH*PBTHREAT_CL		**0.382 ** **
Adj. R^2	0.440	0.442

Table 6
Smoothing vs. accrual quality
Table 6 presents results of OLS estimation of Eq. (4) using 976 firm-loan observations. *SPREAD* is the loan interest rate over LIBOR in basis points. *PBTHREAT_CL* is an indicator that equals one (zero) if a firm is in a country with high (low) threat of private benefits extraction. *DSMTH* is a rank variable increasing in firm-level discretionary smoothing. *AQ* is a variable that is increasing in accruals quality. All variables are further defined in Appendix B. Country and year fixed effects are included but not reported. Robust t-statistics based on standard errors clustered by country and calendar-month-year are reported in parentheses. *, **, and *** indicate significance (two-sided) at the 10%, 5% and 1% levels, respectively.

Dep. Var.:	*SPREAD*		*SPREAD*	
Column:	(1)		(2)	
Intercept	108.793	***	106.165	***
	(3.01)		(2.85)	
PBTHREAT_CL	-70.993	***	-77.373	
	(-2.81)		(-1.48)	
DSMTH	**-0.300**	*******	**-0.374**	*******
	(-2.77)		**(-3.43)**	
DSMTH*PBTHREAT_CL	**0.401**	*****	**0.426**	******
	(1.90)		**(2.39)**	
FSMTH	-0.103		-0.102	
	(-1.118)		(-1.20)	
*FSMTH*PBTHREAT_CL*	0.143		0.152	
	(0.30)		(0.35)	
AQ			**-0.252**	*******
			(-3.27)	
AQ*PBTHREAT_CL			**0.140**	
			(0.45)	
SIZE	-9.339	***	-8.274	***
	(-3.43)		(-2.65)	
BM	14.804	**	14.941	**
	(2.11)		(2.14)	
LEV	41.937	*	39.851	*
	(1.73)		(1.68)	
ROA	-253.663	***	-238.057	***
	(-3.11)		(-2.89)	
TANG	11.205		15.933	
	(0.90)		(1.61)	
STDRET	260.923	**	254.054	**
	(2.11)		(1.97)	
NCOV	9.970	**	10.062	**
	(2.15)		(2.19)	
LFACILITY	-9.263	***	-9.640	***
	(-2.82)		(-3.41)	
LMATURITY	24.920	*	25.620	*
	(1.76)		(1.81)	
SECURE	56.816	**	56.218	**
	(2.02)		(2.01)	
DSMTH+DSMTH*PBTHREAT_CL	**0.101**		**0.052**	
AQ+AQ*PBTHREAT_CL			**-0.112**	
Adj. R^2	0.445		0.448	

Table 7
Firm-level threat of private benefits extraction

Table 7 presents results of OLS estimation of Eq. (4) using firm-loan observations. *SPREAD* is the loan interest rate over LIBOR in basis points. *PBTHREAT_FL* is an indicator that equals one (zero) if a firm has a high (low) percentage of closely-held shares. *ENTRENCH* is an indicator that equals one (zero) if a firm has a high (low) Bebchuk et al. (2009) entrenchment index. *DSMTH* is a rank variable increasing in firm-level discretionary smoothing. All variables are further defined in Appendix B. Column (1) uses our primary sample with untabulated country and year fixed effects and standard errors clustered by country and calendar-month-year. Column (2) uses a sample of U.S. firms with year fixed effects and standard errors clustered by calendar-month-year. Robust t-statistics are reported in parentheses. *, **, and *** indicate significance (two-sided) at the 10%, 5% and 1% levels, respectively.

Dep. Var.:	*SPREAD*	*SPREAD*
THREAT_FL Var.:	*PBTHREAT_FL*	*ENTRENCH*
Column:	(1)	(2)
Intercept	-73.105	123.543 ***
	(-0.96)	(4.24)
THREAT_FL	-3.586	-22.004 *
	(-0.15)	(-1.82)
DSMTH	**-0.180 ** **	**-0.102 * **
	(-2.11)	**(-1.71)**
DSMTH*THREAT_FL	**0.632 *** **	**0.353 ** **
	(3.69)	**(2.49)**
FSMTH	-0.077	-0.464 ***
	(-0.68)	(-5.51)
*FSMTH*THREAT_FL*	-0.493	0.029
	(-1.27)	(0.17)
SIZE	-15.981 ***	-8.405 ***
	(-4.62)	(-4.85)
BM	19.777 ***	9.839 ***
	(4.53)	(3.36)
LEV	30.656 **	100.865 ***
	(2.07)	(10.33)
ROA	-100.479	-161.112 ***
	(-1.29)	(-5.25)
TANG	2.698	-0.220
	(0.32)	(-0.03)
STDRET	199.841 ***	177.529 ***
	(2.62)	(6.22)
NCOV	7.104	-0.844
	(1.57)	(-0.75)
LFACILITY	-10.666 ***	-12.772 ***
	(-3.07)	(-7.63)
LMATURITY	73.577 ***	23.998 ***
	(3.41)	(3.94)
SECURE	69.301 ***	78.450 ***
	(3.60)	(23.01)
DSMTH+DSMTH*THREAT_FL	**0.452 ** **	**0.251 ** **
N	1,608	6,033
Adj. R^2	0.457	0.464