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Syndicated bank lending and rating downgrades: Do sovereign ceiling policies really matter?

We examine the effect of firm credit rating downgrades on the pricing and structure of syndicated bank loans following rating downgrades in the firms' countries of domicile. We find that the sovereign ceiling policies used by credit rating agencies create a disproportionally adverse impact on the bounded firms' borrowing costs relative to other domestic firms following their sovereign's rating downgrade. Moreover, the loans extended tend to be more concentrated and funded by fewer lead arrangers. Forming borrowing relationships with local- as well as foreign-banks and maintaining financial strength ameliorates bounded firms' bank financing costs.

Keywords: Credit ratings, Sovereign ceiling, Bank credit, Relationship lending, Foreign-currency lending, Firm credit constraints.

JEL classification: F34 ; G21; G24; G28; G32; H63

1. Introduction

Sovereign credit rating downgrades carry significant negative consequences for firms domiciled in publicly-downgraded countries. In rating the creditworthiness of debt obligors, major credit rating agencies (CRAs) maintain a so called 'sovereign ceiling policy' -whereby domestic firms are unlikely to receive a rating higher than that of their sovereign. Hence, when there is a sovereign downgrade, firms with ratings equal to that of their sovereign become technically 'bounded' by the implicit ceiling and they also get downgraded, irrespective of their fundamentals. Consequently, they bear the direct consequences of the downgrade whereas non-bounded firms may only experience indirect consequences via the deterioration of the macroeconomic environment in the country. The literature shows that bounded corporate borrowers cut back on corporate investment and reduce their reliance on credit markets relatively more than firms with ratings below the bound following a sovereign downgrade event. Moreover, the bond yields of sovereign ceiling bounded firms increase significantly more than for otherwise similar firms (see Almeida, Cunha, Ferreira, and Restrepo, 2017).

We investigate whether banks in the syndicated loan market would also alter their lending behavior in response to sovereign rating downgrades that impact borrowing firms. Specifically, would banks punish bounded firms more than non-bounded firms following the sovereign downgrade of the borrower's country? To the best of our knowledge, this aspect of the impact of CRAs' sovereign rating actions has not been addressed in the literature. Hence, this study fills the void in the extant literature by examining the responses of syndicated lenders following sovereign downgrades. It is important to understand how these major credit events impact on syndicated bank lending decisions given the significance of this type of bank credit extended to corporate borrowers.

To explore the aforementioned we follow prior studies in employing an identification strategy that exploits the variation in corporate credit ratings that is due to CRAs' sovereign

ceiling policies (see Adelino and Ferreira, 2016; Almeida, Cunha, Ferreira, and Restrepo, 2017). As these studies argue, whilst there is no explicit requirement for CRAs to rate a non-sovereign entity at or below the related sovereign, in practice, corporate credit ratings infrequently exceed those of their sovereigns. By applying this strategy to the syndicated lending market over 1993-2016, we show that the sovereign ceiling policy not only leads to an asymmetric effect on borrowers' cost of credit, but also impacts how lenders work together to structure those loans. Firms with a rating equal to their sovereign before the downgrade are subject to significantly greater increases in loan spreads and other penalties relative to control firms rated below their sovereign (non-bounded firms). This extra cost is equal to approximately 55 basis points and represents almost USD 6.2 million of additional interest expenses for a loan of average size and maturity. Importantly, it mainly arises when bounded firms receive loans from foreign banks. In addition, they receive shorter loan maturities (by 10 months) and tighter loan provisions. Thus, bounded firms face a significant disadvantage compared to their non-bounded counterparts in the event of a sovereign downgrade.

Interestingly, these loans are granted from syndicates with relatively fewer members, where loan share is only divided between a limited number of lenders. These narrow and concentrated syndicates appear to be set up in response to the rising information asymmetry with regards to the borrower's solvency risk following the sovereign downgrade. This corroborates with Sufi's (2007) finding that widening information asymmetry is associated with more concentrated syndicates in loan facilities as lead banks are forced to take a larger share and provide more extensive monitoring.

Similar to Adelino and Ferreira (2016) and Almeida, Cunha, Ferreira, and Restrepo (2017), our identification strategy has the advantage that non-bounded firms have similar but lower credit quality than bounded firms and the sovereign downgrade events represent exogenous shocks on corporate credit ratings. Hence, alternative explanations based on

changes in firm fundamentals, or firm credit risk, or both, are unlikely to explain the discontinuous change in ratings around the sovereign ceiling following the sovereign downgrade event. The exogenous and asymmetric effect of sovereign downgrades on firm ratings is thus likely to be due to the existence of the sovereign ceiling policy, and not necessarily to changes in either a firm's fundamentals or the domestic macroeconomic environment.

Several sensitivity tests show that these baseline findings are robust, and of these, the following four are noteworthy. First, we use different sets of fixed effects (see, e.g., Jiménez, Ongena, Peydró, and Saurina, 2014). These include "bank times year" and "lender's country times year" fixed effects that exclude any alternative supply-side explanations of our findings, and further saturate our model to account for the time-varying macroeconomic environment in the lender's country. Second, we also consider the impact of sovereigns' local currency rating downgrades as a robustness check. Additionally, we examine the impact of rating outlooks as these are forward-looking assessments of sovereign credit quality. Third, we use alternative model specifications with different loan control variables to show that the results are not affected by the "bad controls problem." We further employ specifications where our sample of bounded firms is matched with a subsample of unbounded firms according to their credit quality and their fundamental attributes. Fourth, we estimate a Heckman-type model, which models the probability of a firm borrowing from the given bank to account for sample-selection issues (Dass and Massa, 2011).

We conduct additional analyses to understand the mechanism that leads to this high cost of international bank credit for bounded firms. By focusing on potential demand-side explanations, we show that this cost is contingent on certain firm characteristics and financing choices. In particular, large borrowers with less reliance on debt financing and greater reliance

on internal funds can partially offset the higher loan spread premium following the rating downgrade.

Our examination of country fundamentals reveals that borrower countries with more developed financial markets are generally associated with lower bank borrowing costs. Hence, the concomitant increase in bank loan spreads following a sovereign downgrade can be ameliorated when sovereign bounded firms have access to alternative forms of financing. We reveal that the exchange rate arrangements also play a fundamental role since they allow for currency depreciation as a means for restoring competitiveness. In this regard, we find that the transition away from a fixed exchange rate system to more flexible arrangements, such as crawling pegs and bands, further eases the cost of international bank credit for bounded firms following a sovereign downgrade.

Lastly, we explore how bounded firms should respond to sovereign downgrades to avoid or offset the higher borrowing costs and tougher loan conditions following a sovereign downgrade. We identify two potential avenues. First, establishing an information-intensive banking relationship with a lender is important. We find that by borrowing from the same lead lender at least once in the two years before the current loan, firms can recover a significant portion of the initial interest rate premium compared to firms with first-time bank-firm relationships. Furthermore, benefits to the bounded firms increase with the previous loan amount and frequency of such previous relationships. Second, borrowing from international lenders with subsidiaries in the borrower's country mitigates the negative impact on bank loan terms. These subsidiaries enable the parent banks to gain access to important information about the firm's solvency and prospects as well as the domestic macroeconomic environment. In both cases, the information asymmetry stemming from the sovereign downgrade and the subsequent downgrade of the bounded firms can be better assessed and managed, thereby resulting in more favourable loan terms.

This paper contributes to the literature on the impact of corporate credit rating downgrades on a firm's cost of credit. In this regard, it highlights the higher cost of credit faced by bounded firms following a downgrade, especially when resorting to international financing; most importantly, it identifies the operative mechanisms that drive the higher borrowing costs. The closest papers to ours are possibly those of Adelino and Ferreira (2016), who in a similar setting examine the lending behavior of domestic bounded banks after the sovereign downgrade, whereas Almeida, Cunha, Ferreira, and Restrepo (2017) analyze the real impact on domestic bounded firms. We complement these studies, by investigating the impact of sovereign downgrades and the sovereign ceiling policy-induced corporate downgrades on the loan financing of the domestic bounded firm and evaluate the demand-side implications for the firm's cost of credit.

We present new and comprehensive evidence on the differential impact of sovereign downgrades (considering both foreign- and local-currency denominated ratings and as well as short-term rating outlooks) on bank borrowing costs, other non-price loan terms, and the syndicate characteristics of loans directed to bounded borrowers relative to non-bounded ones. Importantly, we identify potential avenues for affected firms to alleviate the negative impact stemming from the interaction of sovereign and corporate credit risk as reflected in the sovereign and corporate downgrade events, respectively. Concerning this interaction, we point to a new and overlooked aspect of the sovereign-firm nexus that affects firm financing conditions and materializes due to the operation of the sovereign ceiling rule. Thus far, prior studies have mainly investigated sovereign credit risk (through sovereign credit ratings) as determinants of corporate credit ratings (see Borensztein, Cowan, and Valenzuela, 2013), or corporate CDS spreads during the European sovereign debt crisis (see Bedendo and Colla, 2015; Augustin, Boustanifar, Breckenfelder, and Schnitzler, 2018). Our work extends far beyond studies focused on the sovereign debt crisis, showing that sovereign downgrades

increased the bank borrowing costs of European firms (see Drago and Gallo, 2017) by contributing new evidence on corporate borrowers' immunity to their country's rating demise.

Last but not least, we contribute to the literature on the importance of information asymmetry for syndicate formation. Information asymmetries between contracting parties are crucial for the design of optimal contracts (see Brealey, Leland, and Pyle, 1977; Holmstrom and Tirole, 1997). The asymmetries are manifested between the lending counterparties and primarily relate to the lead banks' reputation. Lead banks subject to enforcement actions by their regulators increase their loan shares to entice participants to continue to co-finance the loan (see Delis, Iosifidi, Kokas, Xefteris, and Ongena, 2020). Furthermore, lead arrangers' reputation measured by large-scale bankruptcies affect their subsequent syndication activity (see Gopalan, Nanda, and Yerramilli, 2011), while greater control-ownership divergence causes lead arrangers to retain higher loan shares (see Lin, Ma, Malatesta, and Xuan, 2012).

However, asymmetries are also present between lenders and borrowers. In particular, lead arrangers retain the largest share of the loan the first time an opaque borrower accesses the syndicated loan market and retain lower amounts as the borrower subsequently accesses the market (see Sufi, 2007). This is the case for firms that require intense monitoring and due diligence, and suggests that problems of information asymmetry are reduced when the borrower becomes more 'known' in the syndicated loan market. However, the larger the retained share, the greater the increase in the moral hazard problems (see, e.g., Dennis and Mollyneaux, 2000; Dennis, Nandy, and Sharpe, 2000; Sufi, 2007; Ivashina, 2009).

We provide evidence on the implications for syndicate structure when borrowing firms experience an exogenous negative shock to their creditworthiness that is totally unrelated to a deterioration in firm fundamentals. We document that the sovereign ceiling rule – due to an increase in firm-stemming information asymmetry – drives the lead arranger's responsibility

for all price and non-price-setting decisions of the loan. This is in turn reflected in the formation of more concentrated syndicates with fewer lead arrangers acquiring a stake in the loan.

The rest of the paper proceeds as follows. Section 2 discusses the data and empirical methodology. Section 3 presents and discusses the main empirical results. Section 4 examines the loan-demand channel and country fundamentals and further shows the importance of prior bank-firm lending relationships and the role of subsidiaries as a remedy for the increased firm borrowing costs. Section 5 concludes the paper. An Internet Appendix provides several additional summary statistics and robustness checks.

2. Data and empirical model

We obtain data from various sources to build our detailed matched bank-firm dataset. First, we collect all syndicated loan deals made (at the facility level) over the period 1993 to 2016 from the Refinitiv LPC DealScan database. Dealscan contains the most comprehensive historical loan-deal information available on the global syndicated loan market. We exclude all loans for which there is no conventional pricing (i.e., there is no loan spread data) and this removes all types of Islamic finance and very specialized credit lines. We match the loans with the long-term foreign-currency sovereign credit ratings of the borrower's country issued by Standard & Poor's (S&P). The literature reports that S&P's ratings are updated more frequently and generally precede other credit rating agencies (see Ismailescu and Kazemi, 2010; Alsakka, ap Gwilym, and Vu, 2014; Drago and Gallo, 2017).[3] We match loan facilities with bank- and firm-specific characteristics from Compustat, as well as with macroeconomic and institutional (country-year) variables from several sources. The number of loan facilities for our baseline specifications ranges from 61,985 to 82,715, depending on the controls and the set of fixed

[3] Credit ratings from S&P, along with ratings from Moody's, are further allowed to be used for determining risk weights under Basel II.

effects used. These loans were granted by 573 lead lenders headquartered in 42 countries to 4,278 borrowers from 54 countries; see Table 1 for key descriptive statistics.

To examine whether a bounded firm faces a higher cost of credit following a domestic sovereign downgrade relative to non-bounded firms, we use a regression approach very similar to Adelino and Ferreira (2016), Almeida, Cunha, Ferreira, and Restrepo (2017), Berg, Saunders, Steffen, and Streitz (2016), and Gande and Saunders (2012).[4]

$$Cost\ of\ credit_{lt} = a_0 + a_1 Sovereign\ downgrade_{kt-1} + a_2 Bound_{kt-1} + a_3 Sovereign\ downgrade_{kt-1} \times Bound_{kt-1} + a_4 Controls_{kt} + u_{lt} \quad (1)$$

where $Cost\ of\ credit_{lt}$ measures the cost of loan facility l originated at time t. The most widely used measure is the all-in-drawn spread (*AISD*), denoting the spread over LIBOR, although the recent literature (e.g., Berg, Saunders, Steffen, and Streitz, 2016) also highlights the importance of fees and all-in-spread undrawn (*AISU*). The vector a_0 denotes different types of fixed effects described later in this section. *Controls* is a vector of control variables of dimension k, and u is a stochastic disturbance term.

Sovereign downgrade is an indicator variable equal to one for a downgrade in the long-term foreign-currency credit rating of the borrower's country, and zero otherwise. *Bound* is an indicator variable equal to one if the firm has a credit rating equal to or above the credit rating of its domicile country, and otherwise zero. The interaction of the two, i.e., *Sovereign downgrade* × *Bound*, is in turn equal to one if in the year of the sovereign downgrade the firm

[4] Gande and Saunders (2012) examine a model where the loan amount (or leverage) of firms is regressed on the interaction term between traded syndicated loans (vs. non-traded loans) and the pre-post trade periods. Berg, Saunders, Steffen, and Streitz (2016), use a similar interaction terms model to examine the differential responses of loan spreads and other variables in Europe vs. the U.S. due to foreign lending and other institutional characteristics. Adelino and Ferreira (2016) adopt a diff-in-diff framework to examine the impact of domestic sovereign downgrades on the domestic bounded banks' lending supply relative to non-bounded banks. Similarly, Almeida, Cunha, Ferreira, and Restrepo (2017) examine the real effects of domestic sovereign downgrades on domestic bounded firms compared to non-bounded firms.

has a credit rating equal to or above the credit rating of its domicile country, and zero otherwise (Table A2 provides information on sovereign credit rating downgrades and the domestic bounded firms at the time of the sovereign downgrade). The vector a_0 denotes different types of fixed effects, *Controls* is a vector of control variables of different dimension *k*, and *u* is a stochastic disturbance. We identify the lender's and the borrower's country as the country in which the lender and the borrower are located, respectively. Where a loan is provided by the parent bank's foreign affiliate or subsidiary, the lender's country is set as the country of the affiliate/subsidiary. Similarly, for firms receiving loans through their foreign subsidiaries, we set the borrower's country as the country of the affiliate/subsidiary.[5]

Put simply, our identification strategy provides a direct comparison across two states: bounded (treated) firms and non-bounded (control) firms during the occurrence of a domestic sovereign downgrade. The main coefficient of interest is a_3, which shows the differential effect of *Sovereign downgrade* on the cost of credit between bounded and non-bounded firms. In other words, we obtain identification from the fact that a sovereign downgrade exerts an asymmetric effect on the cost of loans granted to domestic bounded firms relative to control firms that are not at the bound. We expect a_3 to be positive if the sovereign ceiling policies matter for the determination of loan spreads and thus increase the cost of credit for bounded firms.

Moreover, the coefficient a_1 shows how a sovereign downgrade affects the cost of credit for all loans in the sample. If the model is well identified, the interaction term and the control variables should explain (most of) the effect of *Sovereign downgrade* on the cost of

[5] For example, although Citibank (the parent bank) is headquartered in the US, for loans provided by Citibank International Plc, we set the lender's country as the UK. In sensitivity tests, we further examine cases of cross-border loans where the lending bank has an affiliate or subsidiary in the borrower's country. If the bank can fund the loan through its affiliate/subsidiary by resorting to the domestic wholesale markets, it can – to an extent – remove the macroeconomic risk. To accomplish this we identify all banks' subsidiaries in the borrower's country. Similarly, we examine cases where the borrowing firm has an affiliate or subsidiary in the lender's country, although the number of these subsidiaries is relatively small. We discuss this further in Section 4.

credit (i.e., a_1 should be statistically insignificant). The effect of sovereign downgrades on the cost of loans for the domestic non-bounded firms should be minimal or zero, especially when controlling for other firm- and macro-level factors.

We include a battery of other control variables and fixed effects to account for potential omitted variables. Following the relevant literature (e.g., Ivashina, 2009; Adelino and Ferreira, 2016; Almeida, Cunha, Ferreira, and Restrepo, 2017; Hasan, Hoi, Wu, and Zhang, 2017; Kim, 2019; Delis, Hasan, and Ongena, 2020), we control for loan characteristics such as the log of the loan amount, loan maturity (in months), the number of lenders in the syndicate, dummies for performance-pricing provisions and/or collateral, and the total number of covenants.[6] We also control for the total assets of the bank (*Bank size*), the bank return on assets (*Bank ROA*), and the bank's non-performing loans (*Bank NPLs*). Similarly, our firm-level controls include firm size (*Firm size*), firm return on assets (*Firm ROA*), and firm leverage (*Firm Leverage*). We include country-pair-specific variables, such as the difference in the GDP growth rates between the lender's and the borrower's countries (*GDP growth*), or in their GDP per capita (*GDP per capita*) to account for the differences in the degrees of economic development and the macroeconomic conditions of the borrower country. Detailed descriptions of these variables are provided in Table A1 and summary statistics in Table 1.

We also use loan type fixed effects; these are important as loan facilities include credit lines and term loans, which have fundamental differences in their contractual arrangements and pricing (Berg, Saunders, and Steffen, 2016). In additional regressions we also include loan purpose fixed effects (e.g., corporate purposes, working capital, takeovers or acquisitions, debt repayment, etc.). Moreover, we use year, bank, and firm fixed effects. These fixed effects complement our bank- and firm-level characteristics and allow us to control for possible bank- and firm-specific explanations of our findings (such as changes in banks' financial soundness,

[6] Distinguishing between types of covenants (e.g., general and financial covenants) does not affect our results.

corporate governance, or in firm's credit risk and performance), that are not isolated by the inclusion of our set of control variables. We further control for changes in the macroeconomic environment of the lenders' countries and the borrowers' countries using lender's country fixed effects and borrower's country fixed effects, respectively. These fixed effects saturate the effect of *Sovereign downgrade* × *Bound* from other country (socioeconomic and political) effects on bank lending;[7] moreover, they control for changes in monetary conditions. Further, we use country-pair fixed effects to capture common characteristics between the lenders' and borrowers' country-pairs.

In even more stringent specifications, we use bank × year fixed effects. These allow us to control for time-varying supply (bank)-side explanations of our findings (such as changes in a bank's financial soundness, corporate governance, etc.). The regression still yields results on the main coefficients of interest because there are multiple loan facilities from the same bank within years. Similarly, the use of lender's country × year fixed effects shields our specification from country-year (macroeconomic) developments in the lenders' countries. Again, the regression still yields significant results on the main coefficient of interest because there are multiple loan facilities from the same lender country within each year. Additionally, we build our baseline specification with bank-level fixed effects and report the results including bank × year and lender's country × year fixed effects in robustness tests.

The number of loan facilities in our baseline specification is 61,985. Table 1 reports the key descriptive statistics for the set of loan-, bank-, firm-, and macro-level variables in our sample. In Panels A and B of Table 2 we report the summary statistics for key loan features for those bounded firms not experiencing a domestic sovereign downgrade in a given year vs. bounded firms experiencing a domestic sovereign downgrade; Panel C reports their

[7] These are country factors affecting all banks and firms within a country. Several studies examine such macro effects on international bank lending (e.g., Delis, Hasan, and Ongena, 2020; and the associated references), and in this study these effects are fully controlled for via the fixed effects.

differences. As shown in Table A3 the total number of loans granted to bounded firms is 3,210 and constitute approximately 5.2% of the full sample. Out of these, 392 loans are granted to bounded firms experiencing a domestic sovereign downgrade. We find that, on average, *AISD* is 105 basis points higher for bounded firms when experiencing a sovereign downgrade compared to bounded firms without a sovereign downgrade. This difference is statistically significant at the 1% level, and is also evident when the AISU is considered. In addition, loans granted to the former type of firms are more likely to be secured with collateral and have more provisions. In contrast, these loans are granted from syndicates with fewer members and also carry fewer covenants.

[Insert Tables 1 and 2 about here]

3. The effect of sovereign ceiling policies on the cost of credit

3.1. Baseline results

Table 3 reports our baseline results. We cluster standard errors by firm and also by year to avoid time-varying correlations in the data driving our inferences. In line with our discussion in Section 2, we consider different fixed effects in our model specifications. In column (1), we include the simplest fixed effects, namely those at the loan-, year-, bank- and firm-level. In column (2), we introduce borrower's country fixed effects, while in column (3), lender's country fixed effects are used. These control for macroeconomic developments in the lenders' and borrowers' countries, respectively. We further add loan purpose fixed effects and country-pair fixed effects in column (4). In the last two specifications, we add bank × year fixed effects (columns 5-6), while the last column also includes lender's country × year fixed effects.[8]

[8] The number of observations and the corresponding number of banks and firms in columns 5 and 6 are larger because we do not use bank characteristics, which are not available for many banks. Without those characteristics we would start off with more than 80,000 observations.

[Insert Table 3 about here]

Across all specifications, the coefficient on *Sovereign downgrade* is statistically insignificant, which is not surprising as sovereign credit risk should not affect *AISD* unless the borrowing firm is affected (also in line with our priors discussed in Section 2). The coefficient on *Bound* is generally insignificant as the sovereign ceiling also should not affect financial intermediation until a sovereign downgrade event occurs.

We use column (2) as our baseline specification, as the set of fixed effects included in the given specification captures the effect of sovereign ceiling policies on loan spreads and is consistent across all other model specifications. The main coefficient of interest a_3 shows that a sovereign downgrade event increases *AISD* by an average of 54.6 basis points (bps) for bounded firms compared to non-bounded firms. This is a large and economically significant effect, equal to a 32.5% (=54.6 bps ÷ 168.5 bps) increase for the average loan in our sample. Given that the average loan size is $1.13 billion, bounded firms experiencing a sovereign downgrade pay, on average, approximately USD 6.17 million (=$1.13 billion × 54.6 basis points) more per year in interest payment. Considering that the average time to maturity is 4.2 years, this represents approximately USD 25.83 million in extra interest expenses over the loan's duration.[9] Therefore, we can infer that the sovereign ceiling rule substantially raises the cost of loans for bounded firms compared to firms that are not at the bound in the event of a sovereign downgrade.

In Table 4, we replicate the estimations from Table 3 by replacing *Sovereign downgrade* with its local-currency counterpart (*Sovereign downgrade lc*). Results across all specifications mirror those of Table 3 for all our variables of interest. Unsurprisingly, the results are similar considering the strong positive correlation between the two types of credit

[9] Assuming 4.2 annual payments and LIBOR as the discount rate, the increase in interest expense amounts to USD 24.0 million for an average 12-month LIBOR rate of 3.0% during our sample period (for similar calculations, see Ivashina and Sun, 2011).

ratings, as foreign-currency credit rating downgrades are almost always accompanied by local-currency credit rating downgrades. The slightly weaker coefficient on our interaction term, which now ranges from 35.9 to 49.1 basis points might be attributed to the fact that insurance on sovereign debt is mostly denominated in foreign currency, thereby inducing greater sensitivity to foreign-currency credit rating changes relative to local-currency credit rating changes.

[Insert Table 4 about here]

In Table A3 of the Appendix, we examine the sensitivity of our estimates to the "bad controls" problem, by interchangeably excluding loan-level control variables from our specifications.[10] We initially omit all loan-level variables (column 1) and sequentially introduce quantitative information on the loan (*Loan amount, Maturity, Collateral, Number of lenders, Performance provisions, General covenants*) in columns 2-4.[11] Irrespective of the model specification used, the coefficient on the interaction between sovereign downgrade remains consistently positive and statistically significant indicating that the cost of bank credit is higher for bounded versus non-bounded firms.

The size and magnitude of the estimated coefficients on the control variables in Tables 3-4 are generally in line with expectations and the recent works of Bae and Goyal (2009), Ivashina (2009), Cai, Saunders, and Steffen (2018), and Delis, Hasan, and Ongena (2020). In particular, loan spreads decrease with the loan amount, while maturity appears to be irrelevant. The imposition of collateral further increases *AISD* as these loans are generally deemed to be riskier. Also, loans are more competitively priced when more performance provisions are included or there are more banks participating in the syndicate. The behaviour of the bank-

[10] Since the "bad controls" problem is due to differences in the composition of loans to a given firm, in an alternative sensitivity test we include weights based on the number and amount of loans received by each firm (results available upon request).

[11] The replacement (or addition) of *General covenants* with *Financial covenants* or *Net covenants* leaves our results unchanged.

level variables is also largely as anticipated. In this regard, a higher return on bank assets is associated with decreasing *AISD*, while firm characteristics appear immaterial for loan spreads as their effect is mostly captured by the sovereign ceiling rule-induced corporate downgrade. Lastly, the higher the difference between the borrower and the lender countries' GDP per capita, the lower the spread on loans directed to the borrower countries.

There is a possibility of an even stronger impact of sovereign downgrades for the sovereign bounded borrowers if both borrower and lender country sovereigns are downgraded at the same (or in a similar time frame) and the lenders are also sovereign bounded. Unfortunately however, additional complications in modelling and a lack of usable observations for simultaneous sovereign downgrades prevent a quantification of these effects.

3.2. Short-term ratings and rating outlook

We further distinguish between short- and long-term credit ratings, since it might be that some of the effects of sovereign downgrades on the bounded firm's borrowing costs is stemming from downgrades in the sovereign's short-term credit ratings that usually precede (or coincide with) downgrades in the sovereign's long-term credit ratings. To test this, in specification (1) in Table 5, we interact *Sovereign downgrade* × *Bound* with its short-term counterpart *Short-term downgrade*.[12] The coefficient on the double interaction term – albeit relatively weaker than our baseline estimates – is positive and significant, verifying that long-term sovereign downgrades affect bounded firms disproportionally more relative to those below the bound. However, this asymmetric effect of *Sovereign downgrade* on bounded firms is not magnified when its short-term counterpart is also considered, as the latter appears to exert a negligible effect as seen by the insignificant coefficient on the triple interaction term).

[12] We further include all double interactions. For expositional purposes these are not reported here and are available on request.

[Insert Table 5 about here]

Credit ratings are inherently backward-looking credit risk measures whereas outlooks attached to current ratings are forward-looking assessments made by the credit rating agencies. As such, outlook measures contain additional information that might be priced into loan spreads. We consider changes in the outlook for long term foreign currency sovereign ratings. In specification (2), we include an interaction of *Sovereign downgrade* × *Bound* with *Outlook downgrade*. The coefficient on the triple interaction term is positive and statistically significant and larger in magnitude compared to the double interaction term. This suggests that a deterioration in the sovereign's credit rating outlook is considered as an indicator of impending credit rating downgrades. Its effect on *AISD* is over and above the effect exerted by *Sovereign downgrade* × *Bound*, as reflected in its positive and statistically significant coefficient.

3.3. Domestic borrowing vs foreign borrowing

This section examines potential differences in the effect of sovereign downgrades on the bounded firms' cost of credit between domestic and foreign loans. Cross-border loans constitute a significant component of the syndicated loan market and emerge as an increasingly popular form of corporate financing. [13] Moreover, although domestic lenders and borrowers are equally affected by the sovereign event, foreign banks are not. In this regard, we examine whether bounded firms are faced with higher borrowing costs when they resort to foreign banks for financing relative to when they resort to domestic banks. In the first two columns of Table 6, we run our baseline specification for the subsample of loans granted from foreign banks (column 1) and the subsample of loans granted from domestic banks (column 2).

[Insert Table 6 about here]

[13] Cross-border syndicated lending reported in DealScan amounted to more than $2 trillion in 2016.

Initially, we examine the combined effect of sovereign downgrades and the sovereign ceiling rule on cross-border borrowing operations. In total, we observe 26,286 loan facilities granted from foreign banks, which represent approximately 42.4% of our sample. In these operations, foreign banks are exposed to the deteriorating macroeconomic fundamentals in the bounded firm's country. They are further exposed to exchange rate risk, either directly through lending in the borrower country's currency, or indirectly through lending in their own domestic currency. In the presence of these risks, we expect that foreign banks pass the costs to firms in the form of higher loan spreads. Our estimates in column (1) confirm this proposition: the coefficient on our double interaction term is statistically significant and equal to 50.3 basis points. This further reveals that most of the effect of sovereign downgrades on bounded firms' borrowing costs materializes when the latter obtain financing from foreign rather than domestic banks.

Next, we consider loans granted from domestic lenders to domestic borrowers. This is the largest category in our sample, constituting 35,699 loans or approximately 57.6% of our total loan facilities. Since in cases of domestic loans banks are also affected by the sovereign downgrade event, we expect that they are also subject to price concessions when lending domestically; therefore, the higher spread with which bounded firms are faced following the sovereign downgrade, should not be evident when borrowing from domestic banks.[14] Estimates from specification (2) verify this conjecture, since bounded firms are not faced with an increase in their loan spreads after the downgrade event (non-statistically significant coefficient on *Sovereign downgrade* × *Bound*).

However, banks can also be subject to the sovereign ceiling rule, which can in turn reduce their lending supply and drive their loan spreads up (see Adelino and Ferreira, 2016).

[14] In Section 4, we further examine the pricing of loans granted by domestic bounded banks following a sovereign downgrade.

To this end, column (3), replicates specification (2) by replacing our bounded firm indicator with an indicator on whether the lending bank is bounded or not (*Bound (Bank)*). Estimates reveal that indeed, bounded banks charge a higher loan spread equal to more than 26 basis points, when lending domestically following a domestic downgrade; a finding in line with Adelino and Ferreira (2016). In our last specification (column 4), we further consider the case where both loan counterparties are bounded. This is a rare event, as we observe only 9 loans granted from bounded lenders to domestic bounded borrowers. Nonetheless, our estimates indicate that these loans carry a higher spread (surpassing 30 basis points) relative to loans where none of the counterparties is bounded (coefficient on *Sovereign downgrade* × *Bound (Bank & Firm)*).

3.4. Results from a subsample of firms with similar fundamentals

To alleviate remaining concerns that our results are not driven by the sovereign ceiling rule, we further employ a subsample of firms with similar fundamentals that are either above the bound or marginally below. To accomplish this, our sample of bounded firms is matched with a subsample of unbounded firms according to their credit rating and their fundamentals. Results from this exercise are reported in Table 7.

[Insert Table 7 about here]

We initially consider bounded firms vis à vis firms that are one notch below the bound (column 1). According to the results, the effect of sovereign downgrades on bounded firms is even more pronounced than our initial estimates; a sovereign downgrade event increases *AISD* by 73.8 basis points for bounded firms compared to firms just below the bound (coefficient on double interaction). This in turn represents an increase of more than 35% compared to our baseline results. In each of the subsequent specifications, we retain the preceding specification's subsample and progressively impose an additional matching criteria.

Specifically, we further limit our subsample to include firms of a similar size, return on assets, and level of leverage (columns 2-4 respectively). Across these specifications the coefficient on *Sovereign downgrade* × *Bound* retains its negative and statistically significant sign, while its size surges to appoximatelly 106.4 basis points as we progressively use tighter matching criteria to select control firms (specifications 3-4). Again, this effect is almost double that of the baseline estimate, thus validating the higher cost of credit faced by bounded firms relative to other very similar firms that are just below the bound (and unaffected by the sovereign ceiling effect).

3.5. Results for AISU

An important extension of our analysis relates to the role of loan fees. According to Berg, Saunders, and Steffen (2016), commitment plus facility fees, defined as all-in-spread-undrawn (*AISU*), are larger for high-volatility firms. Thus, we might expect that riskier firms face higher overall borrowing costs through higher fees. A constraining factor of the global DealScan database is that the reporting of fees is limited, either because loan deals do not include specifications for undrawn funds or simply due to missing information. Nevertheless, in Table 8 we replicate Table 3 using *AISU* as the dependent variable. Across all specifications, the coefficient on *Sovereign downgrade* × *Bound* is positive and statistically significant at conventional significance levels, raising *AISU* by approximately 28.4% (specification (3)., i.e. 7.62 compared to the sample mean of 26.84 basis points as shown in Table1); therefore, the sovereign ceiling rule is further priced in the fees.[15] Table A8 confirms the response of *AISU* to *Sovereign downgrade* × *Bound* when local-currency credit ratings are also considered.

[Insert Table 8 about here]

[15] We further estimate specifications 1-6 without the inclusion of *AISD* as a control variable; results confirm the positive and statistically significant coefficient on our interaction term (available upon request).

3.6. Effect of the sovereign ceiling rule on non-price loan structure

Our analysis further relates to the effect of the sovereign ceiling rule on other loan terms. To this end, each of the specifications reported in Table 9 estimates our baseline regression by using each of the following loan terms as a dependent variable: *Loan amount*, *Maturity*, *Collateral*, *Number of lenders*, *Performance provisions*, and *Herfindahl Index*. Starting from column (1), we notice that sovereign bounded firms are not necessarily credit rationed by lending syndicates in response to rating downgrades compared to non-bounded firms as the loan amount given is not significantly different relative to those of control firms. However, we observe that *Sovereign downgrade* × *Bound* is negatively related to loan maturity (column 2). Bounded firms receive loans that are on average 10.5 months less than those received by the other firms. Hence, although banks appear willing to accommodate both the bounded and non-bounded firms' need for financing after the downgrade event, they significantly shorten the loans made to bounded firms.

In specification (3), we observe that the sovereign ceiling rule does not exert any influence over a lending syndicate's decision with regards to the imposition of collateral following the downgrade event (column 3). However, they tend to increase the requirement of performance pricing provisions (column 4). The last two specifications examine the effect of *Sovereign downgrade* × *Bound* on syndicate structure. Overall, a sovereign downgrade for a borrower's country results in a narrower and more concentrated syndicate for loans directed to the bounded firms relative to the non-bounded counterparts in the downgraded country. The likely corporate downgrade of bounded firms in the event of a sovereign downgrade due to the sovereign ceiling rule acts as a disincentive for lending banks to enter the syndicate (column 5). Also, each of the syndicate members assumes a higher portion of the loan to ease the resulting information asymmetry with regards to the borrowing firm's solvency risk; in turn

this is also reflected in an increase in the syndicate's Herfindahl index (column 6). These results are in line with the previous findings of Sufi (2007) in the presence of information asymmetry.

[Insert Table 9 about here]

3.7. Additional sensitivity tests

In Table A4, we confirm the insensitivity of our inferences to the type of standard error clustering used. In this respect, we initially cluster standard errors by loan *and* year, and loan *and* firm (columns 1 and 2 respectively). Given, the multi-country nature of our dataset, we consequently cluster errors by borrower's country *and* year (column 3), and by borrower's country *and* firm (column 4). Our last specification adopts a more demanding clustering, as standard errors are clustered by borrower's country *and* firm *and* year. Across all specifications, estimates remain almost identical to our baseline results.

Thus far, we assume that all loans enter the model with equal weights. Normally, the fixed effects in Table 3 provide a safeguard against cross-country variations. We nevertheless acknowledge that the empirical specification might leave the analysis open to the critique that countries receiving more or fewer loans might affect our results disproportionately. To this end, we re-estimate our preferred specification using weighted least squares and several different weights based on the country-year number of loans. We retain the same set of fixed effects and report results from this exercise in Table A5. We initially weight by the number of loans extended by a given lender's country to a given borrower's country scaled by the total number of loans in our sample during the full sample period (column 1); in column (2), we calculate this measure at the annual frequency.

Consequently, we weight by the total number of loans directed from a given lender to a given borrower's country scaled by the total number of loans received by the country of the borrower during our full sample period (column 3) and a given year (column 4). Our last

weighting scheme concerns the total number of loans between a given lender-borrower pair to the total number of loans between that pair (columns 5 and 6 respectively). Across all specifications, and irrespective of the type or frequency of the chosen weight, the coefficient on *Sovereign downgrade* × *Bound* retains its positive and statistically significant value. As for the coefficients on the set of our loan- and bank-level control variables, these are in line with those suggested by our baseline regressions.

Thus far our results could be subject to a sample-selection bias, in the sense that the variables driving our findings might further determine the firm's decision to receive a loan from the particular bank. It may be, for instance, that the impact of the sovereign ceiling rule on loan contracting is due to affected (bounded) firms being the ones more likely to request a loan. To eliminate this potential selection bias from our estimates, we follow Dass and Massa (2011) and employ Heckman's (1979) two-stage model to calculate the probability of a firm entering into a loan deal. In the first stage, we run a probit model to estimate the firm's loan-taking decision. During this stage, our loan sample is extended and includes all syndicated loan facilities available in Dealscan. We calculate Heckman's lambda (inverse mills ratio) and include it as an additional control variable in the second-stage OLS estimation of specifications (1)-(3) of Table A6.

In line with Dass and Massa (2011), we assume that the borrower's decision to get a syndicated loan is a function of the main determinants of the decision to borrow in general. Consequently, our probit regression is augmented with a set of loan-, bank-, and firm-level characteristics; a set of weights for the number, origin, and direction of loans made in a given year; loan type, year, bank, firm, and borrower's country dummies. Our set of annual weights include the number of loans made by a given bank (*Bank loans*), the number of loans to a given firm (*Firm loans*), and the number of loans between a given bank-firm pair (*Bank-firm loans*).

We present results from this exercise in columns 1-3 of Table A6 (Panels A and B). Probit estimates (columns 1-3 of Panel A), indicate that the higher the firm's size, return on assets, and leverage, and the lower the firm's reliance on equity financing, the more likely is the completion of a syndicated loan deal. Loans of a greater amount and shorter maturity are more likely to be granted, particularly when these loans include many lenders, are secured, and carry pricing provisions and covenants. Most importantly, estimates from the second-stage regressions (columns 1-3 of Panel B) confirm the asymmetrically strong positive impact of the sovereign ceiling rule on *AISD* (as reflected in the coefficient on *Sovereign downgrade* × *Bound*).

Last, we control for differences stemming from the macroeconomic and institutional environment in the borrower's country as these factors are known to also influence lending decisions (see, e.g., Delis, Hasan, and Ongena, 2020). Specifically, we include certain macroeconomic and institutional controls (debt-to-GDP ratio, inflation dynamics, prevalence of democratic institutions, rule of law, economic freedom, real interest rate) and a measure of global uncertainty (global stock market volatility). In theory, the slow-moving nature of these variables should cause them to correlate strongly with the borrower's country and country-pair fixed effects employed in model specifications 4-6 in Table 3. Due to their high pair-wise correlations, we do not employ all variables simultaneously. Results from this exercise remain very similar to our baseline results (Table A8).

4. Identifying the mechanisms and potential remedies

Thus far, our analysis points to an asymmetrically higher cost of credit faced by bounded firms relative to non-bounded firms following a sovereign downgrade event in their country. In this section, we identify those firm characteristics that potentially offset this disproportionately higher impact of a sovereign downgrade on bounded firms.

4.1 Exploring the mechanisms: The loan-demand channel

We consider the alternative demand-side explanations for our results and identify certain firm traits that may be driving our results. To this end, Table 10 includes the interaction of *Sovereign downgrade* × *Bound* with a number of different firm characteristics reflecting the firm's size, profitability, capital structure and operating performance. Specification (1) reveals that the effect of the sovereign ceiling rule on the cost of credit is contingent on firm size. In this regard, large firms are able to offset, to some extent, the higher spread following a sovereign downgrade. A one standard deviation increase in the firm's total assets saves the firm approximately 22.5 basis points (=2.03 × 11.06 bps) or 12.4% of the initial spread charged (the coefficient on *Sovereign downgrade* × *Bound* × *Firm size*). Although this is not the case with the firm's return on assets, as *Firm ROA* appears to exert no differential impact on loan spreads (coefficient on triple interaction in specification 2), bounded firms generating high operating income and net income are able to contain their high borrowing costs relative to their non-bounded counterparts (coefficients on triple interactions in specifications 3-4).

[Insert Table 10 about here]

The next two specifications consider the firm's decision with regards to its capital structure. Estimates point to a positive relationship between firm indebtedness and loan spreads, as more leveraged firms face higher borrowing costs; however, greater reliance on equity financing exerts the opposite effect, thereby easing the firm's interest burden (coefficients on triple interactions in specifications 5 and 6, respectively). Similarly, firms with larger cash holdings and retained earnings further manage to partially reverse the increased borrowing costs after the downgrade event. This result is intuitive since the reliance on own funds limits the need to resort to external financing. In this respect, a one standard deviation increase in the firm's cash holdings and retained earnings enables the firm to recover 22.2%

and 14.1% respectively of the initial spread increase (coefficients on triple interactions in specifications 7-8).

4.2 Exploring the mechanisms: Fundamentals of the borrower country

Consequently, we allow for the possibility that the firms' decision to resort to bank financing is related to borrowing conditions and credit constraints in the domestic credit market as well as the level of domestic financial market development. We expect that firms in countries with less developed financial markets and consequently a greater reliance on the banking sector are subject to higher borrowing costs. This is, in turn, a natural corollary of the reduction in domestic credit supply following a downgrade (see Adelino and Ferreira, 2016). However, in countries with developed financial markets, domestic firms have access to alternative sources of financing that consequently ease their borrowing costs. To examine this hypothesis, we include the triple interaction term between measures a set of variables reflecting the financial market conditions and the fundamentals in the borrower's country and *Sovereign downgrade* × *Bound*.

We present results in Table 11, where we initially focus on the level of stock market capitalization in a borrower's country. Estimates from specification (1) suggest that a highly capitalized domestic stock market acts as a counterweight to the increasing loan spreads following a sovereign downgrade (a significant and negative coefficient on triple interaction term). Consequently, and considering the literature that typically measures credit constraints using the ratio of credit provided by banks over GDP (e.g., Beck, Demirgüç-Kunt, and Levine, 2010; Manova, 2012), we focus on the measures reflecting the type and volume of domestic credit provided for the domestic economy. In particular, we generate a binary variable equal to one if countries fall within the 75th percentile of domestic credit provided by either the non-

bank financial sector (specification 2) or the banking sector (specification 3), and zero otherwise.

Estimates in specifications (2)-(3) verify our earlier expectations about the offsetting effect of the level of domestic financial flexibility on the corporate borrower's cost of credit. The coefficient on *Sovereign downgrade* × *Bound* × *Financial sector credit* suggests that bounded firms can alleviate their interest rate burden if operating in an economy where credit is principally provided by the non-bank financial sector. On the other hand, affected firms in countries with a greater reliance on the domestic banking sector are faced with significantly higher borrowing costs following the downgrade event (a positive and significant coefficient on *Sovereign downgrade* × *Bound* × *Banking sector credit*). Moreover, when the ratio of these variables is considered (specification (4)), we notice that countries with a greater reliance on credit from the financial sector relative to the banking sector experiences lower borrowing costs for their affected firms (the coefficient on the triple interaction).

[Insert Table 11 about here]

Our last exercise concerns the importance of the exchange rate regimes for the borrowing firm's cost of credit. One key lesson from the 1990s currency crises was the increasing difficulties faced by countries when attempting to build a reputation needed to sustain a durable fixed exchange rate (Eichengreen, Rose, and Wyplosz, 1995; Obstfeld and Rogoff, 1995). Consequently, many of them adopted a more flexible form of exchange-rate targeting as a way to limit currency volatility, while reducing susceptibility to speculative attacks. This trend was nevertheless reversed following the Asian financial crisis and the Russian default, with countries favouring corner solutions and adopting either hard pegs (e.g., currency boards, dollarization, or currency unions) or freely floating exchange rate regimes (Calvo and Reinhart, 2002). It is therefore not clear how exchange rate arrangements affect the

cost of credit, especially in the aftermath of financial crises which usually precede or follow downgrades in the sovereign's credit rating.

We explore this in specification (5), by interacting *Sovereign downgrade* × *Bound* with *Exchange rate arrangement*, i.e., the borrower's home exchange rate regime by considering the exchange rate classification of Ilzetzki, Reinhart, and Rogoff (2017). The measure is a categorical variable ranging from 1 to 5, with lower values reflecting less flexible regimes such as currency board arrangements or de facto pegs and higher values reflecting more flexible regimes such as managed or freely floating arrangements.[16] Presumably, wide bands allow authorities to actively use monetary policy when it is most needed, thereby enhancing the overall credibility of their commitment to the band and stabilizing intra-band movements and exchange rate fluctuations (Obstfeld and Rogoff, 1995). In addition, flexible arrangements allow for currency depreciation as a means of restoring the competitiveness of the downgraded country, thereby facilitating the recovery of the domestic economy. Indeed, the negative and statistically significant coefficient on *Sovereign downgrade* × *Bound* × *Exchange rate arrangement* in specification (5) indicates that moving away from a fixed regime and allowing for some degree of fluctuation lowers the cost of bank credit for affected firms after the downgrade event. The additional interest rate savings amount to approximately 27 basis points or 25.9% of the original interest rate premium charged.

4.3. Relationship lending

Our results thus far highlight an important competitive disadvantage of bounded firms relative to non-bounded borrowers in the event of a sovereign downgrade that persists in a number of sensitivity tests. In this section, we consider two potential practices that might help alleviate

[16] The classification further includes a sixth category for dual markets in which parallel market data is missing. However, the respective classification does not apply to any of the countries in our sample.

the negative effects from a sovereign downgrade - the formation of bank-firm lending relationships and the utilization of bank and firm subsidiaries.

Prior lending relationships allow lenders to acquire valuable information about the borrowing firm's operations and credit risk. It is reasonable to expect that bounded firms with prior lending ties with their banks might be able to offset the higher loan spreads following a sovereign downgrade. We test this hypothesis in Table 12, by interacting our variables of main interest with *Relationship lending*, a variable reflecting the existence of a prior lending relationship between the given bank-firm pair over the previous 5-year period (see e.g., Bharath, Dahiya, Saunders, and Srinivasan, 2009).

[Insert Table 12 about here]

Estimates in column 1 suggest that relationship borrowers are able to recover approximately 27.6 basis points (or 41.2%) of the interest rate premium following a downgrade event (the coefficient on *Sovereign downgrade* × *Bound* × *Relationship lending*). The offsetting effect of relationship lending further increases with the size and magnitude of this relationship: the greater the number or the amount of loans between the given bank-firm pair during the previous 5-year period, the greater the interest rate savings for the bounded firms following the sovereign downgrade (coefficients on triple interaction terms in columns 2-3).

The next two specifications of Table 12 examine the role of subsidiaries. When the lending bank operates an affiliate or subsidiary in the borrower's country, it can gain access to important information about the firm's creditworthiness and operations. Furthermore, through its subsidiary, the bank is accustomed to the domestic macroeconomic environment, while it can also remove part of the macroeconomic risk if it can fund the loan through its affiliate/subsidiary by resorting to the domestic wholesale markets. We, therefore, expect that borrowers resorting to lenders with subsidiaries in the borrower's country, minimize the

information asymmetry with regards to the firm's credit risk as well as the domestic macroeconomic risk enabling them to achieve more favourable loan terms.

This is verified by the estimates in column (4), where loans granted from banks with domestic subsidiaries carry an approximately 64% lower spread than the average loans directed to bound firms following the sovereign downgrade (the coefficient on triple and double interaction terms, respectively). Similar reasoning applies to firms operating subsidiaries in the lead bank's country. By operating in the lender's country, the firms can communicate important information regarding its operations to the lender so as to reduce information asymmetry. However, as estimates in column (5) reveal, this did not help as the coefficient on the triple interaction term is not significant. Therefore, it appears that the resulting minimization of the information asymmetry is mainly of a supply-side nature and materializes via the bank subsidiaries' lending activities in the borrower countries.

Our last specification evaluates an additional mechanism through which bound firms ease their borrowing costs after a sovereign downgrade - government ownership. In fact, although government ownership is generally associated with a higher cost of debt, consistent with state-induced investment distortions, it is associated with a lower cost of debt during financial crises and for firms more likely to be in financial distress, when implicit government guarantees (subsidies) become widely anticipated (see Ağca and Celasun, 2012; Anginer and Warburton, 2014; Borisova, Fotak, Holland, and Megginson, 2015). As the default of a domestic and especially a foreign investment target is less likely to carry the "political stigma" associated with failures of domestic state-owned firms, we should expect that these government backed firms will get access to lower borrowing costs during turbulent times. Indeed, estimates from column (6) suggest that bound firms under government ownership are able to offset the initial increase in loan spreads following the sovereign downgrade (coefficients on the double and triple interaction terms, respectively).

5. Conclusion

This paper examines the impact of changes in credit ratings on bank loan contracting by taking advantage of the heterogeneous variations in corporate credit ratings induced by the sovereign ceiling policies of credit rating agencies. Our results suggest that firms with ratings at the sovereign bound are subject to significantly higher borrowing costs and worse loan conditions following a sovereign downgrade than otherwise similar firms whose ratings are not at the sovereign bound. Our baseline specification suggests that loans directed to these firms are priced at approximately 55 basis points higher than the corresponding spread on loans to non-bounded firms. These results are robust to several changes in the baseline specification and alternative estimation methods. We calculate this additional cost of the sovereign ceiling rule for the average loan size and maturity to be approximately USD 6.2 million. Thus, firms bounded by their sovereign's credit rating have a significant disadvantage compared to their non-bounded counterparts in the event of a sovereign downgrade. Moreover, we show that this additional cost materializes when bounded firms obtain financing from foreign banks.

We further find that bounded firms are also in a disadvantageous position when non-price loan terms are considered. Although there is no evidence of credit rationing on behalf of banks, the affected firms generally receive loans of shorter duration (by 10 months) that are more likely to carry performance provisions. The sovereign downgrade-induced information asymmetry has further implications for lending syndicate structure with loans to bound firms being systematically granted by smaller and more concentrated syndicates.

Our analysis further investigates the mechanisms leading to this excessive increase in loan spreads by considering alternative demand-side explanations. We show that this increase is contingent on certain firm characteristics since larger and less-leveraged borrowers with a greater reliance on own funds can partially offset the initial loan spread premium following the downgrade event. When turning to country fundamentals we find that borrower countries with

more developed financial markets (and where credit is mostly provided by the non-bank financial sector rather than the banking sector) are generally associated with lower borrowing costs. The adoption of a more flexible exchange rate regime further eases the cost of credit for bound firms following a sovereign downgrade, as it allows for greater monetary freedom.

Firms have also some levers at their disposal in order to reduce the post-downgrade widening in information asymmetry. These include borrowing from banks with whom they have prior lending relationships or borrowing from banks that operate subsidiaries in the borrower's country; either of these can lower the extra cost of credit that bound borrowers are subject to after a sovereign rating downgrade. Future research in this area may further explore the interactive effects of the banking regulatory environment within borrower countries with the rating events.

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Table 1. Summary statistics

The table reports summary statistics (number of observations, mean, standard deviation, minimum and maximum values) for all variables used in the estimations of the main text. All variables are defined in Table A1.

	Obs.	Mean	Std. dev.	Min.	Max.
AISD	61,985	168.45	131.61	-200.00	1,505.00
AISU	29,901	26.84	23.38	0.75	450.00
Sovereign downgrade	61,985	0.07	0.26	0.00	1.00
Sovereign downgrade lc	61,793	0.08	0.27	0.00	1.00
Short-term downgrade	61,963	0.01	0.09	0.00	1.00
Outlook downgrade	61,985	0.10	0.30	0.00	1.00
Bound	61,985	0.06	0.23	0.00	1.00
Loan amount	61,985	20.01	1.35	12.47	24.62
Maturity	61,985	50.22	25.82	1.00	1,140.00
Collateral	61,985	0.35	0.48	0.00	1.00
Number of lenders	61,985	14.49	11.23	1.00	290.00
Performance provisions	61,985	0.31	0.46	0.00	1.00
General covenants	61,985	0.81	1.21	0.00	7.00
Financial covenants	61,985	0.75	1.13	0.00	7.00
Net covenants	61,985	0.06	0.24	0.00	1.00
Bank share	19,644	0.13	0.13	0.00	1.00
Herfindahl	19,644	1,015.81	1,364.75	0.00	10,000.00
Bank size	61,985	13.82	1.01	7.59	19.37
Bank ROA	61,985	0.27	0.57	-5.83	5.70
Bank NPLs	61,985	0.95	2.04	-1.26	25.41
Firm size	61,985	9.56	2.03	3.17	24.13
Firm ROA	61,985	0.09	0.67	-5.54	31.08
Firm EBITDA	59,027	7.28	1.94	-1.55	21.13
Firm income	47,976	6.18	2.04	-5.52	16.91
Firm leverage	61,985	3.09	67.84	-7,270.33	3,569.37
Firm equity	58,355	8.29	2.04	-2.58	21.85
Firm cash	58,292	6.12	2.53	-6.91	17.02
Firm retained earnings	44,363	7.92	2.21	-4.07	20.75
GDP growth	61,985	0.32	1.86	-22.73	28.44
GDP per capita	61,985	-1,688.35	13,597.44	-88,250.53	104,376.70
Stock market capitalization	59,442	1.32	1.35	0.05	12.54
Financial sector credit	60,842	1.91	0.54	-0.04	3.46
Banking sector credit	60,842	0.70	0.37	0.08	2.33
Exchange rate arrangement	61,806	3.33	1.13	1.00	5.00

Table 2. Summary statistics for bounded firms vs. bounded firms pre- and post- sovereign downgrade

The table reports summary statistics for key price and non-price loan terms. All variables are defined in Table A1. Panel A includes observations for the group of bounded firms (i.e., firms with a credit rating equal to or above their sovereign prior to the sovereign downgrade). Panel B includes observations for the group of firms at the sovereign bound when the sovereign is downgraded. Panel C reports results from the mean-comparison test for differences in the mean and standard error between observations in Panel A and Panel B. The*** mark denotes statistical significance at 1% level.

	Obs.	Mean	Std. dev.	Min.	Max.
Panel A: Bounded firms pre-sovereign downgrade					
AISD	3,210	91.54	80.42	1.00	1325.00
AISU	647	13.73	13.96	0.75	101.25
Loan amount	3,210	19.99	1.16	15.42	23.85
Maturity	3,210	40.46	31.68	3.00	234.00
Collateral	3,210	0.19	0.39	0.00	1.00
Number of lenders	3,210	20.90	13.14	1.00	86.00
Performance provisions	3,210	0.05	0.22	0.00	1.00
General covenants	3,210	0.13	0.54	0.00	4.00
Panel B: Bounded firms post-sovereign downgrade					
AISD	392	196.27	138.97	20.00	650.00
AISU	115	49.56	44.63	5.00	180.00
Loan amount	392	20.71	1.47	16.12	23.81
Maturity	392	41.49	21.63	3.00	146.00
Collateral	392	0.24	0.43	0.00	1.00
Number of lenders	392	14.42	7.30	1.00	46.00
Performance provisions	392	0.25	0.44	0.00	1.00
General covenants	392	0.02	0.12	0.00	1.00

Panel C: Mean-comparison test for the mean and standard error

	Mean	Std. error
AISD	104.73***	7.16
AISU	35.83***	4.20
Loan amount	0.73***	0.08
Maturity	1.03	1.23
Collateral	0.05**	0.02
Number of lenders	-6.48***	0.44
Performance provisions	0.20***	0.02
General covenants	-0.12***	0.01

Table 3. Baseline results with different fixed effects

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of fixed effects, as given in the lower part of the table. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sovereign downgrade	-2.426	-2.426	-2.426	-2.354	4.745	7.432
	[-0.310]	[-0.310]	[-0.310]	[-0.285]	[0.609]	[0.981]
Bound	10.032	10.032	10.032	10.890	10.778*	13.534**
	[1.618]	[1.617]	[1.617]	[1.667]	[1.720]	[2.144]
Sovereign downgrade × Bound	54.627***	54.627***	54.627***	52.207***	45.053***	46.087***
	[2.970]	[2.969]	[2.969]	[2.888]	[3.346]	[3.236]
Loan amount	-6.935***	-6.935***	-6.935***	-7.344***	-7.111***	-7.188***
	[-6.018]	[-6.015]	[-6.015]	[-6.815]	[-6.368]	[-6.378]
Maturity	0.073	0.073	0.073	0.109	0.161*	0.160*
	[0.794]	[0.794]	[0.794]	[1.226]	[1.813]	[1.789]
Collateral	32.060***	32.060***	32.060***	30.550***	27.843***	27.737***
	[5.737]	[5.735]	[5.735]	[5.595]	[4.897]	[4.865]
Number of lenders	-0.440***	-0.440***	-0.440***	-0.475***	-0.446***	-0.461***
	[-3.496]	[-3.495]	[-3.495]	[-3.704]	[-3.483]	[-3.539]
Performance provisions	-14.914***	-14.914***	-14.914***	-15.792***	-16.112***	-16.193***
	[-4.583]	[-4.581]	[-4.581]	[-5.134]	[-5.442]	[-5.441]
General covenants	4.434***	4.434***	4.434***	4.072***	3.557**	3.595***
	[3.214]	[3.213]	[3.213]	[2.893]	[2.797]	[2.845]
Bank size	0.193	0.193	0.193	-0.389		
	[0.076]	[0.076]	[0.076]	[-0.184]		
Bank ROA	-5.712*	-5.712*	-5.712*	-4.948*		
	[-1.958]	[-1.957]	[-1.957]	[-1.729]		
Bank NPLs	0.489	0.489	0.489	0.448		
	[1.514]	[1.513]	[1.513]	[1.420]		
Firm size	-1.045	-1.045	-1.045	-3.454	-2.472	-2.473
	[-0.401]	[-0.401]	[-0.401]	[-1.407]	[-1.215]	[-1.219]
Firm ROA	-3.336	-3.336	-3.336	-2.961	-3.093	-3.201
	[-0.951]	[-0.950]	[-0.950]	[-0.955]	[-1.165]	[-1.201]
Firm leverage	0.013	0.013	0.013	0.009	0.010	0.010
	[1.037]	[1.037]	[1.037]	[0.754]	[0.774]	[0.751]
GDP growth	-0.612	-0.612	-0.612	-0.577	-1.037	
	[-0.767]	[-0.767]	[-0.767]	[-0.904]	[-1.164]	
GDP per capita	-0.002*	-0.002*	-0.002*	-0.002**	-0.003	
	[-1.831]	[-1.830]	[-1.830]	[-2.302]	[-1.705]	
Constant	305.260***	305.260***	305.260***	343.612***	319.736***	328.166***
	[7.496]	[7.493]	[7.493]	[9.245]	[14.213]	[14.353]
Observations	61,985	61,985	61,985	61,874	82,444	82,715
Adj. R-squared	0.768	0.767	0.767	0.775	0.786	0.784
Loan type effects	Y	Y	Y	Y	Y	Y
Loan purpose effects	N	N	N	Y	Y	Y
Year effects	Y	Y	Y	N	N	N
Bank effects	Y	Y	Y	Y	N	N
Bank × year effects	N	N	N	N	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Lender's country effects	N	N	Y	Y	Y	N
Lender's country × year effects	N	N	N	N	N	Y
Borrower's country effects	N	Y	Y	Y	Y	Y
Country-pair effects	N	N	N	Y	Y	Y

Table 4. Baseline results with different fixed effects (local-currency ratings)

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of fixed effects, as given in the lower part of the table. In all specifications *Sovereign downgrade lc* is a binary variable equal to one if the sovereign's local-currency credit rating is downgraded in the year before the loan facility's origination year, otherwise zero. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sovereign downgrade	-3.316	-3.316	-3.316	-3.940	1.758	4.920
	[-0.490]	[-0.489]	[-0.489]	[-0.547]	[0.253]	[0.732]
Bound	9.590	9.590	9.590	10.339	11.042	14.654**
	[1.376]	[1.376]	[1.376]	[1.452]	[1.603]	[2.178]
Sovereign downgrade lc × Bound	49.111**	49.111**	49.111**	47.538**	35.918**	36.698**
	[2.715]	[2.714]	[2.714]	[2.689]	[2.662]	[2.533]
Loan amount	-6.843***	-6.843***	-6.843***	-7.260***	-7.047***	-7.130***
	[-5.944]	[-5.942]	[-5.942]	[-6.732]	[-6.274]	[-6.288]
Maturity	0.067	0.067	0.067	0.104	0.155*	0.153
	[0.723]	[0.723]	[0.723]	[1.161]	[1.744]	[1.714]
Collateral	32.224***	32.224***	32.224***	30.702***	27.818***	27.673***
	[5.735]	[5.733]	[5.733]	[5.598]	[4.855]	[4.810]
Number of lenders	-0.437***	-0.437***	-0.437***	-0.471***	-0.444***	-0.463***
	[-3.413]	[-3.411]	[-3.411]	[-3.619]	[-3.394]	[-3.478]
Performance provisions	-14.876***	-14.876***	-14.876***	-15.765***	-16.108***	-16.189***
	[-4.546]	[-4.544]	[-4.544]	[-5.096]	[-5.416]	[-5.403]
General covenants	4.413***	4.413***	4.413***	4.044***	3.584**	3.623***
	[3.185]	[3.183]	[3.183]	[2.859]	[2.792]	[2.838]
Bank size	0.163	0.163	0.163	-0.392		
	[0.065]	[0.065]	[0.065]	[-0.187]		
Bank ROA	-5.726*	-5.726*	-5.726*	-4.991*		
	[-1.964]	[-1.964]	[-1.964]	[-1.736]		
Bank NPLs	0.524	0.524	0.524	0.480		
	[1.602]	[1.601]	[1.601]	[1.501]		
Firm size	-1.530	-1.530	-1.530	-3.927	-2.996	-2.923
	[-0.570]	[-0.569]	[-0.569]	[-1.550]	[-1.320]	[-1.287]
Firm ROA	-3.310	-3.310	-3.310	-2.925	-3.078	-3.200
	[-0.947]	[-0.947]	[-0.947]	[-0.949]	[-1.157]	[-1.196]
Firm leverage	0.013	0.013	0.013	0.009	0.010	0.010
	[1.036]	[1.036]	[1.036]	[0.750]	[0.768]	[0.743]
GDP growth	-0.662	-0.662	-0.662	-0.624	-1.113	
	[-0.813]	[-0.812]	[-0.812]	[-0.965]	[-1.250]	
GDP per capita	-0.002*	-0.002*	-0.002*	-0.002**	-0.003*	
	[-1.912]	[-1.911]	[-1.911]	[-2.409]	[-1.938]	
Constant	308.954***	308.954***	308.954***	346.994***	323.614***	332.335***
	[7.457]	[7.454]	[7.454]	[9.201]	[13.856]	[14.057]
Observations	61,773	61,773	61,773	61,663	81,859	82,127
Adj. R-squared	0.768	0.768	0.768	0.775	0.786	0.784
Loan type effects	Y	Y	Y	Y	Y	Y
Loan purpose effects	N	N	N	Y	Y	Y
Year effects	Y	Y	Y	N	N	N
Bank effects	Y	Y	Y	Y	N	N
Bank × year effects	N	N	N	N	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Lender's country effects	N	N	Y	Y	Y	N
Lender's country × year effects	N	N	N	N	N	Y
Borrower's country effects	N	Y	Y	Y	Y	Y
Country-pair effects	N	N	N	Y	Y	Y

Table 5. Interaction with short-term ratings and outlook

The table reports coefficients and t-statistics [in brackets]. Dependent variable is AISD and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm and year. The lower part of the table denotes the type of fixed effects used in each specification. In specification (1), *Sovereign downgrade* × *Bound* is interacted with *Short-term downgrade*, i.e., a binary variable equal to one, if the sovereign's short-term credit rating is downgraded in the year before the loan facility's origination year (otherwise zero). In specification (2), *Sovereign downgrade* × *Bound* is interacted with *Outlook downgrade*, i.e., a binary variable equal to one, if the sovereign's credit rating outlook is downgraded in the year before the loan facility's origination year (otherwise zero). The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Sovereign downgrade	-2.648	-2.202
	[-0.331]	[-0.283]
Bound	10.334	9.299
	[1.622]	[1.520]
Sovereign downgrade × Bound	27.252**	29.465**
	[2.084]	[2.553]
Sovereign downgrade × Bound × Short-term downgrade	35.521	
	[1.194]	
Sovereign downgrade × Bound × Outlook downgrade		47.828**
		[2.140]
Short-term downgrade	56.341	
	[1.391]	
Outlook downgrade		8.524
		[1.559]
Loan amount	-6.912***	-6.917***
	[-6.024]	[-6.016]
Maturity	0.074	0.074
	[0.806]	[0.813]
Collateral	32.139***	32.206***
	[5.708]	[5.753]
Number of lenders	-0.441***	-0.441***
	[-3.489]	[-3.506]
Performance provisions	-14.842***	-14.886***
	[-4.555]	[-4.569]
General covenants	4.429***	4.415***
	[3.194]	[3.200]
Bank size	0.190	0.205
	[0.076]	[0.081]
Bank ROA	-5.592*	-5.634*
	[-1.902]	[-1.926]
Bank NPLs	0.496	0.497
	[1.470]	[1.550]
Firm size	-1.085	-0.897
	[-0.419]	[-0.335]
Firm ROA	-3.343	-3.338
	[-0.950]	[-0.951]
Firm leverage	0.013	0.013
	[1.036]	[1.036]
GDP growth	-0.558	-0.637
	[-0.700]	[-0.813]
GDP per capita	-0.002*	-0.002*
	[-2.061]	[-1.990]
Constant	305.038***	303.255***
	[7.523]	[7.362]
Observations	61,963	61,985

Adj. R-squared	0.768	0.768
Loan type effects	Y	Y
Year effects	Y	Y
Bank effects	Y	Y
Firm effects	Y	Y
Borrower's country effects	Y	Y

Table 6. Domestic borrowing vs foreign borrowing

The table reports coefficients and t-statistics [in brackets]. Dependent variable is AISD and all variables are defined in Table A1. Estimation method used is OLS with standard errors clustered by firm and year. The lower part of the table denotes the type of fixed effects used in each specification. In specification (1), estimates are from the subsample of loans from foreign banks. In specifications (2)-(4), estimates are from the subsample of loans from domestic banks. In specification (3), *Sovereign downgrade* is interacted with *Bound (Bank)*, i.e., a binary variable equal to one if the lender's credit rating is equal to or above the lender's country credit rating in the year before the loan facility's origination year, otherwise zero. In specification (4), *Sovereign downgrade* is interacted with *Bound (Bank & Firm)*, i.e., a binary variable equal to one if the lender's and the borrower's credit ratings are equal to or above their country's credit rating in the year before the loan facility's origination year, otherwise zero. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1) Loans from foreign banks	(2) Loans from domestic banks	(3) Loans from domestic banks	(4) Loans from domestic banks
Sovereign downgrade	6.223	-10.952	-16.961*	-4.983
	[0.967]	[-0.911]	[-2.044]	[-0.437]
Bound	9.964	19.423*		
	[1.670]	[1.777]		
Bound (Bank)			-2.508	
			[-0.157]	
Bound (Bank & Firm)				-29.031
				[-1.738]
Sovereign downgrade × Bound	50.335**	36.724		
	[2.667]	[1.466]		
Sovereign downgrade × Bound (Bank)			26.298**	
			[2.916]	
Sovereign downgrade × Bound (Bank & Firm)				30.525*
				[2.038]
Loan amount	-4.578**	-6.975***	-5.770***	-5.910***
	[-2.650]	[-6.807]	[-3.535]	[-4.773]
Maturity	0.192*	-0.081	0.144**	0.124**
	[1.974]	[-0.730]	[2.239]	[2.438]
Collateral	17.234***	37.034***	41.976***	42.638***
	[2.820]	[6.791]	[11.796]	[11.833]
Number of lenders	-0.401**	-0.483***	-0.702***	-0.610***
	[-2.197]	[-3.450]	[-3.762]	[-4.005]
Performance provisions	-4.840	-18.336***	-28.992***	-28.107***
	[-1.360]	[-5.063]	[-6.310]	[-7.971]
General covenants	4.213	4.846***	3.686***	3.440***
	[1.581]	[3.488]	[2.899]	[2.825]
Bank size	-0.944	0.342	-6.346	-3.076
	[-0.255]	[0.111]	[-1.697]	[-1.190]
Bank ROA	-3.104	-8.139	-8.444**	-6.589*
	[-1.065]	[-1.710]	[-2.187]	[-1.749]
Bank NPLs	0.098	0.104	0.578	0.912
	[0.338]	[0.170]	[0.558]	[1.263]
Firm size	1.180	-11.779***	-8.656***	-7.551***
	[1.397]	[-3.175]	[-3.548]	[-3.490]
Firm ROA	-0.569	-44.584	-152.633***	-74.037*
	[-0.605]	[-1.416]	[-3.303]	[-2.003]
Firm leverage	0.011	0.013	0.003	0.005
	[1.224]	[0.571]	[0.813]	[1.122]
GDP growth	-0.668			
	[-0.989]			
GDP per capita	-0.001*			
	[-1.761]			
Constant	238.152***	416.918***	459.141***	399.281***
	[4.316]	[7.767]	[7.678]	[7.887]
Observations	26,286	35,699	35,699	35,699

Adj. R-squared	0.810	0.750	0.676	0.684
Loan type effects	Y	Y	Y	Y
Year effects	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y

Table 7. Results from subsamples with similar firm fundamentals

This table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Different specifications include different subsamples of matched firms. Specification (1) includes a subsample of bounded firms and firms that are one notch below the bound. Specification (2) includes the subsample of specification (1) and further limits the subsample to firms with size (*Firm size*) within one standard deviation of the sample mean. Specification (3) includes the subsample of specification (2) and further limits the subsample to firms with return on assets (*Firm ROA*) within one standard deviation of the sample mean. Specification (4) includes the subsample of specification (3) and further limits the subsample to firms with leverage (*Firm leverage*) within one standard deviation of the sample mean. The lower part of the table denotes the type of fixed effects used in each specification. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Sovereign downgrade	-28.520	-41.841	-42.132	-42.132
	[-1.064]	[-1.619]	[-1.637]	[-1.637]
Bound	16.410*	28.831*	28.671*	28.671*
	[1.986]	[2.041]	[2.029]	[2.029]
Sovereign downgrade × Bound	73.833**	106.000***	106.376***	106.376***
	[2.358]	[4.626]	[4.655]	[4.655]
Loan amount	-1.943	-1.951	-1.966	-1.966
	[-0.662]	[-0.459]	[-0.462]	[-0.462]
Maturity	0.302**	0.168	0.17	0.17
	[2.220]	[0.807]	[0.818]	[0.818]
Collateral	0.037	13.832	13.785	13.785
	[0.007]	[1.193]	[1.192]	[1.192]
Number of lenders	0.259	0.029	0.041	0.041
	[1.029]	[0.107]	[0.153]	[0.153]
Performance provisions	-14.371	-4.026	-4.261	-4.261
	[-1.423]	[-0.454]	[-0.481]	[-0.481]
General covenants	8.21	4.652	4.63	4.63
	[1.264]	[0.729]	[0.725]	[0.725]
Bank size	-0.953	-3.028	-2.933	-2.933
	[-0.285]	[-0.687]	[-0.665]	[-0.665]
Bank ROA	-3.322	-5.825	-5.964	-5.964
	[-1.151]	[-1.659]	[-1.696]	[-1.696]
Bank NPLs	1.023**	0.282	0.256	0.256
	[2.678]	[0.499]	[0.451]	[0.451]
Firm size	1.553	-15.326	-14.938	-14.938
	[1.230]	[-0.726]	[-0.708]	[-0.708]
Firm ROA	-112.483*	-110.699	-100.167	-100.167
	[-1.908]	[-1.392]	[-1.281]	[-1.281]
Firm leverage	1.674	3.456*	3.477*	3.477*
	[1.549]	[1.843]	[1.855]	[1.855]
GDP growth	-1.039	0.574	0.572	0.572
	[-0.872]	[0.433]	[0.432]	[0.432]
GDP per capita	-0.001	-0.001	-0.001	-0.001
	[-0.964]	[-0.439]	[-0.391]	[-0.391]
Constant	97.262	301.151	291.403	291.403
	[1.389]	[1.712]	[1.647]	[1.647]
Observations	6,201	2,351	2,346	2,346
Adj. R-squared	0.809	0.849	0.85	0.85
Loan type effects	Y	Y	Y	Y
Year effects	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y

Table 8. Results for AISU

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISU* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of fixed effects, as given in the lower part of the table. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sovereign downgrade	-4.170	-4.170	-4.170	-4.148	-3.483	-2.916
	[-1.574]	[-1.573]	[-1.573]	[-1.595]	[-1.335]	[-1.171]
Bound	-1.473	-1.473	-1.473	-1.182	-1.842	-1.790
	[-0.599]	[-0.599]	[-0.599]	[-0.479]	[-0.741]	[-0.685]
Sovereign downgrade × Bound	7.618***	7.618***	7.618***	7.654***	8.719*	8.822*
	[3.162]	[3.160]	[3.160]	[2.917]	[1.899]	[2.053]
AISD	0.148***	0.148***	0.148***	0.146***	0.148***	0.149***
	[22.421]	[22.407]	[22.407]	[21.647]	[20.593]	[20.840]
Loan amount	-0.019	-0.019	-0.019	0.017	0.140	0.145
	[-0.058]	[-0.058]	[-0.058]	[0.054]	[0.491]	[0.510]
Maturity	0.016	0.016	0.016	0.015	0.008	0.008
	[0.879]	[0.878]	[0.878]	[0.823]	[0.511]	[0.496]
Collateral	3.341***	3.341***	3.341***	3.352***	3.515***	3.529***
	[4.034]	[4.031]	[4.031]	[4.084]	[4.367]	[4.379]
Number of lenders	-0.008	-0.008	-0.008	-0.017	-0.021	-0.022
	[-0.320]	[-0.320]	[-0.320]	[-0.727]	[-0.960]	[-1.021]
Performance provisions	-0.924*	-0.924*	-0.924*	-0.765	-0.774	-0.768
	[-1.730]	[-1.729]	[-1.729]	[-1.463]	[-1.483]	[-1.467]
General covenants	0.113	0.113	0.113	0.157	0.100	0.098
	[0.398]	[0.398]	[0.398]	[0.567]	[0.335]	[0.333]
Bank size	0.396	0.396	0.396	0.372		
	[0.831]	[0.830]	[0.830]	[0.791]		
Bank ROA	-0.726*	-0.726*	-0.726*	-0.698*		
	[-1.803]	[-1.802]	[-1.802]	[-1.787]		
Bank NPLs	0.092	0.092	0.092	0.098		
	[1.202]	[1.201]	[1.201]	[1.190]		
Firm size	-0.351	-0.351	-0.351	-0.305	-0.235	-0.222
	[-0.922]	[-0.922]	[-0.922]	[-0.825]	[-0.589]	[-0.551]
Firm ROA	-6.286**	-6.286**	-6.286**	-5.620**	-1.264	-1.263
	[-2.626]	[-2.625]	[-2.625]	[-2.515]	[-1.281]	[-1.269]
Firm leverage	0.001	0.001	0.001	0.001	0.001	0.001
	[0.459]	[0.458]	[0.458]	[0.736]	[1.174]	[1.050]
GDP growth	-0.157	-0.157	-0.157	-0.233	-0.419	
	[-0.701]	[-0.701]	[-0.701]	[-1.176]	[-1.199]	
GDP per capita	0.000	0.000	0.000	0.000	0.000	
	[0.223]	[0.223]	[0.223]	[0.445]	[0.289]	
Constant	4.479	4.479	4.479	3.814	6.156	5.889
	[0.523]	[0.522]	[0.522]	[0.442]	[1.086]	[1.059]
Observations	29,463	29,463	29,463	29,363	35,045	35,090
Adj. R-squared	0.831	0.831	0.831	0.831	0.840	0.838
Loan type effects	Y	Y	Y	Y	Y	Y
Loan purpose effects	N	N	N	Y	Y	Y
Year effects	Y	Y	Y	N	N	N
Bank effects	Y	Y	Y	Y	N	N
Bank × year effects	N	N	N	N	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Lender's country effects	N	N	Y	Y	Y	N
Lender's country × year effects	N	N	N	N	N	Y
Borrower's country effects	N	Y	Y	Y	Y	Y
Country-pair effects	N	N	N	Y	Y	Y

Table 9. Other loan characteristics

The table reports coefficients and t-statistics [in brackets]. The dependent variable is denoted in the second line of the table and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1) Loan amount	(2) Maturity	(3) Collateral	(4) Performance provisions	(5) Number of lenders	(6) Herfindahl
Sovereign downgrade	-0.046	0.643	0.012	-0.053	1.475*	42.232
	[-1.439]	[0.338]	[0.749]	[-1.090]	[2.026]	[0.391]
Bound	-0.086	3.219	-0.035	-0.043	1.129	-256.844***
	[-1.068]	[1.385]	[-0.755]	[-1.110]	[0.782]	[-2.855]
Sovereign downgrade × Bound	-0.063	-10.462**	0.004	0.154**	-4.023***	369.683*
	[-0.422]	[-2.121]	[0.049]	[2.640]	[-3.479]	[1.742]
AISD	-0.001***	0.003	0.000***	-0.000***	-0.005**	0.175
	[-6.235]	[0.800]	[6.164]	[-4.369]	[-2.750]	[0.312]
Loan amount		1.618***	-0.008*	0.023***	1.507***	-340.159***
		[7.067]	[-1.952]	[4.573]	[9.815]	[-6.304]
Maturity	0.004***		0.001***	0.000	0.022**	-0.666
	[4.441]		[3.588]	[0.871]	[2.582]	[-0.599]
Collateral	-0.065*	3.007***		0.057***	-0.873*	125.961*
	[-1.956]	[4.672]		[3.271]	[-1.856]	[1.761]
Number of lenders	0.017***	0.097***	-0.001*	0.006***		-38.864***
	[9.199]	[3.146]	[-1.800]	[5.624]		[-3.839]
Performance provisions	0.105***	0.484	0.033***		2.707***	-219.591***
	[4.759]	[1.071]	[3.356]		[9.734]	[-3.783]
General covenants	0.005	-0.323*	0.068***	0.151***	0.800***	-2.046
	[0.565]	[-1.889]	[11.985]	[22.587]	[6.700]	[-0.068]
Bank size	0.005	-0.316	0.004	0.007	-0.701***	97.459*
	[0.209]	[-0.508]	[0.431]	[0.497]	[-2.852]	[1.864]
Bank ROA	0.001	0.235	-0.003	-0.007	0.320	-36.195
	[0.072]	[0.729]	[-0.650]	[-0.753]	[1.708]	[-1.613]
Bank NPLs	-0.007**	0.091	-0.002	0.001	0.040	-4.732
	[-2.189]	[1.142]	[-1.522]	[0.804]	[1.165]	[-0.969]
Firm size	0.162*	0.669	-0.046***	-0.004	0.999***	47.990***
	[2.032]	[1.514]	[-5.583]	[-0.591]	[9.253]	[3.354]
Firm ROA	0.016*	-0.156	-0.004	-0.011***	0.080	-112.413***
	[1.819]	[-0.833]	[-0.875]	[-3.491]	[1.236]	[-5.832]
Firm leverage	-0.000	0.002	-0.000	0.000	0.002	0.098
	[-0.649]	[1.207]	[-0.339]	[0.291]	[0.990]	[0.058]
GDP growth	0.009	-0.111	0.001	-0.001	0.264*	20.722**
	[1.260]	[-0.725]	[0.603]	[-0.202]	[1.973]	[2.096]
GDP per capita	0.000	0.000	0.000	0.000	0.000	-0.001
	[0.745]	[0.633]	[0.987]	[0.789]	[0.153]	[-0.102]
Constant	18.100***	12.814	0.737***	-0.364*	-17.376***	6,886.106***
	[20.737]	[1.036]	[5.213]	[-1.913]	[-3.185]	[5.779]
Observations	61,985	61,985	61,985	61,985	61,985	19,212
Adj. R-squared	0.738	0.712	0.734	0.518	0.657	0.584
Loan type effects	Y	Y	Y	Y	Y	Y
Year effects	Y	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y	Y	Y

Table 10. The loan-demand channel

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of fixed effects, as given in the lower part of the table. In specification (1), we interact *Sovereign downgrade* × *Bound* with *Firm size*, i.e., the log of total firm assets. In specification (2), we interact *Sovereign downgrade* × *Bound* with *Firm ROA*, i.e., the return on total firm assets. In specification (3), we interact *Sovereign downgrade* × *Bound* with *Firm EBITDA*, i.e., the log of firm EBITDA. In specification (4), we interact *Sovereign downgrade* × *Bound* with *Firm Income*, i.e., the log of firm net income. In specification (5), we interact *Sovereign downgrade* × *Bound* with *Firm leverage*, i.e., the firm leverage. In specification (6), we interact *Sovereign downgrade* × *Bound* with *Firm equity*, i.e., the log of firm equity capital. In specification (7), we interact *Sovereign downgrade* × *Bound* with *Firm cash*, i.e., the log of firm cash holdings. In specification (8), we interact *Sovereign downgrade* × *Bound* with *Firm retained earnings*, i.e., the log of firm retained earnings. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sovereign downgrade	-33.485	-2.411	-0.363	-23.661*	-2.365	-11.544	-19.048**	-19.502
	[-1.674]	[-0.308]	[-0.047]	[-1.931]	[-0.303]	[-0.574]	[-2.310]	[-0.724]
Bound	-52.150	9.987	8.935	-29.429	9.611	-29.628	16.531	-61.485*
	[-1.578]	[1.593]	[1.354]	[-0.714]	[1.569]	[-0.992]	[0.640]	[-1.814]
Sovereign downgrade × Bound	181.396***	52.167**	113.868**	210.517**	45.821**	160.560***	174.241***	142.298**
	[3.273]	[2.177]	[2.445]	[2.479]	[2.737]	[2.902]	[3.052]	[2.631]
Sovereign downgrade × Bound × Firm size	-11.064***							
	[-2.926]							
Sovereign downgrade × Bound × Firm ROA		42.226						
		[0.291]						
Sovereign downgrade × Bound × Firm EBITDA			-6.554*					
			[-1.739]					
Sovereign downgrade × Bound × Firm Income				-19.176**				
				[-2.194]				
Sovereign downgrade × Bound × Firm leverage					5.304**			
					[2.351]			
Sovereign downgrade × Bound × Firm equity						-10.196**		
						[-2.495]		
Sovereign downgrade × Bound × Firm cash							-15.312**	
							[-2.790]	
Sovereign downgrade × Bound × Firm retained earnings								-9.052**
								[-2.241]
Observations	61,985	61,985	58,990	47,801	61,985	58,329	58,263	44,259
Adj. R-squared	0.768	0.767	0.776	0.788	0.767	0.782	0.766	0.797
Full set of controls	Y	Y	Y	Y	Y	Y	Y	Y
Loan type effects	Y	Y	Y	Y	Y	Y	Y	Y
Year effects	Y	Y	Y	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y	Y	Y	Y	Y

Table 11. Borrower's country fundamentals

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of fixed effects, as given in the lower part of the table. In specification (1), we interact *Sovereign downgrade* × *Bound* with *Stock market capitalization*, i.e., the total value of all listed shares in the borrower's country stock market (% of GDP). In specification (2), we interact *Sovereign downgrade* × *Bound* with *Financial sector credit*, i.e., the domestic credit in the borrower's country provided by the financial sector (% of GDP). In specification (3), we interact *Sovereign downgrade* × *Bound* with *Banking sector credit*, i.e., the domestic credit in the borrower's country provided by the banking sector (% of GDP). In specification (4), we interact *Sovereign downgrade* × *Bound* with *Financial/Banking sector credit*, i.e., the ratio of *Financial sector credit* to *Banking sector credit*. In specification (5), we interact *Sovereign downgrade* × *Bound* with *Exchange rate arrangement*, i.e., a categorical variable ranging from 1 to 5 reflecting the exchange rate regime in the borrower's country based on the exchange rate regime classification of Ilzetzki, Reinhart, and Rogoff (2019). The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Sovereign downgrade	-3.244	-2.459	-2.032	16.755	-2.250
	[-0.437]	[-0.314]	[-0.259]	[1.588]	[-0.285]
Bound	6.996	10.010	8.713	33.699**	8.679
	[1.151]	[1.614]	[1.445]	[2.546]	[1.425]
Sovereign downgrade × Bound	86.050**	56.397***	28.145*	17.818	103.768***
	[2.526]	[3.045]	[2.013]	[0.528]	[2.896]
Sovereign downgrade × Bound × Stock market capitalization	-47.754*				
	[-1.994]				
Sovereign downgrade × Bound × Financial sector credit		-92.763***			
		[-4.325]			
Sovereign downgrade × Bound × Banking sector credit			53.283**		
			[2.111]		
Sovereign downgrade × Bound × Financial/Banking sector credit				-65.260*	
				[-2.019]	
Sovereign downgrade × Bound × Exchange rate arrangement					-26.875*
					[-2.054]
Observations	59,435	61,985	61,985	15,302	61,806
Adj. R-squared	0.767	0.767	0.768	0.827	0.768
Full set of controls	Y	Y	Y	Y	Y
Loan type effects	Y	Y	Y	Y	Y
Year effects	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y	Y

Table 12. Lending relationships and subsidiary role

This table reports estimated coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method used is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of fixed effects, as given in the lower part of the table. In specification (1), we interact *Sovereign downgrade* × *Bound* with *Relationship lending*, i.e., a binary variable equal to 1 for a prior lending relationship between the lender and the borrower during the previous 2-year period, otherwise zero. In specification (2), we interact *Sovereign downgrade* × *Bound* with *Relationship lending number*, i.e., the ratio of the number of prior loans between the lender and the borrower during the previous 2-year period to the total number of loans received by the borrower during the same period. In specification (3), we interact *Sovereign downgrade* × *Bound* with *Relationship lending amount*, i.e., the ratio of the amount of prior loans between the lender and the borrower during the previous 2-year period to the total amount of loans received by the borrower during the same period. In specification (4), we interact *Sovereign downgrade* × *Bound* with *Bank subsidiary*, i.e., a binary variable equal to one if the lender operates a subsidiary in the borrower's country, otherwise zero. In specification (5), we interact *Sovereign downgrade* × *Bound* with *Firm subsidiary*, i.e., a binary variable equal to one if the borrower operates a subsidiary in the lender's country, otherwise zero. In specification (6), we interact *Sovereign downgrade* × *Bound* with *Government-owned firm*, i.e., a binary variable equal to one if the borrower is government-owned, otherwise zero. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sovereign downgrade	-2.012	-1.057	-1.179	-3.153	-2.432	-2.985
	[-0.213]	[-0.131]	[-0.146]	[-0.399]	[-0.303]	[-0.386]
Bound	3.020	8.287	8.005	10.398	10.239	11.266*
	[0.513]	[1.364]	[1.337]	[1.603]	[1.619]	[1.771]
Sovereign downgrade × Bound	67.107***	57.751***	58.075***	55.488***	56.287***	57.495***
	[3.108]	[3.039]	[3.063]	[2.985]	[3.087]	[3.035]
Sovereign downgrade × Bound × Relationship lending	-27.634**					
	[-2.518]					
Sovereign downgrade × Bound × Relationship lending number		-67.392*				
		[-1.722]				
Sovereign downgrade × Bound × Relationship lending amount			-70.809*			
			[-1.786]			
Sovereign downgrade × Bound × Bank subsidiary				-35.507***		
				[-5.080]		
Sovereign downgrade × Bound × Firm subsidiary					-22.249	
					[-1.635]	
Sovereign downgrade × Bound × Government-owned firm						-143.129**
						[-2.573]
Observations	61,985	61,985	61,867	61,985	61,985	61,985
Adj. R-squared	0.768	0.768	0.767	0.767	0.767	0.768
Full set of controls	Y	Y	Y	Y	Y	Y
Loan type effects	Y	Y	Y	Y	Y	Y
Year effects	Y	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y	Y	Y

Internet Appendix
Syndicated bank lending and rating downgrades: Do sovereign ceiling policies really matter?

Abstract

The first section includes the definitions of variables employed. The second section includes information on the construction of the sample. The third section reports several additional sensitivity tests.

Table A1. Variable definitions and sources

Variable	Description	Source
A. Dependent variables in main specifications		
AISD	All-in-spread-drawn, defined as the sum of the spread over LIBOR plus any facility fee.	DealScan
AISU	All-in-spread-undrawn, defined as the sum of the facility fee and the commitment fee.	DealScan
B. Main explanatory variables: Sovereign downgrade		
Sovereign downgrade	A binary variable equal to one, if the sovereign's long-term foreign-currency credit rating is downgraded in the year before the loan facility's origination year, otherwise zero. Sovereign downgrade lc is the equivalent variable for local-currency credit ratings.	S&P Credit Ratings
Short-term downgrade	A binary variable equal to one, if the sovereign's short-term foreign-currency credit rating is downgraded in the year before the loan facility's origination year, otherwise zero.	S&P Credit Ratings
Outlook downgrade	A binary variable equal to one, if the outlook on the sovereign's long-term foreign-currency credit rating is downgraded in the year before the loan facility's origination year, otherwise zero.	S&P Credit Ratings
C. Main explanatory variables: Bounded firms		
Bound	A binary variable equal to one if the borrower's credit rating is equal to or above the borrower's country credit rating in the year before the loan facility's origination year, otherwise zero. The variable *Bound (Bank)* is the equivalent variable for the lender's credit rating, and the variable *Bound (Bank & Firm)* is the equivalent variable for the lender's and the borrower's credit ratings.	S&P Credit Ratings
D. Explanatory variables: Loan characteristics		
Loan amount	Log of the loan facility amount in USD.	DealScan
Maturity	Loan duration in months.	DealScan
Collateral	A binary variable equal to one if the loan is secured with collateral, zero otherwise.	DealScan
Number of lenders	The number of banks involved in the syndicated loan.	DealScan
Performance provisions	A binary variable equal to one if the loan has performance pricing provisions, zero otherwise.	DealScan
General covenants	The total number of covenants in the loan contract.	DealScan
Financial covenants	The number of financial covenants in the loan contract.	DealScan
Net covenants	The number of net covenants in the loan contract.	DealScan
Loan type	A series of binary variables indicating loan type (e.g., term loans, revolvers, etc.).	DealScan
Loan purpose	A series of binary variables indicating loan purpose (e.g., corporate purpose, debt repay, etc.).	DealScan
Bank share	The bank's share of the loan facility.	DealScan
Herfindahl	The Herfindahl index of the syndicate (a measure of the concentration of holdings within a syndicate). The Herfindahl index is calculated using each syndicate member's share in the loan. It is the sum of the squared individual shares in the loan, and varies from zero to 10,000, with 10,000 being the Herfindahl when a lender holds 100% of the loan.	DealScan
Relationship lending	A binary variable equal to one for a prior loan facility between the lender and the borrower in the 2-year period before the loan facility's origination year, zero otherwise.	DealScan
Relationship lending number	The ratio of the number of prior loan facilities between the lender and the borrower in the 2-year period before the loan facility's origination year to the total number of loans received by the borrower during the same period.	DealScan
Relationship lending amount	The ratio of the amount of prior loan facilities between the lender and the borrower in the 2-year period before the loan facility's origination year to the total amount of loans received by the borrower during the same period.	DealScan

E. Explanatory variables: Lender characteristics		
Bank size	The log of total bank assets.	Compustat
Bank ROA	The return on total bank assets.	Compustat
Bank NPLs	The ratio of non-performing loans to total loans.	Compustat
Lerner index	The Lerner index of the bank, which equals (p-mc/p), where p is the average lending rate given by each bank in each year and mc is the marginal cost of producing bank output (also at the bank-year). We proxy the lending rate from the ratio of interest income to total commercial loans and we estimate the marginal cost from the non-parametric estimation of a cost function. We provide more details at the end of this Appendix.	Compustat and own estimations
Bank subsidiary	Abinary variable equal to one if the lender operates a subsidiary in the borrower's country, otherwise zero.	DealScan
F. *Explanatory variables: Borrower characteristics*		
Firm size	The log of total firm assets.	Compustat
Firm ROA	The return on total firm assets.	Compustat
Firm EBITDA	The log of firm EBITDA	Compustat
Firm income	The log of firm net income	Compustat
Firm leverage	The firm leverage.	Compustat
Firm equity	The log of firm equity capital.	Compustat
Firm cash	The log of firm cash holdings.	Compustat
Firm retained earnings	The log of firm retained earnings.	Compustat
Firm subsidiary	A binary variable equal to one if the borrower operates a subsidiary in the lender's country, otherwise zero.	DealScan
G. Explanatory variables: Borrower's country characteristics		
GDP growth	The difference in annual GDP growth rate (%) between the lender's and the borrower's countries.	WDI
GDP per capita	The difference in annual GDP per capita in constant prices between the lender's and the borrower's countries.	WDI
Stock market capitalization	The total value (in USD) of all listed shares in the borrower's country stock market as a percentage of GDP.	WDI
Financial sector credit	The domestic credit in the borrower's country provided by the financial sector as a percentage of GDP.	WDI
Banking sector credit	The domestic credit in the borrower's country provided by the banking sector as a percentage of GDP.	WDI
Exchange rate arrangement	A categorical variable ranging from 1 to 5 reflecting the exchange rate arrangement in the borrower's country. The variable is based on the exchange rate regime classification of Ilzetzki, Reinhart, and Rogoff (2019), with lower values reflecting less flexible arrangements (e.g., a value of 1 includes pre announced pegs, currency board arrangements, pre announced horizontal bands narrower than or equal to +/- 2%, de facto pegs) and higher values reflecting more flexible arrangements (e.g., a value of 4 includes freely floating arrangements, and a value of 5 includes freely floating arrangements).	Ilzetzki, Reinhart, and Rogoff (2019)

Table A2. Sovereign downgrades and bounded firms affected

The table presents the sovereign downgrade events for the borrower countries in our sample and the bounded firms affected.

Country	Year of Downgrade	Bounded firms affected
Mexico	1995	AXA SA de CV
Turkey	1996	Turk Ekonomi Bankasi AS [TEB]
Korea (South)	1997	Hana Bank
Malaysia	1997	Tenaga Nasional Bhd
Malaysia	1997	Telekom Malaysia Bhd
Hong Kong	1998	Citibank NA Hong Kong Branch
Hong Kong	1998	Bank of America Asia
Malaysia	1998	Public Bank Bhd
Malaysia	1998	Malayan Banking Bhd
Argentina	2000	Transportadora de Gas del Sur SA
Turkey	2001	Turkiye Garanti Bankasi AS
Turkey	2001	Finansbank AS [Turkey]
Japan	2002	Tokyo Electric Power Co Inc
Japan	2002	Ajinomoto Co Inc
Japan	2002	Abbott Japan Co Ltd
Philippines	2003	Globe Telecom Inc
Greece	2004	Coca-Cola Hellenic Bottling Co SA (CCHBC)
Philippines	2005	San Miguel Corp
Italy	2006	Enel SpA
Argentina	2008	Pan American Energy
Russia	2008	Severneftegazprom OAO
Russia	2008	Sakhalin II Project
Mexico	2009	PMI Trading Ltd
Mexico	2009	Grupo Bimbo
Mexico	2009	Petroleos Mexicanos (Pemex)
Greece	2010	OTE Hellenic Telecommunications Organisation SA
Ireland	2010	Accenture
Portugal	2010	Energias de Portugal SA [EDP]
Greece	2011	Titan Cement Co SA
Greece	2011	Coca-Cola Hellenic Bottling Co SA (CCHBC)
Italy	2011	SNAM Rete Gas SpA
USA	2011	Momentive Performance Materials Inc
USA	2011	WW Grainger Inc
USA	2011	NetJets Inc
Italy	2012	SNAM Rete Gas SpA
Italy	2012	Enel Rete Gas SpA
Portugal	2012	Energias de Portugal SA [EDP]
Spain	2012	Gas Natural SDG SA
Spain	2012	Amadeus IT Group SA
Spain	2012	Iberdrola SA
Spain	2012	Enagas SA
Argentina	2013	Pan American Energy
Italy	2013	Enel SpA
Italy	2013	Luxottica Group SpA
Italy	2013	Terna SpA [Trasmissione Elettricita Rete Nazionale]
Ukraine	2013	Ferrexpo Group
Argentina	2014	Pan American Energy
Brazil	2014	Vale SA
Brazil	2014	Gerdau
Ghana	2014	Kosmos Energy Ghana HC
Italy	2014	Enel SpA
Italy	2014	Exor SpA
Italy	2014	Terna SpA [Trasmissione Elettricita Rete Nazionale]
Russia	2014	Uralkali JSC [Uralkaly OAO]
Russia	2014	Gazprom OAO

South Africa	2014	Investec Bank Ltd [South Africa]
Bahrain	2015	Bahrain Steel B.S.C.C. EC
Russia	2015	Uralkali JSC [Uralkaly OAO]
Mexico	1995	AXA SA de CV
Turkey	1996	Turk Ekonomi Bankasi AS [TEB]
Korea (South)	1997	Hana Bank
Malaysia	1997	Tenaga Nasional Bhd
Malaysia	1997	Telekom Malaysia Bhd
Hong Kong	1998	Citibank NA Hong Kong Branch
Hong Kong	1998	Bank of America Asia
Malaysia	1998	Public Bank Bhd
Malaysia	1998	Malayan Banking Bhd
Argentina	2000	Transportadora de Gas del Sur SA
Turkey	2001	Turkiye Garanti Bankasi AS
Turkey	2001	Finansbank AS [Turkey]
Japan	2002	Tokyo Electric Power Co Inc
Japan	2002	Ajinomoto Co Inc
Japan	2002	Abbott Japan Co Ltd
Philippines	2003	Globe Telecom Inc
Greece	2004	Coca-Cola Hellenic Bottling Co SA (CCHBC)
Philippines	2005	San Miguel Corp
Italy	2006	Enel SpA
Argentina	2008	Pan American Energy
Russia	2008	Severneftegazprom OAO
Russia	2008	Sakhalin II Project
Mexico	2009	PMI Trading Ltd
Mexico	2009	Grupo Bimbo
Mexico	2009	Petroleos Mexicanos (Pemex)
Greece	2010	OTE Hellenic Telecommunications Organisation SA
Ireland	2010	Accenture
Portugal	2010	Energias de Portugal SA [EDP]
Greece	2011	Titan Cement Co SA
Greece	2011	Coca-Cola Hellenic Bottling Co SA (CCHBC)
Italy	2011	SNAM Rete Gas SpA
USA	2011	Momentive Performance Materials Inc
USA	2011	WW Grainger Inc
USA	2011	NetJets Inc
Italy	2012	SNAM Rete Gas SpA
Italy	2012	Enel Rete Gas SpA
Portugal	2012	Energias de Portugal SA [EDP]
Spain	2012	Gas Natural SDG SA
Spain	2012	Amadeus IT Group SA
Spain	2012	Iberdrola SA
Spain	2012	Enagas SA
Argentina	2013	Pan American Energy
Italy	2013	Enel SpA
Italy	2013	Luxottica Group SpA
Italy	2013	Terna SpA [Trasmissione Elettricita Rete Nazionale]
Ukraine	2013	Ferrexpo Group
Argentina	2014	Pan American Energy
Brazil	2014	Vale SA
Brazil	2014	Gerdau
Ghana	2014	Kosmos Energy Ghana HC
Italy	2014	Enel SpA
Italy	2014	Exor SpA
Italy	2014	Terna SpA [Trasmissione Elettricita Rete Nazionale]
Russia	2014	Uralkali JSC [Uralkaly OAO]
Russia	2014	Gazprom OAO

	South Africa	2014	Investec Bank Ltd [South Africa]
	Bahrain	2015	Bahrain Steel B.S.C.C. EC
	Russia	2015	Uralkali JSC [Uralkaly OAO]
Total	20	19	49

Table A3. Different loan controls

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Different specifications include different loan controls to show that the estimates on the term *Sovereign downgrade* × *Bound* are not overly sensitive to the loan controls used. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Sovereign downgrade	-2.032	-2.249	-2.800	-1.751
	[-0.235]	[-0.286]	[-0.351]	[-0.213]
Bound	10.010	10.932	8.492	10.617
	[1.635]	[1.680]	[1.464]	[1.677]
Sovereign downgrade × Bound	56.986***	54.809***	57.707***	52.915***
	[2.969]	[2.862]	[3.198]	[2.812]
Loan amount			-8.070***	-7.273***
			[-6.855]	[-5.965]
Maturity			0.095	0.068
			[1.048]	[0.742]
Collateral		31.714***		32.712***
		[5.718]		[5.745]
Number of lenders		-0.556***		-0.510***
		[-4.663]		[-4.054]
Performance provisions		-15.995***	-15.418***	
		[-4.705]	[-4.802]	
General covenants		4.329***	6.380***	
		[3.178]	[4.197]	
Bank size	1.380	0.545	0.664	0.253
	[0.519]	[0.209]	[0.252]	[0.101]
Bank ROA	-6.299*	-5.791*	-6.088*	-5.725*
	[-2.062]	[-2.008]	[-2.033]	[-1.910]
Bank NPLs	0.452	0.531	0.413	0.485
	[1.321]	[1.615]	[1.225]	[1.509]
Firm size	-4.854	-2.329	-3.080	-0.995
	[-1.382]	[-0.753]	[-1.082]	[-0.372]
Firm ROA	-3.760	-3.631	-3.562	-3.190
	[-0.961]	[-1.006]	[-0.954]	[-0.896]
Firm leverage	0.010	0.011	0.011	0.013
	[0.710]	[0.947]	[0.872]	[1.024]
GDP growth	-0.941	-0.725	-0.714	-0.626
	[-1.202]	[-0.892]	[-0.929]	[-0.786]
GDP per capita	-0.002*	-0.002*	-0.002	-0.002*
	[-1.824]	[-1.936]	[-1.687]	[-1.877]
Constant	194.378***	179.878***	343.689***	310.498***
	[4.193]	[4.125]	[7.578]	[7.597]
Observations	62,888	62,888	61,985	61,985
Adj. R-squared	0.756	0.762	0.763	0.766
Loan type effects	Y	Y	Y	Y
Year effects	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y

Table A4. Different clustering of standard errors

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table 1. Estimation method is OLS. The lower part of the table denotes the type of fixed effects used in each specification and the type of standard error clustering (C refers to borrower's country, F refers to firm, L refers to loan, and Y refers to year). The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Sovereign downgrade	-2.426	-2.426	-2.426	-2.426	-2.426
	[-0.324]	[-0.386]	[-0.369]	[-0.448]	[-0.369]
Bound	10.032*	10.032	10.032***	10.032***	10.032***
	[1.981]	[1.501]	[3.741]	[2.800]	[3.741]
Sovereign downgrade × Bound	54.627***	54.627***	54.627***	54.627***	54.627***
	[3.245]	[2.808]	[3.312]	[2.986]	[3.312]
Loan amount	-6.935***	-6.935***	-6.935***	-6.935***	-6.935***
	[-6.896]	[-7.231]	[-7.433]	[-9.490]	[-7.433]
Maturity	0.073	0.073	0.073	0.073	0.073
	[0.824]	[1.160]	[0.666]	[0.782]	[0.666]
Collateral	32.060***	32.060***	32.060***	32.060***	32.060***
	[6.123]	[8.975]	[5.266]	[6.244]	[5.266]
Number of lenders	-0.440***	-0.440***	-0.440**	-0.440***	-0.440**
	[-3.996]	[-3.868]	[-2.733]	[-4.284]	[-2.733]
Performance provisions	-14.914***	-14.914***	-14.914***	-14.914***	-14.914***
	[-4.745]	[-7.451]	[-4.088]	[-4.348]	[-4.088]
General covenants	4.434***	4.434***	4.434***	4.434***	4.434***
	[3.515]	[4.109]	[3.989]	[8.944]	[3.989]
Bank size	0.193	0.193	0.193	0.193	0.193
	[0.085]	[0.087]	[0.080]	[0.089]	[0.080]
Bank ROA	-5.712*	-5.712***	-5.712***	-5.712***	-5.712***
	[-2.000]	[-2.797]	[-3.015]	[-4.328]	[-3.015]
Bank NPLs	0.489	0.489*	0.489	0.489*	0.489
	[1.584]	[1.811]	[1.310]	[1.814]	[1.310]
Firm size	-1.045	-1.045	-1.045	-1.045	-1.045
	[-0.513]	[-0.414]	[-0.296]	[-0.297]	[-0.296]
Firm ROA	-3.336	-3.336	-3.336	-3.336	-3.336
	[-1.311]	[-0.949]	[-0.758]	[-0.752]	[-0.758]
Firm leverage	0.013	0.013	0.013	0.013***	0.013
	[1.091]	[1.191]	[1.218]	[10.306]	[1.218]
GDP growth	-0.612	-0.612	-0.612	-0.612	-0.612
	[-0.982]	[-0.840]	[-0.683]	[-0.679]	[-0.683]
GDP per capita	-0.002**	-0.002**	-0.002	-0.002*	-0.002
	[-2.346]	[-2.303]	[-1.205]	[-1.793]	[-1.205]
Constant	305.260***	305.260***	305.260***	305.260***	305.260***
	[8.555]	[7.716]	[6.398]	[6.174]	[6.398]
Observations	61,985	61,985	61,985	61,985	61,985
Adj. R-squared	0.768	0.767	0.767	0.767	0.767
Loan type effects	Y	Y	Y	Y	Y
Year effects	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y	Y
Clustering	L&Y	L&F	C&Y	C&F	C&F&Y

Table A5. Weighted least squares

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is weighted least squares with standard errors clustered by firm *and* year. The lower part of the table denotes the type of fixed effects used in each specification. In specification (1), we weight by the number of loans between the lender's country and the borrower's country to the total number of loans in our sample. In specification (2), we employ the weight of specification (1) at the yearly frequency. In specification (3), we weight by the number of loans between the lender and the borrower's country to the total number of loans in our sample. In specification (4), we employ the weight of specification (3) at the yearly frequency. In specification (5), we weight by the number of loans between the lender and the borrower to the total number of loans in our sample. In specification (6), we employ the weight of specification (5) at the yearly frequency. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sovereign downgrade	-2.423	-1.939	-2.457	-2.399	-2.425	-2.180
	[-0.309]	[-0.249]	[-0.314]	[-0.308]	[-0.310]	[-0.275]
Bound	10.027	10.190	10.002	10.033	10.023	9.814
	[1.614]	[1.644]	[1.609]	[1.616]	[1.615]	[1.589]
Sovereign downgrade × Bound	54.659***	53.977***	54.669***	54.509***	54.609***	54.888***
	[2.973]	[2.953]	[2.979]	[2.976]	[2.968]	[2.950]
Loan amount	-6.929***	-6.852***	-6.927***	-6.899***	-6.939***	-6.708***
	[-6.015]	[-5.984]	[-6.007]	[-5.994]	[-6.029]	[-5.899]
Maturity	0.073	0.070	0.073	0.072	0.073	0.070
	[0.789]	[0.753]	[0.789]	[0.784]	[0.794]	[0.764]
Collateral	32.059***	31.998***	32.039***	31.958***	32.069***	31.598***
	[5.733]	[5.721]	[5.732]	[5.711]	[5.744]	[5.743]
Number of lenders	-0.440***	-0.442***	-0.441***	-0.440***	-0.440***	-0.451***
	[-3.494]	[-3.495]	[-3.496]	[-3.496]	[-3.495]	[-3.547]
Performance provisions	-14.921***	-15.090***	-14.941***	-14.952***	-14.916***	-14.905***
	[-4.581]	[-4.584]	[-4.584]	[-4.572]	[-4.583]	[-4.565]
General covenants	4.434***	4.475***	4.418***	4.436***	4.438***	4.358***
	[3.212]	[3.224]	[3.207]	[3.212]	[3.211]	[3.171]
Bank size	0.152	-0.227	0.182	0.327	0.190	-0.099
	[0.060]	[-0.092]	[0.072]	[0.131]	[0.075]	[-0.039]
Bank ROA	-5.798*	-6.009**	-5.811*	-5.907*	-5.726*	-5.562*
	[-1.982]	[-2.076]	[-1.995]	[-1.988]	[-1.960]	[-1.873]
Bank NPLs	0.470	0.299	0.464	0.490	0.488	0.506
	[1.450]	[1.002]	[1.440]	[1.535]	[1.510]	[1.563]
Firm size	-1.062	-1.220	-1.057	-1.098	-1.043	-1.208
	[-0.407]	[-0.476]	[-0.404]	[-0.420]	[-0.400]	[-0.447]
Firm ROA	-3.328	-3.293	-3.363	-3.366	-3.336	-3.323
	[-0.949]	[-0.945]	[-0.959]	[-0.961]	[-0.951]	[-0.953]
Firm leverage	0.013	0.013	0.013	0.013	0.013	0.012
	[1.040]	[1.050]	[1.038]	[1.058]	[1.035]	[1.018]
GDP growth	-0.620	-0.637	-0.621	-0.602	-0.614	-0.608
	[-0.776]	[-0.805]	[-0.778]	[-0.759]	[-0.769]	[-0.755]
GDP per capita	-0.002*	-0.002**	-0.002*	-0.002**	-0.002*	-0.002*
	[-2.037]	[-2.090]	[-2.065]	[-2.100]	[-2.036]	[-2.020]
Observations	61,985	61,985	61,985	61,985	61,985	61,985
Adj. R-squared	0.767	0.768	0.767	0.768	0.767	0.768
Loan type effects	Y	Y	Y	Y	Y	Y
Year effects	Y	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y	Y	Y

Table A6. Heckman sample-selection model

The table reports coefficients and t-statistics [in brackets] from Heckman's (1979) sample-selection model. The dependent variable is in the second line of each panel and all variables are defined in Table A1. Estimation method in Panel A is maximum likelihood and in Panel B is OLS with standard errors clustered by firm *and* year. Panel A reports the estimates from the first-stage probit model to estimate the determinants of the firm's loan-taking decision. The lower part panel A denotes the dummy variables used in each specification. Panel B reports the estimates from the second-stage OLS regression for the effect of firm credit rating changes on loan spreads. Each of the specification in Panel B includes the inverse mills ratio (*Lambda*) from the corresponding specification in Panel A. The lower part of Panel B denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: The loan-taking decision by the firm

	(1)	(2)	(3)
	Loan deal	Loan deal	Loan deal
Firm size	0.085***	0.120***	0.119***
	[49.258]	[25.908]	[25.183]
Firm ROA	0.029***	0.029***	0.029***
	[5.908]	[5.800]	[5.802]
Firm leverage	0.000**	0.000	0.000*
	[2.198]	[1.264]	[1.917]
Firm equity		-0.038***	-0.037***
		[-7.936]	[-7.485]
Firm debt			-0.003
			[-1.434]
Loan amount	0.223***	0.228***	0.228***
	[77.890]	[76.729]	[76.719]
Maturity	-0.000***	-0.000**	-0.000**
	[-3.380]	[-2.394]	[-2.404]
Collateral	0.297***	0.269***	0.270***
	[35.439]	[30.554]	[30.582]
Number of lenders	0.016***	0.016***	0.016***
	[37.270]	[35.823]	[35.815]
Performance provisions	0.378***	0.417***	0.417***
	[38.547]	[41.074]	[41.069]
General covenants	0.014***	0.006	0.006
	[3.963]	[1.545]	[1.533]
Bank size	0.006*	0.002	0.002
	[1.655]	[0.460]	[0.467]
Bank ROA	0.015**	0.013**	0.013**
	[2.473]	[2.060]	[2.079]
Bank NPLs	-0.025***	-0.025***	-0.025***
	[-14.250]	[-13.931]	[-13.939]
Bank loans	4.864***	5.157***	5.158***
	[20.971]	[21.370]	[21.372]
Firm loans	-70.395***	-41.605***	-41.429***
	[-12.306]	[-6.516]	[-6.492]
Bank-firm loans		-197.504***	-197.361***
		[-7.003]	[-7.000]
Constant	-72.722***	-69.223***	-69.167***
	[-44.846]	[-40.412]	[-40.371]
Observations	169,172	161,483	161,483
Loan type effects dummies	Y	Y	Y
Year dummies	Y	Y	Y
Bank dummies	Y	Y	Y
Firm dummies	Y	Y	Y
Borrower's country dummies	Y	Y	Y

Panel B: The effect of Sovereign downgrade × Bound on loan spreads

	(1) AISD	(2) AISD	(3) AISD
Sovereign	-2.221	-0.325	-0.313
	[-0.282]	[-0.039]	[-0.038]
Bound	10.758	8.036	8.074
	[1.699]	[1.276]	[1.280]
Sovereign downgrade × Bound	53.769***	56.107***	56.058***
	[2.892]	[2.924]	[2.920]
Loan amount	-2.558	-5.912**	-5.665**
	[-1.138]	[-2.738]	[-2.638]
Maturity	0.066	0.120	0.119
	[0.714]	[1.350]	[1.346]
Collateral	37.355***	30.673***	30.936***
	[5.590]	[4.866]	[4.904]
Number of lenders	-0.206	-0.318**	-0.305*
	[-1.225]	[-2.098]	[-2.022]
Performance provisions	-8.279**	-9.102**	-8.702**
	[-2.224]	[-2.598]	[-2.495]
General covenants	4.828***	4.575***	4.588***
	[3.326]	[3.562]	[3.574]
Bank size	0.549	1.008	1.021
	[0.218]	[0.404]	[0.409]
Bank ROA	-5.364*	-4.179**	-4.159**
	[-1.795]	[-2.294]	[-2.283]
Bank NPLs	-0.003	0.455	0.428
	[-0.008]	[1.169]	[1.102]
Firm size	0.167	0.777	0.840
	[0.061]	[0.454]	[0.491]
Firm ROA	-2.781	-2.288	-2.259
	[-0.807]	[-0.883]	[-0.871]
Firm leverage	0.015	0.038**	0.038**
	[1.256]	[2.238]	[2.273]
GDP growth	-0.596	-0.575	-0.574
	[-0.748]	[-0.720]	[-0.719]
GDP per capita	-0.002*	-0.002*	-0.002*
	[-1.850]	[-1.980]	[-1.981]
Constant	169.400**	239.782***	232.312***
	[2.261]	[3.638]	[3.535]
Observations	61,985	58,329	58,329
Year dummies	Y	Y	Y
Bank dummies	Y	Y	Y
Firm dummies	Y	Y	Y
Borrower's country dummies	Y	Y	Y

Table A7. Different macro-controls

This table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISD* and all variables are defined in Table A1. The estimation method is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of macro-level controls. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sovereign downgrade	-18.433	-19.591*	0.912	-4.884	-2.323	-18.433
	[-1.634]	[-1.975]	[0.103]	[-0.632]	[-0.294]	[-1.634]
Bound	10.394	13.418	6.357	14.053	10.305	10.394
	[0.929]	[1.073]	[0.760]	[1.526]	[1.653]	[0.929]
Sovereign downgrade × Bound	49.757***	49.677***	57.141***	53.395***	54.211***	49.757***
	[2.959]	[3.458]	[3.208]	[2.837]	[2.890]	[2.959]
Loan amount	-6.869***	-7.582***	-7.015***	-6.580***	-6.928***	-6.869***
	[-6.699]	[-6.719]	[-5.698]	[-6.198]	[-6.020]	[-6.699]
Maturity	-0.039	-0.114	0.049	0.04	0.074	-0.039
	[-0.447]	[-0.926]	[0.520]	[0.467]	[0.805]	[-0.447]
Collateral	28.934***	31.660***	34.548***	35.395***	32.116***	28.934***
	[4.467]	[4.837]	[6.521]	[6.542]	[5.805]	[4.467]
Number of lenders	-0.404**	-0.457***	-0.432***	-0.516***	-0.428***	-0.404**
	[-2.677]	[-3.164]	[-3.985]	[-3.911]	[-3.344]	[-2.677]
Performance provisions	-18.765***	-20.025***	-16.873***	-15.060***	-15.061***	-18.765***
	[-4.325]	[-4.393]	[-5.089]	[-4.610]	[-4.577]	[-4.325]
General covenants	4.661**	5.004**	4.688***	4.155***	4.421***	4.661**
	[2.390]	[2.437]	[3.337]	[3.065]	[3.221]	[2.390]
Bank size	-1.407	-1.388	-0.599	1.418	0.258	-1.407
	[-0.486]	[-0.357]	[-0.227]	[0.602]	[0.102]	[-0.486]
Bank ROA	-5.577*	-4.687	-6.622**	-4.903*	-5.684*	-5.577*
	[-1.944]	[-1.404]	[-2.259]	[-1.833]	[-1.975]	[-1.944]
Bank NPLs	0.301	-0.074	0.628*	0.501	0.478	0.301
	[0.719]	[-0.162]	[1.966]	[1.570]	[1.421]	[0.719]
Firm size	-2.077	-1.633	-1.301	-6.651**	-1.091	-2.077
	[-1.630]	[-0.929]	[-0.564]	[-2.556]	[-0.418]	[-1.630]
Firm ROA	-255.882***	-245.635***	-2.633	-2.984	-3.247	-255.882***
	[-7.852]	[-7.696]	[-0.902]	[-0.885]	[-0.929]	[-7.852]
Firm leverage	-0.071***	-0.071***	0.013	0.013	0.013	-0.071***
	[-5.195]	[-5.451]	[0.999]	[1.034]	[1.055]	[-5.195]
GDP growth	0.595	-0.022	-0.808	-1.516**	-0.561	0.595
	[0.564]	[-0.020]	[-0.886]	[-2.507]	[-0.692]	[0.564]
GDP per capita	-0.002	0.000	-0.002	-0.001	-0.002*	-0.002
	[-1.121]	[-0.059]	[-1.607]	[-1.509]	[-2.030]	[-1.121]
Debt-to-GDP	0.932**	1.064***				0.932**
	[2.838]	[3.055]				[2.838]
Inflation	0.815					0.815
	[1.120]					[1.120]
Trade balance		-0.000***				
		[-3.906]				
Polity			-3.049			
			[-1.443]			
Economic freedom			-1.874			
			[-1.599]			
Real rate				-0.811		
				[-1.371]		
Vix					0.587	
					[1.533]	
Constant	297.977***	304.566***	491.050***	341.670***	293.225***	297.977***
	[6.526]	[4.904]	[4.639]	[8.967]	[6.973]	[6.526]
Observations	34,961	28,491	55,275	59,118	61,985	34,961
Adj. R-squared	0.79	0.788	0.772	0.767	0.768	0.79
Loan type effects	Y	Y	Y	Y	Y	Y

Year effects	Y	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Borrower's country effects	Y	Y	Y	Y	Y	Y

Table A8. Results for AISU (local-currency ratings)

The table reports coefficients and t-statistics [in brackets]. Dependent variable is *AISU* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by firm *and* year. Each specification includes a different set of fixed effects, as given in the lower part of the table. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sovereign downgrade lc	-4.059	-4.059	-4.059	-4.254	-3.358	-2.836
	[-1.557]	[-1.556]	[-1.556]	[-1.659]	[-1.321]	[-1.165]
Bound	-1.600	-1.600	-1.600	-1.257	-1.807	-1.762
	[-0.639]	[-0.639]	[-0.639]	[-0.505]	[-0.714]	[-0.664]
Sovereign downgrade lc × Bound	8.524***	8.524***	8.524***	8.302***	9.050**	9.096**
	[2.988]	[2.986]	[2.986]	[3.046]	[2.121]	[2.275]
AISD	0.147***	0.147***	0.147***	0.146***	0.149***	0.149***
	[22.329]	[22.314]	[22.314]	[21.662]	[20.435]	[20.692]
Loan amount	-0.025	-0.025	-0.025	0.012	0.140	0.146
	[-0.077]	[-0.077]	[-0.077]	[0.041]	[0.487]	[0.508]
Maturity	0.017	0.017	0.017	0.015	0.008	0.008
	[0.913]	[0.912]	[0.912]	[0.860]	[0.493]	[0.476]
Collateral	3.383***	3.383***	3.383***	3.405***	3.517***	3.532***
	[4.019]	[4.017]	[4.017]	[4.094]	[4.300]	[4.314]
Number of lenders	-0.007	-0.007	-0.007	-0.016	-0.021	-0.022
	[-0.265]	[-0.265]	[-0.265]	[-0.655]	[-0.936]	[-0.995]
Performance provisions	-0.925	-0.925	-0.925	-0.761	-0.762	-0.754
	[-1.704]	[-1.703]	[-1.703]	[-1.445]	[-1.452]	[-1.432]
General covenants	0.105	0.105	0.105	0.149	0.097	0.095
	[0.368]	[0.368]	[0.368]	[0.532]	[0.323]	[0.319]
Bank size	0.369	0.369	0.369	0.337		
	[0.776]	[0.776]	[0.776]	[0.717]		
Bank ROA	-0.721*	-0.721*	-0.721*	-0.691*		
	[-1.811]	[-1.810]	[-1.810]	[-1.780]		
Bank NPLs	0.095	0.095	0.095	0.100		
	[1.222]	[1.221]	[1.221]	[1.198]		
Firm size	-0.321	-0.321	-0.321	-0.275	-0.193	-0.180
	[-0.836]	[-0.835]	[-0.835]	[-0.731]	[-0.480]	[-0.444]
Firm ROA	-6.488**	-6.488**	-6.488**	-5.827**	-1.268	-1.267
	[-2.668]	[-2.667]	[-2.667]	[-2.562]	[-1.273]	[-1.261]
Firm leverage	0.001	0.001	0.001	0.001	0.002	0.001
	[0.418]	[0.417]	[0.417]	[0.695]	[1.256]	[1.130]
GDP growth	-0.159	-0.159	-0.159	-0.242	-0.418	
	[-0.727]	[-0.727]	[-0.727]	[-1.291]	[-1.201]	
GDP per capita	0.000	0.000	0.000	0.000	0.000	
	[0.237]	[0.237]	[0.237]	[0.467]	[0.314]	
Constant	4.616	4.616	4.616	4.050	5.691	5.425
	[0.532]	[0.532]	[0.532]	[0.465]	[1.002]	[0.973]
Observations	29,353	29,353	29,353	29,253	34,742	34,787
Adj. R-squared	0.831	0.831	0.831	0.832	0.840	0.838
Loan type effects	Y	Y	Y	Y	Y	Y
Loan purpose effects	N	N	N	Y	Y	Y
Year effects	Y	Y	Y	N	N	N
Bank effects	Y	Y	Y	Y	N	N
Bank × year effects	N	N	N	N	Y	Y
Firm effects	Y	Y	Y	Y	Y	Y
Lender's country effects	N	N	Y	Y	Y	N
Lender's country × year effects	N	N	N	N	N	Y
Borrower's country effects	N	Y	Y	Y	Y	Y
Country-pair effects	N	N	N	Y	Y	Y