Corporate debt structure over the global credit cycle *

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Abstract

We study how firms' issuance and refinancing decisions shape debt structure around the world. We leverage instrument-level data to create a comprehensive picture of the maturity, currency, and security type composition of firms' debt. A major advantage of these data is the ability to evaluate how issuance and refinancing shape the substitution between different types of instrument – corporate bonds and bank loans – and between debt denominated in local and foreign currency at the firm level for a large cross-section of countries. We document three fundamental facts. First, while prepayment rates are similar across different types of instrument, they vary substantially across currencies, with USD debt exhibiting the highest prepayment rates. Second, when either global or local credit conditions are tight, prepayment rates decline, and a greater fraction of long-term debt with only 2 or 3 years remaining time to maturity survives to the last year. Third, while tight global credit conditions have a particularly negative effect on the likelihood of risky firms issuing new debt, extreme international capital outflow events lower the overall probability of issuance but do not differentially impair riskier firms. Instead, surges in capital inflows disproportionally improve the ability of risky firms to manage rollover risk.

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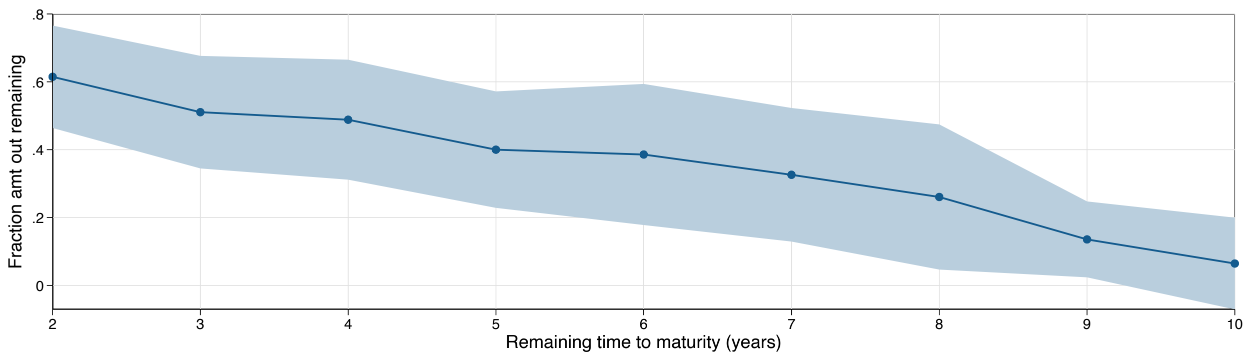
1 Introduction

The corporate finance literature has long understood that firms' capital structure affects a multitude of firm and aggregate-level outcomes. While a number of papers have explored a variety of different dimensions of capital structure, we know surprisingly little about the determinants of the maturity structure of debt, and the interplay between maturity and currency choices. Firms may mitigate liquidity shortages associated with rollover risks by actively managing the maturity structure of their debt, tailoring the maturity composition of debt both to their own needs but also to the demands of lenders both domestically and abroad. In this paper, we study the maturity structure of firms' debt – on a granular level – as the joint outcome of debt prepayment and debt issuance decisions.

A key innovation of this study is the use of comprehensive instrument-level data on firms' debt liabilities. This allows us to fully map the composition of firms' debt along the maturity, currency, and security type dimensions for a large cross-section of firms across the world. We exploit the rich nature of these data to study how prepayment and issuance decisions shape firms' debt structure along the maturity, currency, and security type dimensions, and how those decisions are affected by firm-level characteristics. Crucially, we study the role of the global credit cycle and capital flows in driving firms' ability to manage their debt structure.

We document three basic facts related to how firms manage their maturity structure. First, we show that, on average, firms prepay a substantial fraction of debt well in advance of maturity. This is reflected in the term structure of average survival rate plotted in Figure 1, which shows the fraction of amount outstanding at a given horizon that survives until the final year of maturity. For example, while only 10% of debt with 10 years to maturity survives until the last year, around 50% of debt with 3 years to maturity is prepaid before the final year. Furthermore, prepayment rates are particularly high for debt in USD, and debt of firms that experience a substantial reduction in credit risk.

Figure 1. Term structure of debt prepayment. This figure plots the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Shaded area indicate 95% confidence bands around point estimates based on standard errors clustered at the firm level.



Second, new issuances have long-lasting impacts on debt structure. That is, even 5 years after a new corporate bond issuance, firms' average maturity remains higher, coupon rates remain lower, and bonds remain a larger fraction of overall debt outstanding relative to the pre-issuance year. Third, firms appear to avoid corporate bond maturity towers –having too much debt due in any given period – by issuing away from the prevalent outstanding bond maturities. However, the maturity composition of loans outstanding does not appear to be a significant determinant of the maturity choice for new bond issuances.

In terms of the role of the global credit cycle, we document substantially less prepayment when financial conditions –as measured by the VIX– are tight. Moreover, focusing on events of extreme international capital outflows, we find that firms ability to prepay debt is substantially hindered during these episodes. Putting together these results, periods of tight financial conditions increase financial fragilities that arise from higher exposure to rollover risk at the firm level.

A key element of the analysis in this paper is the comprehensive international debt market data collected in Boyarchenko and Elias (2023), which puts together primary and secondary corporate bond market data together with data on corporate debt outstanding, firm balance sheets, and firm default probabilities across a number of countries. The current paper focuses on the *instrument*-level debt securities outstanding data from the Capital IQ Debt Capital Structure dataset and primary market data from SDC Platinum and Mergent FISD, which allow us to construct granular measures of the maturity, currency, and security type composition of firms' debt outstanding and issuance.

This level of granularity is a substantial improvement over papers that study debt maturity structure using only on balance sheet data. First, balance sheet data does not contain any information on the currency or security type composition of outstanding liabilities. Second, even along the maturity dimension, the available information is extremely limited. For instance, international balance sheet data only differentiates between debt coming due over the next year versus all other debt. That is, balance sheet data provides no information on the share of debt coming due at any other horizon. Even for the U. S. balance sheet data provides precise information on maturities of up to 5 years but not any other horizons.

This paper is related to several strands of literature. First, it closely relates to recent studies that explore debt maturity decisions explicitly. Choi et al. (2018), show that following a shock to rollover risk, firms increase the dispersion of their maturity structure so as to avoid having large amounts of debt coming due in any given year. Moreover, they also show that the existing maturity structure of a firm affects the maturity of newly issued bonds as firms seem to avoid issuing new bonds that mature in years in which they have debt instruments maturing. In a similar vein, Xu (2018) shows that high yield firms actively refinance their bonds to extend their maturities, especially when credit supply conditions are lax. In related work, Ma et al. (2023) show that high yield firms systematically exercise the call option in corporate bonds to manage rollover risk and interest costs. Li and Su (2022) argue that surges in international capital flows lead firms to reduce the maturity of their debt.

Second, it relates to the literature that explores the importance of corporate debt maturity structure. In the context of maturity structure and rollover risk, Almeida et al. (2011) show that U. S. firms with high shares of long term debt coming due immediately after the 2007 credit supply shock contracted investment more than similar firms with lower rollover risk. Similarly, in a large panel of countries, Elias (2021) shows that firms with high exposure during episodes of large reversals in international capital flows also had to contract investment more than less exposed firms. Relatedly, a number of theoretical papers (see e.g. Brunnermeier and Yogo, 2009; Chen et al., 2021; He and Milbradt, 2014, 2016; He and Xiong, 2012; Diamond and He, 2014) study various aspects of rollover risk and its interplay with firm characteristics as well as its real effects.

Third, this paper is related to a number of studies that explore various aspects of firms' maturity structure. One dimension to consider is the types of instruments firms use to finance themselves. Rauh and Sufi (2010) show that there is substantial cross-firm heterogeneity in the complexity of debt structure, with lower-credit-quality firms more likely to have subordinated marketable debt. Using a broad cross-section of firms in the U. S., Colla et al. (2013) argue that debt specialization of U. S. firms has also increased over time, with more than three quarters of firms borrowing using only one type of debt instrument. In the international context, John et al. (2021) link the degree of debt specialization to country-level creditor protection, with firms in countries with stronger creditor protection having more concentrated debt structures. Another dimension that the literature explores in the currency composition of debt. Du and Schreger (2022) find that a higher reliance on foreign currency debt by the corporate sector is associated with higher risk of sovereign default. In a somewhat counterintuitive result, Bleakley and Cowan (2008) find that following a depreciation, firms with higher foreign currency exposure do not seem to be more affected.

This paper also contributes to the literature on the Global Financial Cycle (GFCy) which highlights the importance of global factors in driving local credit and business cycles. Rey (2013) discusses the existence of a GFCy in capital flows, asset prices, and credit growth and the effect this has on other countries' monetary policy independence. Miranda-Agrippino and Rey (2020) discuss the importance of U. S. monetary policy as a driver of the GFCy, and Miranda-Agrippino and Rey (2015) study the importance of the GFCy as a driver of world assets returns.

The rest of the paper is organized as follows. In Section 2, we describe the data we use and discuss some patterns in corporate debt structure around the world. Section 3 presents overall results on debt prepayment and issuance. We study the role of the global credit cycle in shaping debt maturity structure in Section 4. In Section 5 we explore how debt prepayment and issuance changes during extreme capital flow episodes. Section 6 concludes.

2 Data and debt structure measures

We rely on the comprehensive international debt market data collected in Boyarchenko and Elias (2023), which puts together primary and secondary corporate bond market data together with data on corporate debt outstanding, firm balance sheets, and firm default probabilities across a number of countries. The current paper focuses on the *instrument*-level debt securities outstanding data from the Capital IQ Debt Capital Structure dataset, which allows us to construct granular measures of the maturity, currency, and security type composition of firms' debt outstanding. We augment the information on debt outstanding with information on corporate bond issuance from consolidated SDC Platinum and Mergent FISD,[1] allowing us to explore the determinants of issuance decisions. Given that the focus of the current paper is on corporate debt structure, our basic unit of observation is a firm-year. We match the firm-level data on debt structure and corporate bond issuance with firm-level balance sheet data from consolidated Compustat and Worldscope,[2] and firm-level expected

[1] SDC Platinum provides extensive coverage of international bonds while Mergent FISD focuses on U. S. issuances

[2] Compustat includes Compustat North America and Compustat Global. For firm-years that are available in both Compustat and Woldscope, we use data from Compustat. If firm-years are unavailable in

default frequencies (EDFs) from Moody's KMV CreditEdge.[3] Throughout, we consolidate our data to the ultimate parent level, avoiding double-counting of instruments that appear on balance sheets of both the ultimate parent and the issuing subsidiary.

For each instrument captured in the Capital IQ Debt Capital Structure dataset, we observe a number of security characteristics including maturity, currency, security type, interest rate, and amount outstanding. We use this information to construct firm-level measures that capture key aspects of a firms' debt structure. For each measure, we consider debt overall, as well as bank debt ("loans") and corporate bonds ("bonds").[4] We follow Rauh and Sufi (2010) and define loans as instruments described as either bank loans, term loans, bank overdrafts, revolving credit, or letters of credit outstanding, and bonds as instruments described as either bonds and notes, debentures, or notes payable.

Using the reported maturity date and the fiscal period end date to measure remaining time to maturity, we construct measures of amount outstanding by maturity bucket.[5] Notice that, while firm-level balance sheet data from Compustat and Worldscope provides information on long-term debt coming due in the following 12 months,[6] our firm-level measure of amount outstanding by maturity bucket allows us to have a more comprehensive view of the term structure of debt outstanding. Moreover, the granularity of the instrument-level dataset enables us to build the term structure of debt outstanding by security type and currency. That is, we can measure, for example, the amount outstanding of corporate bonds denominated in USD that each firm has due in 5 years.

Compustat, we use Worldscope. Boyarchenko and Elias (2023), Section 5.2, reports the match rate between Compustat and Worldscope and compares the information provided in both dataset for a number of key firm characteristics.

[3] See Boyarchenko and Elias (2023) for a detailed description of the data sources and the matching procedure between debt amount outstanding, primary market issuance, and balance sheet data.

[4] Note that debt instruments overall include additional types of borrowing, including commercial paper, mortgages, convertible debt, and capital leases.

[5] For remaining time to maturities up to and including 10 years, we construct one year buckets. We bucket maturities between 10 and 30 yesrs into three buckets: between 11 and 15 years, between 16 and 20 years, and between 20 and 30 years. Debt securities may also have remaining time to maturity greater than 30 years, or have perpetual maturity, or have missing maturity information.

[6] Compustat North America includes also measures of long-term debt coming due in each following year up to 5 years.

As in Choi et al. (2018), we construct two measures of how dispersed is the maturity structure out to 30 years: the inverse of the maturity-weighted Herfindahl index and the negative log distance to perfect dispersion. More specifically, given annual maturity buckets $t_1, \ldots, t_{30}$ and the fraction w_{t_i} of total amount outstanding with remaining time to maturity t_i, the maturity-weighted Herfindahl index is defined as

$$HHI^{w}_{f,t} = \left(\sum_{j=1}^{30} t_j^{-1} \right)^{-2} \sum_{i=1}^{30} \left(t_i^{-1} w_{t_i} \right)^2 ,$$

so that the (log) dispersion in firm f's maturity structure at date t is $disp^{w}_{f,t} = \log HHI^{w}_{f,t}$. Similarly, we define the distance to perfect dispersion as

$$D_{f,t} = T^{-1}_{f,max} \sum_{i=1}^{T_{f,max}} \left(w_{t_i} - T^{-1}_{f,max} \right)^2 ,$$

where $T_{f,max}$ is the maximum maturity that the firm ever has outstanding. A firm's maturity structure is more dispersed when $disp^{w}_{f,t}$ is larger, and closer to being perfectly distributed among maturity options available to firm f when $-\log D_{f,t}$ is larger. In addition to measures of dispersion of maturity structure, we also compute the more standard weighted average maturity (WAM) of firm debt outstanding, as well as the weighted average coupon (WAC) of fixed-coupon debt outstanding. We leverage the granularity of our data, and construct these measures for both the overall debt structure and, importantly, also by currency and security type.

Figure 2 plots the distribution of log weighted maturity dispersion, negative log distance to perfect dispersion, and the within-firm range of WAM across years. The figure shows that debt structures are more dispersed in advanced economies, especially the U. S., relative to emerging market economies, both within a firm-year (first two rows) and within a firm across years (bottom row).

To investigate how the existing debt structure affects firms' issuance decisions, we augment the Capital IQ data on the current stock of debt (and its characteristics) with data on corporate bond primary market issuance from consolidated SDC Platinum and Mergent FISD. Issuance data contains information on proceeds, offering amounts, currency, maturity, and pricing. As with the amount outstanding data, we consolidate to the ultimate parent level[7] and compute offering amounts and proceeds by maturity bucket and/or by currency.

Finally, we obtain firm characteristics from the consolidated Compustat and Worldscope financial statements data. We construct standard firm characteristics, including log size (total assets in USD terms), leverage, profitability (EBITDA over lagged total assets), cash holdings (cash + short-term investments) over lagged total assets, and operating income over lagged total assets. We measure firm riskiness using the one year expected default frequency (EDF) from Moody's KMV CreditEdge. We assign firms into three credit risk buckets based on the percentiles of the log EDF distribution within a country, with the lowest risk firms corresponding to the P25 of the log EDF distribution, and the riskiest firms corresponding to the P75 of the log EDF distribution within a country.

The final dataset has 755,064 firm-year observations of the debt structure data, corresponding to 85,761 firms. Out of these 755,064 firm-year observations, we restrict our main sample to 421,579 firm-years (47,210 firms) that are matched to balance sheet data, have total amount outstanding from the debt instruments data no more than 10% greater than the total debt reported in the balance sheet data, and are non-financials and non-utilities. These 421,579 firm-years cover 125 countries, from fiscal year 2001 to fiscal year 2022. Out of the 47,210 firms that have data on debt securities outstanding and firm characteristics, 17,653 have non-zero bond amount outstanding at some point in our sample. We can match 8,745 of these to primary market data on corporate bond issuances. Table 1 reports summary statistics for some key variables of our matched firm-year sample.

Table 2 reports the estimated coefficients from the regression of debt structure characteristic

[7] See details in Boyarchenko and Elias (2023).

on the first lag of the characteristic and firm-level characteristics

$$\text{Debt char}_{f,t} = \alpha_f + \alpha_t + \alpha_c + \phi \text{Debt char}_{f,t-1} + \sum_k \beta_k \text{Firm char}_{f,t-1} + \epsilon_{f,t}.$$

The first row of the table shows that, even though firms can adjust their debt structure through issuance and debt refinancing decisions, the overall characteristics of their debt structure are relatively persistent. That is, although firms manage their debt structure, they do so in a time-persistent way.

Table 2 also shows that riskier firms have lower WAM, higher WAC, and a lower fraction of debt denominated in foreign currency. Bigger firms have longer maturity, rely less on bank debt, and have a lower fraction of debt denominated in local currency. Importantly, larger firms and more levered firms have higher maturity dispersion of their debt. Finally, firms that have a larger cash buffer also have longer average debt maturity but lower dispersion in their capital structure.

3 Maturity management

Firms face three types of choices in managing the overall amount and the composition of their debt: what debt is allowed to mature, what debt is prepaid early (before the contractual maturity date), and what debt is issued to either replace maturing or prepaid debt or to increase total amount of debt outstanding. For a given maturity h, we can thus represent the stock of debt with remaining time to maturity that a firm has as of date t as the sum of pre-existing debt with maturity $h+1$ as of the previous period, net of any early prepayment, and new issuances of debt with maturity h between dates $t-1$ and t:

$$amtout^h_{f,t} = amtout^{h+1}_{f,t-1} - prepayment^{h+1}_{f,t-1} + issuance^h_{f,t}.$$

Here, $amtout^{h}_{f,t}$ is the amount outstanding at time t with maturity h, $prepayment^{h+1}_{f,t-1}$ is the amount prepaid between $t-1$ and t, and $issuance^{h}_{f,t}$ is the amount of new issuances with maturity h. In this section, we study the extent to which firms engage in new debt issuances and refinancing and the drivers of each type of action.

3.1 Debt prepayment

Firms choose to prepay their debt for a number of reasons, including to reduce their total amount outstanding (debt retirement), or to refinance existing debt (e.g. to extend maturities, reduce coupon payments). Given our focus on understanding maturity structure, we start by exploring the term structure of prepayment. More specifically, we estimate

$$amtout^{1}_{f,t} = \alpha_{f,h} + \alpha_{t,h} + \alpha_{c,h} + \beta_h amtout^{h+1}_{f,t-h} + \gamma_h \mathbf{X}_{f,t-h} + \epsilon_{f,t,h}, \tag{1}$$

where $\alpha_{\cdot,h}$ are firm, year, and country fixed-effects, respectively, and $\mathbf{X}_{f,t+1-h}$ is a vector of firm characteristics known to affect firm leverage decisions. The coefficient β_h captures the share of amount outstanding with remaining time to maturity $h+1$ as of date $t-h$ that survives until year t (at which point it has less than 12 months to maturity). Thus, $1-\beta_h$ is the cumulative prepayment rate that we interpret as a proxy for firms' willingness and ability to manage their rollover risk by not allowing instruments to get to their last year of maturity.

Table 3 reports the term structure of estimated coefficients β_h from regression (1) for total amount of debt outstanding, as well as bonds and loans separately. Each column in Table 3 corresponds to a different value of h. Starting with Table 3a, we see that a significant share of debt does not survive until the last year before maturity. Moreover, this share declines monotonically as the time to maturity increases. For example, only a third of debt outstanding with 7 years to maturity (column 6) survives until the last year while around half of the debt with 3 years to maturity survives until year $t-1$. This is precisely the term structure in Figure 1, which shows that these differences in survival rates across horizons are statistically significant. Furthermore, Table 3b and Table 3c show that bonds and loans separately display a similar term structure. On average, the survival rate of bonds is higher than that of loans, but the difference between the point estimates is not statistically significant.

Table 4 reports the estimated term structure of survival rates, conditional on the currency denomination of debt. The differences in the estimated survival rates for local currency (non-USD- or EUR-denominated debt) in Table 4b and foreign, USD-denominated debt in Table 4c are striking. While the prepayment rates on local currency debt are on-par with the overall prepayment rates we saw in Table 3, foreign USD-denominated debt is prepaid at a much higher rate. For example, only about 14% of foreign, USD-denominated debt with 5 years to maturity (column 4) survives until the last year.

Figure 3 compares the full term structure of survival rates by currency. Figure 3a shows that the difference between the survival rate of local (non-USD or Euro) debt and that of foreign (USD) debt is statistically significant for short and medium-term maturities. While this result might suggest that the difference could be driven by foreign debt being more prone to prepayment, Figure 3b shows that the survival rates for local and foreign USD debt are indistinguishable. This suggests that the differences observed in Figure 3a are driven by USD debt specialness.[8]

Firms' ability to manage their maturity structure through early prepayment and potential refinancing may be affected by firm riskiness. For example, Xu (2018) argues that in the U. S., speculative grade issuers refinance their corporate bonds at a higher rate than investment grade firms. We investigate this potential mechanism in Table 5, where we augment regression (1) with interactions of the main independent variable with risk dummies that

[8] In unreported results we furthermore find that the prepayment rate of foreign Euro denominated debt is similar to the prepayment rate of local (non-USD or Euro) denominated debt.

indicate whether a firm is high risk (p75 of the country-level log EDF distribution) or low risk (p25 of the distribution).[9] While Table 5b confirms the Xu (2018) result that riskier firms prepay corporate bonds at a higher rate than less risky firms do, Tables 5a and 5c show that the prepayment rate for overall debt and for loans are similar across firms with differential credit risk.

An alternative hypothesis is that prepayment becomes more likely as firm risk declines. For example, a firm that transitions from speculative grade to investment grade would opt to refinance to take advantage of the better financing terms available to investment grade borrowers. Table 6 reports the estimated coefficients from the survival rate regression (1) augmented with interactions of the main independent variable with upgrade and downgrade dummies. Here, we consider a firm to have been "upgraded" if it moves from the p75 to the p25 of the log EDF distribution, and "downgraded" if it moves from the p25 to the p75.[10] Table 6 shows that, overall, survival rates are lower for debt of upgraded firms. This is especially true for corporate bonds perhaps because of the prevalence of call provisions that allow issuers to repay corporate bonds without penalties.[11]

Overall, the results in Tables 3– 6 show that firms actively avoid letting their debt reach one year before maturity, especially their USD-denominated debt, and that firms prepay their debt at a higher rate as their credit risk improves.

3.2 New issuances

In addition to choosing a prepayment strategy, firms also actively manage the timing and characteristics of new debt issuance. We now turn to primary market data on corporate

[9] We measure firm risk at the same period of time as we measure the amount outstanding in the right hand side of our estimation.

[10] We measure the transition from time $t-h$ to $t-1$.

[11] For more results on the prevalence of call provisions in corporate bonds around the world, refer to Boyarchenko and Elias (2023).

bond issuance to investigate how the existing debt structure affects the maturity choice for new issuances. Although using primary market data restricts our study of issuance decisions to only corporate bonds (and only corporate bond issuances in firm-years in both the debt structure and primary market data), primary market data allows us to measure the exact timing of the issuance decision and bond characteristics at issuance.

We begin by examining the factors that affect the probability of a firm issuing in a given year. More specifically, we estimate a probit specification for firm f issuing in year t as a function of firm characteristics and the maturity distribution of existing debt

$$\mathbb{P}\left(\text{Issuance}_{f,t}\right) = \Phi\left(\alpha_t + \alpha_c + \sum_m \beta_{h,m} \frac{amtout^m_{f,t-1}}{assets_{f,t-2}} + \gamma \mathbf{X}_{f,t-1} + \epsilon_{f,t}\right). \tag{2}$$

Table 7 reports the estimated coefficients from regression (2), grouping existing amounts outstanding into four maturity buckets: with 2 year time-to-maturity, 3 year time-to-maturity, between 4 and 30 years time-to-maturity, and longer than 30 years time-to-maturity. Starting with column (1), we see that firms have a higher probability of issuing when they have more corporate bonds outstanding with 2 or 3 years remaining time-to-maturity in the previous period. This is intuitive: firms are more likely to issue when they have debt coming due in the short run, consistent with the low survival rates to last year before maturity we saw above. Comparing high risk (p75 of the country-level log EDF distribution) to low risk (p25 of the distribution) firms in column (2), we see that high risk firms have a lower probability of issuance than less risky firms. On average, the probability of a high risk firm issuing in a given year is 3 percentage points lower than the probability of a low risk firm issuing.

Finally, in column (3), we see that even high risk firms with corporate bonds maturing in the short run have a lower probability of issuance than low risk firms do, so that the maturity of amount outstanding distribution effects we saw in column (1) are attenuated for high risk firms. In contrast, low risk firms appear to be willing to issue in a more opportunistic fashion, with the marginal effect of longer maturity debt outstanding greater for issuance decisions of lower risk firms. Putting the results of Table 7 together with the prepayment results in Table 3, we thus see that, while risky firms may not differentially prepay their debt early, they have a lower probability of issuing corporate bonds overall, and even when they have a large fraction of debt coming due.

As documented in Choi et al. (2018), firms in the U. S. use new debt issuance as an opportunity to diversify their maturity structure, so that a lower fraction of debt is issued with maturities coinciding with existing debt amount outstanding. Table 8 reports the estimated coefficients from the regression of total proceeds for a given maturity bucket h, in USD-equivalent, relative to lagged total assets, on the amount outstanding in maturity bucket $h+1$, as well as the two surrounding maturity buckets, as of the previous year:

$$\frac{issuance^{h}_{f,t}}{assets_{f,t-1}} = \alpha_{f,h} + \alpha_{t,h} + \alpha_{c,h} + \beta_{h,0}\frac{amtout^{h+1}_{f,t-1}}{assets_{f,t-2}} + \beta_{h,1}\frac{amtout^{h+2}_{f,t-1}}{assets_{f,t-2}} + \beta_{h,-1}\frac{amtout^{h}_{f,t-1}}{assets_{f,t-2}} \tag{3}$$
$$+ \beta_{h,r}\sum_{l\neq -1,0,1}\frac{amtout^{h+1+l}_{f,t-1}}{assets_{f,t-2}} + \gamma_h \mathbf{X}_{f,t+1-h} + \epsilon_{f,t,h}.$$

Negative estimates of $\beta_{h,0}$, $\beta_{h,1}$ and $\beta_{h,-1}$ correspond to firms choosing to issue bonds with maturities away from the prevailing maturities of existing amount outstanding.

In considering the choice of maturity of new *corporate bond* issuance, a firm may want to avoid maturity concentration overall or maturity concentration in corporate bonds in particular. Starting with the latter hypothesis, Table 8a shows that firms globally do indeed avoid issuing at maturities similar to their existing bond maturity structure, with, for example, a one percentage point increase in existing debt with five year time-to-maturity over total assets corresponding to a 5 basis point reduction in new issuance with five year time-to-maturity. Table 8b shows, instead, that the maturity composition of loans outstanding does not play a role in the maturity choice of new corporate bond issuance, so that, on average, firms are not modifying their preferred corporate bond maturity to not coincide with loan maturities. Putting together the results above, corporate bond issuers avoid creating additional bond maturity concentration but do not avoid adding bond maturities to existing loan concentration. Overall, this leads to a muted effect of existing debt concentration on bond issuances (Table 8c). That is, when issuing bonds, firms avoid bond maturity towers but not overall maturity towers.

We next explore how issuances change the overall debt structure. Table 9 presents the estimated coefficients from

$$\Delta\text{Debt char}_{f,t_d,t-1} = \alpha_f + \alpha_t + \alpha_c + \nu_d Issuance_{f,t} + \sum_k \beta_k \text{Firm char}_{f,t-1} + \epsilon_{f,t}. \quad (4)$$

where $Issuance_{f,t}$ is a dummy that indicates whether a firm issued a bond in year t. Hence, ν_d captures the differential change in capital structure in issuance years. The results in Table 9a show that issuance years are associated with increases in amount outstanding, WAM, maturity dispersion, percentage of bonds in overall debt, and corresponding decreases in WAC, and percentage of loans in overall debt. Table 9b furthermore shows these effects are amplified in years in which the firm issues both local and foreign currency debt.

Finally, Table 10 explores the persistence of the results presented in Table 9a. The point estimates decrease as the horizon d over which regression (4) is estimated increases, suggesting the initial effects dissipate with time. However, the effects remain statistically significant even 5 years after the issuance year, demonstrating a certain level of persistence in the changes that follow bond issuances. That is, firms are not always at a constant 'desired' capital structure and, instead, issuances lead to changes that take years to revert.

4 Maturity structure over the global credit cycle

While the discussion so far has focused on firms' demand for debt funding, capital structure outcomes are also shaped by credit supply conditions. Firms face credit conditions both at a country (local) and a global level. Boyarchenko and Elias (2024) show that global credit conditions matter for local pricing of debt instruments. In this section, we study the interplay between global financial conditions and firms' maturity structure. We start by documenting some basic facts about how firms' debt structure changes over the global credit cycle, and then explore the relationship between the cycle and firms' ability to prepay existing debt and issue new debt.

4.1 Basic facts of maturity structure over the cycle

We begin by exploring whether capital structure changes differentially during periods of tight global financial conditions. Similarly to specification (4) above, we estimate

$$\Delta \text{Debt char}_{f,t_d,t-1} = \alpha_f + \alpha_c + \nu_{l,d} p(VIX)_{t-1} + \sum_k \beta_k \text{Firm char}_{f,t-1} + \epsilon_{f,t}. \tag{5}$$

Here, $p(VIX)_{t-1}$ is a categorical variable that indicates whether the VIX is in the bottom 25th percentile, top 25th percentile or in between. High levels of the VIX correspond to tight financial conditions, while low levels of the VIX correspond to loose financial conditions. Table 11 reports the estimated coefficients from regression (5). Periods of tight global financial conditions are associated with declines in firms' total debt amount outstanding, shortened average maturities and less dispersed maturity structures. The fraction of loans in debt outstanding also declines, corresponding to the procyclicality of intermediated debt documented in Adrian and Shin (2014), and the fraction of local-currency denominated debt increases. In other words, when global financial conditions are tight, firms are less able to take on maturity and currency risk through the composition of their debt.

4.2 What drives maturity structure over the cycle

A natural question to ask is whether financial conditions are related to the prepayment behavior explored in Section 3. We augment regression (1) to include an interaction with a measure of financial conditions:

$$amtout^{1}_{f,t} = \alpha_{f,h} + \alpha_{t,h} + \alpha_{c,h} + \beta_h amtout^{h+1}_{f,t-h} + \beta_{h,v} amtout^{h+1}_{f,t-h} \times p(VIX)_t + \gamma_h \mathbf{X}_{f,t-h} + \epsilon_{f,t,h}. \tag{6}$$

Positive values of $\beta_{h,v}$ represent higher survival rates. Table 12 presents the estimated coefficients β_h and $\beta_{h,v}$. Tight financial conditions correspond to a significantly lower prepayment intensity for maturities up to 5 years – columns 1–4. Table 12b shows that, for bonds, the higher survival rate during tight periods extends only to maturities of up to 3 years. On the other hand, Table 12c shows that, for loans, the term structure is similar to that of debt overall.

Turning to the question of whether aggregate credit conditions affect the probability of issuance, in Table 13 we report the estimated coefficients from regression (2) for the full sample, and the subsamples of years with loose credit conditions (VIX in the p25) and with tight credit conditions (VIX in the p75) separately. Comparing the estimated coefficients in column (2) (loose credit conditions) to column (3) (tight credit conditions), we see that high risk firms have a particularly low probability of issuing when global credit conditions are tight. While the average probability of a low risk firm issuing is virtually unchanged between tight and loose credit condition years, the average probability of a high risk firm is 3 percentage points lower when credit conditions are tight than when credit conditions are loose. Furthermore, the marginal effect of higher amount of debt coming due in the shorter run is higher when global credit conditions are loose. This is consistent with firms more likely to issue in conjunction with early debt prepayment – that is, firms issuing to refinance existing debt coming due in the near term – when credit conditions are more accommodative. Intuitively, when credit conditions are tight, both the benefits to refinancing and the availability of credit are lower, and firms may choose to wait with their refinancing decisions.

5 Maturity structure and capital flow reversals

As shown in the previous section, credit supply conditions are related to corporate issuance and repayment decisions that affect firms' maturity structures. A natural setting to explore how changes in such credit supply conditions affect maturity structures are episodes of large changes in international flows, as they have large effects in credit supply conditions. For instance, Bertaut et al. (2023) explore how U. S. investors portfolio flows into emerging markets sovereign bonds is related to duration and currency risk. In this section, we explore how "stops" – sudden drops in capital inflows into a country by foreign investors– and "surges" – sudden increases in capital inflows by foreign investors – affect maturity structures at the micro level.

We identify episodes of international capital flow reversals following Forbes and Warnock (2012, 2021). In a nutshell, their methodology uses quarterly data on flows by type – debt, equity, bank, and foreign direct investment – from the IMF's IFS, to identify periods of large drops/increases in capital flows. To that end, we compute a 5-year moving average of changes in quarterly flows, and identify periods in which the change in flows drops/increases more than one standard deviation below/above the 5-year mean. While the methodology in Forbes and Warnock (2012, 2021) identifies capital flow "episodes" that can last many years, we follow Elias (2021), and identify the first year of each episode as the event.[12]

Having identified "stop" and "surge" events, we explore how these events affect the aspects of corporate maturity structures discussed in previous sections.

[12] For a more detailed description of the methodology refer to Forbes and Warnock (2012, 2021) or Elias (2021).

How are refinancing decisions impacted by large reversals in capital flows? We start by extending equation 1 to include interactions with our event dummy:

$$amtout^1_{f,t} = \alpha_{f,h} + \alpha_{t,h} + \alpha_{c,h} + \beta_h amtout^{h+1}_{f,t-h} + \beta_{h,e} amtout^{h+1}_{f,t-h} \times stop_{c,t} + \gamma_h \mathbf{X}_{f,t-h} + \epsilon_{f,t,h}, \tag{7}$$

where, $stop_{c,t}$ is the event dummy that identifies events. We set $stop_{c,t} = 1$ the year of stop events, and set $stop_{c,t} = 0$, the year of surge events. That is, we test the differential effect during stop years with respect to surge years. As before, the coefficient β_h captures the share of amount outstanding with remaining time to maturity $h+1$ as of date $t-h$ that survives until year t (at which point it has less than 12 months to maturity). Crucially, $\beta_{h,e}$ captures the differential impact of stop episodes on repayment activity.

Table 14 shows that prepayment is significantly lower during stop episodes. This is exactly what you would expect, given that stop episodes are characterized by liquidity dry-ups that can prevent firms from refinancing. These effects are present throughout the term structure with even the survival rate of amounts outstanding with a maturity of 9 years having a statistically significant point estimate. Moreover, Tables 14b and 14c show that these results hold for bonds and loans separately.

Regarding the currency composition of debt, Table 15 shows that debt denominated in local currency is particularly affected by stop episodes while the prepayment rate of USD foreign currency debt does not seem to change significantly.

Turning to issuance activity in stop and surge episodes, Table 16 reports the estimated coefficients from regression (2) for the full sample, and the subsamples of surge country-years and stop country-years separately. Overall, the average probability of issuing is approximately 3 percentage points lower during stop episodes than during surge episodes. High risk firms with a large amount of debt coming due in the near term benefit particularly from capital surges, with a s significant increase in the marginal effect of short term debt coming due.

6 Conclusion

In this paper we document three basic facts related to how firms manage their maturity structure. First, we show that, on average, firms prepay a substantial fraction of debt well in advance of maturity and that this prepayment exhibits a upward-sloping term structure. Furthermore, prepayment rates are particularly high for debt in USD, and debt of firms that experience a substantial reduction in credit risk. Second, new issuances have long-lasting impacts on debt structure. That is, years after a corporate bond issuance, firms' average maturity remains higher, coupon rates remain lower, and bonds remain a larger fraction of overall debt outstanding relative to the pre-issuance year. Third, firms appear to avoid corporate bond maturity towers –having too much debt due in any given period – by issuing away from the prevalent outstanding bond maturities. However, the maturity composition of loans outstanding does not appear to be a significant determinant of the maturity choice for new bond issuances.

As it relates to credit supply conditions, we show that tight supply conditions, as proxied for by both periods with a high VIX and periods with large international capital outflows, are associated with a reduction in firms' ability to prepay debt.

Put together, our results highlight the importance of understanding the determinants of firms' maturity structure decisions. Firms actively manage their maturity structure through both prepayment and issuance decisions. When the global credit cycle impedes their ability to refinance and issue at their preferred rates, debt instruments reach maturity with much higher probability, exposing firms to rollover risk. The global credit cycle can thus create financial fragilities at the firm level.

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Table 1: Firm-level summary statistics. This table reports summary statistics

	(1)							
	mean	sd	p5	p25	p50	p75	p95	count
Total debt/Total assets	0.25	0.20	0.01	0.09	0.22	0.37	0.62	421,579
Share LTD	0.49	0.36	0.00	0.13	0.51	0.83	1.00	419,087
Current Portion LTD	9.05	514.20	0.00	0.08	0.27	0.65	3.74	290,356
Current Portion TD	0.51	0.36	0.00	0.18	0.49	0.87	1.00	420,288
CIQ Current Portion TD	0.11	0.25	0.00	0.00	0.00	0.05	0.82	421,579
Log size	4.94	2.28	1.16	3.47	4.94	6.44	8.78	421,579
Leverage	0.54	0.79	0.14	0.34	0.51	0.67	0.93	421,284
Profitability	0.06	0.22	-0.22	0.03	0.09	0.15	0.28	383,948
Cash holdings/Total assets	0.18	0.24	0.00	0.04	0.11	0.24	0.61	394,683
Operating income/Total assets	0.06	0.23	-0.23	0.03	0.09	0.15	0.28	384,987
WAM	4.49	3.43	1.00	2.00	3.71	5.92	11.05	337,951
Log dispersion	1.86	1.92	0.00	0.00	1.59	3.25	5.44	336,038
-Log distance	2.38	1.36	-0.20	1.66	2.44	3.22	4.47	336,038
WAC	5.52	3.67	0.88	2.80	5.02	7.39	12.12	286,207
Pct. bond	10.25	24.41	0.00	0.00	0.00	0.00	77.95	421,579
Pct. loan	64.22	38.82	0.00	27.33	81.97	99.95	100.00	421,579
Pct. local (non-USD/EUR)	67.40	44.86	0.00	0.00	100.00	100.00	100.00	421,579
Pct. foreign in USD	6.63	22.20	0.00	0.00	0.00	0.00	71.49	421,579

Table 2: Persistence in firm-level capital structure characteristics. This table reports the estimated coefficients from the regressions of a firm-level summary measure of debt capital structure on one lag of the summary measure and lagged firm characteristics. All regressions include country, year, and firm fixed effects. Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. USD
Own lag	0.58	0.44	0.55	0.58	0.52	0.53	0.51	0.43
	(0.00)***	(0.00)***	(0.00)***	(0.02)***	(0.01)***	(0.00)***	(0.01)***	(0.01)***
L.Low risk	0.02	-0.01	0.00	-0.05	0.27	0.21	-0.31	0.25
	(0.02)	(0.01)	(0.00)	(0.01)***	(0.17)	(0.16)	(0.12)**	(0.26)
L.High risk	-0.07	-0.00	-0.00	0.06	-0.46	-0.13	0.05	-0.54
	(0.01)***	(0.01)	(0.00)	(0.01)***	(0.16)***	(0.15)	(0.10)	(0.26)**
L.Log size	0.06	0.21	0.04	0.01	0.81	-0.44	-0.95	0.05
	(0.01)***	(0.01)***	(0.00)***	(0.01)	(0.17)***	(0.15)***	(0.11)***	(0.25)
L.Leverage	0.00	0.11	0.02	0.00	-0.02	-0.27	-0.09	0.49
	(0.02)	(0.03)***	(0.00)***	(0.00)***	(0.11)	(0.21)	(0.06)	(0.57)
L.Profitability	-0.10	-0.02	0.00	-0.36	-6.26	-1.00	-5.02	10.29
	(0.30)	(0.28)	(0.04)	(0.37)	(5.18)	(5.34)	(3.36)	(6.13)*
L.Cash holdings/Total assets	0.18	-0.08	-0.02	-0.07	0.35	-1.29	-0.01	2.15
	(0.04)***	(0.03)***	(0.00)***	(0.03)*	(0.62)	(0.48)***	(0.32)	(0.93)**
L.Operating income/Total assets	0.32	-0.01	-0.01	0.09	5.33	3.21	4.30	-7.43
	(0.31)	(0.28)	(0.04)	(0.37)	(5.20)	(5.39)	(3.40)	(6.27)
Adj. R-sqr	0.69	0.62	0.95	0.85	0.77	0.68	0.74	0.79
W/in adj. R-sqr.	0.35	0.21	0.32	0.35	0.31	0.30	0.28	0.21
N. of obs	190681	189290	189290	162092	114346	227074	182292	57885
N. of clusters	21233	21138	21138	19040	11222	23245	19004	6214

Table 3: Term structure of debt prepayment. This table reports the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before. Column (1) thus reports the estimated fraction of two year debt that survives to one year before maturity. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.61	0.51	0.49	0.40	0.39	0.33	0.26	0.14	0.06
	(0.08)***	(0.08)***	(0.09)***	(0.09)***	(0.11)***	(0.10)***	(0.11)**	(0.06)**	(0.07)
Adj. R-sqr	0.51	0.46	0.40	0.39	0.39	0.39	0.42	0.46	0.47
W/in adj. R-sqr.	0.33	0.23	0.10	0.06	0.03	0.01	0.01	0.00	0.00
N. of obs	326032	288930	258173	231576	208339	187382	167573	149026	131994
N. of clusters	35442	31865	28828	26313	24363	22810	21325	19897	18601

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.69	0.60	0.45	0.41	0.39	0.63	0.23	0.11	0.08
	(0.17)***	(0.14)***	(0.14)***	(0.12)***	(0.13)***	(0.12)***	(0.16)	(0.11)	(0.07)
Adj. R-sqr	0.65	0.62	0.49	0.49	0.48	0.53	0.52	0.52	0.53
W/in adj. R-sqr.	0.46	0.39	0.14	0.12	0.06	0.10	0.02	0.00	0.00
N. of obs	138841	124614	112121	100606	90548	81222	72514	64380	56927
N. of clusters	14441	13222	12196	11187	10380	9674	9029	8439	7903

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.55	0.38	0.36	0.24	0.29	0.08	-0.14	0.04	0.03
	(0.09)***	(0.12)***	(0.06)***	(0.07)***	(0.11)**	(0.06)	(0.18)	(0.07)	(0.06)
Adj. R-sqr	0.46	0.33	0.23	0.22	0.24	0.23	0.26	0.28	0.29
W/in adj. R-sqr.	0.36	0.17	0.06	0.02	0.02	0.00	0.00	0.00	0.00
N. of obs	312225	277589	248572	223003	200351	179967	160677	142651	126035
N. of clusters	33357	30248	27619	25309	23413	21923	20488	19118	17848

Table 4: Term structure of debt prepayment across currencies. This table reports the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before across different currency types. Column (1) thus reports the estimated fraction of two year debt that survives to one year before maturity. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out_{t-h}^{h+1}	0.61	0.51	0.49	0.40	0.39	0.33	0.26	0.14	0.06
	(0.08)***	(0.08)***	(0.09)***	(0.09)***	(0.11)***	(0.10)***	(0.11)**	(0.06)**	(0.07)
Adj. R-sqr	0.51	0.46	0.40	0.39	0.39	0.39	0.42	0.46	0.47
W/in adj. R-sqr.	0.33	0.23	0.10	0.06	0.03	0.01	0.01	0.00	0.00
N. of obs	326032	288930	258173	231576	208339	187382	167573	149026	131994
N. of clusters	35442	31865	28828	26313	24363	22810	21325	19897	18601

(b) Local (non-USD/EUR)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out_{t-h}^{h+1}	0.65	0.59	0.66	0.55	0.41	0.25	0.16	0.04	-0.05
	(0.09)***	(0.09)***	(0.11)***	(0.14)***	(0.19)**	(0.12)**	(0.05)***	(0.10)	(0.19)
Adj. R-sqr	0.56	0.53	0.42	0.40	0.38	0.39	0.42	0.47	0.48
W/in adj. R-sqr.	0.39	0.32	0.14	0.07	0.02	0.01	0.00	0.00	0.00
N. of obs	250259	222366	199177	178919	161244	145186	129887	115420	101957
N. of clusters	26725	24204	22063	20243	18892	17803	16748	15697	14697

(c) Foreign in USD

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out_{t-h}^{h+1}	0.37	0.21	0.17	0.14	0.15	0.01	0.16	0.11	0.03
	(0.10)***	(0.06)***	(0.06)***	(0.06)**	(0.05)***	(0.14)	(0.15)	(0.11)	(0.05)
Adj. R-sqr	0.28	0.16	0.17	0.16	0.16	0.17	0.17	0.16	0.18
W/in adj. R-sqr.	0.21	0.07	0.06	0.03	0.02	-0.00	0.01	0.00	0.00
N. of obs	70209	62229	55302	49138	43718	38740	34107	29765	25797
N. of clusters	7924	7196	6555	6034	5544	5164	4784	4417	4070

Table 5: Term structure of debt prepayment by firm riskiness. This table reports the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before by firm riskiness as of $t-h$. Column (1) thus reports the estimated fraction of two year debt that survives to one year before maturity. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.60	0.55	0.42	0.43	0.74	0.30	0.25	0.12	-0.38
	(0.10)***	(0.11)***	(0.11)***	(0.15)***	(0.32)**	(0.19)	(0.15)*	(0.04)***	(0.25)
Low risk × Amt out$_{t-h}^{h+1}$	-0.10	-0.16	0.24	-0.00	-0.50	0.09	0.33	-0.04	0.58
	(0.18)	(0.15)	(0.22)	(0.22)	(0.39)	(0.22)	(0.50)	(0.15)	(0.36)
High risk × Amt out$_{t-h}^{h+1}$	0.02	-0.27	-0.18	-0.22	-0.54	0.23	-0.12	-0.09	0.35
	(0.14)	(0.14)**	(0.15)	(0.15)	(0.34)	(0.40)	(0.15)	(0.07)	(0.23)
Adj. R-sqr	0.52	0.50	0.43	0.42	0.45	0.44	0.44	0.45	0.47
W/in adj. R-sqr.	0.29	0.23	0.10	0.05	0.04	0.01	0.01	0.00	0.01
N. of obs	233792	209341	188322	170000	153649	138851	125002	111879	99720
N. of clusters	24163	21997	20091	18595	17249	16236	15345	14546	13866

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.66	0.64	0.47	0.36	0.35	0.67	0.10	0.00	-0.12
	(0.21)***	(0.15)***	(0.19)**	(0.17)**	(0.21)*	(0.06)***	(0.12)	(0.05)	(0.06)**
Low risk × Amt out$_{t-h}^{h+1}$	0.23	0.19	0.05	0.24	0.23	-0.19	0.71	0.42	0.23
	(0.21)	(0.17)	(0.31)	(0.19)	(0.30)	(0.23)	(0.44)	(0.30)	(0.12)**
High risk × Amt out$_{t-h}^{h+1}$	-0.16	-0.39	-0.32	-0.33	-0.28	-0.40	0.05	-0.05	0.09
	(0.11)	(0.14)***	(0.17)*	(0.20)*	(0.22)	(0.06)***	(0.14)	(0.10)	(0.05)*
Adj. R-sqr	0.67	0.66	0.50	0.52	0.50	0.55	0.55	0.57	0.59
W/in adj. R-sqr.	0.47	0.44	0.14	0.14	0.06	0.08	0.02	0.01	0.01
N. of obs	110796	100396	90892	82108	74281	66917	59946	53438	47325
N. of clusters	10903	10190	9497	8851	8302	7816	7337	6930	6515

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.55	0.46	0.25	0.28	1.09	0.02	-0.30	-0.13	0.00
	(0.14)***	(0.16)***	(0.12)**	(0.13)**	(0.49)**	(0.05)	(0.32)	(0.10)	(0.11)
Low risk × Amt out$_{t-h}^{h+1}$	-0.09	-0.40	0.18	-0.24	-1.08	0.10	0.28	0.30	0.01
	(0.15)	(0.17)**	(0.21)	(0.13)*	(0.49)**	(0.08)	(0.47)	(0.30)	(0.21)
High risk × Amt out$_{t-h}^{h+1}$	-0.01	-0.14	0.02	0.06	-0.86	0.38	0.43	0.22	-0.00
	(0.16)	(0.23)	(0.24)	(0.20)	(0.51)*	(0.28)	(0.32)	(0.12)*	(0.11)
Adj. R-sqr	0.48	0.39	0.26	0.25	0.33	0.27	0.25	0.25	0.27
W/in adj. R-sqr.	0.34	0.19	0.05	0.02	0.08	0.00	0.00	0.00	0.00
N. of obs	225927	202764	182684	164814	148679	134128	120509	107606	95617
N. of clusters	23091	21169	19516	18119	16776	15775	14906	14121	13431

Table 6: Term structure of debt prepayment by upgrades/downgrades. This table reports the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before by changes in firm riskiness. Column (1) thus reports the estimated fraction of two year debt that survives to one year before maturity. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. An "upgrade" is a firm moving from P75 as of year $t-h$ to P25 as of year $t-1$. A "downgrade" is a firm moving from P25 as of year $t-h$ to P75 as of year $t-1$. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.61	0.51	0.50	0.40	0.39	0.33	0.26	0.14	0.06
	(0.08)***	(0.08)***	(0.09)***	(0.09)***	(0.11)***	(0.10)***	(0.11)**	(0.06)**	(0.07)
Upgrade=1 × Amt out$_{t-h}^{h+1}$		-0.47	-0.44	-0.48	-0.50	-0.34	0.05	-0.35	-0.17
		(0.10)***	(0.08)***	(0.14)***	(0.11)***	(0.10)***	(0.11)	(0.07)***	(0.23)
Downgrade=1 × Amt out$_{t-h}^{h+1}$		0.47	-0.27	0.14	0.48	-0.31	-0.22	-0.36	0.23
		(0.40)	(0.45)	(0.54)	(0.32)	(0.21)	(0.29)	(0.26)	(0.06)***
Adj. R-sqr	0.51	0.47	0.40	0.39	0.39	0.39	0.42	0.46	0.47
W/in adj. R-sqr.	0.33	0.23	0.11	0.06	0.03	0.01	0.01	0.00	0.00
N. of obs	326032	288930	258173	231576	208339	187382	167573	149026	131994
N. of clusters	35442	31865	28828	26313	24363	22810	21325	19897	18601

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.69	0.60	0.46	0.41	0.39	0.63	0.23	0.11	0.08
	(0.17)***	(0.14)***	(0.15)***	(0.12)***	(0.13)***	(0.12)***	(0.16)	(0.11)	(0.07)
Upgrade=1 × Amt out$_{t-h}^{h+1}$		-0.55	-0.44	-0.29	-0.46	-0.05	0.15	-0.02	-0.34
		(0.16)***	(0.15)***	(0.14)**	(0.18)**	(0.13)	(0.36)	(0.11)	(0.32)
Downgrade=1 × Amt out$_{t-h}^{h+1}$		0.36	-0.65	0.11	-0.31	-0.33	-0.25	-0.31	-0.06
		(0.65)	(0.22)***	(0.65)	(0.14)**	(0.17)*	(0.14)*	(0.74)	(0.05)
Adj. R-sqr	0.65	0.62	0.49	0.49	0.48	0.53	0.52	0.52	0.53
W/in adj. R-sqr.	0.46	0.39	0.14	0.12	0.06	0.10	0.02	0.00	0.00
N. of obs	138841	124614	112121	100606	90548	81222	72514	64380	56927
N. of clusters	14441	13222	12196	11187	10380	9674	9029	8439	7903

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.55	0.38	0.36	0.24	0.29	0.09	-0.15	0.04	0.04
	(0.09)***	(0.12)***	(0.06)***	(0.07)***	(0.11)**	(0.06)	(0.19)	(0.07)	(0.06)
Upgrade=1 × Amt out$_{t-h}^{h+1}$		-0.13	-0.30	-0.18	-0.25	-0.10	0.25	0.36	-0.16
		(0.24)	(0.04)***	(0.07)**	(0.10)**	(0.06)	(0.19)	(0.41)	(0.21)
Downgrade=1 × Amt out$_{t-h}^{h+1}$		-0.09	-0.13	0.05	0.74	-0.22	-0.12	-0.17	0.03
		(0.34)	(0.32)	(0.29)	(0.38)*	(0.14)	(0.19)	(0.21)	(0.43)
Adj. R-sqr	0.46	0.33	0.23	0.22	0.24	0.23	0.26	0.28	0.29
W/in adj. R-sqr.	0.36	0.17	0.06	0.02	0.02	0.00	0.00	0.00	-0.00
N. of obs	312225	277589	248572	223003	200351	179967	160677	142651	126035
N. of clusters	33357	30248	27619	25309	23413	21923	20488	19118	17848

Table 7: Probability of issuance. This table reports the estimated coefficients from the probit regression of a firm issuing in a given year on lagged amount outstanding in each maturity bucket as a share of lagged total assets. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. All regressions include country, year, and industry fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

	(1)	(2)	(3)
Amt out^2_{t-1}	2.62		2.59
	(0.18)***		(0.30)***
Amt out^3_{t-1}	1.45		1.94
	(0.14)***		(0.23)***
Amt out^{LT}_{t-1}	0.62		0.44
	(0.06)***		(0.10)***
Amt out^{Oth}_{t-1}	0.94		1.12
	(0.10)***		(0.16)***
Low risk		0.03	-0.03
		(0.02)**	(0.02)
High risk		-0.10	-0.04
		(0.02)***	(0.02)*
Low risk $\times$ Amt out^2_{t-1}			0.77
			(0.52)
High risk $\times$Amt out^2_{t-1}			-0.93
			(0.45)**
Low risk $\times$Amt out^3_{t-1}			-0.12
			(0.40)
High risk $\times$ Amt out^3_{t-1}			-1.06
			(0.37)***
Low risk $\times$Amt out^{LT}_{t-1}			0.56
			(0.13)***
High risk $\times$Amt out^{LT}_{t-1}			-0.48
			(0.18)***
Low risk $\times$ Amt out^{Oth}_{t-1}			0.50
			(0.26)*
High risk $\times$Amt out^{Oth}_{t-1}			-0.91
			(0.25)***
Pseudo R-sqr	0.16	0.16	0.16
N. of obs	91831	75987	79227
N. of clusters	8264	6680	6754

Table 8: Avoiding maturity concentration at issuance. This table reports the estimated coefficients from the regression of total proceeds of a given maturity as a share of lagged total assets on lagged amount outstanding in each maturity bucket as a share of lagged total assets, for firm-years in which we observe non-zero corporate bond issuance. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Bond amount outstanding

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Amt out_{t-1}^{h+1}	-0.38	-1.60	0.91	0.45	-4.96	6.76	0.88	-9.70	8.04	-3.63
	(0.51)	(0.99)	(1.38)	(0.58)	(1.72)***	(3.58)*	(1.59)	(2.84)***	(2.87)***	(2.07)*
Amt out_{t-1}^{h}	1.00	-2.85	-4.28	0.51	-5.41	0.35	-7.75	-19.97	1.83	-8.32
	(1.53)	(1.33)**	(1.57)***	(0.72)	(2.47)**	(0.96)	(1.91)***	(3.06)***	(1.55)	(2.64)***
Amt out_{t-1}^{h+2}	1.35	0.62	-0.65	0.30	-0.21	1.01	-0.98	-7.58	1.69	-2.29
	(0.51)***	(0.55)	(0.70)	(0.31)	(1.96)	(1.04)	(1.12)	(1.94)***	(1.22)	(1.84)
Amt out_{t-1}^{Rest}	0.04	-0.13	0.08	0.01	-2.06	0.15	-1.11	-1.32	0.51	-1.46
	(0.15)	(0.30)	(0.40)	(0.33)	(1.29)	(0.47)	(0.69)	(1.27)	(0.44)	(0.73)**
Adj. R-sqr	0.73	0.18	0.28	0.29	0.33	0.27	0.26	0.33	0.24	0.29
W/in adj. R-sqr.	0.00	0.00	0.02	0.00	0.02	0.02	0.01	0.04	0.03	0.02
N. of obs	15614	15614	15614	15614	15614	15614	15614	15614	15614	15614
N. of clusters	3253	3253	3253	3253	3253	3253	3253	3253	3253	3253

(b) Loan amount outstanding

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Amt out_{t-1}^{h+1}	0.14	-0.49	-0.62	-0.34	-1.46	0.04	-3.50	4.41	-0.24	0.55
	(0.70)	(0.54)	(0.76)	(0.25)	(1.33)	(0.59)	(1.90)*	(2.20)**	(0.52)	(1.19)
Amt out_{t-1}^{h}	0.83	1.61	-0.61	-0.35	1.09	1.78	1.11	7.50	-0.71	-0.24
	(0.67)	(1.14)	(0.65)	(0.29)	(1.35)	(1.52)	(1.70)	(2.64)***	(0.31)**	(1.53)
Amt out_{t-1}^{h+2}	-0.76	0.31	-1.28	-0.06	-6.28	-0.51	0.36	1.30	0.31	0.83
	(0.44)*	(0.50)	(0.58)**	(0.22)	(4.25)	(0.49)	(2.07)	(2.21)	(0.45)	(1.15)
Amt out_{t-1}^{Rest}	-0.22	0.40	-0.47	0.44	1.24	0.18	0.34	3.80	-0.02	-0.64
	(0.16)	(0.30)	(0.50)	(0.22)*	(0.70)*	(0.51)	(0.59)	(1.48)**	(0.29)	(0.75)
Adj. R-sqr	0.73	0.18	0.28	0.29	0.33	0.26	0.26	0.31	0.21	0.29
W/in adj. R-sqr.	0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.02	0.00	0.02
N. of obs	15614	15614	15614	15614	15614	15614	15614	15614	15614	15614
N. of clusters	3253	3253	3253	3253	3253	3253	3253	3253	3253	3253

(c) Overall amount outstanding

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Amt out_{t-1}^{h+1}	0.37	-0.83	0.28	-0.01	-3.42	2.99	-0.46	-3.68	4.90	-0.99
	(0.46)	(0.62)	(0.65)	(0.28)	(1.19)***	(1.60)*	(1.18)	(1.78)**	(1.81)***	(1.06)
Amt out_{t-1}^{h}	1.36	0.05	-1.95	0.03	-1.34	2.02	-3.21	-9.70	0.79	-5.44
	(0.62)**	(0.62)	(0.83)**	(0.31)	(1.22)	(1.67)	(1.24)***	(2.19)***	(0.87)	(1.75)***
Amt out_{t-1}^{h+2}	0.37	0.00	-1.21	0.15	-3.49	0.18	-0.33	-4.47	0.97	-0.40
	(0.33)	(0.38)	(0.46)***	(0.20)	(2.16)	(0.60)	(1.07)	(1.37)***	(0.47)**	(1.28)
Amt out_{t-1}^{Rest}	-0.07	0.05	-0.27	0.27	-0.46	0.20	-0.47	1.00	0.22	-1.26
	(0.14)	(0.20)	(0.33)	(0.16)*	(0.65)	(0.42)	(0.41)	(0.75)	(0.32)	(0.56)**
Adj. R-sqr	0.73	0.17	0.28	0.29	0.33	0.27	0.26	0.32	0.23	0.29
W/in adj. R-sqr.	0.00	0.00	0.02	0.00	0.02	0.01	0.01	0.03	0.02	0.02
N. of obs	15614	15614	15614	15614	15614	15614	15614	15614	15614	15614
N. of clusters	3253	3253	3253	3253	3253	3253	3253	3253	3253	3253

Table 9: Changes in firm-level capital structure characteristics around bond issuance. This table reports the estimated coefficients from the regressions of one year changes in a firm-level summary measure of debt capital structure on an indicator of new corporate debt being issued in year t. All regressions include country, year, and firm fixed effects, as well as lagged firm characteristics. Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Issuance overall

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Issuance	5.41	0.67	0.54	0.13	-0.07	11.13	-9.62	-0.32	0.45
	(0.21)***	(0.03)***	(0.02)***	(0.00)***	(0.02)***	(0.27)***	(0.27)***	(0.17)*	(0.28)
Adj. R-sqr	0.03	-0.05	-0.06	-0.06	-0.03	0.00	-0.02	-0.04	-0.02
W/in adj. R-sqr.	0.07	0.00	0.01	0.01	0.00	0.03	0.01	0.00	0.00
N. of obs	232198	190681	189290	189290	162092	114346	227074	227610	101415
N. of clusters	24082	21233	21138	21138	19040	11222	23245	23465	10147

(b) Issuance split by currency

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Local issuance	5.34	0.62	0.52	0.13	-0.07	10.66	-9.31	0.75	-1.36
	(0.22)***	(0.03)***	(0.02)***	(0.00)***	(0.02)***	(0.28)***	(0.28)***	(0.16)***	(0.28)***
Fgn issuance	5.19	0.91	0.62	0.13	-0.03	13.78	-11.37	-7.29	6.35
	(0.52)***	(0.07)***	(0.04)***	(0.01)***	(0.05)	(0.73)***	(0.72)***	(0.80)***	(0.76)***
Both local and fgn issuance	8.51	1.15	0.81	0.21	-0.11	12.56	-10.56	-4.72	4.69
	(0.78)***	(0.10)***	(0.06)***	(0.02)***	(0.05)**	(0.81)***	(0.80)***	(0.89)***	(0.95)***
Adj. R-sqr	0.03	-0.05	-0.06	-0.06	-0.03	0.00	-0.02	-0.04	-0.01
W/in adj. R-sqr.	0.07	0.00	0.01	0.01	0.00	0.03	0.01	0.00	0.00
N. of obs	232198	190681	189290	189290	162092	114346	227074	227610	101415
N. of clusters	24082	21233	21138	21138	19040	11222	23245	23465	10147

Table 10: Persistence of changes in firm-level capital structure characteristics around bond issuance. This table reports the estimated coefficients from the regressions of one year changes in a firm-level summary measure of debt capital structure on an indicator of new corporate debt being issued in year t. All regressions include country, year, and firm fixed effects, as well as lagged firm characteristics. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Year of issuance

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Issuance	5.41	0.67	0.54	0.13	-0.07	11.13	-9.62	-0.32	0.45
	(0.21)***	(0.03)***	(0.02)***	(0.00)***	(0.02)***	(0.27)***	(0.27)***	(0.17)*	(0.28)
Adj. R-sqr	0.03	-0.05	-0.06	-0.06	-0.03	0.00	-0.02	-0.04	-0.02
W/in adj. R-sqr.	0.07	0.00	0.01	0.01	0.00	0.03	0.01	0.00	0.00
N. of obs	232198	190681	189290	189290	162092	114346	227074	227610	101415
N. of clusters	24082	21233	21138	21138	19040	11222	23245	23465	10147

(b) Year after issuance

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Issuance	2.25	0.51	0.49	0.12	-0.06	10.46	-7.96	-0.61	0.99
	(0.21)***	(0.03)***	(0.02)***	(0.01)***	(0.02)***	(0.32)***	(0.32)***	(0.22)***	(0.34)***
Adj. R-sqr	0.07	0.00	-0.01	-0.02	0.05	0.03	0.02	-0.01	0.02
W/in adj. R-sqr.	0.05	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00
N. of obs	205347	168193	166855	166855	141343	102877	201642	201552	90869
N. of clusters	21914	19318	19212	19212	17058	10542	21324	21379	9499

(c) 2 years after issuance

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Issuance	1.64	0.36	0.41	0.11	-0.04	9.67	-6.11	-0.75	1.26
	(0.25)***	(0.04)***	(0.02)***	(0.01)***	(0.02)	(0.36)***	(0.36)***	(0.25)***	(0.39)***
Adj. R-sqr	0.12	0.05	0.03	0.02	0.11	0.06	0.07	0.03	0.06
W/in adj. R-sqr.	0.05	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
N. of obs	183330	150331	149154	149154	124596	92946	181108	180776	81796
N. of clusters	19880	17668	17580	17580	15281	9827	19597	19503	8800

(d) 3 years after issuance

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Issuance	1.39	0.31	0.36	0.09	-0.07	8.11	-4.02	-0.85	1.31
	(0.27)***	(0.04)***	(0.02)***	(0.01)***	(0.03)***	(0.40)***	(0.41)***	(0.28)***	(0.44)***
Adj. R-sqr	0.20	0.09	0.07	0.07	0.16	0.11	0.11	0.06	0.09
W/in adj. R-sqr.	0.10	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00
N. of obs	164251	133856	132796	132796	110409	83615	162412	162135	73338
N. of clusters	18357	16179	16099	16099	13915	9185	18176	18032	8178

(e) 4 years after issuance

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Issuance	1.23	0.28	0.28	0.07	-0.13	7.62	-2.74	-1.21	1.92
	(0.27)***	(0.05)***	(0.03)***	(0.01)***	(0.03)***	(0.44)***	(0.45)***	(0.31)***	(0.48)***
Adj. R-sqr	0.25	0.13	0.12	0.12	0.20	0.15	0.14	0.10	0.13
W/in adj. R-sqr.	0.11	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00
N. of obs	147509	119534	118516	118516	98355	75251	145819	145783	65902
N. of clusters	16965	14892	14806	14806	12760	8603	16784	16680	7637

(f) 5 years after issuance

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Issuance	0.88	0.38	0.26	0.05	-0.13	5.18	-0.14	-1.56	2.25
	(0.30)***	(0.05)***	(0.03)***	(0.01)***	(0.03)***	(0.47)***	(0.49)	(0.34)***	(0.51)***
Adj. R-sqr	0.30	0.17	0.16	0.17	0.25	0.20	0.18	0.14	0.16
W/in adj. R-sqr.	0.11	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00
N. of obs	132740	106755	105861	105861	87848	67599	131168	131308	59262
N. of clusters	15934	13855	13778	13778	11896	8116	15781	15687	7202

Table 11: Changes in firm-level capital structure characteristics over the financial cycle. This table reports the estimated coefficients from the regressions of one year changes in a firm-level summary measure of debt capital structure on lagged VIX. Values of VIX in the top 25th percentile historically correspond to tight financial conditions, while VIX in the bottom 25th percentile correspond to loose financial conditions. All regressions include country and firm fixed effects, as well as lagged firm characteristics. All regressions include country, year, and firm fixed effects. Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

	Amt out/L.total assets	WAM	Log dispersion	-Log distance	WAC	Pct. bond	Pct. loan	Pct. local	Pct. fgn
Loose	-0.40	0.04	0.02	0.00	0.02	-0.60	0.07	-0.49	0.10
	(0.09)***	(0.01)***	(0.01)***	(0.00)	(0.01)*	(0.14)***	(0.13)	(0.10)***	(0.22)
Tight	-0.58	-0.10	-0.05	-0.00	-0.03	0.89	-0.35	0.29	-0.32
	(0.09)***	(0.01)***	(0.01)***	(0.00)*	(0.01)**	(0.14)***	(0.14)**	(0.09)***	(0.23)
Adj. R-sqr	0.02	-0.06	-0.07	-0.08	-0.04	-0.03	-0.04	-0.06	-0.05
W/in adj. R-sqr.	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
N. of obs	229395	188493	187110	187110	160460	113077	224648	180987	57454
N. of clusters	24002	21148	21054	21054	18975	11179	23182	18982	6208

Table 12: Term structure of debt prepayment over the financial cycle. This table reports the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before by firm riskiness as of $t-h$, controlling for the tightness of credit conditions as measured by the VIX. Column (1) thus reports the estimated fraction of two year debt that survives to one year before maturity. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out_{t-h}^{h+1}	0.53	0.42	0.37	0.37	0.33	0.27	0.21	0.02	-0.01
	(0.10)***	(0.07)***	(0.09)***	(0.10)***	(0.12)***	(0.10)***	(0.14)	(0.04)	(0.04)
Loose × Amt out_{t-h}^{h+1}	-0.11	-0.15	-0.16	-0.21	-0.13	0.30	0.56	0.60	0.60
	(0.11)	(0.12)	(0.12)	(0.11)*	(0.16)	(0.22)	(0.58)	(0.45)	(0.47)
Tight × Amt out_{t-h}^{h+1}	0.23	0.33	0.58	0.70	0.46	0.18	0.06	0.30	0.46
	(0.11)**	(0.10)***	(0.20)***	(0.24)***	(0.33)	(0.17)	(0.13)	(0.07)***	(0.16)***
Adj. R-sqr	0.53	0.50	0.43	0.41	0.39	0.39	0.42	0.46	0.47
W/in adj. R-sqr.	0.35	0.28	0.15	0.10	0.04	0.01	0.01	0.01	0.00
N. of obs	325426	288360	257666	231154	207978	187085	167335	148801	131803
N. of clusters	35403	31821	28790	26281	24338	22787	21312	19878	18579

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out_{t-h}^{h+1}	0.72	0.62	0.55	0.49	0.40	0.56	0.25	0.01	-0.00
	(0.14)***	(0.12)***	(0.14)***	(0.13)***	(0.17)**	(0.15)***	(0.10)**	(0.06)	(0.02)
Loose × Amt out_{t-h}^{h+1}	-0.21	-0.21	-0.40	-0.29	0.16	1.05	2.31	1.82	1.61
	(0.15)	(0.16)	(0.16)**	(0.18)*	(0.41)	(0.62)*	(1.07)**	(1.18)	(1.20)
Tight × Amt out_{t-h}^{h+1}	0.16	0.27	0.13	0.03	-0.11	0.01	-0.08	0.13	0.51
	(0.09)*	(0.13)**	(0.20)	(0.16)	(0.28)	(0.23)	(0.20)	(0.15)	(0.26)**
Adj. R-sqr	0.67	0.64	0.51	0.50	0.48	0.54	0.54	0.54	0.56
W/in adj. R-sqr.	0.49	0.43	0.17	0.14	0.06	0.12	0.06	0.04	0.05
N. of obs	138619	124426	111962	100495	90479	81186	72489	64367	56903
N. of clusters	14422	13213	12180	11176	10374	9675	9031	8442	7902

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out_{t-h}^{h+1}	0.40	0.21	0.21	0.18	0.11	0.10	-0.04	0.05	0.07
	(0.13)***	(0.05)***	(0.08)***	(0.08)**	(0.09)	(0.07)	(0.23)	(0.12)	(0.11)
Loose × Amt out_{t-h}^{h+1}	-0.15	-0.13	-0.12	-0.11	-0.02	-0.04	-0.02	-0.08	-0.08
	(0.09)	(0.07)*	(0.11)	(0.10)	(0.14)	(0.10)	(0.24)	(0.12)	(0.12)
Tight × Amt out_{t-h}^{h+1}	0.35	0.46	0.49	0.62	0.91	-0.15	-0.36	0.01	-0.11
	(0.18)*	(0.14)***	(0.13)***	(0.25)**	(0.48)*	(0.15)	(0.50)	(0.22)	(0.21)
Adj. R-sqr	0.51	0.40	0.26	0.24	0.27	0.23	0.26	0.28	0.29
W/in adj. R-sqr.	0.42	0.26	0.10	0.05	0.06	0.00	0.00	0.00	0.00
N. of obs	311660	277058	248101	222609	200011	179690	160456	142454	125868
N. of clusters	33324	30209	27588	25282	23391	21900	20475	19107	17828

Table 13: Probability of issuance over the credit cycle. This table reports the estimated coefficients from the probit regression of a firm issuing in a given year on lagged amount outstanding in each maturity bucket as a share of lagged total assets, controlling for the tightness of credit conditions as measured by the VIX. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. All regressions include country and industry fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

	Baseline	Loose	Tight
Low risk	-0.02	-0.02	0.08
	(0.02)	(0.04)	(0.04)**
High risk	-0.04	0.01	-0.27
	(0.02)*	(0.05)	(0.04)***
Amt out^{2}_{t-1}	2.90	3.13	2.55
	(0.30)***	(0.66)***	(0.61)***
Amt out^{3}_{t-1}	2.13	2.58	1.77
	(0.23)***	(0.56)***	(0.46)***
Amt out^{LT}_{t-1}	0.45	0.64	0.53
	(0.10)***	(0.20)***	(0.18)***
Amt out^{Oth}_{t-1}	1.15	1.21	1.49
	(0.16)***	(0.34)***	(0.31)***
Low risk × Amt out^{2}_{t-1}	0.47	0.63	-0.25
	(0.52)	(0.96)	(1.12)
High risk × Amt out^{2}_{t-1}	-1.03	-0.71	0.08
	(0.47)**	(1.01)	(0.98)
Low risk × Amt out^{3}_{t-1}	-0.18	0.43	0.14
	(0.40)	(0.83)	(0.96)
High risk × Amt out^{3}_{t-1}	-1.21	-2.27	-1.10
	(0.38)***	(0.78)***	(0.64)*
Low risk × Amt out^{LT}_{t-1}	0.54	0.40	0.79
	(0.13)***	(0.25)	(0.27)***
High risk × Amt out^{LT}_{t-1}	-0.50	-1.46	-0.01
	(0.19)***	(0.44)***	(0.32)
Low risk × Amt out^{Oth}_{t-1}	0.39	0.30	0.07
	(0.26)	(0.49)	(0.52)
High risk × Amt out^{Oth}_{t-1}	-0.86	-1.04	-0.84
	(0.27)***	(0.61)*	(0.47)*
Pseudo R-sqr	0.17	0.17	0.17
N. of obs	75683	14463	16860
N. of clusters	6676	5704	6068

Table 14: Term structure of debt prepayment for capital flows – security types. This table reports the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before by firm riskiness as of $t-h$. Column (1) thus reports the estimated fraction of two year debt that survives to one year before maturity. "Event" is a dummy equal to 1 if the country experiences a capital outflow event in year t; omitted category is capital surge events. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.02	0.15	-0.08	-0.01	0.14	-0.02	-0.20	-0.18	-0.11
	(0.26)	(0.08)*	(0.11)	(0.13)	(0.21)	(0.19)	(0.04)***	(0.05)***	(0.13)
Event × Amt out$_{t-h}^{h+1}$	0.97	0.77	1.56	1.56	1.33	1.07	0.46	0.38	3.85
	(0.30)***	(0.19)***	(0.50)***	(0.44)***	(0.70)*	(1.00)	(0.17)***	(0.16)**	(3.21)
Adj. R-sqr	0.25	0.23	0.20	0.17	0.08	0.07	0.16	0.15	0.14
W/in adj. R-sqr.	0.15	0.13	0.11	0.09	0.01	0.01	0.00	0.01	0.03
N. of obs	31603	28514	24815	22360	19894	17389	15186	13508	10547
N. of clusters	11136	10236	9290	8558	7896	7135	6495	5896	4772

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.22	0.14	0.09	0.08	0.18	0.19	-0.04	-0.10	-0.04
	(0.13)*	(0.08)*	(0.08)	(0.05)	(0.11)	(0.12)	(0.01)***	(0.06)	(0.07)
Event × Amt out$_{t-h}^{h+1}$	0.46	0.38	0.91	0.68	0.57	0.18	-0.00	0.01	1.13
	(0.19)**	(0.16)**	(0.28)***	(0.12)***	(0.61)	(0.50)	(0.05)	(0.02)	(1.37)
Adj. R-sqr	0.52	0.50	0.52	0.43	0.37	0.36	0.48	0.48	0.44
W/in adj. R-sqr.	0.18	0.15	0.17	0.08	0.02	0.01	0.00	0.01	0.02
N. of obs	13737	12401	10875	9626	8487	7601	6580	5901	4775
N. of clusters	4695	4338	3949	3576	3290	3036	2749	2504	2127

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.18	-0.01	-0.08	-0.01	-0.17	-0.00	-0.06	-0.25	-0.53
	(0.08)**	(0.07)	(0.10)	(0.11)	(0.09)*	(0.02)	(0.08)	(0.27)	(0.45)
Event × Amt out$_{t-h}^{h+1}$	0.59	0.46	0.83	0.90	0.79	-0.52	0.17	0.21	0.31
	(0.15)***	(0.11)***	(0.42)**	(0.61)	(0.33)**	(0.54)	(0.51)	(0.35)	(0.40)
Adj. R-sqr	0.21	0.08	-0.00	0.03	0.02	-0.02	0.01	-0.01	-0.04
W/in adj. R-sqr.	0.19	0.06	0.03	0.04	0.01	0.00	0.00	0.00	0.00
N. of obs	30862	27924	24327	21819	19302	16879	14773	13153	10258
N. of clusters	10885	10036	9120	8372	7691	6958	6337	5753	4646

Table 15: Term structure of debt prepayment for capital flows – currencies. This table reports the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before by firm riskiness as of $t-h$. Column (1) thus reports the estimated fraction of two year debt that survives to one year before maturity. "Event" is a dummy equal to 1 if the country experiences a capital outflow event in year t; omitted category is capital surge events. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.02	0.15	-0.08	-0.01	0.14	-0.02	-0.20	-0.18	-0.11
	(0.26)	(0.08)*	(0.11)	(0.13)	(0.21)	(0.19)	(0.04)***	(0.05)***	(0.13)
Event × Amt out$_{t-h}^{h+1}$	0.97	0.77	1.56	1.56	1.33	1.07	0.46	0.38	3.85
	(0.30)***	(0.19)***	(0.50)***	(0.44)***	(0.70)*	(1.00)	(0.17)***	(0.16)**	(3.21)
Adj. R-sqr	0.25	0.23	0.20	0.17	0.08	0.07	0.16	0.15	0.14
W/in adj. R-sqr.	0.15	0.13	0.11	0.09	0.01	0.01	0.00	0.01	0.03
N. of obs	31603	28514	24815	22360	19894	17389	15186	13508	10547
N. of clusters	11136	10236	9290	8558	7896	7135	6495	5896	4772

(b) Local (non-USD/EUR)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.02	0.16	0.15	-0.02	-0.06	-0.19	-0.47	-0.32	-0.34
	(0.24)	(0.06)***	(0.14)	(0.11)	(0.05)	(0.04)***	(0.03)***	(0.08)***	(0.09)***
Event × Amt out$_{t-h}^{h+1}$	0.70	0.43	1.79	1.35	0.61	0.32	0.62	0.35	1.68
	(0.19)***	(0.08)***	(0.48)***	(0.40)***	(0.39)	(0.37)	(0.05)***	(0.07)***	(1.43)
Adj. R-sqr	0.17	0.15	0.18	0.10	0.02	-0.01	0.06	0.05	0.03
W/in adj. R-sqr.	0.10	0.08	0.12	0.05	0.00	0.00	0.01	0.01	0.02
N. of obs	26956	24523	21414	19194	17070	15213	13445	11936	9116
N. of clusters	9559	8843	8044	7391	6808	6202	5719	5183	4118

(c) USD foreign

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Amt out$_{t-h}^{h+1}$	0.05	0.09	0.04	0.06	-0.03	-0.03	-0.08	-0.11	0.20
	(0.07)	(0.09)	(0.06)	(0.09)	(0.02)	(0.03)	(0.01)***	(0.02)***	(0.30)
Event × Amt out$_{t-h}^{h+1}$	0.33	-0.00	0.11	1.54	0.24	0.11	0.23	0.23	-0.03
	(0.25)	(0.12)	(0.12)	(0.91)*	(0.16)	(0.17)	(0.15)	(0.14)*	(0.35)
Adj. R-sqr	0.06	0.04	0.06	0.44	0.14	0.38	0.39	0.37	0.51
W/in adj. R-sqr.	0.05	0.01	0.00	0.42	-0.00	-0.00	-0.00	-0.00	0.00
N. of obs	7921	7077	6291	5378	4761	4345	3792	3426	2798
N. of clusters	2833	2560	2320	2026	1832	1695	1512	1386	1175

Table 16: Probability of issuance across capital flows episodes. This table reports the estimated coefficients from the probit regression of a firm issuing in a given year on lagged amount outstanding in each maturity bucket as a share of lagged total assets, for capital stop and capital surge events. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. All regressions include year and industry fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

	Baseline	Surges	Stops
Low risk	-0.08	-0.12	-0.01
	(0.02)***	(0.06)*	(0.06)
High risk	0.04	-0.16	-0.04
	(0.02)	(0.07)**	(0.08)
Amt out$^{2}_{t-1}$	3.55	3.06	4.15
	(0.33)***	(1.05)***	(0.96)***
Amt out$^{3}_{t-1}$	2.53	1.65	2.84
	(0.24)***	(0.79)**	(0.87)***
Amt out$^{LT}_{t-1}$	0.44	0.03	0.36
	(0.10)***	(0.39)	(0.26)
Amt out$^{Oth}_{t-1}$	1.29	1.64	1.19
	(0.17)***	(0.59)***	(0.52)**
Low risk $\times$ Amt out$^{2}_{t-1}$	0.41	0.70	-2.45
	(0.55)	(1.76)	(1.45)*
High risk $\times$ Amt out$^{2}_{t-1}$	-1.41	4.43	-1.68
	(0.50)***	(2.12)**	(1.47)
Low risk $\times$ Amt out$^{3}_{t-1}$	-0.12	0.64	0.41
	(0.41)	(1.34)	(1.43)
High risk $\times$ Amt out$^{3}_{t-1}$	-1.61	-0.18	0.39
	(0.37)***	(1.52)	(1.48)
Low risk $\times$ Amt out$^{LT}_{t-1}$	0.72	0.52	0.56
	(0.13)***	(0.47)	(0.35)
High risk $\times$ Amt out$^{LT}_{t-1}$	-0.66	-0.94	0.08
	(0.19)***	(0.71)	(0.51)
Low risk $\times$ Amt out$^{Oth}_{t-1}$	0.52	-0.23	0.46
	(0.26)**	(0.85)	(0.77)
High risk $\times$ Amt out$^{Oth}_{t-1}$	-1.05	-1.33	-0.61
	(0.26)***	(1.24)	(0.85)
Pseudo R-sqr	0.14	0.18	0.15
N. of obs	75708	6098	6078
N. of clusters	6684	4197	4086

Figure 2. Firm-level maturity structure characteristics. This figure plots the distribution of log weighted maturity dispersion, negative log distance to perfect dispersion, and within-firm range across years of weighted average maturity (WAM) for the full set of countries (left column) and comparing U. S. to other advanced economies (right column).

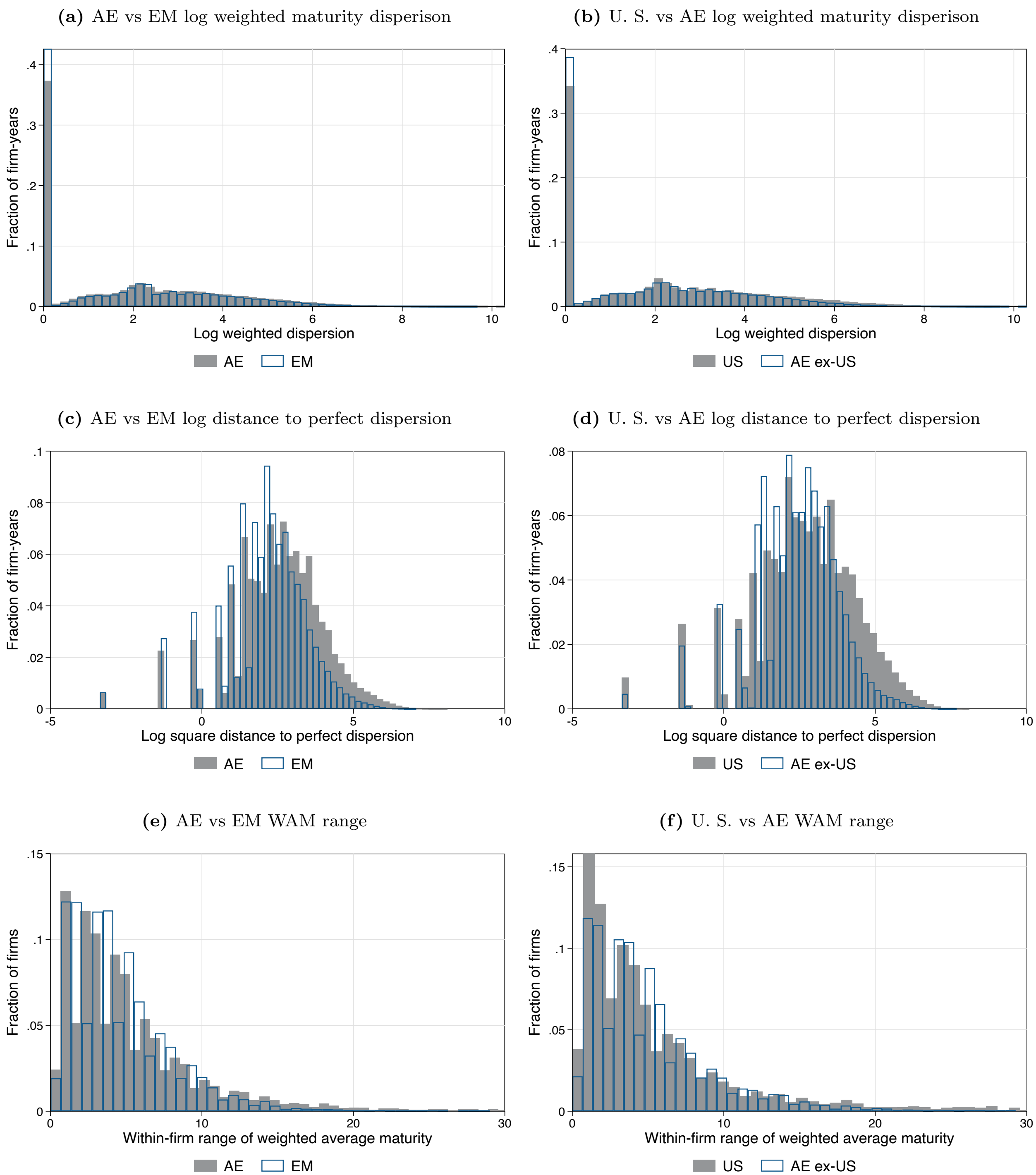
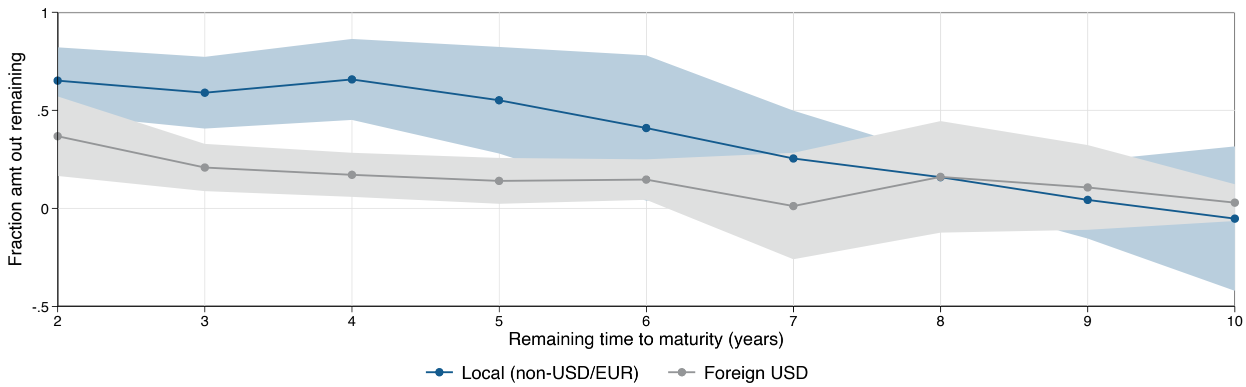


Figure 3. Term structure of debt prepayment across currencies. This figure plots the estimated coefficient from the regression of amount outstanding with one year remaining time to maturity on amount outstanding with $h+1$ remaining time to maturity as of h years before across different currency types. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Shaded area indicate 95% confidence bands around point estimates based on standard errors clustered at the firm level.

(a) Local (non-USD/EUR) versus foreign in USD



(b) US USD versus foreign in USD

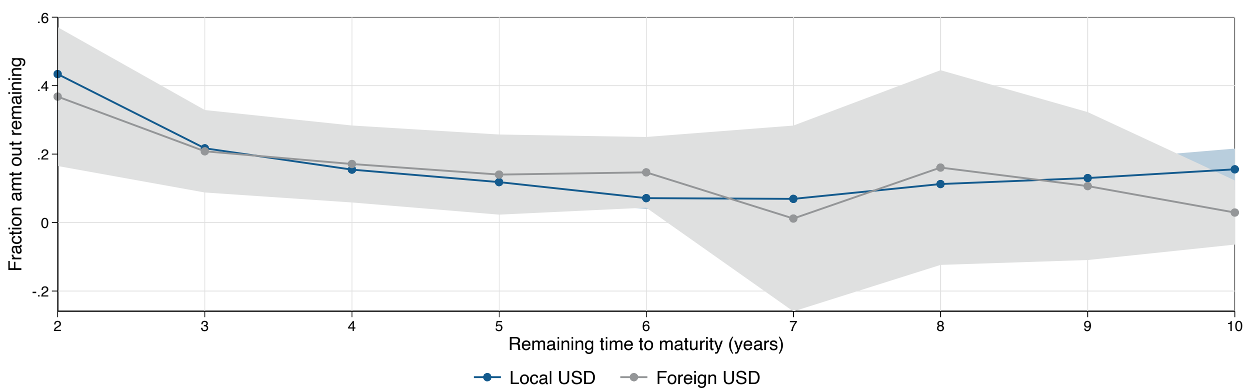


Table A.1: Term structure of debt prepayment. This table reports the estimated coefficient from the regression of amount outstanding with two year remaining time to maturity on amount outstanding with $h+2$ remaining time to maturity as of h years before. Column (1) thus reports the estimated fraction of three year debt that survives to two years before maturity. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out_{t-h}^{h+2}	0.82	0.84	0.72	0.65	0.31	0.03	-0.02	-0.00
	(0.11)***	(0.14)***	(0.13)***	(0.18)***	(0.14)**	(0.07)	(0.07)	(0.06)
Adj. R-sqr	0.73	0.59	0.53	0.47	0.45	0.48	0.53	0.56
W/in adj. R-sqr.	0.56	0.33	0.20	0.07	0.01	0.00	0.00	0.00
N. of obs	326032	288930	258173	231576	208339	187382	167573	149026
N. of clusters	35442	31865	28828	26313	24363	22810	21325	19897

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out_{t-h}^{h+2}	0.87	0.78	0.78	0.46	0.56	0.16	0.09	0.08
	(0.05)***	(0.09)***	(0.10)***	(0.12)***	(0.13)***	(0.13)	(0.10)	(0.07)
Adj. R-sqr	0.89	0.65	0.66	0.42	0.46	0.44	0.44	0.45
W/in adj. R-sqr.	0.83	0.46	0.44	0.07	0.07	0.01	0.00	0.00
N. of obs	138841	124614	112121	100606	90548	81222	72514	64380
N. of clusters	14441	13222	12196	11187	10380	9674	9029	8439

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out_{t-h}^{h+2}	0.81	0.84	0.60	0.75	0.29	0.26	0.49	0.58
	(0.12)***	(0.15)***	(0.15)***	(0.25)***	(0.15)*	(0.23)	(0.22)**	(0.23)**
Adj. R-sqr	0.62	0.46	0.35	0.35	0.30	0.33	0.38	0.39
W/in adj. R-sqr.	0.49	0.27	0.11	0.10	0.01	0.00	0.00	0.00
N. of obs	312225	277589	248572	223003	200351	179967	160677	142651
N. of clusters	33357	30248	27619	25309	23413	21923	20488	19118

Table A.2: Term structure of debt prepayment across currencies. This table reports the estimated coefficient from the regression of amount outstanding with two year remaining time to maturity on amount outstanding with $h+2$ remaining time to maturity as of h years before across different currency types. Column (1) thus reports the estimated fraction of three year debt that survives to two years before maturity. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out_{t-h}^{h+2}	0.82	0.84	0.72	0.65	0.31	0.03	-0.02	-0.00
	(0.11)***	(0.14)***	(0.13)***	(0.18)***	(0.14)**	(0.07)	(0.07)	(0.06)
Adj. R-sqr	0.73	0.59	0.53	0.47	0.45	0.48	0.53	0.56
W/in adj. R-sqr.	0.56	0.33	0.20	0.07	0.01	0.00	0.00	0.00
N. of obs	326032	288930	258173	231576	208339	187382	167573	149026
N. of clusters	35442	31865	28828	26313	24363	22810	21325	19897

(b) Local (non-USD/EUR)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out_{t-h}^{h+2}	0.88	1.04	0.84	0.84	0.35	0.01	-0.04	-0.03
	(0.13)***	(0.19)***	(0.20)***	(0.25)***	(0.21)*	(0.06)	(0.05)	(0.07)
Adj. R-sqr	0.74	0.59	0.49	0.46	0.44	0.48	0.54	0.56
W/in adj. R-sqr.	0.58	0.31	0.15	0.06	0.01	0.00	0.00	0.00
N. of obs	250259	222366	199177	178919	161244	145186	129887	115420
N. of clusters	26725	24204	22063	20243	18892	17803	16748	15697

(c) Foreign in USD

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out_{t-h}^{h+2}	0.78	0.63	0.62	0.49	0.28	0.09	0.02	0.02
	(0.11)***	(0.16)***	(0.16)***	(0.28)*	(0.12)**	(0.09)	(0.06)	(0.03)
Adj. R-sqr	0.69	0.58	0.53	0.30	0.23	0.25	0.27	0.33
W/in adj. R-sqr.	0.64	0.50	0.43	0.13	0.02	0.00	-0.00	-0.00
N. of obs	70209	62229	55302	49138	43718	38740	34107	29765
N. of clusters	7924	7196	6555	6034	5544	5164	4784	4417

Table A.3: Term structure of debt prepayment by firm riskiness. This table reports the estimated coefficient from the regression of amount outstanding with two year remaining time to maturity on amount outstanding with $h+2$ remaining time to maturity as of h years before by firm riskiness as of $t-h$. Column (1) thus reports the estimated fraction of three year debt that survives to two years before maturity. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out$_{t-h}^{h+2}$	0.85	0.94	1.02	1.22	0.11	-0.13	-0.13	-0.10
	(0.12)***	(0.16)***	(0.16)***	(0.30)***	(0.09)	(0.10)	(0.08)	(0.05)*
Low risk × Amt out$_{t-h}^{h+2}$	-0.15	-0.12	-0.46	-0.73	0.34	0.47	0.21	0.11
	(0.09)	(0.16)	(0.13)***	(0.32)**	(0.24)	(0.22)**	(0.23)	(0.08)
High risk × Amt out$_{t-h}^{h+2}$	-0.14	-0.38	-0.44	-1.05	0.44	0.25	0.05	0.02
	(0.16)	(0.19)**	(0.21)**	(0.33)***	(0.27)	(0.16)	(0.11)	(0.09)
Adj. R-sqr	0.75	0.64	0.59	0.55	0.52	0.51	0.52	0.52
W/in adj. R-sqr.	0.55	0.34	0.23	0.11	0.01	0.00	0.00	0.00
N. of obs	233792	209341	188322	170000	153649	138851	125002	111879
N. of clusters	24163	21997	20091	18595	17249	16236	15345	14546

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out$_{t-h}^{h+2}$	0.90	0.91	0.89	0.62	0.59	0.04	-0.00	0.00
	(0.06)***	(0.07)***	(0.11)***	(0.10)***	(0.11)***	(0.07)	(0.05)	(0.05)
Low risk × Amt out$_{t-h}^{h+2}$	0.04	-0.04	-0.06	-0.10	-0.10	0.63	0.44	0.08
	(0.05)	(0.10)	(0.12)	(0.24)	(0.25)	(0.42)	(0.31)	(0.09)
High risk × Amt out$_{t-h}^{h+2}$	0.00	-0.20	-0.25	-0.71	-0.24	0.17	-0.03	0.02
	(0.06)	(0.24)	(0.31)	(0.13)***	(0.13)*	(0.14)	(0.08)	(0.05)
Adj. R-sqr	0.91	0.70	0.69	0.45	0.47	0.47	0.45	0.47
W/in adj. R-sqr.	0.86	0.52	0.49	0.08	0.06	0.02	0.01	0.00
N. of obs	110796	100396	90892	82108	74281	66917	59946	53438
N. of clusters	10903	10190	9497	8851	8302	7816	7337	6930

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out$_{t-h}^{h+2}$	0.87	0.96	0.94	1.64	0.09	-0.45	0.11	0.24
	(0.13)***	(0.21)***	(0.26)***	(0.50)***	(0.08)	(0.54)	(0.07)	(0.12)**
Low risk × Amt out$_{t-h}^{h+2}$	-0.23	-0.14	-0.58	-1.12	0.50	1.89	1.25	0.81
	(0.13)*	(0.23)	(0.26)**	(0.49)**	(0.20)**	(0.82)**	(0.28)***	(0.35)**
High risk × Amt out$_{t-h}^{h+2}$	-0.26	-0.43	-0.52	-1.27	0.30	0.59	-0.14	-0.24
	(0.20)	(0.29)	(0.30)*	(0.50)**	(0.26)	(0.53)	(0.10)	(0.12)**
Adj. R-sqr	0.66	0.50	0.41	0.45	0.36	0.34	0.35	0.33
W/in adj. R-sqr.	0.49	0.28	0.14	0.16	0.01	0.01	0.01	0.01
N. of obs	225927	202764	182684	164814	148679	134128	120509	107606
N. of clusters	23091	21169	19516	18119	16776	15775	14906	14121

Table A.4: Term structure of debt prepayment by upgrades/downgrades. This table reports the estimated coefficient from the regression of amount outstanding with two year remaining time to maturity on amount outstanding with $h+2$ remaining time to maturity as of h years by changes in firm riskiness. Column (1) thus reports the estimated fraction of three year debt that survives to two years before maturity. Firms are assigned to riskiness buckets based on the quartile of (log) 1 year EDF at the country level. An "upgrade" is a firm moving from P75 as of year $t-h$ to P25 as of year $t-1$. A "downgrade" is a firm moving from P25 as of year $t-h$ to P75 as of year $t-1$. All regressions include country, year, and firm fixed effects, as well as firm characteristics (log size, leverage, profitability, cash holdings over total assets, and operating income over total assets). Standard errors clustered at the firm level reported in parentheses below point estimates. *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

(a) Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out$_{t-h}^{h+2}$	0.82	0.84	0.72	0.65	0.31	0.03	-0.02	-0.00
	(0.11)***	(0.14)***	(0.13)***	(0.18)***	(0.15)**	(0.07)	(0.07)	(0.06)
Upgrade=1 × Amt out$_{t-h}^{h+2}$		-0.88	-0.68	-0.83	-0.22	0.27	-0.31	-0.12
		(0.21)***	(0.18)***	(0.19)***	(0.17)	(0.09)***	(0.11)***	(0.07)*
Downgrade=1 × Amt out$_{t-h}^{h+2}$		0.36	0.80	-0.45	-0.67	0.53	0.10	-0.00
		(0.08)***	(0.30)***	(0.39)	(0.33)**	(0.14)***	(0.23)	(0.06)
Adj. R-sqr	0.73	0.59	0.53	0.47	0.45	0.48	0.53	0.56
W/in adj. R-sqr.	0.56	0.33	0.20	0.07	0.01	0.00	0.00	-0.00
N. of obs	326032	288930	258173	231576	208339	187382	167573	149026
N. of clusters	35442	31865	28828	26313	24363	22810	21325	19897

(b) Bonds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out$_{t-h}^{h+2}$	0.87	0.78	0.78	0.46	0.57	0.15	0.09	0.08
	(0.05)***	(0.09)***	(0.10)***	(0.12)***	(0.13)***	(0.13)	(0.10)	(0.07)
Upgrade=1 × Amt out$_{t-h}^{h+2}$		-1.06	0.38	-0.63	-0.16	0.20	-0.02	0.54
		(0.26)***	(0.22)*	(0.19)***	(0.12)	(0.13)	(0.10)	(0.09)***
Downgrade=1 × Amt out$_{t-h}^{h+2}$		0.21	0.90	-0.99	-0.66	0.65	0.47	0.37
		(0.10)**	(0.17)***	(0.20)***	(0.52)	(0.28)**	(0.24)*	(0.10)***
Adj. R-sqr	0.89	0.65	0.66	0.42	0.46	0.44	0.44	0.45
W/in adj. R-sqr.	0.83	0.46	0.45	0.07	0.07	0.01	0.00	0.00
N. of obs	138841	124614	112121	100606	90548	81222	72514	64380
N. of clusters	14441	13222	12196	11187	10380	9674	9029	8439

(c) Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Amt out$_{t-h}^{h+2}$	0.81	0.84	0.60	0.76	0.30	0.26	0.50	0.60
	(0.12)***	(0.15)***	(0.15)***	(0.25)***	(0.16)*	(0.23)	(0.22)**	(0.23)**
Upgrade=1 × Amt out$_{t-h}^{h+2}$		-0.94	-0.60	-0.92	-0.33	-0.47	-0.51	-0.57
		(0.15)***	(0.18)***	(0.24)***	(0.16)**	(0.24)*	(0.22)**	(0.22)***
Downgrade=1 × Amt out$_{t-h}^{h+2}$		-0.11	-0.33	-0.31	-0.55	0.16	-0.63	-0.61
		(0.15)	(0.16)**	(0.37)	(0.17)***	(0.43)	(0.22)***	(0.23)***
Adj. R-sqr	0.62	0.46	0.35	0.36	0.30	0.33	0.38	0.39
W/in adj. R-sqr.	0.49	0.27	0.11	0.10	0.01	0.00	0.01	0.01
N. of obs	312225	277589	248572	223003	200351	179967	160677	142651
N. of clusters	33357	30248	27619	25309	23413	21923	20488	19118