

Initial conditions and the private debt renegotiation process

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Abstract

I investigate whether and how initial conditions around loan origination influence private debt renegotiation process. I model the renegotiation likelihood, and the conditional probability of multiple renegotiation rounds or multiple amended terms using a sequential logit model. I use a large sample of 15,000 loans on the European credit market. I find that contractual (covenants and collateral) and organizational (lenders pool size, reputation and relationship) mechanisms mitigating adverse selection and moral hazard risks have the largest and positive economic impacts. Lenders financial conditions (capitalization and credit portfolio exposure) and institutional arrangement aiming at creditors protection significantly impact the renegotiation process.

JEL classification: G21, G24, G32, G34

Keywords: financial contracts, private debt, renegotiation, sequential logit, Europe

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1. Introduction

According to the incomplete contract theory (Hart and Moore, 1999), the renegotiation of a credit agreement is about designing an optimal decision-making mechanism for revising the initial terms in case of contingencies (Hart and Moore, 1988). Provided a proper renegotiation design process in the initial contract, efficient investments and optimal risk-sharing can be achieved (Aghion et al., 1994). Therefore, initial loan terms should play an important role in the renegotiation process because they are contingent on informational and contractual frictions, the bargaining power of parties, and thus the allocation of decision rights at the time of origination (Bester, 1994).

Despite a rich theoretical literature dealing with financial contracting and debt renegotiation¹, empirical evidence is only emerging and offers mixed or even puzzling results (Nikolaev, 2016; Roberts, 2015; Roberts and Sufi, 2009)². On the one hand, Roberts and Sufi (2009) find that the initial terms of a credit contract have no significant impact on the probability of renegotiation. On the other hand, in a recent study Nikolaev (2016) shows that contracting frictions, agency, information problems, and ultimately demand for lender's monitoring drive the renegotiations. In related papers, Saavedra (2015) find that the expectations of future contract renegotiation affect the design of initial debt contracts while Paligorova and Santos (2016) show that the initial syndicate composition and structure has a significant impact on renegotiation likelihood. Therefore, the impact of the initial conditions on renegotiation calls for more empirical research.

¹ (Aghion and Bolton, 1992; Chemmanur and Fulghieri, 1994; Dewatripont and Maskin, 1990; Fudenberg and Tirole, 1990; Hart, 2001, 1995, Hart and Moore, 1999, 1998, 1988; Maskin and Tirole, 1999).

² Other papers study renegotiation in Europe (Godlewski, 2015a, 2015b, 2014), troubled debt restructuring in Germany (Brunner and Krahnert, 2008) and temporary debt restructuring in Japan (Miyakawa and Ohashi, 2016).

In this paper, I investigate whether and how initial conditions around the loan origination influence the renegotiation process. More precisely, I study whether and how the initial borrower, lender, loan and country conditions influence the decision to renegotiate, the dynamics of the renegotiation process (unique vs multiple renegotiation rounds), and the scope of the amendments to the credit agreement (unique vs multiple loan terms amended). I consider loan renegotiation as a process because, conditional on a renegotiation decision, multiple renegotiation rounds can occur during the life time of the credit agreement (Roberts, 2015), or large portions of the loan contract can be rewritten by amending several characteristics of the debt contract (Godlewski, 2016). I focus on a broad set of proxies capturing initial conditions: loan terms, lenders' pool characteristics, borrower and lender financial conditions, and country-level legal and financial environment. I rely on a large cross-country sample of more than 15,000 loan facilities to more than 8,000 firms from 29 European countries, of which 20% were renegotiated at least once during the period under investigation (1999-2015). To model the renegotiation process in a comprehensive manner, I employ sequential logit regressions.

My main findings confirm the important economic role of initial conditions for the renegotiation process. The terms of the initial credit agreement and the lenders' pool structure are significant determinants of the probability of renegotiation, and, to a lesser extent, of the dynamics and scope of renegotiation. Contractual mechanisms such as covenants and collateral that aim at mitigating adverse selection and moral hazard have the largest positive economic impacts. Organizational mechanisms such as lenders pool size, reputation and relationship are also significant. These results do not support Roberts and Sufi (2009) conclusions but corroborate recent findings by Nikolaev (2016) and support the idea that demand for monitoring and strategic aspects of control rights play an important role in the renegotiation decision. Furthermore,

financial characteristics related to the soundness and credit portfolio management quality of the lenders significantly impact the renegotiation process. Finally, among the legal and financial environment variables, institutional arrangement aiming at creditors protection are the most economically significant determinants of the renegotiation process.

My results are important and relevant for a better understanding of one of the main advantages of corporate financing through private debt: the inherent flexibility of credit contracts, that can be revised and amended, even outside of financial distress (Gorton and Kahn, 2000; Smith and Warner, 1979; Zinbarg, 1975). The impact of initial conditions on this contractual flexibility is thus of utmost interest, because understanding the determinants of private debt renegotiation process can shed light on how to write better credit contracts, with far reaching consequences for the design of debt contracts, corporate policy and performance, financial intermediation efficiency, and the economy as a whole³. This is particularly relevant for bank-based financial systems, like Europe, where private debt remains the major source of external financing for firms (de Haan et al., 2012; Gomes and Phillips, 2012)⁴.

My contributions complement several studies on private debt renegotiation, mostly on the US credit market (Nikolaev, 2016; Roberts, 2015; Roberts and Sufi, 2009). I also contribute to a growing literature the role of particular contractual features in financial contracting and debt renegotiation (Asquith et al., 2005; Denis and Wang, 2014; Dichev and Skinner, 2002; Saavedra, 2015). However, my paper differs in several important ways. First, I explicitly focus on the impact of initial conditions on the renegotiation process. Second, to perform the most comprehensive study

³ (Acharya et al., 2005; Asquith et al., 2005; Bolton and Scharfstein, 1996; Chava and Roberts, 2008; Denis and Wang, 2014; Desein, 2005; Dichev and Skinner, 2002; Garleanu and Zwiebel, 2009; Mella-Barral, 1999; Moraux and Silaghi, 2014; Pawlina, 2010; Saavedra, 2015).

⁴ Private credit to GDP was 92% while 40% of the firms had a bank loan or line of credit, and between 25% to 30% of companies were using banks to finance investments or working capital in the Euro Area (source: The World Bank, Global Financial Development Database, 2013).

possible, I consider a broad range of potential determinants at origination, both at the micro (such as loan contract features, structure and composition of the lenders' pool, firm and lender financial characteristics) and macro (such as legal, financial and banking environment) levels. Third, I use a large sample of 15,000 loans over a 16 years' period and I employ an adequate methodology which is the sequential logit model. Fourth, I can exploit the cross-country dimension of my sample, covering 29 countries, regarding the effect of country determinants. Finally, I focus on the European credit market which is a bank-based financial system where private debt represents most of the external corporate financing.

The reminder of the paper is organized as follows. Section two covers the relevant theoretical and empirical literature. Data, methodology and variables are presented and discussed in section three. Section four covers the descriptive statistics and the univariate and multivariate results, as well as robustness checks. Finally, section five concludes.

2. Literature review

This section is devoted to the discussion of the relevant theoretical and empirical literature on debt renegotiation.

2.1 Theoretical background

From a theoretical perspective, private debt renegotiation can be rooted in a rich literature on contractual incompleteness and financial contracting. Debt financing is found to be a natural way of implementing contingent control allocations (Aghion and Bolton, 1992) and one of the important role of the initial contract is to allocate bargaining power (Gorton and Kahn, 2000). This helps to link the theory of incomplete contracts, financial contracting and ultimately renegotiation.

The foundations of incomplete contracts theory are developed by Hart and Moore (1999).

The basic idea is that contracts are incomplete because they leave something out or are ambiguous. Incompleteness can be the consequence of bounded rationality, because parties cannot foresee some events, or because of complicated states of nature that cannot be verified ex ante, even if the parties would like to add state contingent clauses. Due to ex post efficiency of the initial (incomplete) contract, the occurrence of (purely) unanticipated or (simply) non-contractible states will lead the contracting parties to be unable or unwilling to commit to the initial terms of the contract. This is where contract renegotiation may occur to update and complete the initial agreement.

The renegotiation process may be considered as a decision-making mechanism in advance of contingencies, especially in the case of dynamic relationships between the parties (e.g. a borrower and a lender). In other words, it's about designing an optimal mechanism for revising the initial terms upon arrival of new information (Hart and Moore, 1988). Aghion et al. (1994) show that provided a proper renegotiation design process in the initial contract (with default options in case of failed renegotiation and allocation of all bargaining power to either contracting party), efficient investments and optimal risk-sharing can be achieved. In such a setting, debt contract renegotiation becomes very useful once unverifiable actions occur (Huberman and Kahn, 1988) because it helps to contract on unverifiable information (Hermalin and Katz, 1991) and can avoid problems such as underinvestment (Bergman and Callen, 1991; Pawlina, 2010) or overleverage and overinvestment (Arnold and Westermann, 2016). Ultimately, renegotiation can improve welfare as it may enhance the market value of debt as it avoids ill-timed liquidation (Mella-Barral, 1999) or involuntary liquidity default (Acharya et al., 2005).

Financial contracting theory focus on decision (or control) rights allocation (Hart, 2001). The initial design of a debt contract reflects a bargaining process between the parties on how the initial, and subsequent when we consider contract incompleteness, surplus is shared. Contractual allocation of decision rights drives the incentives alignment of parties and may trigger renegotiation. A positive shock to the borrower that improves credit quality should shift the bargaining power in his favor (Hart and Moore, 1998), especially if the borrower may access outside options for external financing. In a setting with asymmetric information, better informed agents (borrowers) yield control rights to less informed agents (lenders) in the initial contract, especially through covenants (Dessein, 2005; Garleanu and Zwiebel, 2009). These are later amended upon arrival of new information to re-equilibrate bargaining power and surplus sharing between the parties. However, according to Berlin and Mester (1992), firms with high ex ante credit risk find the option to renegotiate most valuable, which will depend on the severity of agency problems and the quality of lender's information (i.e. monitoring technology).

Relative bargaining power and contractual allocation of decision rights have deep implications on debt reorganization and valuation (Dumitrescu, 2007; Fan and Sundaresan, 2000). In a dynamic setting with strategic agents and multiple creditors, Hege and Mella-Barral (2005) show that the possibility of renegotiation severely limit the size of the obtained concessions, which can be attractive ex ante because debt dispersion protects creditors from opportunistic expropriation. This explains why the likelihood of renegotiation should decrease with the number of lenders (Bolton and Scharfstein, 1996). Moraux and Silaghi (2014) show that the bargaining power of claimants plays a critical role in determining the size of the concessions obtained in a renegotiation. Firms with lower bargaining power experience a larger number of renegotiation rounds and obtain relatively larger concessions in the last renegotiation rounds. Smaller firms with

a concentrated group of creditors obtain smaller concessions during renegotiation. The number of renegotiation rounds decrease with its costs, which are higher for firms with more public than private debt, complex capital structure and international creditors. Renegotiating firms have a higher leverage ratio, lower return on equity, and more likely to be non-investment grade.

Strategic considerations of the renegotiation process have also other important consequences. The borrower may use the renegotiation process as a signaling game to influence the lender's renegotiation strategy via the repayment offer (Gale and Hellwig, 1989). The lender can use the renegotiation strategy to reduce borrower's incentives to engage in opportunistic renegotiation (Bourgeon and Dionne, 2013). Lenders reputational concerns may provide incentives to devote a larger amount of resources to information production in order to make the "right" renegotiation decision (Chemmanur and Fulghieri, 1994).

2.2 Empirical evidence

Empirical literature is far less developed than theory, but is growing rapidly, and deals mostly with determinants of private debt renegotiation⁵. Roberts and Sufi (2009) use a sample of 1000 private credit agreements for publicly traded US firms. They find that 64.5% of the contracts are renegotiated, often early in the life of the loan, with important amendments to the initial terms (amount, maturity, and pricing). They uncover main determinants of renegotiation: the accrual of new information concerning the credit quality, investment opportunities, and the collateral of the borrower, and fluctuations in credit and equity markets. The initial terms of the contract have no significant impact on the probability of renegotiation.

⁵ Another strand of the literature studies the links between specific contractual features, such as covenants, and the renegotiation process (Asquith et al., 2005; Dou, 2016; Saavedra, 2015) and the consequences of renegotiations on firm performance (Denis and Wang, 2014; Miyakawa and Ohashi, 2016).

Roberts (2015) provides additional results on the dynamics of renegotiation using a sample of 1,773 renegotiations. He finds that most loans are renegotiated multiple times over relatively short horizons, leading to significant changes to the contract terms. The main determinants of this process are the financial health of the borrower and the lender, the uncertainty regarding borrowers' future profitability, and the outcome of renegotiation. In a similar dynamic setting, Nikolaev (2016) uses a much larger sample (92,000 renegotiations) and shows that uncertainty is a strong determinant of renegotiation frequency, consistent with the idea that amendments help to complete the credit agreement in response to unforeseen contingencies. He also finds that the renegotiation dynamics are driven by contracting frictions, agency or information problems of the borrower-lender relationship and by demand for lender's monitoring process.

Godlewski (2015a, 2015b, 2014) provides empirical evidence on loan renegotiations in Europe. He finds that renegotiating financial covenants is the most significant amendment type with the largest significant and positive impact on a borrower's abnormal return, ranging between 10 and 15%. Early and less frequent renegotiations also lead to significant and positive abnormal returns. These findings support the idea that the renegotiation of financial contracts may certify borrower's quality. The dynamics of loan renegotiation in Europe are slightly different from the US: multiple renegotiations are less frequent, covenants are less frequently amended, and the first renegotiation occurs much later. Nevertheless, renegotiations lead to substantial amendments to main initial loan terms. Furthermore, borrower transparency and amendment characteristics reduce the number of renegotiation rounds. Also, financial development, banking structure and legal environment of the borrower country play a major role for renegotiation.

3. Data, methodology, and variables

In this section I describe data sources, sample selection process, the econometric methodology employed, and variables.

3.1 Data

I start by extracting all available loan amendments in Europe with effective dates between January 1999 (start of the Euro) and December 2015 (last available information) from the Bloomberg Professional Terminal Service (Bloomberg)⁶. This data set contains unique loan identifiers, effective dates of amendments, and amended terms. The latter concern changes to amount (facility, tranche, outstanding...), maturity, covenants, pricing grid, definition (non-material amendment). For material amendments, such as changes to amount or maturity, Bloomberg also provides old and new terms.

Next, I extract all loans to European borrowers (excluding Financial and Government entities) with effective dates between January 1999 and December 2015 that are available in Bloomberg⁷. This allows me to gather information on loan facility amount, spread, maturity, covenants, collateral, date, type (revolver, term...), purpose (corporate, refinance, acquisition...), currency, etc. I also obtain unique loan identifiers which allows to merge this data set with information on lenders. The latter provides information on the number of lenders, the retained shares of the loan, the nationalities (country of incorporation), the roles (or titles), and the identity (names). I also obtain some descriptive information on the borrowers (name, industry sector, country, identifiers...).

⁶ I use the Bloomberg corporate actions function (CACT).

⁷ I use the Bloomberg loan search function (LSRC).

Then I merge this loan and lenders data set with the amended loans information using unique loan identifiers. At this stage, the sample size is reduced mostly due to unmatched loans in both datasets and missing information on lenders.

I add (borrower) country level data to include various economic, financial, and legal environment characteristics, using the Global Financial Development Database from the World Bank (Demirguc-Kunt et al., 2012), Djankov et al. (2007) and Favara et al. (2012). I merge using borrower country of incorporation and loan origination year. After dropping borrower countries with no renegotiations (Iceland and Slovakia) the sample size is reduced to 15,781 loans to 8,691 borrowers.

Next, I use the borrower identifiers to add firms accounting variables and financial ratios from Bloomberg. This step reduces drastically the size of the sample with financial information on the borrowing companies. Furthermore, as Bloomberg provides only the names of the lenders, I focus on lead banks (i.e. loan agents) of the banking pools and match Bloomberg and Orbis (Bureau van Dijk) data by names⁸. Then I perform a manual check, regroup the loan agents by banking group, and use their tickers to extract lead banks financial characteristics from Orbis.

My sample is larger than most of US studies, usually using around 1,000 (hand-collected) credit agreements, but close to Nikolaev (2016) with respect to the number of firms (he uses a sample of more than 10,000 firms). It is also larger than European studies, as these focus exclusively on amended loans only, the largest using 833 renegotiated loans (Godlewski, 2015a).

3.3 Methodology and variables

My main objective is to study the influence of initial conditions on the renegotiation process in a comprehensive framework. The renegotiation process consists of a renegotiation

⁸ I initially perform a fuzzy matching using the Stata reclin2 module.

decision (likelihood), and conditional decisions related to renegotiation dynamics (number of renegotiation rounds) or scope (number of amended loan terms). The adequate methodology is the sequential logit model. Figure 1 illustrates this approach. In a first step (or sequence), the renegotiation decision is modelled with a dummy variable *Renegotiation* equal to one if a loan was renegotiated (0 otherwise). In a second step, conditionally on this decision, the renegotiation process can involve multiple rounds, or amending several terms of the loan agreement. I employ two alternative specifications to model second step decisions, involving dummy variables *Rounds* (equal to one if a loan was renegotiated more than once, 0 otherwise) and *Amendments* (equal to one if a loan had more than one term amended, 0 otherwise).

Regarding explanatory variables, I follow previous literature and consider variables capturing loan contract and lenders pool characteristics, borrowing firms and lenders characteristics, and borrower country environment characteristics⁹. All variables are measured at the time of loan origination as my focus is to uncover if and how initial conditions are related to potential loan renegotiations.

The initial loan terms are contingent on informational and contractual frictions, the bargaining power of parties, and thus the allocation of decision rights at the time of origination. Therefore, they play a strategic role in the development of the bank-borrower relationship and determine, at least indirectly, the probability of renegotiation and the potential amendments (Bester, 1994). I consider main loan terms such as amount, maturity, collateral and covenants. I also control for the amount outstanding and the number of previously issued loans. Amount and maturity are related to information asymmetry and uncertainty (Berger et al., 2005; Mosebach,

⁹ All variables are defined in appendix B. An important factor in choosing the proxies is data availability, especially regarding borrower and (lead) lender characteristics. I discuss alternative variables in the robustness checks section. I also control for a large set of fixed effects such as loan origination year, purpose, currency, borrower country and industry sector. Standard errors are clustered at the facility level; clustering at the firm level leads to qualitatively very similar results.

1999). Collateral and covenants are contractual mechanisms serving as signaling and screening devices to mitigate adverse selection and moral hazard problems (Besanko and Thakor, 1987; Bester, 1985). Secured loans are more prone to renegotiation (Bester, 1994) while covenants renegotiation allows to rebalance the allocation of contractual control rights (Garleanu and Zwiebel, 2009).

The structure and composition of the banking pool are also related to informational frictions at the time of loan origination, especially regarding credit risk diversification, moral hazard and hold-up problems (Bolton and Scharfstein, 1996; Bosch and Steffen, 2011; Lee and Mullineaux, 2004; Preece and Mullineaux, 1996; Sufi, 2007). Another important aspect is the role of lender's reputation in mitigating agency problems (Bushman and Wittenberg-Moerman, 2012; Johnson, 1997; McCahery and Schwiendbacher, 2010; Ross, 2010). Borrower-lender proximity is also important as it helps overcome information asymmetry problems (Hauswald and Marquez, 2006; Mian, 2006). Thus, I consider variables such as the number of lenders, the presence of lead lenders that belong to a league table, the existence of previous bank-borrower relationships and the presence of lenders that are from the same country as the borrower.

I also control for borrower and (lead) lender¹⁰ financial characteristics to take their relative bargaining power and financial health into account. On the borrower side, I consider proxies for size, leverage, and profitability. Larger and more profitable firms should have greater bargaining power. Leverage can also be considered as a bargaining tool but it could also hamper the outside options of the borrower if considered as too high. I also control for transparency by considering the listed and rated status of the borrower. On the lender side, apart from size and profitability

¹⁰ An important portion of the loans are syndicated loans; therefore, I focus on the lead lender (i.e. loan agent) of the banking pool.

variables, I also consider specific bank's variables such as capitalization, loan loss reserves and loans to assets ratio. Well capitalized banks with a sound credit portfolio management should be more willing to enter renegotiation.

Finally, I investigate the impact of borrower's country variables. I consider the legal environment because it influences lenders' monitoring and contracting costs (Bae and Goyal, 2009; Qian and Strahan, 2007). I focus on renegotiation frictions, following Favara et al. (2015, 2012), measured by creditors' priority or recovery rate. I also consider the development and structure of financial systems because it affects the cost of external financing by acting on information asymmetry (Levine et al., 2000; Rajan and Zingales, 1998) and provides valuable outside options for refinancing. I focus on the development of credit and stock markets, and on the banking market structure with proxies for concentration, foreign banks presence and banking sector health.

4. Results

This section is devoted to the presentation of the main descriptive statistics, and the discussion of regression results and robustness checks.

4.1 Descriptive statistics

Table 1 presents the country composition of the sample and the country average proportion of renegotiated loans for the whole period. Among the 29 countries covered, United Kingdom represents the largest portion of loans and borrowers (23% and 22% respectively), followed by France, Germany, Spain, Netherlands, and Italy. These six countries account for 71% of the sample¹¹. The sample coverage is consistent with the European syndicated lending market, where these countries account for most of the loan originations. We observe an important country

¹¹ Countries forming the EU-15 represent 88% of the sample, while Eurozone countries account for 61%.

heterogeneity in loan renegotiation percentage, ranging from below 1% in Portugal to almost 44% in Luxembourg.

Figure 2 shows the time distribution of loan originations and renegotiations. We remark a cyclical evolution of the market, with booms and busts around the Credit Crisis in 2008 and 2009 and the Eurozone Crisis in 2012 and 2013. The sample contains rather long-term loans, as initial maturities ranging from 5 to 10 years represent 60% of the credit agreements (figure 3). Figure 4 shows the breakdown of amended loan characteristics. Loan amount represents the most amended characteristic (close to 33%), followed by maturity (21%) and definition (25%), which is a non-material amendment. These figures are close to Roberts (2015) who finds that changes to amount and maturity occur in 27% and 29% of the cases respectively. Figure 5 provides the distribution of renegotiation rounds and amendments. Unique renegotiation or single amended loan term concern 70% and 45% of the renegotiations respectively. Renegotiation dynamics is less important than its scope, as multiple amendments are more common than multiple rounds. For instance, less than 16% of renegotiations involve two rounds, while in less than 34% of the cases, two loan terms are amended following renegotiation. An infinitesimal portion of renegotiations involve nine rounds, while in 1% of the cases the entire loan contract is amended. The distribution of the time to renegotiation is asymmetric, with most renegotiations occurring before 50 months since origination (figure 6).

Table 2a provides descriptive statistics and t-test statistics for renegotiation related variables. Panel A shows means and standard deviations of renegotiation characteristics. The sample average for *Renegotiation* dummy equals 18% (with a standard deviation equal to 39%),

which is lower when compared to 37% (Nikolaev, 2016)¹². For the sub-sample of renegotiated loans, the average duration from origination to amendment equals 32 months (or 42% of the initial maturity), while a typical loan is renegotiated 1.6 times, involving almost 1.9 amended terms. Roberts (2015) finds that an amended loan enters on average 3.5 renegotiation rounds. Material changes to amount and maturity equal -36 million USD and +17.25 months respectively. Roberts and Sufi (2009) find +193 million USD and 25.53 months respectively. In my sample, positive changes to amount or to maturity occur in 51% and 79% of the respective renegotiation cases. When both items are increased simultaneously (which occurs in 33% of the cases), amount increases by 177.89 million USD and maturity is extended by 22.19 months. These figures are closer to Roberts and Sufi (2009). We remark that multiple rounds are associated with several amendments, and vice-versa. Loan amount increase is less common for frequently renegotiated loans while it occurs more often when several loan terms are amended. However, maturity is decreased more often in the latter case. Mechanically, the time to renegotiation is larger for renegotiations involving multiple rounds or several amendments.

Panel B of table 2a presents a breakdown of various renegotiation packages¹³. The most important package involves a single amended loan term which is the amount (close to 20%). In Roberts (2015) sample, packages involving amending covenants only account for almost 46% of the renegotiations. Among material amendments, renegotiating maturity only comes second (12.15% vs 4.68% by Roberts (2015)), followed by renegotiation of two loan terms: amount and

¹² It is even much lower when comparing to US samples where renegotiations account for 60% to 73% (Denis and Wang, 2014; Roberts, 2015). There are several plausible explanations for these differences. First, I investigate a different economic area which is much more bank-based. Second, their samples are hand-collected and thus smaller. Third, the definition of renegotiation may vary. For instance, Roberts (2015) considers amendment, amendment and restated, and rollover as renegotiations, which might mechanically increase the proportion of renegotiations.

¹³ Renegotiation packages accounting for at least 2% of the renegotiations are displayed. The total number of different packages is 56.

maturity (3.43% by Roberts (2015)). Let note that amending four different loan terms occurs in 2% of the cases.

Table 2b provides various descriptive statistics for all explanatory variables¹⁴. The sample contains large loans (1.9 billion USD) with maturity above 6 years, secured in 40% of the cases and with few financial covenants (9%). Borrowers have previously issued almost 4 loans. Due to the size of the loans, the number of lenders is almost 10, of which 20% belong to a league table. In 12% of the cases a banking relationship existed while 28% of the lenders are from the same country as the borrower.

Half of the borrowers are listed companies and 12% had a rating. These are large firms (almost 5 billion USD of sales) with a debt to equity ratio equal to 1.40, current ratio at 1% and operating margin equal to 11%. Lead lenders are very large financial institutions (total assets above 1 trillion USD), with book value per share at 39%. More than 40% of assets are loans and loan loss reserves to gross loans ratio equals 2%. Their total common equity ratio is 4% and return on equity is 10%. Overall, these are firms and banks that exhibit good financial conditions.

Finally, average renegotiation frictions are weak (0.39 on a scale from 0 to 1), creditors priority is high (close to scale's maximum at 4) and their recovery rate is above 50%. Financial markets are well developed, both regarding credit and equity markets, with a larger portion of international debt. Bank concentration is important, with a strong penetration of foreign institutions, and a satisfactory financial health. Overall, borrower country environment is creditors' friendly, financially developed, with a relatively sound banking system.

¹⁴ All firm and lender (lead) variables are symmetrically winsorized at 5% to minimize the influence of outliers. Panel B shows the breakdown of the sample by borrower industry sector, loan purpose, loan type, and loan currency.

4.2 Regression results

I start with the sequential logit regressions results in Table 3. The renegotiation decision is modelled in a first step (*Renegotiation*), and then the decisions to enter multiple renegotiation rounds (*Rounds*) or amending several terms of the contract (*Amendments*) are modelled in a second step. I begin with the simplest specification including initial loan terms only, and I augment it progressively with lenders pool variables, borrower listed status and rating dummies, and lender rating dummy.

Coefficients significance and signs are robust across specifications. Therefore, I focus on the full model in the last three columns. A first important result is that a clear majority of variables are statistically significant in the *Renegotiation* model and robust across specifications. This suggests that initial conditions play an important role in shaping the credit contract through renegotiation.

All main loan characteristics at origination have a significant and positive impact on the renegotiation likelihood. The marginal effect of covenants equals 19%, while other loan terms have a lower impact, ranging from 1% to 9%. Furthermore, covenants and collateral increase the probability of multiple renegotiation rounds, with economic effects ranging from 11% to 15%, while multiple amended loan terms increase by 12% when covenants are attached to the initial loan contract. These first results are consistent with the idea that initial contractual frictions increase the probability of amending the credit agreement. Collateral serves as a signaling and screening device to mitigate adverse selection problems (Besanko and Thakor, 1987a, 1987b; Bester, 1985) while covenants mitigate moral hazard risk. Secured loans are more prone to renegotiation (Bester, 1994) while amending restrictive covenants allows to rebalance the allocation of contractual control rights (Dessein, 2005; Garleanu and Zwiebel, 2009). The effects of loan amount

or maturity might be more mechanical in the sense that larger facilities with longer maturities have more chances to be renegotiated. However, greater amount and longer maturity are also associated with lower information asymmetry and less uncertainty (Berger et al., 2005; Mosebach, 1999) which can improve the willingness to amend the credit agreement. Additionally, borrowers who issued more loans in the past and thus are better known from the credit market renegotiate more easily because of reduced information asymmetry. However, the economic impact of this variable is very low at 0.05%. On the contrary, larger outstanding amounts reduce renegotiation likelihood.

All lenders pool variables are significant, except *Same country*. Larger pools of lenders with a greater presence of reputable institutions (league presence) increase renegotiation likelihood, *League* having the largest economic effect (4.5%). On the contrary, the existence of bank-borrower relationship has a negative impact on renegotiation, with a marginal effect of 3.5%. The number of lenders is usually expected to have a different effect because of issues related to coordination problems or voting majority in case of material amendments (Bolton and Scharfstein, 1996)¹⁵. In our case, it might be simply a mechanical effect related to the fact that larger loans, which are more often renegotiated, are usually funded by more lenders. However, larger syndicates are usually associated with less informational frictions (Lee and Mullineaux, 2004; Preece and Mullineaux, 1996; Sufi, 2007), eventually enhancing the creditors willingness to renegotiate the loan and to engage into multiple rounds. Furthermore, in a dynamic perspective, debt dispersion protects creditors from opportunistic expropriation (Hege and Mella-Barral, 2005). Lender

¹⁵ The amendments must be approved by a certain percentage of lenders, usually per three levels of approval: required-lenders level; full vote; and supermajority. The first level is a simple majority of approval of nonmaterial amendments and waivers, or changes affecting one facility. A full vote, including participants, is required to approve material changes such as RATS (rate, amortization, term, security). A supermajority – typically 70% to 80% of lenders – is required for certain material changes, such as alterations to amortization and the release of collateral. The size of the lenders pool is sometimes used as a proxy for the costs of renegotiation (Asquith et al., 2005).

reputation mitigates adverse selection and helps signaling the quality of the deal (Bushman and Wittenberg-Moerman, 2012; Ross, 2010), thus also easing the prospect for renegotiation. The existence of a previous bank-borrower relationship should allow writing more complete contracts since origination because of reduced information asymmetry and better mutual knowledge between contracting parties. This can explain the negative coefficient of *Relationship* in the first model. However, conditional on renegotiating the initial contract, such relationship can enhance the willingness to amend the credit contract multiple times, with an economic impact close to 11%.

Listed and rated firms have a significant and positive impact on the renegotiation process, due to their greater transparency which facilitates re-contracting. The former coefficient increases the likelihood of renegotiation by 6.5%, while the latter increases the probabilities of multiple rounds or multiple amendments by 10% or 13.5% respectively.

Table 4 presents results including firm and lender (lead) variables¹⁶. None of the borrower characteristics are significant. This may be explained by sample size, which is cut by half due to firm variables availability, or by the fact that these characteristics do not impact the renegotiation process around the time of loan origination. Alternatively, borrower profile may already be reflected in the initial loan terms and thus not “adding” much to the equation. Among (lead) lender variables, three are significant: *TCE Ratio*, *LLR / Loans*, and *Loans / Assets*, with large economic effects (double digits marginal effects). Lender capitalization ratio has a very significant and positive impact on all steps of a renegotiation process. This finding confirms the idea that sounder financial institutions at the time of loan origination are better prepared to handle costly but potentially beneficial renegotiations. The loan loss reserves ratio is significantly positive in the *Amendments* equation only, suggesting that better credit risk coverage enhance the willingness of

¹⁶ I do not display all variables from table 3 which are included and robust.

the lender to rewrite larger portions of the contract only, but not renegotiate the contract or do so multiple times. Financial institutions with larger loans portfolio in their balance sheet are, on the contrary, less willing to enter renegotiation or to amend several credit terms. Indeed, renegotiating credit contracts or enlarging the scope of amendments is more problematic and costly when a lender must already manage larger credit exposures.

Finally, table 5 shows results including (borrower) country characteristics, with respect to renegotiation frictions, financial development, and banking structure¹⁷. Creditors protection at loan origination have a significant impact on the renegotiation process. *Renegotiation failure* index has a negative and economically significant (marginal effect at 15%) on the likelihood of renegotiation. Larger values of the index indicate stronger creditors protection, who are less willing to accept concessions through renegotiation if their interests are legally better protected against shareholders' strategic default incentives. But they are more willing to accept renegotiation when the legal environment guarantees larger recovery rates (for secured claims), with an important economic effect (11%). Moreover, conditional on renegotiation taking place, creditors are willing to pursue multiple rounds of renegotiation when their claims are ranked first (*Priority*), with an economic impact close to 8%.

Financial development proxies related to credit and stock markets development are significant but their economic effects are weak (well below 1%). Private credit market development has a negative impact on renegotiation decision, while more internationalized private debt markets have a positive effect on renegotiation likelihood and multiple rounds. Stock market development has a similar effect but only in the *Renegotiation* equation. The latter result can be explained considering greater transparency and information for market participants and

¹⁷ Again, I do not display all variables from table 3 which are included and robust.

more abundant external finance outside options, both enhancing renegotiation prospects. The former results are more puzzling. On the one hand, renegotiation likelihood is reduced when larger amounts of financial resources are provided by domestic banks. In that case, it is possible that borrowers have less financing outside options on the domestic credit market and thus less bargaining power, while domestic banks are also more reluctant to accept renegotiation due to their larger credit exposures. On the other hand, renegotiation decision and dynamics are positively influenced when more outstanding private debt is issued abroad. This can signal a more open and internationally recognized credit market, providing more information, competition and valuable outside options for external financing, ultimately favoring the renegotiation process.

Banking structure has also a significant impact on the renegotiation process, with weak economic effects (below 1%). Banking concentration and the presence of foreign financial institutions positively influence renegotiation likelihood. The latter coefficient can be explained along the arguments provided above for internationally opened debt markets. Renegotiation likelihood increases with greater presence of foreign banks and thus alternative financing outside options. The former coefficient can be explained considering that banks with a higher degree of market power have an overall lower risk exposure (Berger et al., 2009) thus less reluctant to accept concessions through renegotiation. Also, according to the “information hypothesis” (Dell’Ariccia and Marquez, 2006; Petersen and Rajan, 1995), greater concentration allows banks to have access to more and better information and thus favors renegotiation.

To summarize, the results support the importance and relevance of initial conditions in driving the loan renegotiation process. The terms of the credit agreement at origination and the lenders’ pool structure are significant determinants of the probability of renegotiation, and, to a lesser extent, of the dynamics and scope of renegotiation. Contractual mechanisms mitigating

adverse selection and moral hazard, such as covenants and collateral, have the largest economic impacts. The size, reputation and relationship features of the lenders pool are also significant. These results corroborate the recent findings by Nikolaev (2016) and support the idea that demand for monitoring and strategic aspects of control rights play an important role in the renegotiation decision. Furthermore, several financial characteristics of the lenders are significant determinants of the renegotiation, especially those related to the soundness and credit portfolio management quality of the lenders. Finally, the legal and financial environment of the borrower country also play an important role for the renegotiation decision, especially institutional arrangement aiming at creditors protection.

4.3 Robustness checks

I perform a battery of robustness tests of previous results. I investigate the effects of alternative explanatory variables, initial contractual frictions, maturity, financial crises, and economic areas.

I am limited by the available data regarding alternative variables. Nevertheless, I can test several alternative proxies. Regarding the initial contract characteristics, including the loan spread as a proxy for credit risk yields a significant and positive coefficient in the *Renegotiation* model, with a weak economic impact measured by the marginal effect¹⁸. However, including the loan spreads drastically reduces the sample size as less than half of it contains information on this variable. Therefore, I do not include it in the main regressions. Regarding the lenders pool characteristics, using an alternative variable for the size of the lenders pools such as the concentration of retained shares of the loan yields an insignificant coefficient¹⁹. As data on retained

¹⁸ The loan spread equals 249 bps on average (median 225 bps) with a standard deviation of 181 bps.

¹⁹ The concentration of lenders retained shares of the loan, computed as the HHI of retained shares, equals 6% on average with a standard deviation of 17%.

shares of a loan is scarce, I do not include this variable in the main regressions. Furthermore, results are very similar when considering the presence of lenders in the top 5 or top 10 of the league table, or computing previous lead lender-firm relationship on a 5 years' period. Considering other proxies for the borrower's financial characteristics, such as the quick ratio or the profit margin gives similar results. Regarding the lead lender's variables, using the tier 1 capital ratio gives same results as the TCE ratio, while including the net interest margin or the loans to deposits ratio yields insignificant results. Finally, using alternative proxies for the borrower country environment gives the following results. The creditors rights index coefficient is not significant. Other bank concentration measures (three largest banks, H-statistic, Lerner index) and using the number of foreign banks instead of assets give similar results. Replacing the bank Z score by the ratio of nonperforming loans, regulatory capital or liquid assets also lead to similar results.

Next I consider specific contractual features of the initial credit agreement, such as the absence of covenants or collateral. I also consider a sub-sample without term loans, and loans funded by smaller pools of lenders (with respect to the sample median equal to 6), the absence of previous relationship, or unrated borrowers. I expect to capture more problematic loans with respect to informational frictions and moral hazard using these proxies²⁰. Results are provided in table 6. Overall, they remain robust when compared to table 3, with the notable exceptions of *Lenders* and *Listed*. The size of the lending pool becomes significant and negative in the *Rounds* equation when considering smaller groups of creditors, while listed status of the borrower has a significant and negative effect on the likelihood of amending several loan terms when the borrower has no rating.

²⁰ The choice of these variables is also guided by the statistical and economic significance of the coefficients in table 3.

I investigate the effect of loan maturity by excluding loans maturing in 2013 and those maturing after 2015. More than half of the loans in my sample have an initial maturity between 5 and 10 years (see figure 3), and loans maturing in 2013 represent the largest portion (8.24%). I want to check if the main results survive without this maturity as eliminating all loans with maturity between 5 and 10 years would drastically reduce the sample size and couldn't guarantee reliable results. I also want to verify the effect of excluding loans with initial maturity beyond the end of the sample (41% of the loans have a maturity year greater than 2015). In that case, the average maturity at origination drops to 5.2 years (vs 6.4 for the whole sample). Table 7 shows the results. We notice minor changes when comparing to main results in tables 3-5. In panel A, *Previous issues* becomes not significant while in panel B lead lender's size and profitability become significant when excluding maturity year 2013. In panel C, we notice that renegotiation frictions variables become not significant while financial development proxies are weaker.

The cyclical behavior of loan originations and renegotiations (see figure 2) may suggest that the renegotiation process could be sensitive to financial crises, notably the Credit crisis of 2008 and the Eurozone crisis of 2010. Indeed, greater uncertainty and information frictions that arise following large disruptions in the functioning of capital markets can affect financial intermediation and thus loan origination and renegotiation. Therefore, I also check for the impact of the post-crises period on the main results by rerunning all regressions on two sub-periods, starting from October 2008 for the Credit crisis²¹ and June 2010 for the Eurozone crisis²².

Results are displayed in table 8. We remark that results are affected by the post-crises periods. In panel A, variables for previous loan issuance, lenders reputation and relationship are

²¹ Leaving 63% of the initial sample and 71% of the renegotiations.

²² Which leaves 76% of the initial sample and 81% of the renegotiations.

not significant, especially for the post Credit crisis period. We can argue that the effects of market presence of the borrower and the existence of a bank-relationship which normally mitigate informational frictions and impact the renegotiation process simply vanish away following a major financial crisis. The reputation of financial institutions which normally help to signal the quality of a deal and mitigates adverse selection and moral hazard problems also vanishes away, while the crisis might also have a negative effect on the reputation itself. We also remark that borrower and lead lender variables have weaker impacts (panel B). The coefficient of loan losses reserves ratio becomes not significant while, especially in the case of the Eurozone crisis, lead lender's size and RoE become significant, with opposite signs. Simply put, in the post-crisis period the management of the loan portfolio risk might become less relevant for the renegotiation process, while larger banks can still accept to amend a loan, although more profitable ones are more reluctant to do so, eventually to preserve their RoE in difficult market conditions. In panel C, the domestic debt ratio becomes significant and negative, suggesting that in a period of crisis larger amounts of domestically issued debt become a burden for the local banking industry that reduces outside options for borrowers. Stock markets development becomes insignificant while their volatility is significant for the Eurozone crisis sub-period. A more uncertain and volatile environment induces a greater likelihood of renegotiating a loan, as the prospects of the borrower and the bank relationship become less certain, while reduces the probability of doing so multiple times. We also notice that banking industry health (*Bank Z score*) reduces the likelihood of renegotiation following the Eurozone crisis as banks were strongly affected by the spillovers of the sovereign crisis and thus less willing to accept concessions on credit agreements.

Finally, a last series of robustness checks concern economic areas. I perform all the regressions on a sub-sample with loans issued in the Eurozone area only (61% of the whole

sample), and on a sub-sample excluding UK (25% of the observations)²³. For the latter sub-sample, most of the results remain robust, with the exceptions of stock market development and bank concentration variables which become insignificant. This is also the case for the former sub-sample, while several other variables become significant for the *Rounds* equation with similar coefficient signs as in tables 3-5. It is the case for loan variables such as the amount, the maturity, the outstanding amount, and the presence of league table lenders. Borrower variables (size, leverage, and liquidity proxies) also become significant.

5. Conclusion

I investigate the influence of initial conditions on the renegotiation process. I focus on whether and how the initial borrower, lender, loan and country conditions influence the decision to renegotiate, the renegotiation dynamics, and the scope of the amendments. I employ sequential logit regressions on a cross-country sample of more than 15,000 loan facilities originated on the European credit market.

I find that initial conditions are important and relevant determinants of the loan renegotiation process. The terms of the initial credit agreement and the lenders' pool structure are significant determinants of the probability of renegotiation, and, to a lesser extent, of the dynamics and scope of renegotiation. Contractual mechanisms such as covenants and collateral that aim at mitigating adverse selection and moral hazard have the largest positive economic impacts. Organizational mechanisms such as lenders pool size, reputation and relationship are also significant. These results corroborate the recent findings by Nikolaev (2016) and support the idea that demand for monitoring and strategic aspects of control rights play an important role in the renegotiation decision. Furthermore, financial characteristics related to the soundness and credit

²³ To spare space I do not display the tables of results but they are available upon request.

portfolio management quality of the lenders significantly impact the renegotiation process.

Finally, among the legal and financial environment variables, institutional arrangement aiming at creditors protection are the most economically significant determinants of the renegotiation process.

These results survive several robustness checks related to the effect of alternative explanatory variables, initial contractual frictions, maturity, financial crises, and economic areas.

Notable exceptions are related to the impact of financial crises.

Appendix

Appendix A: Description of amended terms

Amount

Borrow amount = change to borrowed amount

Borrowing base amount = change to borrowing base amount which is the value assigned to a collection of a borrower's assets (such as accounts receivable or inventory), used by lenders to determine the initial and/or ongoing loan amount, and/or compliance with one or more debt covenants

Facility amount = change to facility amount

LOC amount = change to line of credit amount which acts as a guarantee provided by lenders to pay off debt or obligations if the borrower cannot

Outstanding amount = change to loan outstanding amount

Prepay amount = change to prepay amount

Tranche amount = change to tranche amount

Covenants financial = change to financial covenants which enforce minimum financial performance against the borrower (such as coverage, leverage, current ratio, tangible net worth and maximum capital expenditures)

Covenants non-financial = change to non-financial covenants which can be affirmative (state what action the borrower must take to comply with the loan) and negative (limit the borrower's activities)

Maturity

Maturity change = change to loan maturity

Pricing

Loan fee = change to loan fees (such as upfront fee, commitment fee, facility fee, etc.)

Pricing grid = change to pricing grid such as altering the level of applicable margin contingent on borrower's leverage

Definition

Definition change = change to definition of key terms in loan agreement (for instance the definition of an accounting ratio used as a benchmark for a financial covenant, such as the equity to assets ratio)

Appendix B: Variables definitions

Dependent variables

Renegotiation = 1 if a loan is renegotiated (0 otherwise)

Rounds = 1 if a loan is renegotiated multiple times (i.e. more than once) (0 otherwise)

Amendments = 1 if several characteristics of the initial loan contract are amended (i.e. more than one) (0 otherwise)

Other variables

N. Rounds = number of renegotiation rounds

N. Amendments = number of amended loan terms following renegotiation

Change to amount (\$mln) = change to loan amount for renegotiations involving amount amendment (in MLN USD)

Amount increased = 1 if Change to amount > 0

Change to maturity (m.) = change to loan maturity for renegotiations involving maturity amendment (in months)

Maturity extended = 1 if Change to maturity > 0

Time to renegotiation = time from loan origination to renegotiation (in months)

Time to renegotiation / Maturity = time to renegotiation divided by loan maturity at origination (in percent)

Explanatory variables

Loan variables (source: Bloomberg)

Amount = Loan facility amount at origination (in MLN USD).

Maturity = Loan maturity at origination (in years).

Covenants = 1 if loan has covenants.

Secured = 1 if loan is secured.

Amount outstanding = amount outstanding on all loans.

Previous issues = Number of loans previously issued by a firm.

Lenders pool variables (source: Bloomberg)

Lenders = Number of lenders in the syndicate.

League = 1 if the loan agent was listed among the top 3 of the Bloomberg European league table one year before the origination year.

Relationship = 1 if the loan agent syndicated a loan for the same borrower during the last 3 years before the origination year.

Same country = Percentage of lenders in the pool which are from the same country as the borrower.

Firm variables (source: Bloomberg)

Listed = 1 if a firm is listed on a stock exchange.

Borrower rated = 1 if a firm has a rating (Moody's or S&P, Senior Unsecured Debt or LT Issuer Credit).

Sales = Net sales or revenue of the firm (in MLN USD).

Debt / Equity = Total debt to equity.

Current ratio = Current assets to current liabilities.

Operating margin = Operating income to net sales.

Lender (lead) variables (source: Orbis, Bureau van Dijk)

Lender rated = 1 if a lead lender has a rating (Moody's or S&P, Senior Unsecured Debt or LT Issuer Credit).

Total Assets = Total assets (in BLN USD).

Book value = Book value per share

TCE Ratio = tangible common equity ratio: total equity – (intangible assets + goodwill + preferred stock equity) / tangible assets (total assets less goodwill and intangibles).

LLR / Loans = Loan losses reserves / total loans.

RoE = Return on common equity: net income / average common shareholder's equity.

Loans / Assets = Total loans / total assets.

Country variables (sources: Demirgüç-Kunt et al. (2012), Djankov et al. (2007), and Favara et al. (2012))

Renegotiation failure = Measures the probability that shareholders fail to force a renegotiation of debt with creditors²⁴.

Priority = Equals 0, 1, 2, 3, or 4 to reflect the order in which creditors' claims are served. A value of 4 indicates that creditors' claims are always served first.

Creditors' recovery = Recovery rate for secured creditors, conditional on default.

Private credit = Financial resources provided to the private sector by domestic money banks as a share of GDP.

Domestic private debt = Total amount of domestic private debt securities (amount outstanding) issued in domestic markets as a share of GDP. It covers data on long-term bonds and notes, commercial paper and other short-term notes.

International private debt = Total amount of international private debt securities (amount outstanding) issued in domestic markets as a share of GDP. It covers long-term bonds and notes, treasury bills, commercial paper and other short-term notes.

Stock market = Total value of all listed shares in a stock market as a percentage of GDP.

Volatility of stock = Average of the 360-day volatility of the national stock market index.

Bank concentration = Assets of five largest banks as a share of total commercial banking assets.

²⁴ The index is the average of the following binary (0 if no, 1 if yes) indicators: 1) secured creditors may seize and sell their collateral without court approval, 2) secured creditors may enforce their security either in or out of court, 3) the entire firm's assets can be pledged as collateral, 4) an insolvency or liquidation order cannot be appealed at all, 5) an insolvency case is suspended until the resolution of the appeal, 6) the firm may enter liquidation without attempting reorganization, 7) secured creditors may enforce their security upon commencement of the insolvency proceedings, 8) a defaulting firm must cease operations upon commencement of insolvency proceedings, 9) management does not remain in control of decisions during insolvency proceedings, 10) secured creditors have the right to approve the appointment of the insolvency administrator, 11) secured creditors may dismiss the insolvency administrator, 12) secured creditors vote directly on the reorganization plan.

Foreign banks = Percentage of the total banking assets that are held by foreign banks. A foreign bank is a bank where 50 percent or more of its shares are owned by foreigners.

Bank Z score = Captures the probability of default of a country's commercial banking system. Z-score compares the buffer of a country's commercial banking system (capitalization and returns) with the volatility of those returns.

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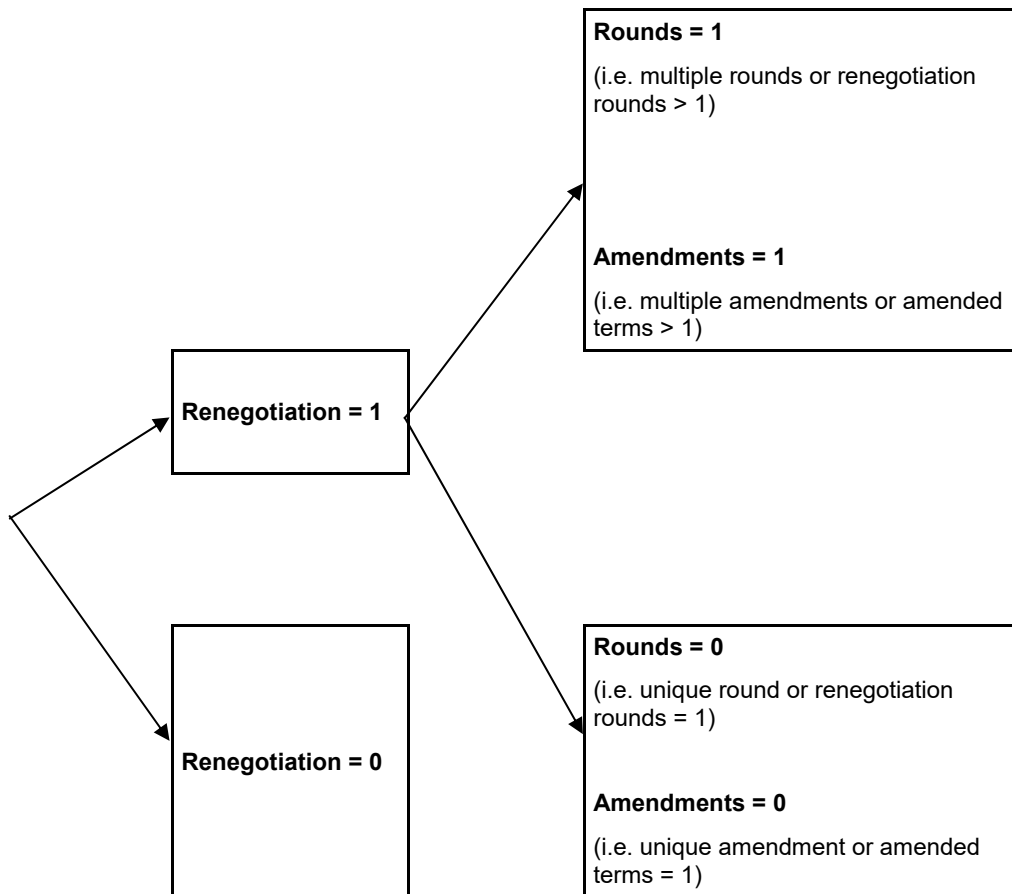


Figure 1 Sequential logit

This figure illustrates the sequential logit approach to renegotiation decision, dynamics and scope (variables are defined in appendix B).

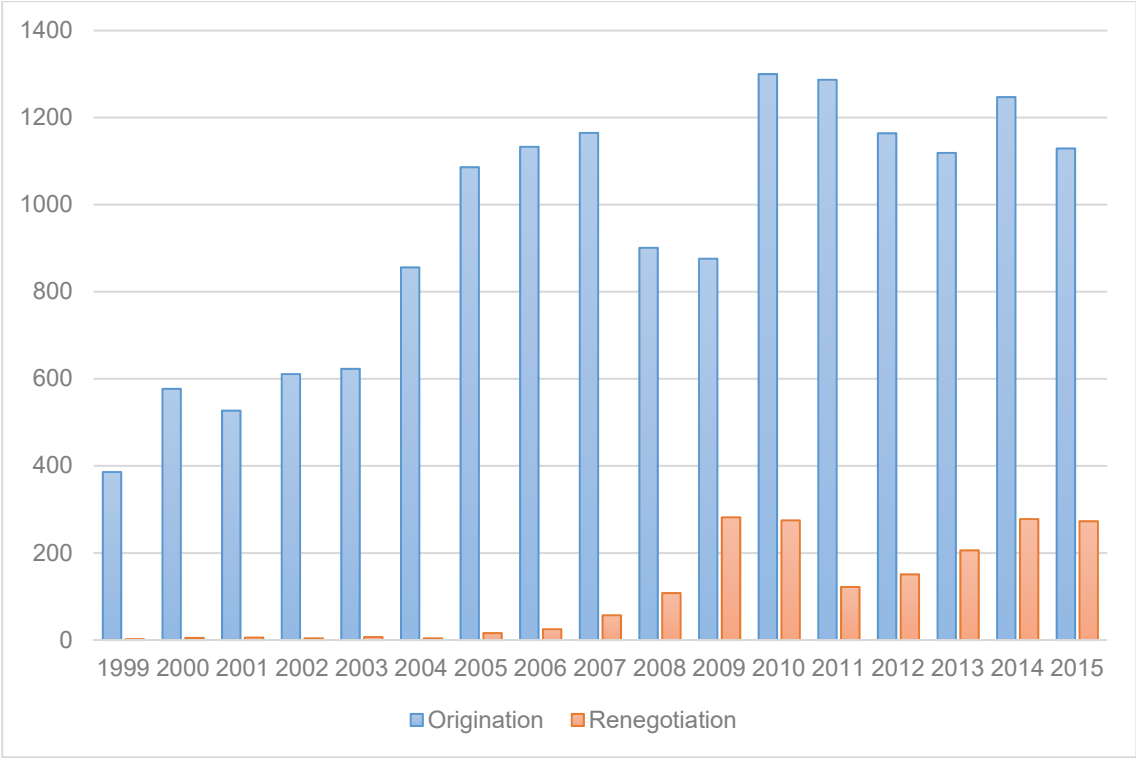


Figure 2 Sample composition by year

This figure provides the distribution of the number of loan facilities (originated and renegotiated) by year.

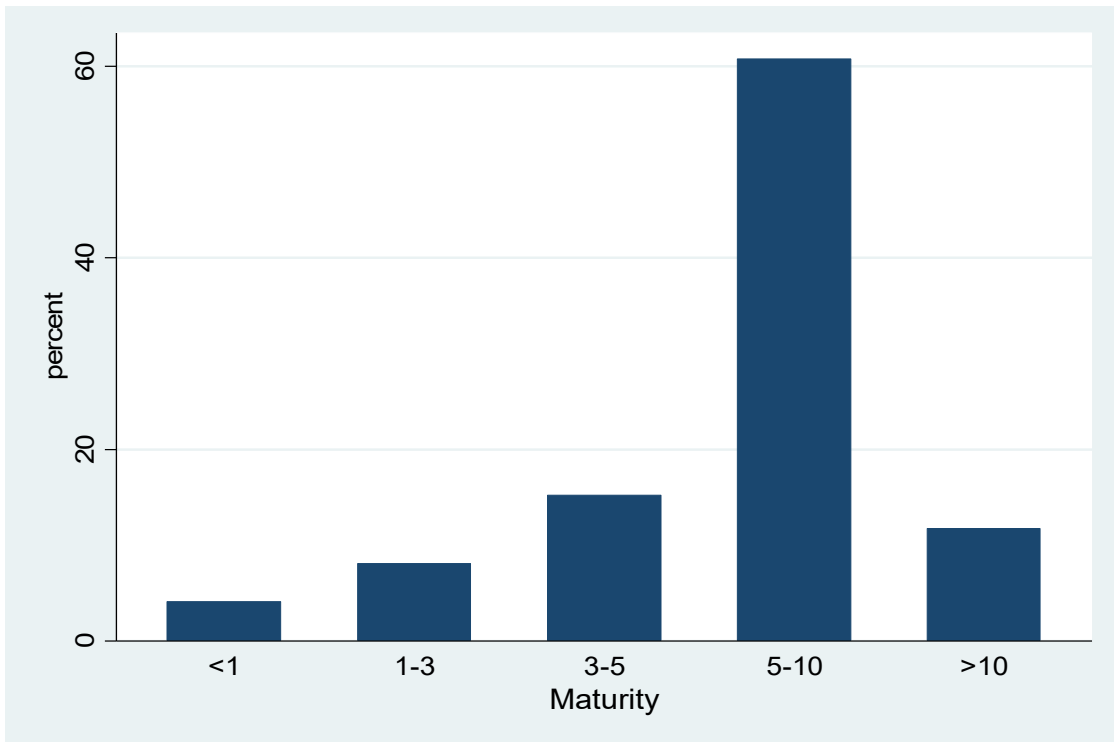


Figure 3 Sample composition by loan maturity at origination

This figure shows the distribution of the loans by initial maturity by brackets (in years).

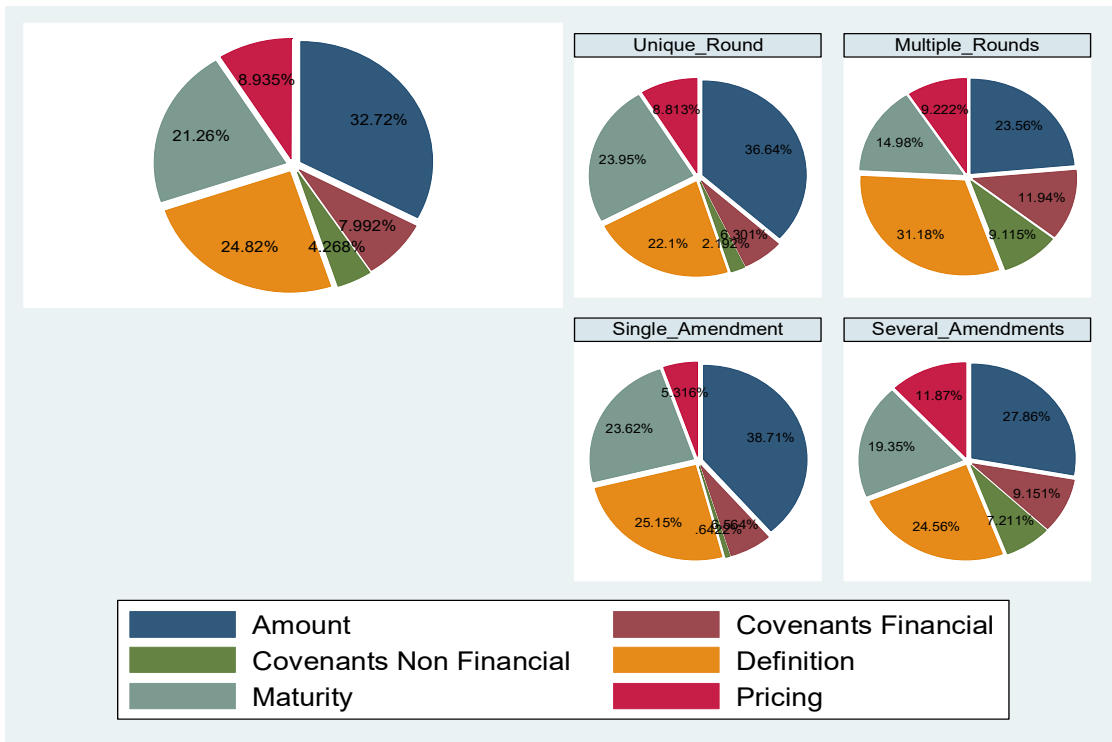


Figure 4 Amended terms

This figure presents the breakdown of amended loan characteristics following renegotiation for the sample of amended contracts and by renegotiation dynamics (*Rounds*) and renegotiation scope (*Amendments*). 30% of renegotiations involve multiple rounds and 55% of renegotiations involve several amendments. Amended terms are described in appendix A.

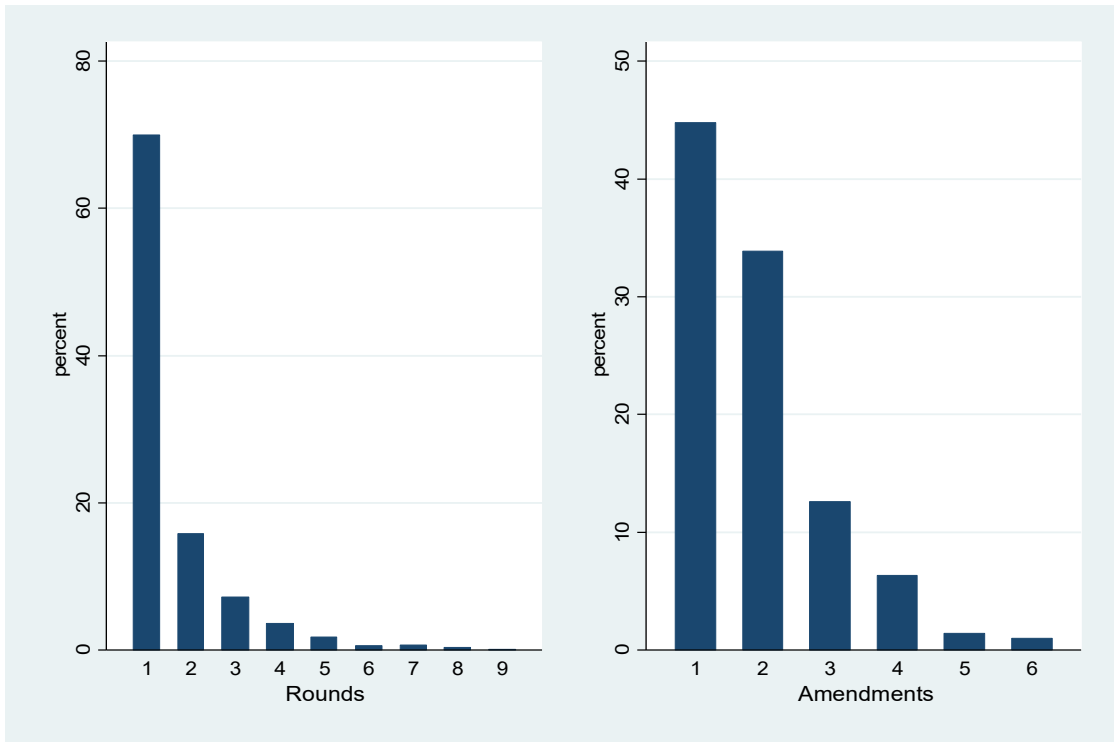


Figure 5 Renegotiation dynamics and scope

The left figure presents the distribution of renegotiation rounds. For instance, 15.85% of the amended loans involve 2 rounds. The right figure presents the distribution of amended terms. For instance, 12.60% of the amended loans involve amending three loan terms.

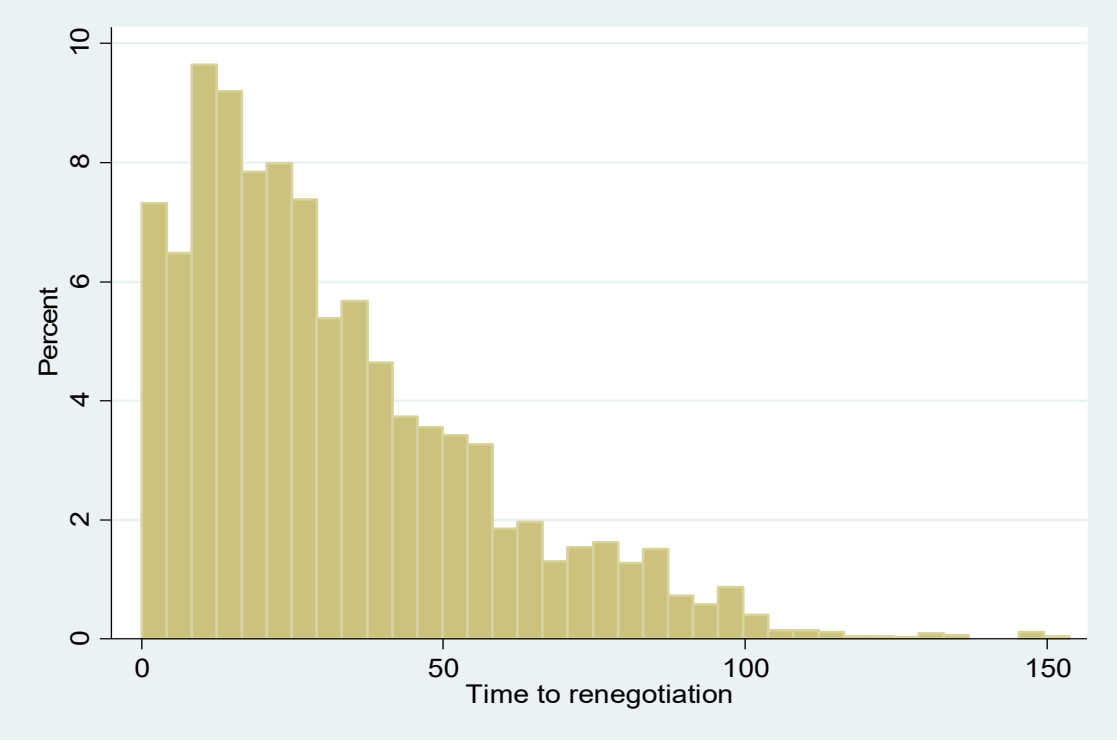


Figure 6 Time to renegotiation

This figure shows the histogram of the time elapsed from loan origination to renegotiation (measured in months).

Table 1 Sample composition by country

This table presents the number of loans, companies and average percent of renegotiated loans by borrower country.

Country	Loans	Companies	Renegotiation
AUSTRIA	112	69	16,92%
BELGIUM	287	164	18,11%
BULGARIA	47	35	3,30%
CROATIA	36	20	6,12%
CYPRUS	27	15	31,71%
CZECH REPUBLIC	105	78	14,35%
DENMARK	166	78	13,77%
ESTONIA	24	12	31,25%
FINLAND	325	133	14,58%
FRANCE	1984	1054	14,31%
GERMANY	1766	986	20,03%
GREECE	184	118	3,04%
HUNGARY	77	45	25,00%
IRELAND	224	131	21,97%
ITALY	1033	663	9,62%
LATVIA	11	8	35,71%
LUXEMBOURG	376	226	43,88%
NETHERLANDS	1119	604	26,82%
NORWAY	495	284	21,48%
POLAND	242	143	10,44%
PORTUGAL	130	86	0,92%
RUSSIAN FEDERATION	452	222	23,88%
SLOVENIA	45	25	2,86%
SPAIN	1685	1006	11,09%
SWEDEN	470	194	14,54%
SWITZERLAND	499	206	21,28%
TURKEY	183	133	2,61%
UKRAINE	51	38	13,43%
UNITED KINGDOM	3676	1947	21,10%

Table 2a Renegotiation variables: descriptive statistics and univariate analysis

Panel A provides descriptive statistics for variables related to renegotiation for the whole sample and by *Rounds* and by *Amendments*, along with mean t-test statistics (30% of renegotiations involve multiple rounds and 55% of renegotiations involve several amendments.). Panel B shows the breakdown of renegotiation packages in details. x means that a specific loan term was amended. For instance, amending simultaneously the loan amount and maturity occurs in 10.04% of the renegotiations.

Panel A

Variable	Mean	SD	Rounds			Amendments		
			=1	>1	T-test	=1	>1	T-test
Renegotiation	0.18	0.39						
N. Rounds	1.58	1.14				1.37	1.74	(-13.12)***
N. Amendments	1.89	1.05	1.73	2.25	(-18.57)***			
Change to amount (\$mln)	-35.93	770.80	-16.29	-107.11	(2.20)*	-50.73	-19.29	(-0.92)
<i>Amount increased</i>	0.51	0.50	0.53	0.46	(2.84)**	0.48	0.54	(-2.58)**
Change to maturity (m.)	17.25	50.00	16.72	19.22	(-0.74)	15.96	18.53	(-0.93)
<i>Maturity extended</i>	0.79	0.40	0.79	0.80	(-0.41)	0.90	0.73	(9.11)***
Time to renegotiation	32.09	24.79	27.46	42.81	(-23.37)***	30.15	33.66	(-5.55)***
Time to renegotiation / Maturity	0.42	0.34	0.38	0.51	(-14.35)***	0.40	0.43	(-2.96)**

Panel B

Maturity	Definition	Covenants Financial	Covenants Non Financial	Pricing	Amount	Percent
					x	19,91%
	x					12,94%
x						12,15%
x					x	10,04%
	x				x	8,09%
		x				3,38%
	x	x	x			2,97%
				x		2,73%
x				x	x	2,39%
x	x				x	2,02%
	x	x	x		x	2,00%

Table 2b Explanatory variables: descriptive statistics

Panel A provides descriptive statistics for all explanatory variables (definitions are provided in appendix B). Panel B shows the breakdown of the sample by borrower industry sector, loan purpose, loan type, and loan currency.

Panel A

Variable	Mean	SD	Median
<i>Loan</i>			
Amount	1 861.15	34 401.44	300.00
Maturity	6.41	4.01	5.95
Covenants	0.09	0.28	0.00
Secured	0.40	0.49	0.00
Amount outstanding	4.73	53.41	0.44
Previous issues	3.80	3.27	3.00
<i>Lenders pool</i>			
Lenders	9.24	11.85	6.00
League	0.19	0.39	0.00
Relationship	0.12	0.33	0.00
Same country	0.28	0.45	0.00
<i>Firm</i>			
Listed	0.47	0.50	0.00
Borrower rated	0.12	0.32	0.00
Sales	4 835.52	8 295.17	1 128.00
Debt / Equity	1.40	1.73	0.79
Current ratio	0.01	0.01	0.01
Operating margin	0.11	0.13	0.09
<i>Lender (lead)</i>			
Lender rated	0.16	0.37	0.00
Total assets	1 200.00	798.00	1 030.00
Book value	0.39	0.35	0.26
TCE ratio	0.04	0.02	0.03
LLR / Loans	0.02	0.01	0.02
RoE	0.10	0.08	0.11
Loans / Assets	0.41	0.14	0.40
<i>Country (borrower)</i>			
Renegotiation failure	0.39	0.15	0.45
Priority	3.33	0.76	4.00
Creditors recover	0.61	0.20	0.56
Private credit	113.53	39.03	107.39
Domestic private debt	33.16	23.57	29.22
International private debt	64.23	37.97	55.33
Stock market	86.87	44.58	77.91
Volatility of stock	20.26	7.87	19.08
Bank concentration	78.04	15.13	78.71
Foreign banks	118.82	190.08	74.24
Bank Z score	11.41	5.33	10.87

Panel B

Borrower industry sector	Loan purpose	Loan type	Loan currency
Basic Materials	Acquisition	Term	EUR
Communications	General corporate purposes	Revolving	GBP
Consumer, Cyclic	LBO		USD

Consumer, Non-cyclical	16,65%	Project finance	7,00%
Diversified	18,92%	Debt refinancing	25,00%
Energy	15,74%	Working capital	5,00%
Industrial	17,26%		
Technology	23,16%		
Utilities	11,24%		

Table 3 Renegotiation process: loan and lenders pool determinants

This table presents estimated coefficients and standard errors, clustered at the loan facility level (in parentheses) from sequential logit regressions. Reneg., Rounds, and Amend. correspond to the renegotiation decision (= 1 if a loan is renegotiated (0 otherwise), first sequence), the renegotiation rounds decision (= 1 if a loan is renegotiated multiple times (i.e. more than once) (0 otherwise), second sequence) or the renegotiation scope decision (= 1 if several characteristics of the initial loan contract are amended (i.e. more than one) (0 otherwise), second sequence). Figure 1 illustrates the sequential logit approach. All variables are described in appendix B. All regressions include control variables for main loan currencies (USD and GBP), loan type (term), loan purposes (acquisition, general corporate, LBO, project finance, debt refinancing, working capital), year, borrower industry sector and country. *, **, and *** indicate a statistically significant coefficient at the 10%, 5%, and 1% confidence level.

	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
Amount (log)	0.2549*** (0.05)	0.1131 (0.07)	-0.0017 (0.05)	0.1775*** (0.06)	0.0000 (0.08)	-0.0014 (0.07)	0.1610*** (0.06)	0.0083 (0.08)	0.0018 (0.07)
Maturity	0.0624*** (0.01)	0.0457 (0.03)	0.0328 (0.03)	0.0532*** (0.02)	0.0330 (0.04)	0.0271 (0.03)	0.0653*** (0.02)	0.0362 (0.04)	0.0299 (0.03)
Covenants	1.5003*** (0.15)	0.9266*** (0.20)	0.4484** (0.20)	1.6484*** (0.16)	0.8768*** (0.22)	0.5934*** (0.23)	1.5372*** (0.16)	0.8301*** (0.22)	0.5870** (0.23)
Secured	0.6803*** (0.10)	0.7187*** (0.17)	0.2535 (0.16)	0.6249*** (0.11)	0.6199*** (0.19)	0.0261 (0.18)	0.6834*** (0.11)	0.6569*** (0.19)	0.0325 (0.18)
Amount outstanding (log)	-0.1833*** (0.05)	0.0383 (0.07)	-0.0328 (0.05)	-0.1824*** (0.05)	0.1160 (0.08)	-0.0759 (0.06)	-0.2039*** (0.05)	0.0935 (0.08)	-0.0905 (0.06)
Previous issues	0.0559** (0.02)	0.0113 (0.02)	0.0336 (0.03)	0.0458* (0.02)	-0.0284 (0.03)	0.0246 (0.03)	0.0542** (0.02)	-0.0270 (0.03)	0.0214 (0.03)
Lenders				0.0467*** (0.01)	0.0200** (0.01)	0.0077 (0.01)	0.0448*** (0.01)	0.0179** (0.01)	0.0061 (0.01)
League				0.3848*** (0.13)	0.1271 (0.23)	-0.2691 (0.22)	0.3681*** (0.13)	0.1649 (0.22)	-0.2447 (0.22)
Relationship				-0.3007* (0.16)	0.5840** (0.24)	0.1881 (0.24)	-0.3523** (0.16)	0.6307*** (0.24)	0.2025 (0.24)
Same country				-0.1000 (0.14)	-0.3375 (0.23)	0.1062 (0.23)	-0.0742 (0.14)	-0.2864 (0.23)	0.1321 (0.23)
Listed							0.6593*** (0.12)	-0.0617 (0.20)	-0.2296 (0.18)
Borrower rated							0.2494 (0.17)	0.4683** (0.22)	0.5353** (0.23)
Lender rated							0.1573 (0.15)	-0.4305 (0.28)	-0.1232 (0.23)
Facilities		10480			6699			6699	
Chi2		599.39			480.91			525.11	
Log. L.		-11936.30			-8614.25			-8497.28	

Table 4 Renegotiation process: borrower and lender determinants

This table presents estimated coefficients and standard errors, clustered at the loan facility level (in parentheses) from sequential logit regressions. Renegotiation, Rounds, and Amendments correspond to the renegotiation decision (= 1 if a loan is renegotiated (0 otherwise), first sequence), the renegotiation rounds decision (= 1 if a loan is renegotiated multiple times (i.e. more than once) (0 otherwise), second sequence) or the renegotiation scope decision (= 1 if several characteristics of the initial loan contract are amended (i.e. more than one) (0 otherwise), second sequence). Figure 1 illustrates the sequential logit approach. All variables are described in appendix B. All regressions include control variables for main loan currencies (USD and GBP), loan type (term), loan purposes (acquisition, general corporate, LBO, project finance, debt refinancing, working capital), year, borrower industry sector and country. *, **, and *** indicate a statistically significant coefficient at the 10%, 5%, and 1% confidence level.

	Renegotiation	Rounds	Amendments	Renegotiation	Rounds	Amendments
Sales (log)	-0.0297 (0.04)	0.0301 (0.06)	-0.0604 (0.06)			
Debt / Equity	-0.0422 (0.04)	-0.0269 (0.06)	0.0314 (0.08)			
Current ratio	8.5872 (8.75)	-11.2140 (13.57)	-9.8865 (15.84)			
Operating margin	0.5483 (0.55)	-0.8866 (0.80)	1.0655 (1.02)			
Total assets (log)				0.0556 (0.11)	0.2176 (0.20)	-0.0083 (0.19)
Book value				-0.0956 (0.20)	-0.3570 (0.27)	-0.1818 (0.31)
TCE ratio				13.5743** (5.83)	31.8057*** (9.91)	24.6119*** (9.31)
LLR / Loans				-3.0478 (5.73)	-5.6084 (9.22)	24.2640** (9.53)
RoE				0.5802 (1.00)	-0.3319 (1.58)	0.2783 (1.73)
Loans / Assets				-1.7495*** (0.64)	-1.6181 (1.13)	-1.8857* (1.02)
Loan variables		Yes			Yes	
Lenders pool variables		Yes			Yes	
Listed & Rating dummies		Yes			Yes	
Facilities		3068			5218	
Chi2		314.37			473.42	
Log. L.		-4342.19			-7061.01	

Table 5 Renegotiation process: country determinants

This table presents estimated coefficients and standard errors, clustered at the loan facility level (in parentheses) from sequential logit regressions. Renegotiation, Rounds, and Amendments correspond to the renegotiation decision (= 1 if a loan is renegotiated (0 otherwise), first sequence), the renegotiation rounds decision (= 1 if a loan is renegotiated multiple times (i.e. more than once) (0 otherwise), second sequence) or the renegotiation scope decision (= 1 if several characteristics of the initial loan contract are amended (i.e. more than one) (0 otherwise), second sequence). Figure 1 illustrates the sequential logit approach. All variables are described in appendix B. All regressions include control variables for main loan currencies (USD and GBP), loan type (term), loan purposes (acquisition, general corporate, LBO, project finance, debt refinancing, working capital), year, borrower industry sector and country. *, **, and *** indicate a statistically significant coefficient at the 10%, 5%, and 1% confidence level.

	Renegotiation	Rounds	Amendments	Renegotiation	Rounds	Amendments	Renegotiation	Rounds	Amendments
GDP growth	0.1569***	0.0554	-0.2325**	0.0697	-0.0768	-0.1441	0.0963**	0.0442	-0.0965
	(0.05)	(0.08)	(0.10)	(0.06)	(0.08)	(0.10)	(0.04)	(0.07)	(0.07)
Renegotiation failure	-1.3675***	-0.6135	0.3420						
	(0.49)	(0.82)	(0.75)						
Priority	0.1794	0.5016**	0.0825						
	(0.12)	(0.20)	(0.17)						
Creditors recovery	0.9792***	-0.2597	0.3952						
	(0.37)	(0.62)	(0.60)						
Private credit				-0.0084***	-0.0035	-0.0053			
				(0.00)	(0.00)	(0.00)			
Domestic private debt				-0.0033	0.0016	-0.0051			
				(0.00)	(0.01)	(0.01)			
International private debt				0.0110***	0.0096**	0.0064			
				(0.00)	(0.00)	(0.01)			
Stock market				0.0050**	0.0014	0.0027			
				(0.00)	(0.00)	(0.00)			
Volatility of stock				0.0042	-0.0446	-0.0446			
				(0.02)	(0.04)	(0.03)			
Bank concentration							0.0116**	0.0083	0.0021
							(0.01)	(0.01)	(0.01)
Foreign banks							0.0011***	-0.0002	0.0010*
							(0.00)	(0.00)	(0.00)

Bank Z score			-0.0075 (0.01)	0.0017 (0.02)	-0.0129 (0.02)
Loan variables	Yes	Yes		Yes	
Lenders pool variables	Yes	Yes		Yes	
Listed & Rating dummies	Yes	Yes		Yes	
Facilities	5005	4012		5655	
Chi2	357.75	369.74		468.84	
Log. L.	-5704.98	-5445.59		-7831.98	

Table 6 Robustness checks: contractual frictions

This table presents estimated coefficients and standard errors, clustered at the loan facility level (in parentheses) from sequential logit regressions. Robustness checks concern credit contracts with specific initial conditions: no covenants, no collateral, no term loans, with few lenders (less than the sample median equal to 6), no previous relationship, no borrower rating. Reneg., Rounds, and Amend. correspond to the renegotiation decision (= 1 if a loan is renegotiated (0 otherwise), first sequence), the renegotiation rounds decision (= 1 if a loan is renegotiated multiple times (i.e. more than once) (0 otherwise), second sequence) or the renegotiation scope decision (= 1 if several characteristics of the initial loan contract are amended (i.e. more than one) (0 otherwise), second sequence). Figure 1 illustrates the sequential logit approach. All variables are described in appendix B. All regressions include control variables for main loan currencies (USD and GBP), loan type (term, except in "No term loans" specification), loan purposes (acquisition, general corporate, LBO, project finance, debt refinancing, working capital), year, borrower industry sector and country. *, **, and *** indicate a statistically significant coefficient at the 10%, 5%, and 1% confidence level.

Panel A

	No covenants			No collateral			No term loans		
	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
Amount (log)	0.3241*** (0.08)	0.1468 (0.11)	0.0832 (0.10)	0.2154*** (0.07)	0.1637 (0.16)	0.1807 (0.12)	0.0586 (0.07)	0.1109 (0.13)	0.0491 (0.09)
Maturity	0.0506*** (0.02)	0.0353 (0.05)	0.0192 (0.04)	0.0754*** (0.02)	0.1223*** (0.04)	-0.0022 (0.05)	0.1049*** (0.02)	0.1058** (0.04)	0.1069*** (0.04)
Covenants				1.1138*** (0.19)	0.6044** (0.27)	-0.2973 (0.28)	1.2857*** (0.16)	0.9922*** (0.28)	0.0894 (0.23)
Secured	0.8719*** (0.13)	0.7188*** (0.24)	0.0349 (0.20)				0.9789*** (0.14)	0.5746** (0.24)	0.2534 (0.20)
Amount outstanding (log)	-0.1989*** (0.06)	-0.0950 (0.10)	-0.1712** (0.08)	-0.1971*** (0.06)	-0.0961 (0.16)	-0.1616 (0.10)	-0.1443** (0.07)	-0.0694 (0.12)	-0.1359* (0.08)
Previous issues	0.0426 (0.03)	0.0131 (0.04)	0.0046 (0.04)	0.0734*** (0.02)	-0.0007 (0.04)	0.0158 (0.04)	-0.0051 (0.03)	0.0347 (0.04)	0.0108 (0.04)
Lenders	0.0468*** (0.01)	0.0462*** (0.01)	0.0098 (0.01)	0.0398*** (0.01)	0.0256*** (0.01)	0.0227** (0.01)	0.0430*** (0.01)	-0.0035 (0.01)	0.0155* (0.01)
League	0.1732 (0.14)	0.1764 (0.28)	-0.3855 (0.26)	0.2202 (0.16)	0.6992** (0.29)	0.1405 (0.28)	0.2398* (0.14)	-0.1087 (0.29)	-0.1527 (0.24)
Relationship	-0.3137* (0.18)	0.2228 (0.35)	0.1601 (0.27)	-0.3108* (0.18)	-0.1896 (0.34)	-0.1074 (0.31)	-0.1458 (0.16)	0.5885* (0.30)	-0.1706 (0.26)
Same country	0.0427 (0.13)	-0.3465 (0.26)	0.0376 (0.24)	0.0266 (0.15)	-0.0536 (0.29)	0.0956 (0.25)	-0.0180 (0.14)	-0.3005 (0.26)	-0.0723 (0.23)
Listed	0.4389*** (0.13)	0.2605 (0.22)	-0.3006 (0.21)	0.4478*** (0.15)	-0.0252 (0.26)	0.1967 (0.25)	0.5232*** (0.13)	-0.0105 (0.25)	-0.1342 (0.21)
Borrower rated	0.3057* (0.17)	0.5466** (0.26)	0.7687*** (0.25)	0.1735 (0.19)	0.2075 (0.32)	0.4478* (0.27)	0.2792* (0.17)	0.5162* (0.28)	0.3366 (0.24)
Lender rated	0.0076 (0.12)	-0.5921** (0.27)	0.3191 (0.22)	-0.0015 (0.15)	-0.6622* (0.40)	0.2295 (0.30)	-0.1676 (0.14)	-0.6181* (0.33)	0.3489 (0.23)
Facilities		6261			4442			4610	
Chi2		279.67			227.11			372.47	
Log. L.		-7229.53			-4045.81			-3707.16	

Panel B

	Few lenders			No relationship			No borrower rating		
	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
Amount (log)	0.2572*** (0.09)	0.1070 (0.20)	0.0906 (0.26)	0.2466*** (0.06)	0.0856 (0.09)	0.0654 (0.07)	0.2088*** (0.07)	-0.0335 (0.09)	0.1222 (0.08)
Maturity	-0.0080 (0.03)	0.0297 (0.06)	0.0133 (0.06)	0.0436*** (0.01)	0.0785** (0.03)	0.0064 (0.04)	0.0396*** (0.01)	0.0784** (0.04)	0.0371 (0.04)
Covenants	1.4653*** (0.28)	1.0062** (0.40)	-0.0021 (0.45)	1.2440*** (0.16)	0.6729*** (0.21)	0.3190 (0.20)	1.3079*** (0.17)	0.9179*** (0.22)	0.4539** (0.22)
Secured	0.7614*** (0.21)	-0.2756 (0.36)	0.1567 (0.38)	0.8883*** (0.12)	0.5973*** (0.20)	0.2254 (0.18)	0.9136*** (0.12)	0.5616*** (0.20)	0.2224 (0.19)
Amount outstanding (log)	-0.1379* (0.08)	-0.1523 (0.19)	-0.1467 (0.24)	-0.2463*** (0.05)	-0.0094 (0.09)	-0.1344** (0.06)	-0.1822*** (0.05)	0.1051 (0.08)	-0.1710** (0.07)
Previous issues	-0.0208 (0.04)	-0.1163 (0.10)	-0.1940** (0.10)	0.0833*** (0.02)	0.0040 (0.03)	0.0189 (0.03)	0.0445* (0.03)	-0.0345 (0.03)	-0.0043 (0.03)
Lenders	0.2220*** (0.08)	-0.4265** (0.19)	-0.0531 (0.14)	0.0449*** (0.01)	0.0211** (0.01)	0.0094 (0.01)	0.0451*** (0.01)	0.0208** (0.01)	0.0079 (0.01)
League	0.3924 (0.24)	1.3561*** (0.43)	-0.7034 (0.45)	0.1817 (0.14)	0.2116 (0.24)	-0.4205* (0.24)	0.2773** (0.14)	0.0147 (0.26)	-0.3272 (0.25)
Relationship	-0.0024 (0.29)	0.3128 (0.44)	-0.4704 (0.47)				-0.2747 (0.18)	0.4835 (0.30)	0.1098 (0.29)
Same country	-0.0972 (0.22)	-0.1981 (0.45)	-0.3410 (0.43)	-0.0777 (0.13)	-0.0626 (0.22)	0.0656 (0.21)	-0.1771 (0.13)	-0.1348 (0.25)	0.1343 (0.22)
Listed	0.6629*** (0.22)	0.5909 (0.47)	-0.1056 (0.37)	0.4130*** (0.12)	-0.0245 (0.21)	-0.2984 (0.20)	0.5247*** (0.13)	-0.0695 (0.22)	-0.4910** (0.21)
Borrower rated	-0.1988 (0.46)	2.3310*** (0.82)	0.0140 (0.73)	0.3672** (0.18)	0.5652** (0.24)	0.5338** (0.23)			
Lender rated	-0.2174 (0.26)	-0.4734 (0.67)	0.6304 (0.45)	-0.0433 (0.12)	-0.6194** (0.25)	0.0997 (0.22)	0.0106 (0.13)	-0.3138 (0.26)	0.2949 (0.23)
Facilities		2971			5857			5993	
Chi2		192.96			332.06			310.54	
Log. L.		-2167.76			-7972.76			-7774.62	

Table 7 Robustness checks: maturity

This table presents estimated coefficients and standard errors, clustered at the loan facility level (in parentheses) from sequential logit regressions. Robustness checks concern maturity effects: excluding loans with maturity year equal to 2013 (largest proportion of loans within the 5-10 years' maturity range) and excluding loans maturing after 2015 (end of sample timespan). Panels A, B and C correspond to loan and lenders pool, borrower and lender, and country determinants respectively. Reneg., Rounds, and Amend. or Amendments correspond to the renegotiation decision (= 1 if a loan is renegotiated (0 otherwise), first sequence), the renegotiation rounds decision (= 1 if a loan is renegotiated multiple times (i.e. more than once) (0 otherwise), second sequence) or the renegotiation scope decision (= 1 if several characteristics of the initial loan contract are amended (i.e. more than one) (0 otherwise), second sequence). Figure 1 illustrates the sequential logit approach. All variables are described in appendix B. All regressions include control variables for main loan currencies (USD and GBP), loan type (term), loan purposes (acquisition, general corporate, LBO, project finance, debt refinancing, working capital), year, borrower industry sector and country. In Panel C no country fixed effects are included. *, **, and *** indicate a statistically significant coefficient at the 10%, 5%, and 1% confidence level.

Panel A

	Maturity 2013 excluded			Maturities > 2015 excluded		
	Reneg.	Rounds	Amendments	Reneg.	Rounds	Amendments
Amount (log)	0.2429*** (0.06)	0.0677 (0.09)	0.1031 (0.08)	-0.0955 (0.07)	0.0193 (0.07)	-0.0494 (0.07)
Maturity	0.0539*** (0.01)	0.0663* (0.03)	0.0125 (0.04)	0.0620** (0.03)	0.0282 (0.04)	0.0807* (0.05)
Covenants	1.1959*** (0.16)	0.7651*** (0.21)	0.2834 (0.21)	1.7202*** (0.16)	0.8011*** (0.22)	0.5215** (0.23)
Secured	0.8533*** (0.12)	0.6672*** (0.20)	0.1790 (0.18)	1.2086*** (0.14)	0.4982** (0.24)	0.3403 (0.23)
Amount outstanding (log)	-0.1825*** (0.05)	0.0235 (0.09)	-0.1329** (0.07)	-0.0110 (0.06)	0.0494 (0.07)	-0.0369 (0.06)
Previous issues	0.0358 (0.02)	-0.0221 (0.03)	0.0185 (0.03)	0.0259 (0.03)	0.0201 (0.03)	0.0141 (0.03)
Lenders	0.0482*** (0.01)	0.0207** (0.01)	0.0083 (0.01)	0.0258** (0.01)	0.0099* (0.01)	0.0103* (0.01)
League	0.2531* (0.13)	0.1748 (0.23)	-0.4140* (0.24)	0.4191** (0.17)	0.4145* (0.25)	0.0654 (0.27)
Relationship	-0.3522** (0.17)	0.6340** (0.26)	0.3857 (0.26)	-0.3601* (0.21)	0.4836* (0.25)	-0.3898 (0.29)
Same country	-0.0938 (0.13)	-0.1084 (0.22)	0.0540 (0.21)	-0.2889* (0.16)	0.0571 (0.27)	-0.2139 (0.26)
Listed	0.3816*** (0.12)	-0.0494 (0.21)	-0.3706* (0.21)	0.6470*** (0.17)	0.2680 (0.26)	-0.0195 (0.24)
Borrower rated	0.2763* (0.17)	0.5806*** (0.22)	0.6728*** (0.22)	0.0567 (0.25)	0.4058* (0.24)	0.4966 (0.31)
Lender rated	0.0272 (0.12)	-0.5296** (0.24)	0.1761 (0.20)	0.1346 (0.26)	0.8220** (0.40)	-0.1163 (0.40)
Facilities		6391			3528	
Chi2		390.49			416.09	
Log. L.		-8302.94			-4151.01	

Panel B

	Maturity 2013 excluded						Maturities > 2015 excluded					
	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
Sales (log)	-0.0036 (0.04)	0.0529 (0.06)	-0.0118 (0.06)			0.0262 (0.04)	0.0734 (0.06)	-0.0373 (0.06)				
Debt / Equity	-0.0749* (0.04)	-0.0282 (0.07)	-0.0516 (0.07)			-0.0614 (0.05)	-0.0794 (0.08)	-0.1072 (0.07)				
Current ratio	6.7574 (9.45)	-3.4994 (15.12)	-24.1060 (15.60)			-3.0848 (9.84)	-12.3513 (15.20)	-9.1270 (16.89)				
Operating margin	0.3670 (0.56)	-1.1002 (0.85)	0.8850 (0.93)			-0.0546 (0.64)	0.0873 (0.87)	1.6850 (1.05)				
Total assets (log)				0.3934*** (0.10)	-0.0602 (0.18)	-0.0764 (0.17)			0.0464 (0.14)	-0.1803 (0.26)	0.2081 (0.26)	
Book value				-0.2459 (0.20)	-0.4181 (0.29)	-0.1377 (0.32)			0.2334 (0.22)	0.2478 (0.29)	0.0640 (0.34)	
TCE ratio				10.1482** (4.63)	22.2200*** (7.87)	24.2677*** (7.89)			5.7234 (8.45)	44.2316*** (13.01)	40.2475*** (12.70)	
LLR / Loans				-1.8524 (5.02)	-2.7434 (9.60)	15.9187* (8.20)			8.1245 (8.01)	-3.7038 (14.23)	8.9388 (12.10)	
RoE				-1.7544** (0.85)	2.6237* (1.53)	0.2778 (1.44)			-0.4091 (1.01)	-0.8053 (1.42)	-1.5931 (1.65)	
Loans / Assets				-0.6604 (0.60)	-1.9456* (1.07)	-1.4904 (0.96)			-1.1079 (0.79)	-1.6614 (1.40)	-1.2411 (1.09)	
Loan variables		Yes		Yes			Yes			Yes		
Lenders pool variables		Yes		Yes			Yes			Yes		
Listed & Rating dummies		Yes		Yes			Yes			Yes		
Facilities		2877		4970			1764			2772		
Chi2		181.39		348.52			258.62			387.92		
Log. L.		-4274.67		-6758.89			-2579.82			-3534.04		

Panel C

Maturity 2013 excluded									
	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
GDP growth	0.0179 (0.03)	-0.0330 (0.05)	-0.0928* (0.05)	0.0976** (0.05)	-0.0910 (0.07)	-0.0626 (0.07)	0.0026 (0.02)	0.0287 (0.04)	-0.0396 (0.04)
Renegotiation failure	-1.3407*** (0.48)	0.4100 (0.78)	-0.2384 (0.77)						
Priority	0.1724 (0.11)	0.4593** (0.21)	-0.0707 (0.18)						
Creditors recovery	1.1693*** (0.37)	-0.8022 (0.65)	0.5512 (0.60)						
Private credit				-0.0074** (0.00)	-0.0041 (0.00)	-0.0051 (0.00)			
Domestic private debt				-0.0153*** (0.01)	-0.0016 (0.01)	-0.0160* (0.01)			
International private debt				0.0243*** (0.00)	0.0066 (0.00)	0.0118** (0.01)			
Stock market				-0.0007 (0.00)	0.0008 (0.00)	0.0006 (0.00)			
Volatility of stock				0.0180 (0.01)	-0.0520** (0.02)	-0.0163 (0.02)			
Bank concentration							0.0109** (0.01)	0.0021 (0.01)	-0.0030 (0.01)
Foreign bank							0.0017*** (0.00)	-0.0002 (0.00)	0.0006 (0.00)
Bank Z score							-0.0239* (0.01)	-0.0003 (0.02)	0.0057 (0.02)
Facilities		4770			3729			5348	
Chi2		309.49			322.37			380.06	
Log. L.		-5418.02			-4896.25			-7441.01	
Maturities > 2015 excluded									
GDP growth	0.0347 (0.04)	-0.0366 (0.04)	-0.0698 (0.06)	0.0727 (0.05)	-0.0386 (0.07)	-0.0767 (0.07)	0.0150 (0.03)	0.0304 (0.04)	-0.0298 (0.04)
Renegotiation failure	-0.0672 (0.61)	-1.5796 (1.01)	0.9952 (0.92)						
Priority	0.2921* (0.16)	-0.0371 (0.23)	0.0943 (0.28)						

Creditors recovery	-0.2118 (0.56)	0.4102 (0.83)	-0.3526 (0.86)					
Private credit				-0.0056 (0.00)	-0.0042 (0.00)	-0.0007 (0.00)		
Domestic private debt				-0.0048 (0.01)	0.0104** (0.01)	-0.0015 (0.01)		
International private debt				0.0113** (0.00)	0.0011 (0.00)	-0.0004 (0.01)		
Stock market				0.0009 (0.00)	-0.0014 (0.00)	0.0027 (0.00)		
Volatility of stock				0.0265** (0.01)	-0.0301 (0.02)	-0.0121 (0.02)		
Bank concentration							0.0057 (0.01)	-0.0063 (0.01)
Foreign bank							0.0013*** (0.00)	-0.0016*** (0.00)
Bank Z score							-0.0406** (0.02)	0.0189 (0.02)
Facilities		2566		3270			3480	
Chi2		347.85		401.46			414.32	
Log. L.		-2702.85		-3795.45			-4105.16	
<i>In all regressions:</i>								
Loan variables		Yes		Yes			Yes	
Lenders pool variables		Yes		Yes			Yes	
Listed & Rating dummies		Yes		Yes			Yes	

Table 8 Robustness checks: financial crises

This table presents estimated coefficients and standard errors, clustered at the loan facility level (in parentheses) from sequential logit regressions. Robustness checks concern financial crises effects: Credit crisis (period following October 2008) and Eurozone crisis (period following June 2010). Panels A, B and C correspond to loan and lenders pool, borrower and lender, and country determinants respectively. Reneg., Rounds, and Amend. or Amendments correspond to the renegotiation decision (= 1 if a loan is renegotiated (0 otherwise), first sequence), the renegotiation rounds decision (= 1 if a loan is renegotiated multiple times (i.e. more than once) (0 otherwise), second sequence) or the renegotiation scope decision (= 1 if several characteristics of the initial loan contract are amended (i.e. more than one) (0 otherwise), second sequence). Figure 1 illustrates the sequential logit approach. All variables are described in appendix B. All regressions include control variables for main loan currencies (USD and GBP), loan type (term), loan purposes (acquisition, general corporate, LBO, project finance, debt refinancing, working capital), year, borrower industry sector and country. In Panel C no country fixed effects are included. *, **, and *** indicate a statistically significant coefficient at the 10%, 5%, and 1% confidence level.

Panel A

	Credit crisis			Eurozone crisis		
	Reneg.	Rounds	Amendments	Reneg.	Rounds	Amendments
Amount (log)	0.2511*** (0.08)	0.2720** (0.13)	-0.0889 (0.12)	0.2645*** (0.07)	0.0442 (0.10)	0.0732 (0.08)
Maturity	0.0272 (0.02)	-0.0784 (0.06)	0.1190*** (0.04)	0.0469*** (0.02)	0.0713* (0.04)	0.0757** (0.04)
Covenants	1.3867*** (0.23)	1.1083*** (0.27)	0.2973 (0.29)	1.1322*** (0.18)	0.7719*** (0.24)	0.1406 (0.21)
Secured	0.5713*** (0.14)	0.5436** (0.24)	-0.2210 (0.22)	0.8185*** (0.12)	0.8431*** (0.22)	0.1108 (0.19)
Amount outstanding (log)	-0.1983*** (0.07)	-0.0352 (0.12)	-0.0200 (0.09)	-0.2222*** (0.06)	0.0179 (0.09)	-0.1356** (0.07)
Previous issues	0.0243 (0.03)	0.0317 (0.04)	0.0093 (0.04)	0.0450* (0.02)	-0.0143 (0.04)	-0.0296 (0.04)
Lenders	0.0377** (0.02)	0.0128 (0.01)	0.0144 (0.01)	0.0434*** (0.01)	0.0170 (0.01)	0.0236** (0.01)
League	0.1788 (0.16)	-0.2000 (0.32)	-0.1430 (0.26)	0.1411 (0.14)	0.1348 (0.27)	-0.2406 (0.24)
Relationship	-0.1220 (0.19)	0.8589*** (0.30)	0.6038** (0.28)	-0.2728 (0.18)	0.5470** (0.27)	0.2244 (0.26)
Same country	-0.2016 (0.16)	-0.6784** (0.31)	-0.2795 (0.27)	-0.1715 (0.13)	-0.3452 (0.26)	-0.2458 (0.22)
Listed	0.3765*** (0.14)	-0.4971** (0.24)	-0.0377 (0.21)	0.2706** (0.13)	-0.0174 (0.23)	-0.2993 (0.20)
Borrower rated	0.3536* (0.20)	0.6153** (0.27)	0.2125 (0.26)	0.3071* (0.18)	0.6096** (0.24)	0.4780** (0.23)
Lender rated	0.0770 (0.15)	-0.2876 (0.29)	0.0082 (0.25)	-0.0785 (0.12)	-0.4308* (0.24)	0.3819* (0.21)
Facilities		4762			5332	
Chi2		378.96			279.77	
Log. L.		-5662.51			-7295.95	

Panel B

	Credit crisis						Eurozone crisis					
	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
Sales (log)	0.0497 (0.05)	-0.0073 (0.07)	-0.1124 (0.08)				0.0573 (0.04)	0.0123 (0.06)	-0.0922 (0.06)			
Debt / Equity	-0.0492 (0.06)	0.1558* (0.08)	0.1721* (0.09)				-0.0750 (0.05)	-0.0086 (0.07)	0.0011 (0.07)			
Current ratio	12.6004 (10.01)	6.8038 (20.05)	-12.8500 (20.26)				7.8038 (10.34)	-7.3415 (17.58)	-6.7928 (17.74)			
Operating margin	0.8461 (0.66)	-3.3164** (1.34)	0.7654 (1.20)				0.2954 (0.63)	-1.6273* (0.94)	0.7708 (1.05)			
Total assets (log)				0.1367 (0.12)	-0.1648 (0.22)	-0.0376 (0.22)				0.2916*** (0.10)	-0.1040 (0.19)	-0.1618 (0.19)
Book value				-0.2383 (0.28)	0.0832 (0.46)	-0.7032 (0.47)				-0.3225 (0.21)	-0.2801 (0.35)	-0.3243 (0.36)
TCE ratio				5.9579 (6.72)	29.0037** (12.07)	2.1580 (11.07)				9.7674* (5.07)	19.5999** (8.28)	20.1439** (7.91)
LLR / Loans				-6.5127 (6.21)	-13.1732 (11.47)	13.0228 (10.18)				-3.4431 (5.36)	-8.8000 (9.92)	5.6809 (8.52)
RoE				0.3645 (1.20)	-1.5470 (1.94)	1.0078 (2.25)				-2.0073** (0.95)	0.6023 (1.73)	0.2706 (1.52)
Loans / Assets				-1.4063* (0.81)	-2.1537 (1.54)	-0.5020 (1.20)				-1.0780 (0.66)	-2.3351** (1.17)	-1.0343 (0.94)
Loan variables		Yes			Yes			Yes			Yes	
Lenders pool variables		Yes			Yes			Yes			Yes	
Listed & Rating dummies		Yes			Yes			Yes			Yes	
Facilities		2175			3673			2421			4166	
Chi2		221.35			326.90			154.29			268.17	
Log. L.		-2836.57			-4547.19			-3611.18			-5831.33	

Panel C

Credit crisis									
	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
GDP growth	0.1389***	0.1352	-0.0273	0.0893	0.0706	-0.1166	0.1019**	0.1533*	-0.0839
	(0.05)	(0.10)	(0.11)	(0.08)	(0.13)	(0.12)	(0.04)	(0.08)	(0.08)
Renegotiation failure	-1.1727**	0.1932	-0.0913						
	(0.57)	(0.89)	(1.00)						
Priority	0.2007	0.3521	0.1118						
	(0.14)	(0.25)	(0.22)						
Creditors recovery	0.9067**	0.0623	-0.1622						
	(0.42)	(0.70)	(0.71)						
Private credit				-0.0060	-0.0006	0.0004			
				(0.00)	(0.00)	(0.01)			
Domestic private debt				-0.0098*	-0.0040	-0.0222**			
				(0.01)	(0.01)	(0.01)			
International private debt				0.0134***	0.0156***	0.0116**			
				(0.00)	(0.01)	(0.01)			
Stock market				0.0060**	0.0011	-0.0070			
				(0.00)	(0.01)	(0.00)			
Volatility of stock				0.0205	0.0133	-0.0487			
				(0.03)	(0.05)	(0.04)			
Bank concentration							0.0088	0.0147	-0.0031
							(0.01)	(0.01)	(0.01)
Foreign bank							0.0011**	0.0006	0.0006
							(0.00)	(0.00)	(0.00)
Bank Z score							-0.0253	-0.0260	-0.0126
							(0.02)	(0.03)	(0.02)
Facilities		3634			2125			3742	
Chi2		264.79			250.50			318.75	
Log. L.		-3807.41			-2791.11			-5083.40	
Eurozone crisis									
	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.	Reneg.	Rounds	Amend.
GDP growth	0.0145	0.0719	-0.0987*	0.1271**	0.0107	-0.0758	0.0070	0.0809*	-0.0422
	(0.03)	(0.06)	(0.06)	(0.05)	(0.08)	(0.08)	(0.03)	(0.05)	(0.05)
Renegotiation failure	-1.1301**	-0.5643	-0.1276						
	(0.53)	(0.88)	(0.82)						
Priority	0.2892**	0.6703***	0.0428						
	(0.13)	(0.25)	(0.20)						

Creditors recovery	0.9902**	-0.8296	0.1530					
	(0.39)	(0.69)	(0.63)					
Private credit				-0.0094***	-0.0030	-0.0050		
				(0.00)	(0.00)	(0.01)		
Domestic private debt				-0.0207***	-0.0006	-0.0238***		
				(0.01)	(0.01)	(0.01)		
International private debt				0.0293***	0.0092**	0.0132**		
				(0.00)	(0.00)	(0.01)		
Stock market				-0.0002	0.0024	-0.0009		
				(0.00)	(0.00)	(0.00)		
Volatility of stock				0.0289**	-0.0437*	-0.0145		
				(0.01)	(0.02)	(0.02)		
Bank concentration							0.0106*	0.0006
							(0.01)	(0.01)
Foreign bank							0.0019***	0.0001
							(0.00)	(0.00)
Bank Z score							-0.0321**	-0.0139
							(0.01)	(0.02)
Facilities		4017		2693			4301	
Chi2		242.87		261.78			276.72	
Log. L.		-4710.09		-3944.38			-6435.21	
<i>In all regressions:</i>								
Loan variables		Yes		Yes			Yes	
Lenders pool variables		Yes		Yes			Yes	
Listed & Rating dummies		Yes		Yes			Yes	