

# **Do Banks Charge Information Rent in Lending Relationships? Cross-Country Evidence**

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## **Abstract**

The paper examines the impact of lending relationships on loan contract terms using a sample of 6500 loans from 40 countries. We find that relationship lending on average leads to higher interest rate, lower collateral requirement, and shorter loan maturity for our sample of international borrowers. However, we also show that there is significant variation across countries regarding the benefits and costs of banking relationships, which can be explained by countries' legal and regulatory environments. Stronger creditor rights and higher disclosure requirements can significantly increase the benefits of relationship lending. Borrowers in countries with well enforced creditor rights and strict disclosure regulations actually pay lower interest rate on relationship loans.

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## **I. Introduction**

The question whether it is beneficial for firms to engage in lending relationships has generated continuous interest in the literature. Some recent evidences suggest that at least for public firms in U.S., relationship lending seems to be able to lower the cost of the loan for the borrower (for example, see Bharath et al., 2011; and Schenone, 2010). One explanation for these findings is that relationship lending can reduce the information asymmetry between the lender and the borrower, which leads to lower cost for the lender. Then as long as the relationship lender is willing to share part of the benefits with the borrower, it will also reduce the loan costs for the borrower as well (Boot and Thakor, 1994).

However, it is not clear whether relationship lending can always lead to such benefits.

An alternative theory initiated by Sharpe (1990) argues that there is also a lock-in effect associate with relationship lending, which is caused by the adverse selection problem exist between outside lenders and the borrower. Such "lock-in" effect can induce relationship lender to extract economic rent in the form of higher interest rate. The argument is supported by some evidences using loans originated by private held borrowers (Petersen and Rajan (1994), Degryse and Van Cayseele (2000), and Schenone, 2010).

Even for public firms, it remains an open question whether the empirical evidences extend beyond the results for U.S. firms. Compare to most other countries, U.S firms have the advantage of having access to well-developed financial markets as well as strict disclosure requirements that lower the information asymmetry between relationship lenders and non-lenders. In addition, prospective lenders in U.S. are also protected by well enforced legal system that supports creditor rights, which can lead to higher incentives for risk taking (Houston, Lin, Lin, and Ma, 2010). All these institutional factors can lead to stronger competition from outside lenders for the borrower despite the adverse selection problem (already low due to disclosure regulation), which can force the relationship lender to share the benefits of the relationship with the borrower. However, not all countries have the same developments in legal and institutional environments as in U.S. In countries where creditor rights are less protected and law enforcement is poor, outside lenders may be more cautious and refrain from taking risks on firms with serious adverse selection problems. The adverse selection problem between the relationship borrower and prospective lenders is also more serious in countries where disclosure requirements are low, as less credible information about the borrower is available to outsider lenders. All these factors can deter competition and lead to hold-up problems in which relationship banks charge monopoly economic rents on the borrower in the form of higher interest rate.

In this paper, we explore whether there is a variation across countries regarding the impact of relationship lending on loan contract terms. We conjecture that a country's institutional factors such as creditor right protection and disclosure regulations can play an important role in determining the costs and benefits of relationship lending beyond what can be explained by borrower's firm level characteristics. We expect that to the extent where a country's legal regimes and disclosure regulations can foster competition, relationship lending will be beneficial to the borrower. In contrast, in countries where competition is less supported by the legal and regulatory regimes, relationship lending may become more costly. In addition to institutional characters, we also investigate whether a country's level of capital market development and its banking system structure can offer additional explanatory power.

To date, cross-country evidence on the effects of relationship lending on loan contract terms has been limited. Using data from 20 European countries, Ongena and Smith (2000) find that firms

in countries with strong creditor rights choose to borrow from a smaller number of banks; however they do not examine the value of the banking relationship. Degryse and Van Cayseele (2000) examine the value of banking relationship in a non-U.S. setting and find that the length of the relationship is associated with higher interest rate, however their study only focus on one country, Belgium.

Using a broader set of sample that includes 6524 syndicated loans conducted from 40 countries, our paper is the first to investigate the link between countries' institutional characteristics and the value of relationship lending. We find that a country's level of disclosure requirement and creditor right protection has significant impact on whether or not entrenched bank in relationship loans charge information rent. In countries where creditor right protection is low, borrowers in relationship lending are more likely to get stuck in the "locked-in" effect and pay hold-up costs in the form of higher interest rate. As the countries' level of creditor right protection increase, relationship lending becomes more beneficial. We find a similar relation between country's disclosure requirement and relationship lending. In countries with low disclosure requirement, borrowers of relationship loans pay higher interest than cost on non-relationship loans. As the disclosure regulation of the country becomes more stringent, borrowers in relationship loans begin to pay lower interest rate and relationship lending eventually becomes beneficial.

We also employ a propensity score matching (PSM) approach to control for the endogeneity issue in relationship loan studies and to examine the various determinants of the relationship lending's impact on loan cost. We find that while firm level variables such as size and profitability significantly affect the interest rate premium (or discount) paid on relationship loans versus non-relationship loans, firm characteristics alone cannot explain the variations in the difference in interest rate across-countries. We show that countries' legal regimes and institutions offer significant additional explanation power on top of firm and industry variables. Borrowers in relationship loans pay an interest rate premium in countries where creditor right protection is weak and disclosure requirement is low. The interest premium decreases as countries' creditor right and disclosure regulation strengthens and eventually becomes discount in countries with stringent creditor right protection and disclosure regulation.

In addition, we find that the country's institutional characteristics also affect the impact of firm level opacity on the benefits and costs of relationship lending. In countries with weak institutions, higher firm level information opacity is related to higher interest rate paid on relationship loans. However, in countries with strong legal environments, higher firm level information opacity actually leads to lower interest rate on relationship loans. The result is consistent with the hypothesis that information opacity increases the potential benefits of relationship lending when such relationship is beneficial but can cause higher adverse selection problem when hold-up problem exist.

Lastly, we study the impact of relationship lending on non-price terms of the loan (loan maturity and collateral). We find that consistent with the idea that lending-relationships lower the information asymmetry between the lender and borrower; relationship loans are less likely to require collateral. The difference in collateral requirement between relationship loans and non-relationship loans is more significant in countries with high creditor rights. We believe this is due to the reason that collateral is more effective in countries with better creditor rights protection and thus are used more by non-relationship loans. We also find that relationship loans are associated with shorter loan maturity, which is consistent with the idea that relationship lending lowers the monitoring costs for the lender, which give them more incentives to use shorter maturity loans.

Our paper makes several contributions to the literature. First, our paper extends the research in banking relationship and the value of relationship lending. Our study is the first to examine the value of relationship lending in a cross-country setting and to provide evidence on the existence of information rent for public firms in countries with less strict disclosure requirements and creditor right protection. Second, our paper adds to the law and finance literature by further demonstrating the significant impact of legal, regulatory, and institutional environments on the costs and benefits of lending relationships, which has not been extensively examined before.

The remainder of the paper proceeds as follows. Section II discusses related literature and the main hypothesis of the paper. Section III describes the data. Section IV reports the main results on loan interests. Section V examines non-price loan contract terms. Section VI discusses the

robustness tests, and Section VII concludes this paper.

## **II. Related Literature and Hypothesis Development**

### *A. Existing Theories on the Value of Relationship Lending*

There are two prevailing theories regarding the benefits and costs of relationship lending on loan contracts. The first one is proposed by Boot and Thakor (1994), who argue that loan interest rate should decrease as banking relationship intensifies. Since relationship lending reduces information asymmetry between the lender and the borrower, it can also reduce the cost of monitoring and providing loans for the relationship lenders. The authors argue that as long as the relationship lender is willing to share part of the savings with the borrower, it will reduce the loan costs for the borrower as well.

Recent empirical studies on syndicated loans of U.S. public firms provide support to this argument. Using relationship measures based on past loans with the lender, Bharath et al. (2011) find that relationship lending provides significant benefits to U.S. public borrowers, both in the form of lower interest rate and lower collateral requirements. The authors also find that firm level information opacity significantly increase the benefits of relationship lending. Examining interest rate on syndicated loans by firms before and after IPO, Schenone (2010) also find that interest rate is lower on relationship loans after the borrower went public.

However, alternative theory proposed by Sharpe (1990) and Greenbaum, Kanatas, and Venezia (1989) argues that relationship lending can lead to an unexpected hold-up problems by the relationship bank. The authors explain that as relationship between the lender and the borrower deepens, the lender will be able to acquire proprietary information about the borrower which will increase the asymmetric information between the lending bank and other outside prospective lenders. The information advantage can lead to adverse selection problem for the borrower when it's seeking financing from alternative lending banks. As a result, when outside competition is low, the relationship lender may be able to charge the borrower monopoly rent in the form of higher interest rate.

The empirical evidences on the two theories are mixed when studies examine the problem using loans originated by small, private held borrowers. Using loans granted to small businesses and loan maturity as a measure of the length of lending relationship, Petersen and Rajan (1994) find that relationship length has no relationship to lending costs. Degryse and Van Cayseele (2000) find that interest rate actually increase with relationship length, which provide support to the lock-in effect of relationship lending. In contrast, Berger and Udell (1995) find that firms in longer relationships pay lower interest rate. More recently, Schenone (2010) find that relationship lenders extract economic rent in the form of higher interest rate on borrowers before they go public.

### *B. Hypothesis on the Impact of Country Legal and Institution*

We hypothesize that development in a country's level of creditor rights protection and disclosure requirement can significantly increases the value of lending relationships. In this section, we provide detailed discussion on their potential effects on the benefits and costs of relationship lending.

#### *B.1 Creditor Rights*

Following LLSV (1998), we use the creditor right index to measure the level of creditor right protection in a country. The index consists of four conditions with a value of 1 added to the index for each condition that holds: (1) Secured creditors gain possession of assets once the petition for reorganization receives approval (i.e., there is no automatic stay on creditors' ability to seize collateral); (2) secured creditors are ranked first in the distribution of proceeds in case of liquidation; (3) there are restrictions such as creditors' consent for going into reorganization; and (4) (incumbent) management does not stay in control of the firm during the reorganization.

In our paper, we hypothesize that creditor rights can have an indirect and yet positive impact on the value of lending relationship. Research has shown that stronger creditor right is associated with both creditors' willingness to grant credit (DMS, 2007) and banks' appetite of risk taking (Houston et al., 2010). More specifically, in countries with better creditor right protection, lenders are more likely to recover collateral, force repayment, or even gain control of the debtor in the case of financial distress (Houston et al., 2010). Such actions will increase the recovery

rate for banks during the case of default, and as a result increases the banks' risk tolerance. With higher tolerance for default rate, we should expect lenders to be more willingly to lend to riskier borrowers.

In the case of relationship lending, when borrowers in an existing relationship seek to switch lenders, outside creditors faces additional risks due to the adverse selection problem. Relationship borrowers who cannot overcome this adverse selection problem will be forced to stay with the existing relationship lender, who may take advantage of the situation to charge information rent. Besides reducing the information asymmetry between the relationship lender and outside creditors, one way to mitigate the impact of the adverse selection risk is to increase the margin of error for outside lenders and lower their expected loss in case of a default. Since stronger creditor rights lead to higher asset recovery rate, we expect outside lenders to show a greater tolerance for adverse selection risk as the consequence of misjudgment becomes less severe. As a result, more borrowers will have the option to opt-out of their existing relationship when it's not satisfactory, which will increase the competition for the relationship lender and drive down potential hold-up costs. Similarly, we also expect the "lock-in" effect to be the most severe in countries with weak creditor rights protection.

On additional factor that need to be considered is the legal enforcement in the country. Creditor rights alone are not effective if they cannot be faithfully enforced. We use the Rule of Law index from La Porta et al. (1997) to capture the law enforcement tradition in a country. The index is from 1 to 10, with 10 being the strongest and 1 being the weakest. Following Ongene and Smith (2000), we combine the creditor rights index and the rule of index by multiple them together. The new index allows us to measure the true effective protection of creditor rights in a country.

## *B.2 Disclosure Regulation*

As we discussed earlier, information asymmetry between the borrower and non-lenders can have significant impact on the benefits and costs of having a lending relationship. When non-lenders believe that relationship lender holds significant more information about the borrower than what's available to out-side lenders, the relationship borrower will face significant adverse selection problem when seeking alternative lenders.

One way to solve this problem is to simply reduce the information asymmetry between the firm and outside lenders. However, disclosure by the borrower can only be effective if such disclosure is credible and not self-serving (see, Hail and Leuz, 2005; and Verrecchia, 2001). Without a reliable way to show commitment, investors may treat any voluntary disclosure with suspicion since firms may have incentives to manipulate or withhold information in certain situations, e.g. when performance is poor or risk is high.

Based on these reasons, we conjecture that country level disclosure regulations will play an important role in determining the costs and benefits of relationship lending beyond that can be explained by firm level information available. Effective disclosure regulations bind firms to provide a certain level of information in both good and bad times, which can be credibly used by outside lenders to evaluate the borrower and reduce information asymmetry between prospective lenders and the relationship lender. In addition to its impact on information asymmetry, disclosure regulations can also increase the usefulness of capital markets for securities and reduce cost of capital (Hail and Leuz, 2005). Easier access to capital markets can provide alternative financing to the borrower and drive up competition for the relationship lender.

There is also a potential negative impact of disclosure requirement on the benefits that can be gained through relationship lending. If information asymmetry between relationship lender and prospective creditors are too low due to disclosure regulations, the lender will not be able to gain significant savings from the relationship and will not be able to share as much with the borrower. However, we believe this problem with disclosure regulation is limited as it only exists in countries where relationship banking is already beneficial. In addition, Bharath et al. (2011) also show that even in countries with high disclosure requirement like U.S., there are still sufficient firm level information asymmetry left for banks to gain benefits from the relationship.

Following Hail and Leuz (2005), we use the prospectus disclosure requirement index from La Porta et al. (2005) as our proxy for the level of a country's disclosure requirement. While it is more related to stock market than accounting statement disclosure, the index allows us to effectively capture the *regulation* rather than voluntary disclosure practice.

### **III. Data and Summary Statistics**

#### *A. Data and Relationship Intensity Measure*

We obtain our syndicate loan data from the Dealscan database by the Loan Pricing Corporation (LPC). LPC provides detailed information on loan coverage goes back to 1980s. For loans greater than \$100,000, Dealscan reports the structure of the lending syndicate and the identity of the syndicate members, as well as loan characteristics such as interest rates (basis point spread over LIBOR rate, including all fees), collateral requirement, the loan amount, and time to maturity. However, Dealscan coverage on international firms is sparse until mid of 1990s. To reduce sample selection bias, our sample covers loans by international firms from 1995 to 2007.

While Dealscan provides detailed data on the loan information, it does not have information about the borrowers' characteristics. To obtain the information, we manually match the names of the borrowers with company names from Worldscope. Through Worldscope, we are able to collect borrower's balance sheet and income statement financial information such as firm size, profitability, leverage, and asset tangibility. We are also able to extract the borrower's primary SIC code and drop loans to firms who are in the financial (SIC 6) and public industry (SIC 9) since they are more likely to be influenced by government and may have different risk characteristics from other type of borrowers. Bank mergers can affect a pre-existing lending relationship. To control for the mergers and acquisition activities in the banking sector, we construct a chronology of banking M&A using hand-matching data from SDC Platinum mergers and acquisition database and searching through Lexis-Nexis.

To measure a borrower's strength of relationship with the lending bank, we follow Schenone (2010) and Bharath, Dahiya, Saunders, and Srinivasan (2011) and use two measures that based on the past loans the firm had borrowed from the same lead banker. The first one calculates the number of loans that the firm has borrowed from its lead lender as a proportion of the total loans the firm has borrowed. More specifically, the measure is constructed as following:

For each firm  $i$  that borrows loan  $l$  from lead lender bank  $m$ , we first find all the loans that the firm has borrowed up to loan  $l$  since its first loan. Then we determine how many loans prior to loan  $l$  has the same lead lender  $m$  as loan  $l$ , we call it  $\text{Prior\_by\_Lead}$  following Schenone (2010).

By definition, Prior\_by\_Lead has a minimum number of 0 and a maximum number of l-1 and the total loan number range from 1 to l. The first relationship intensity measure Relation (Number) is then equal to:

$$\text{Relation}(\text{Number})_i = \frac{\text{Prior\_Loan\_Number\_by\_Lead}_{i,l}}{\text{Total\_Number\_of\_Loans\_to\_Date}_{i,l}}$$

A second and similar measure is based on the dollar amount of loans that the firm has borrowed from its lead lender as a proportion of the total dollar amount of loans the firm has borrowed. Again for loan l from bank m to firm i, the variable is constructed as:

$$\text{Relation}(\text{Amount})_i = \frac{\text{Prior\_Loan\_Amount\_by\_Lead}_{i,l}}{\text{Total\_Amount\_of\_Loans\_to\_Date}_{i,l}}$$

To define a bank as lead lender, we examine the Dealscan field that describes the lender's role in loan syndication. The field includes a number of descriptions such as "admin agent", "Lead Bank", "Arranger", "Bookrunner" etc. No consistent description or methodology has been used by LPC to design as lead lender. Hence, following previous literature (Dennis and Mullineaux (2000), Bharath, Dahiya, Saunders, and Srinivasan (2007)), we refer an institution as a lead lender if the bank's description includes one of the following: "agent" (Admin agent, Managing agent, and agent), "Arranger" (Lead arranger, Mandated arranger, Arranger), "Lead Bank", and "Bookrunner". Unlike previous literature that study U.S. firms, many of the loans in the sample include multiple lead bankers, out of 6524 loans, 1100 loans has more than one lead bank in the syndication. In the case where there are multiple lead bankers for a loan, we take the highest relationship measure from all the lead banks for the loan as our relationship intensity measure.

### *B. Summary Statistics*

Table I, panel A provides the distribution of loans by country as well as some key country level variables that capture the development of the country's private debt market. The key variable of our interest, the interest spread over LIBOR (reported in Dealscan as All-in-Drawn, referred in our paper as AISD), is missing in about half of our samples; thus we report both the number of the total sample of loans as well as number of loans with the All-in-Drawn variable. In total,

there are 6524 loans and 3225 of those have the interest spread information. The distribution of the number of loans across countries is consistent with previous research on international syndicated loans (see Qian and Strahan, 2007). Overall there is a great variation in the number of loans with the greatest concentration of loans in European and East Asian countries. Relationship loans accounts for slightly less than half of the total loans and there is no clear pattern as to what type of countries are more likely to have relationship loans. There is no clear bias towards any group of countries in the omission of interest spread in the sample loans except for Japan (the observation is clustered for Japan in the total sample, but not for samples with all-in-drawn variable). The reduction in sample size is also evenly distributed between relationship loans and non-relationship loans.

We also show the development of private bond market (measured as total bonds issued by private firms divided by GDP), creditor right protection, and bank concentration by the three largest banks in the country. Not surprisingly, European countries have the most developed private bond markets. We also find that European countries have the highest bank concentration, but the results are mostly driven by Scandinavian countries.

Panel B reports the loan and firm characteristics by country. Similar to loan number, both loan size and loan price vary significantly across countries. Firms in European countries in general are able to borrow larger amount of loans as well as pay a lower interest rate compare to other regions. The average loan size for European countries is 817 million while the average loan size for Asian and South American countries is 152 million and 227 million respectively. European countries only need to pay a spread of 73 basis points on average while Asian countries need to pay 103 basis points and South American countries need to pay 198 basis points. The differences, especially in loan size, can be partly explained by firm size. The borrowers in the top quartile firm size have an average loan size of 877 million versus 224 million for the other borrowers.

### *C. Univariate Analysis*

Table 2 reports the interest rate paid by borrowers in both relationship loans and non-relationship loans. We classify the borrowing firms to countries based on their countries' legal origin, level of disclosure requirement, public bond market development, creditor right protection, and

concentration in the banking sector. Schenone (2010) finds that for U.S. loans, banks tend to offer lower interest rate at the early stage of the lending relationship, but substantially increases the interest rate as the relationship deepens. To examine whether this also holds true for international firms, we further separate the relationship loans to two groups: loans with low relationship intensity, and loans with high relationship intensity.

Panel A classifies the firms according to whether they belong to a common law or civil law country following the classification of LLSV (1998). For both type of countries, we find that there is a significant U shape regarding the impact of the lending relationship intensity on the interest spread of the loan. For low value relationship intensity loans, the borrowers in common law countries on average pay 23.38 basis points lower than non-relationship loans; however as relationship intensity increases, the borrowers start to pay higher and higher interest rate. The average interest spread on high value relationship intensity loans for common countries is 14.10 basis point higher than low intensity relationship loans. The U shape pattern also exists for borrowers from civil law countries. The borrowers pay 14.45 basis points lower when they start their lending relationship; but as the relationship deepens, the reduction in interest spread increases by 14.10 basis points. One significant difference between civil law and common law countries is the spread difference between non-relationship loans and high relationship loans. While relationship loans with high intensity seems to still offer benefits, though reduced, to borrowers in common law countries, the benefits have largely disappeared for borrowers from civil law countries.

Panel B breaks the borrowing firms to countries with high disclosure requirement and countries with low disclosure requirement. We use the prospectus disclosure requirement index from La Porta et al. (2005) as measure of disclosure requirement, and we define countries as having a low disclosure requirement if its index is below the median (0.58). Similar to panel A, we find that there is a U shape pattern on the interest paid on relationship loans for borrowers from high disclosure requirement countries. Also high intensity relationship lenders still offer lower interest rate to borrowers compare to transaction loans. However, the U shape disappeared for borrowers from low disclosure requirement countries. It seems that relationship loans do not offer benefits to borrowers regardless of the relationship stage the firm is in.

In panel C, we classify firms into countries with well developed public bond market and countries with less developed bond market. A country's public bond market is considered well developed if its historical average dollar amount of private bond issued to GDP ratio is above the sample median, which is 0.24. The results suggest that in countries with less developed debt markets, relationship loans do not offer benefits to borrowers once the borrower is locked in with the lender.

In panel D, firms are groups based on the concentration of the banking industry of their countries. Ongena and Smith (2000) find that firms maintain more banking relationships in countries with un-concentrated banking sector. In this panel, we find that high intensity relationship loans with one single bank do not offer benefits to the borrower in countries with un-concentrated banking industry, while low intensity relationships do.

Finally, panel E classifies the firms into groups by the level of creditor protection of their countries. Similar to previous panels, there is a U shape relation exists between interest spread paid on loans and the relationship intensity between the lender and the borrower. We find no significant difference in pattern between high creditor protection countries and low creditor protection countries.

While the panels seem to provide a strong story that relationship lending initially decreases interest rate and then increases it, we also find that the intensity of relationship is strongly related to firm size. Larger firms are more likely to have low intensity relationship but are less likely to have no relationship or high relationship. Such effects will need to be controlled before we can make further conclusions.

## **IV. Main Empirical Results**

### *A. Baseline Model Results*

In this section we conduct a base-line regression to examine the impact of relationship intensity on loan interest spread controlling for various firm, loan and country specific factors. In addition,

we include interaction variables between the measure of relationship intensity and different country factors to investigate whether the impact vary by country characteristics. The following model is estimated using the individual loan data:

$$\text{AISD} = \beta_0 + \beta_1(\text{REL}) + \sum \beta_i(\text{REL} * \text{Country\_Characteristics}) + \sum \beta_i(\text{Loan\_Characteristics}) + \sum \beta_i(\text{Firm\_Characteristics}) + \sum \beta_i(\text{Country\_Characteristics}) + \gamma + \eta + \varepsilon$$

AISD is the interest spread over LIBOR on the drawn amount plus the annual fee in bps. Loan characteristics include the number of lenders in the syndicate, the log of the dollar amount of the loan, the log of loan maturity in months, indicators for loan type (revolver loan, term loan, or facility loan), indicators for loan purpose (debt repayment, takeovers, acquisitions, and LBO), and a dummy variable to show whether the loan is the first loan in a new lending relationship (switch lender). For firm characteristics, we control for firm size (log of firm asset in 2000 dollars), firm's tangibility defined as the ratio of property, plant, and equipment (PPE) to total assets, firm's profitability measured as last year's return on assets, and firm's ratio of total debt to total assets. We also control for whether the firm has an investment grade credit rating or not. However, one problem is that most of the firms in our sample do not have credit ratings. Thus to control for firm's risk, we also construct the Altman's Z-score for each firm, calculate as  $Z = 1.2 (\text{Working Capital}/\text{Total Assets}) + 1.4 (\text{Retained Earnings}/\text{Total Assets}) + 3.3 (\text{Earnings Before Interest and Taxes}/\text{Total Assets}) + 0.6 (\text{Market Value of Equity}/\text{Book Value of Liabilities}) + 0.999 (\text{Net Sales}/\text{Total Assets})$ . Following, we define a firm as low risk if it has Z-score above 2.675. For firms that do have enough information to calculate Z-score before the loan, we assign the value of 1 to a missing risk measure dummy variable.

Lastly, we control for a number of country characteristics. First we use the index of creditor right from La Porta et al. (1997) to measure the degree to which creditor rights are protected in a country. To also control for the enforceability of those laws, we use the interaction variable between the measure of creditor right and the rule of law index from La Porta et al. (1997) to better capture the true degree of protection. Second, we control for the disclosure requirement in the country to capture the amount of credible borrower's information available to outside investors and financial institutions. Information asymmetry between the borrower and non-

lenders can have significant impact on the benefits and costs of having a lending relationship. As discussed in section II, we use the prospectus disclosure requirement index from La Porta et al. (2005) as our proxy for disclosure regulations. In addition to creditor right protection and disclosure requirement, we also use two measures to control for the development of the security markets in a given country. The two measures used are the ratio of market value of private sector debt securities to GDP and ratio of the stock market capitalization to GDP. Both measures come from and we use the average ratios from 1995 to 2005 to control for bond market and stock market development for each country respectively.

We follow Ongena and Smith (2000) and control the degree of bank concentration within a country using the concentration ratio from Barth et al. (2007), defined to be the percentage of a country's commercial banking assets owned by its largest 3 banks. We also control for a range of country economic development indicators including the average inflation rate in the country, the log of average per capita GNP of the country, the risk of the country. To control for country's risk, we use the country risk index from International country risk guide (ICRG), which controls for economic, financial, and political risks. Lastly, research has shown that many of the variances in the institutional variables can be explained by the legal origin of the country. To take into account of this, we categorize our countries by their legal origin to French Law countries, German Law countries, Scandinavia Law countries, and Common Law countries.

Table 3 reports the initial results using the base line regression. Model 1 to 3 uses the relationship intensity measure based on the prior number of loans the borrower has conducted with the lender before. Model 4 to model 6 uses the measure based on the prior dollar amount of loans the firm has borrowed from the same lender. For brevity purpose, the indicator variables for loan purposes and types are not included.

In model 1 and 4 we only look at the firm and loan level characteristics while controlling for country, industry, and year fixed effects. Consistent with the idea that relationship banks can lock in their clients by acquiring information monopoly, we find that relationship intensity on average is positively and significantly related to interest spread for international firms, whose countries' institutional developments are typically weaker than U.S. On average, holding

everything else constant, a borrower that conducts 100% of its past loans with the same lender will on average pay 17 basis point more compare to a non-relationship loan.

In model 2 and 5 we include country level variables and their interaction terms with the relationship intensity measures to examine whether the benefits or costs of relationship lending varies by country. Similar to model 1, we find that the coefficient on relationship measurement is highly positive and significant. However, we also find that the impact of relationship intensity on interest spread decreases as the disclosure requirement and creditor right protection of the borrower's home country increases. This is consistent with the notion that as more credible information about the borrower becomes available to outside lenders and as the potential lenders become more protected in case things go wrong, the competition from outside lenders will increase and it is more difficult for relationship banks to hold-up their clients due to their information advantage. We also find that as the bond market in the country becomes more developed, relationship banking becomes more beneficial. The structure of the banking sector also has an impact, as the banking sector become more concentrated in a country, it reduces the higher costs associate with relationship banking. The result is consistent with the empirical finding of Ongena and Smith (2000) that firms maintain fewer banking relationships in countries with high banking concentration. In model 3 and 6 we include interaction variables between legal origins and relationship intensity in our model to control for any common correlation between the institutional variables. The results are essentially unchanged.

The other variables in the model are consistent with what we expect. We find that firms pay higher interest rate with larger loan amount and longer loan maturity. But the interest rate spread decreases as the number of lenders in the syndicated loans increases, probably because more risks are shared. For firm characteristics, we find that larger firms, firms with higher tangibility and profits pay lower interest rate while firms with higher leverage pay higher interest spread. We also find that firms of investment grade pay lower interest rate while firms with missing information pay higher interest rate. Some of the country characteristics also have an impact on the loan spread. Not surprisingly, firms in countries with high inflation rate pay higher interest rate. We also find that firms in high growth countries and countries with higher GNP per capita

pay lower interest rate. Similar to what Qian and Strahan (2007) show, we find that firms in non-common law countries typically pay lower interest rate on their loans.

Overall, the results in this section seems to provide initial evidence that the effect of banking relationship can vary significantly by country and seems to be generally associate with higher interest rate for public firms in countries with low disclosure requirement and weak creditor protection.

### *B. Propensity Score Matching Approach*

One serious problem with our base line regression model is that the choice of staying in a lending relationship and conducting a relationship loan is to a certain extend decided by the borrower and thus endogenous. Factors such as dollar amount of the loan, firm size or even country characteristics may affect the borrower's decision to take a relationship loan or not. In addition, the interaction variables we use in our model may not be adequate to capture all the factors that can affect the interest spread difference between a relationship loan and a non-relationship loan. To address these problems, we use a propensity score matching approach where we find a group of matching non-relationship loans for each relationship loan based on firm, loan, and country characteristics, and then we calculate the difference in interest rate spread between the relationship loan and the group of matching non-relationship loans.

To carry out the matching procedure, we first determine the propensity of a loan in the sample to be a relationship loan by estimating a logit model and calculating the predicted probability of being a relationship loan. More specifically, the logit model is as follows:

$$\begin{aligned} Prob (REL=1) = & \beta_0 + \sum \beta_i(\text{Loan\_Characteristics}) + \sum \beta_i(\text{Firm\_Characteristics}) \\ & + \sum \beta_i(\text{Country\_Characteristics}) + \gamma + \eta + \varepsilon \end{aligned}$$

where REL is a dummy variable that equals to 1 if the firm has borrowed from the same lender before. Loan characteristics include the dollar amount of the loan and indicator variables for loan type (term loan, revolver loan, and facility loan) and loan purpose (debt repay loan, acquisition, takeover, and LBO). Firm characteristics include firm's tangibility, profitability,

leverage, size, and firm's risk. Ideally we would like to estimate a separate logit model for each country; however, because the sample size of some countries is limited, we choose to include loans from all countries in one sample and controlling for country characteristics. The country characteristics we have in the model include legal origins, creditor rights of the country, the degree of bond market development and stock market development, disclosure requirement of the country, log of per capita GNP, average inflation rate, GDP growth rate, and country risk. We also include industry and year dummies.

We then use the coefficients from the logit regression to compute the probability of being a relationship loan for each loan in the sample and match each relationship loan with a group of non-relationship that has propensity scores close to the relationship loan. Two methods are used to select the matching loans. First method we use is the Nearest Neighbor method, in which we choose for each relationship loan, 5 non-relationship loans with the closest propensity scores. We then calculate the average interest spread for this 5 non-relationship loans as the matching interest rate to compare with the AISD on the relationship loan. To avoid the risk of bad matches, we set the tolerance level on the maximum propensity score distance (caliper) to 0.005. The second matching method is a kernel method in which we derive the matching interest rate estimator using a weighted average of non-relationship loans, with more weights given to the non-relationship loans that have the closest propensity score to the relationship loan. Two weighting kernels are used to derive the matching interest rate, GAUSSIAN and EPANECHNIKOV (only EPANECHNIKOV is reported in the paper, though results are similar). For the kernel estimators, we also specify a propensity score bandwidth that limits the sample of non-relationship loans to be used for comparison. Following Bharath et al. (2011), we pick the bandwidth to be 0.01.

Panel A in Table IV compares the firm and loan characteristics between the non-relationship loans and relationship loans. Not surprisingly, both the firm and loan characteristics between relationship loans and their matching non-relationship loans are very similar. The matching sample has slightly larger loan size compare to the relationship loan, but the difference is not statistically significant. We are also happy to find that the loan maturity between the two types of loans is very close. Since we did not include loan maturity in our propensity score matching

procedure, the similarity of this variable indicates that our matching procedure is able to capture loan characteristics beyond what's specified in the model.

Panel B in Table IV compares the differences in interest rate spread between the relationship loans and the matching non-relationship loans across different categories. In the first column, we break our relationship loans to loans made in high creditor right protection countries and loans made in low creditor right protection countries. A country is defined as having high creditor right protection if the creditor right \* Rule of Law variable is above 17, which is the median value in our sample countries. Consistent with our hypothesis, we find that the interest rate difference between relationship loans and non-relationship loans is positive and significant at 1% level in countries with high creditor right protection. The difference is negative and significant in countries with low creditor right protection, which is consistent with the findings of Bharath et al. (2011) that relationship lending seems to be beneficial for public firms in U.S., which has a high level of creditor right protection.

In the second column, we break the sample into countries with high disclosure requirement and countries with low disclosure requirement based on their prospectus disclosure requirement index. A country is considered as having high disclosure requirement if its index value is above the median of 0.58. Similar to our first column, we find that relationship loan borrowers pay significantly higher interest rate compare to non-relationship loans when the borrowing firm is located in countries with low disclosure requirement. The difference in interest rate has largely disappeared for relationship loans made in countries with high disclosure requirement.

In the last column of Panel B in Table IV, we categorize the relationship loans into loans with a high relationship intensity value and loans with a low relationship intensity value. A relationship loan is counted as high relationship intensity loan if the firm has borrowed more than 33% (our sample median) of its past loans from the same lead bank. We find that loans in the high relationship intensity category pay significantly higher interest rate than their non-relationship counterparts. However, loans in low relationship intensity category pay lower interest rate than their counterparts, though the difference is not statistically significant. The lower interest rate

may imply that banks may use lower interest rate to attract firms until the relationship bank is able to gain enough proprietary information about the borrower.

Panel C conducts formal multivariate regression to examine the determinants of difference in loan interest rate between relationship loans and non-relationship loans. The general model we use is as following:

$$\text{Difference in AISD} = \beta_0 + \beta_1(\text{REL}) + \sum \beta_i(\text{Country\_Characteristics}) + \sum \beta_i(\text{Loan\_Characteristics}) + \sum \beta_i(\text{Firm\_Characteristics}) + \gamma + \eta + \varepsilon$$

The dependent variable is the difference in interest rate between the relationship loan and the matching non-relationship loans. For the matching loans, the interest rate is calculated based on the estimating method used (Nearest Neighbor or EPANECHNIKOV). We include the same loan and firm variables as our base-line model. For our country variables, we include creditor right protection, disclosure regulation, bond and stock market development measures, bank concentration, legal origins, and log of GNP per capita.

For the first two models in panel C, we only include firm and loan characteristics along with industry and year fixed effects. On average, the coefficients on firm and loan characteristics are as expected. Relationship loans with longer maturity and larger loan amount pay higher interest rate than non-relationship loans as it may be more difficult to obtain the same loan terms from a non-relationship lender. The interest rate difference for borrowers with better profitability, higher tangibility, lower leverage, and larger firm size is smaller, which can be contributed to the fact that it's easier for better quality firms to obtain alternative financing, thus less likely to be locked in a relationship. On average, the firm and loan characteristics explain about 18% of the variation in the interest spread difference.

The next four models include country level variables as well as measures of relationship intensity. The inclusion of country level variables increases the adjusted R-square to 28%, a 56% increase over the firm and loan variables only models. And consistent with what we find in the base-line model, relationship loans made in countries with low creditor right protection and low disclosure

requirements pay significantly higher interest rate than the non-relationship loans. This difference in interest rate is both economically and statistically significant. For example, holding everything else constant and only considering creditor right protection, the interest rate difference between a relationship loan and a non-relationship loan in Argentina (which has an enforceable creditor right protection index of 5.35) will be about 30 basis points higher than the same interest rate difference paid by a relationship loan in United Kingdom (with an index value of 34.27). If we consider disclosure requirement only and hold everything else constant, the interest spread difference between relationship and non-relationship loan in Argentina (with a disclosure index of 0.5) will be about 50 basis point higher than the interest rate difference paid by the borrower in a similar relationship loan in United Kingdom (with an index value of 0.83). Adding the impact of Creditor right protection and disclosure requirement together, the spread difference between relationship loan and non-relationship loan will be 80 basis point higher in Argentina than in United Kingdom! These results suggest that institutional difference across countries have significant impact on competition from out-side lenders can effectively reduce or increase the economic rent extracted by relationship lenders.

Also similar to our base-line regression, we find that the degree of relationship intensity has a positive effect on the interest rate difference between a relationship loan and a non-relationship loan. The result is in contrast to what Bharath et al. (2011) find with U.S. firms, which show that interest rate decreases as relationship intensity increases. We believe that this difference is partly due to the fact that most of our sample is consisted of loans conducted in countries with low creditor right or disclosure requirements. In an unreported test, we include interaction variables between the degree of relationship intensity and country institutional variables; we find that the effect of relationship intensity on interest rate difference reverse in countries with high disclosure requirements and creditor right protection, and the coefficients are statistically significant.

Unlike our base-line regression, we do not find other country characteristics besides legal origins to have an impact on the interest rate difference between relationship loans and non-relationship loans. More specifically, both the proxy for bond market development in a country and banking sector concentration lose their significance. This is either due to the endogeneity correction of

the propensity score matching approach or the inclusion of other variables in explaining the interest rate difference.

Overall, the propensity score matching approach confirms the main findings of the base-line regression and show a significant impact by the degree of creditor right protection and disclosure requirement on the benefits of relationship lending for public firms.

### *C. Firm Level Information Opacity*

The results in last section show that the level of disclosure requirement and creditor right protection in a country can affect whether relationship lending is beneficial or not. We argue that higher disclosure requirement can increase the credible information available to outside lenders, which will reduce information asymmetry and increase competition. Similarly higher creditor right offers better protection to outside lenders and make them less risk averse, which will increase competition and thus reduce hold-up costs associate with relationship lending. In this section, we examine how our results are affected by firm level information opacity and whether the impact of firm level information opacity on interest rate difference between relationship loans and non-relationship loans vary by country level variables.

We are interested in firm level information opacity primarily for two reasons. First, firm level information opacity may be the primary driver behind our results regarding disclosure requirement. Our argument regarding disclosure requirement is that it serves as a commitment device that forces companies to disclose information in both good and bad times, which increase credible information available to investors and reduce information asymmetry (Bushee and Leuz, 2005). However, our results may simply capture the fact that companies in high disclosure requirement countries will have less firm level information asymmetry in general. While the difference is subtle, the latter effect sometimes can be achieved through other means (such as voluntary disclosure or analysts following) than country's institutional development. Thus it's in our interest to ensure that our results on the country's disclosure requirement are robust even after controlling for firm level information opacity.

The second reason we are interested in firm level information opacity is to study its impact on the benefits and costs of relationship lending. The effect of firm level information opacity on relationship lending can vary greatly depends on whether the benefits or the hold up costs of the relationship lending dominates. In countries where the lack of its legal institutions and regulations making relationship lending more costly to the borrower, we should expect lower firm level information opacity to help the borrowing firm overcome the lock-up effects associate with relationship lending and thus reduces interest spread. On the other hand, when country level institutional development foster competition from outside lenders and make relationship lending more beneficial to the borrower, relatively higher firm level information opacity can increase the potential benefits of relationship lending as it allows the relationship lender to generate more proprietary information and share the benefits with the borrower.

In this paper, we seek to empirically examine what is the average impact of firm level information opacity on our sample of loans from international firms, many of them from countries with weak institutional development. In addition, we investigate whether the effects of firm level information opacity varies with the level of creditor right protection and disclosure requirement in a country, which we have shown that can affect the benefits and costs of relationship lending.

We use two measures in our paper to capture firm level information asymmetry. The first measure is the standard deviation of analysts' earnings forecast following Krishnaswami and Subramaniam (1999), which is measured as the standard deviation of all earnings forecasts made in the 11<sup>th</sup> month of the fiscal year. We use the 11<sup>th</sup> month because O'brien and Bhushan (1990) and Lang, Lin, and Miller (2003) document that the analyst activities levels off after the 11<sup>th</sup> month. The higher the dispersion in analysts' forecast, the more information opacity the firm has since the disagreement indicates a lack of information about the firm. The second measure we use is the analyst forecast error in the year before the loan is borrowed. The variable is defined as the absolute value of the analyst forecast error (actual earnings minus the mean estimation of the earnings by analysts), deflated by stock price. The higher the forecast error, the higher the firm level information asymmetry. Again, following Lang, Lin, and Miller (2003), the earning

forecast is obtained for the 11<sup>th</sup> month of the fiscal year. All the analysts data is obtained from I/B/E/S.

Panel A of Table V provides initial results on the relation between firm level information opacity and the interest rate on relationship loans using the base-line regression. Consistent with our finding that relationship lending leads to higher interest rate for our sample of international loans, we also find that firm level information opacity compounds the information rent extraction problem. The coefficient on the interaction variable between relationship intensity and proxies for information asymmetry is always positive and significant. Holding everything else constant, firms with higher level of information opacity pay higher interest spread on their relationship loans in our sample. In addition, we also find that the inclusion of firm level information measure does not affect the coefficient on our country level information measure, which implies that country's legal institutions and disclosure regulations do play an important role in fostering competition and reduce the problem of information rent in relationship lending.

Panel B of Table V examines the effects of firm level information opacity on the interest rate difference between a relationship loan and its matching non-relationship loans obtained through propensity score matching. For brevity reason, only matching results that are calculated using the Nearest Neighbor method are reported, though the results are similar when using other matching estimates. We also only use the relationship intensity measure that is based on the number of past loans the firm has borrowed from the same lender. The results do not change regardless if we use the other measure of relation intensity or not.

The first two models in panel B provide similar results to what we find using the base-line regression model. Information opacity is positively and significantly related to the interest rate premium paid by relationship loans over non-relationship loans. And the impact of country's disclosure regulation on the differences in interest rate is not affected whether or not we include firm level information measures. Model 3 and Model 4 in the panel include interaction variables between firm level information opacity measure and the level of country's creditor right protection and disclosure requirement to examine whether the effect of firm level information asymmetry varies by country's legal institutional development.

Consistent with the hypothesis that firm level information opacity is positively related to interest rate when relationship lending leads to hold-up problem and negatively related to interest rate when relationship lending provides benefits to the borrower, we find that the positive impact of information asymmetry on interest rate differences decreases as country's disclosure regulation and creditor right protection becomes more developed. The results further corroborate our earlier findings that the development of country's disclosure regulation and legal creditor right protection can foster competition and lead to more beneficial relationship lending.

## **V. Results on Non-price Terms of Loan Contract**

### *A. Collateral Requirement*

In this section, we focus on non-price terms of the loan contract and investigate what impact does relationship lending has on the collateral requirement of the loan in a cross-country setting. Bharath et al. (2011) argue that since relationship lending is related with increased monitoring and lower information asymmetry between the lender and the borrower, it reduces both the adverse selection (as proposed by Bester, 1985; Besanko and Thakor, 1987) and the moral hazard (see Holmstrom and Tirole, 1997; Stulz and Johnson, 1985; Boot, Thakor, and Udell, 1991) motivations behind requiring collaterals in loan contracts. Consistent with this argument, Bharath et al. (2011) find that relationship lending is associated with lower probability of pledging collateral for a loan for U.S. companies.

In this paper, we propose that the effect of banking relationship on loan collateral requirement may also vary with country characteristics, particularly with each country's level of creditor right protection. Let's consider the adverse selection motivation behind collateral requirement first. To the extent that there is a need for low credit risk borrowers to signal their quality and pledging collateral is an effective way to do, relationship lending can reduce this collateral requirement as the adverse selection problem between the relationship lender and borrower is mitigated. However, when creditor rights protection is low, it reduces the effectiveness of collateral as a way for signaling (as documented by Qian and Strahan, 2007). As a result, the *difference in need* to use collateral between a non-relationship borrower with an adverse selection problem and a

relationship borrower without one is also diminished. A similar argument can be applied to the moral hazard theory. The benefits of do not need (or less requirement) to use collateral associated with relationship lending is only significant when pledging collateral is effective and thus demanded by the lender. Since collateral is more effective and useful in countries with high creditor right protection, the benefits of relationship lending on collateral requirement should also be more significant in those countries.

We test our hypothesis in table VI. A probit model is used to examine the likelihood of pledging collateral. In all four models, the dependent variable is a dummy variable that equals to 1 if the loan was secured and 0 otherwise. The independent variables are the same as we used in our base-line regression, for brevity reasons, only selected variables are reported. Since the information on whether collateral is required is limited for our sample of international loans, we only use 1523 loan observations in our full model regression.

The first two models are estimated using all the observations where collateral information is available. Consistent with the idea that relationship lending reduces the need for collateral, we find that the coefficients on relationship intensity measures are negative though insignificant. More importantly, we find that the coefficient on the interaction variable between creditor rights and relationship intensity is negative and significant at 5% level. The results support our argument that the benefits of relationship lending on collateral requirement is most shown in countries where creditor right protection is high and collateral is more useful.

Similar to the problem in our interest rate regression, the choice of whether to engage in relationship loan is endogenous and need to be adjusted. We again using the propensity score matching method to select matching non-relationship loans for our relationship loans. For each relationship loan, one matching non-relationship loan is selected based on which one has the closest propensity score. To prevent bad matches, we set the tolerance level to 0.001 and each non-relationship loan can only be matched once. We are able to find a match non-relationship loan for 988 relationship loans, out of which 320 loans with their matching loans have collateral data (which give us a total sample of 640 loans).

The regression results using the matched sample are reported in the last two models in table VI. Similar to the first two models, we find that the coefficients on relationship intensity measures are negative though insignificant, but the coefficient on the interaction variable between creditor right and relationship intensity is positive and significant (at 10% level). In all four models, we find the coefficient on the interaction variable between disclosure regulation and relationship intensity to be not significant. The results on other control variables are largely as expected. We find larger firms and firms with more profitability are less likely to use collateral, while firms with high leverage are more likely. The results are consistent with past research like Bharath et al. (2011).

### *B. Loan Maturity*

Relationship lending can also have an impact on loan maturity. Bharath et al. (2011) propose that there are conflicting effects on loan maturity caused by the reduction in information asymmetry between the relationship lender and the borrower. From the demand side, on one hand, reduced information asymmetry in relationship lending eliminates the need for borrowers to use short term loans to signal quality. On the other hand, less information asymmetry also reduces the refinancing risks, which makes short term loans more appealing to borrowers. From the supply side, relationship lending makes short term loan more appealing to lenders since the monitoring cost is lower. Examining this question empirically, Bharath et al. (2011) find that for U.S. public firms, loan maturity becomes significantly shorter as the relationship between borrower and the lender deepens.

It is not clear how the impact of relationship lending on loan maturity will differ in a cross-country settings. In countries where well functioning legal regimes and institutions are absent, short term maturity loans have already been used by lenders as an alternative to collateral (since they are relatively ineffective) to mitigate loan risks (Diamond, 2004). This may imply that as lending relationship reduces information asymmetry and increases monitoring, part of the need for short term maturity loans by lenders in countries with weak creditor right protection will be reduced. However, relationship lending still increases incentives to using shorter term maturity loans both for demand side (reduced refinancing risks) and for supply side (lower monitoring costs) regardless of differences in countries' legal institutions.

In this section, we empirically investigate the impact of relationship intensity on loan maturity. Similar to our loan collateral studies, we use both the full sample and the reduced sample that only consists of relationship loans and their matching relationship loans (1976 loans or 988 pairs from 36 countries). The dependent variable in our model is the log of loan maturity in months and the independent variables are the same as in our base-line regression without the loan maturity variable.

The results are reported in Table VII. The first two models are estimated using the full sample. Consistent with the findings of Bharath et al. (2011), we find that relationship intensity measures are related to shorter loan maturities and the relation is significant at 5% level. The coefficients on the interaction variables between relationship measures and disclosure regulation/creditor right protection are insignificant. The results on relationship intensity measures are very similar in the last models where we use the propensity score matching sample. The coefficient is significant and negative at 1% for relationship measure based on past number of loans that borrowed from the lender and the coefficient is 10% significant for the measure based on past dollar amount of loans from the same lender. However, unlike our full sample results, we also find that relationship lending shortens loan maturity less in countries with weak creditor right protection, which is significant at 5% level. This is consistent with the argument relationship lending reduces information asymmetry between borrower and lender and removes the need for lenders to use short term loan maturity to mitigate risk in countries with weak legal regimes and well-developed institutions.

## **VI. Robustness Checks**

In this section, we extend our analysis to examine whether our results are robust to changes in sample compositions, model specification, and estimation procedures. First, our main institutional variables of interest—disclosure regulation from La Porta et al. (2005) is measured at the end of 2000, and yet our sample covers the longer period from 1995 to 2007. While researches have shown that country's legal regimes and institutions tend to stay relatively stable over time, some countries may still have experienced changes in their disclosure requirements

through this period. For example, many European countries adopted mandatory international accounting standard (IFRS) reporting around 2005, which may have increased the country's disclosure environment. To ensure our results are not affected by changes in legal environments, we rerun our main regressions using shorter time periods (e.g. one is from 1998 to 2002), our results stay mainly unchanged.

Second, we find that there is a clustering of observations for Japan (for the loan maturity regression) and U.K. (for the interest rate regression). To ensure our results are not driven by any one particular country, we re-estimate our loan maturity model with Japan removed our interest rates model with U.K. removed. We find that our results are not significantly affected after the removal of these two countries.

Third, while we find that our results on disclosure regulation is not affected by firm level measure of information opacity, it may be driven by the fact that firms in high disclosure regulation countries will also have high voluntary disclosure, which may not necessarily correlated with our measure of firm level information opacity since it's analysts based. To test for this, we also include the CIFAR index from Bushman et al. (2004), which is a country level data that captures voluntary disclosure practice. We find that while the CIFAR index is significant, disclosure regulation still has significant impact on the benefits of relationship lending.

Lastly, we include firm fixed effects to our model. We do not include firm fixed effect model initially because our main interests are the country level legal and institutional variables, which have little time variation and are also constant for firms within the same country. In addition, relatively few firms in our sample have more than one loan. Nonetheless we re-estimate our base-line model with firm fixed effects to control for potential firm level omitted variables. We find that the results on our main interaction variable between relationship intensity and country level variables remain qualitatively similar.

## **VII. Conclusion**

This paper examines the impact of country level legal and institutional characteristics on the benefits of relationship lending. We find that country level variables have significant explanatory power on the effects of banking relationships beyond what can be explained by firm level characteristics. More specifically, we find that creditor rights and disclosure requirement of a country can significantly lower the interest rate in relationship lending. In countries where creditor rights is poor and disclosure requirement is weak, banking relationships can lead to serious hold-up problem and higher loan costs for the borrower.

Table I. Summary Statistics: *This table presents the number of observations and summary statistics by country*

Panel A: Loan and Country Characteristics by Country							
Country	N of Loans (total)	N of Relationship Loan (total)	N of Loans (All-in- Drawn)	N of Relationship Loan (All-in- Drawn)	Private Bond Market/G DP	Creditor Right*Rule of Law	Largest 3 Bank Concentration
<b>Asia</b>							
Australia	274	126	140	68	0.29	30	0.34
Hong Kong	104	31	75	21	0.16	32.86	0.56
India	114	29	76	17	0.01	8.33	0.35
Indonesia	5	1	5	1	0.01	7.97	0.51
Israel	11	5	9	4	-	14.45	0.52
Japan	2288	1240	281	126	0.44	17.97	0.35
Korea	316	136	202	88	0.50	16.05	0.38
Malaysia	137	31	36	11	0.47	20.35	0.43
Pakistan	10	4	8	3	-	3.03	0.58
Philippines	84	29	53	22	0.00	2.73	0.74
Singapore	115	45	55	19	0.18	25.7	0.86
Taiwan	478	119	259	80	0.25	17.03	0.29
Thailand	147	48	71	21	0.1	12.5	0.49
Turkey	10	4	8	3	0.00	10.37	0.66
<b>Europe</b>							
Austria	7	2	4	2	0.35	30	0.69
Belgium	24	8	17	6	0.43	20	0.77
Denmark	15	6	12	5	1.12	30	0.78
Finland	76	40	57	29	0.27	10	0.95
France	269	113	192	79	0.41	0	0.51
Germany	146	72	117	61	0.46	27.7	0.62
Greece	30	14	24	11	0.01	6.18	0.87
Ireland	19	4	16	4	0.12	7.8	0.59
Italy	68	23	51	18	0.39	16.67	0.52
Netherlands	93	44	67	28	0.48	30	0.71
New Zealand	58	29	25	14	-	40	0.94
Norway	93	39	57	24	0.21	20	0.89
Portugal	5	3	5	3	0.21	8.68	0.71
Spain	73	29	58	25	0.27	15.6	0.74
Sweden	86	34	65	25	0.46	10	0.95
Switzerland	51	16	35	10	0.40	10	0.84
United Kingdom	605	259	399	162	0.17	34.26	0.61
<b>North America</b>							
Canada	489	245	211	94	0.25	10	0.55
<b>South America</b>							
Argentina	10	4	8	4	0.03	5.35	0.37
Brazil	74	38	39	17	0.10	6.31	0.41
Chile	37	13	34	12	0.18	14.03	0.48
Colombia	4	2	3	2	0.01	0	0.37
Mexico	64	21	52	18	0.08	0	0.63
Peru	3	2	2	2	0.03	0	0.66
Venezuela	5	2	4	2	-	19.1	-
<b>Africa</b>							
South Africa	29	11	23	9	0.12	13.25	0.87
<b>Total</b>	<b>6524</b>	<b>2921</b>	<b>3225</b>	<b>1323</b>	<b>-</b>	<b>-</b>	<b>-</b>

Panel B: Loan and Borrower Summary Statistics by Country

Country	Mean All-in-Drawn	Mean Loan Size	Mean Deal Maturity	Mean Secured Loan	Mean Borrower Firm Size	Mean Firm Leverage	Mean Firm ROA
<b>Asia</b>							
Australia	90	373	67	13.81%	3908	0.31	0.073
Hong Kong	104.29	164	56	25.71%	2921	0.30	0.081
India	103.46	98	88	47.5%	2622	0.35	0.101
Indonesia	127.5	59	46	-	266	0.54	0.092
Israel	15.78	117	52	50%	2885	0.43	0.073
Japan	60.72	223	37	5.2%	8814	0.34	0.021
Korea	79.62	136	62	6.95%	12649	0.41	
Malaysia	102.93	140	75	33.7%	3214	0.34	0.055
Pakistan	169.25	71	28	-	576	0.30	0.065
Philippines	143.62	99	67	21.9%	2509	0.38	0.065
Singapore	98.88	146	51	21.9%	2252	0.36	0.056
Taiwan	95.08	122	63	55%	1823	0.34	0.055
Thailand	92.17	112	65	18.75%	1561	0.48	0.08
Turkey	159.22	267	52	60%	6879	0.33	0.058
<b>Europe</b>							
Austria	26.25	324	67	-	7820	0.30	0.06
Belgium	55.81	1020	66	-	12291	0.28	0.065
Denmark	26.83	1011	57	100%	8146	0.27	0.092
Finland	39.52	744	71	40%	6857	0.35	0.068
France	72	888	66	68.75%	13115	0.27	0.041
Germany	80.27	1253	56	70%	14430	0.24	0.043
Greece	102.88	354	61	100%	1726	0.38	0.07
Ireland	189	1752	77	78%	3832	0.43	0.039
Italy	83.56	1010	64	78%	17720	0.35	0.042
Netherlands	98.98	675	54	58.3%	4079	0.32	0.06
New Zealand	73.64	174	61	15.2%	1264	0.37	0.06
Norway	76.53	477	65	80%	3355	0.38	0.057
Portugal	31.6	534	26	21.9%	5839	0.33	0.079
Spain	84.14	1152	63	56.6%	9982	0.36	0.057
Sweden	53.65	583	63	50%	2651	0.27	0.075
Switzerland	58.76	1213	51	60%	14463	0.30	0.061
United Kingdom	93.69	734	57	55.7%	3934	0.29	0.065
<b>North America</b>							
Canada	132.48	548	44	65.1%	4932	0.30	0.064
<b>South America</b>							
Argentina	243.18	112	42	-	1481	0.35	0.053
Brazil	209.67	229	38	72.7%	9030	0.23	0.11
Chile	81.22	230	62	33.3%	5221	0.28	0.058
Colombia	270.83	303	54	-	2325	0.33	0.072
Mexico	115.02	400	54	30%	10308	0.28	0.091
Peru	206.25	98	36	-	1367	0.32	0.064
Venezuela	260.50	219	67	-	25070	0.25	0.027
<b>Africa</b>							
South Africa	102.10	211	49	83.3%	3544	0.20	0.092
<b>Sample Mean</b>	107.72	459	57	49.28%	6191	0.33	0.065

**Table II. Interest Rate by Country Characteristics and Relationship Intensity**

*This table compares the loan interest rate (measured as AISD) across countries with different legal and institutional characteristics. We also examine the impact of relationship intensity on the loan interest rate within each country group. A loan is considered as no relationship loan if the borrower has never borrowed from the lender before. A loan is considered as low relationship loan if the borrower has borrowed 33% of its past loans from the same lender before, and high relationship loan if the number is above 33%. Disclosure requirement is measured with the prospectus disclosure requirement index from La Porta et al. (2005), which ranges from 0 to 1 with 1 represent the highest disclosure. Creditor right is the creditor right index from DSM (2007) that measures the degree to which creditor rights are protected in a country. Bond market development is measured as market value of private sector debt securities to GDP. Bank concentration is calculated as the percentage of a country's commercial banking assets owned by its largest 3 banks. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.*

	No Relationship (1)	Low Relationship (2)	High Relationship (3)	Difference (1) – (2)	Difference (1) – (3)	Difference (3) – (2)
<b>Legal Origin</b>						
Common Law	108.75	85.38	99.59	23.38***	9.27*	14.10**
Civil Law	86.53	72.07	84.75	14.45***	1.78	12.67**
<b>Disclosure Requirement</b>						
High Requirement	95.48	73.44	89.23	21.03***	6.25*	15.78***
Low Requirement	100.03	97.91	97.2	2.12	2.83	0.71
<b>Public Bond Market</b>						
High Development	81.54	61.84	73.68	19.69***	7.85**	11.84**
Low Development	110.21	95.91	113.11	14.38**	-2.84	17.21**
<b>Bank Concentration</b>						
High Concentration	95.10	75.10	85.87	20.00***	9.23**	10.77*
Low Concentration	95.29	77.74	95.00	17.55***	0.29	17.25**
<b>Creditor Right</b>						
High Creditor Right	93.01	76.01	89.85	17.00***	3.16	13.85**
Low Creditor Right	96.64	77.23	91.03	19.40***	5.60	13.78**

**Table III. Impact of Country Legal Regimes and Institutions on Benefits of Relationship**

*This table presents the results from the OLS mode that examines the impact of country level legal and institutional factors on interest rate of relationship loans. The dependent variable AISD is the interest spread over LIBOR on the drawn amount plus the annual fee in bps. Relation (Number) measures the relationship intensity between the borrower and the lender based on the past number of loans the firm has borrowed from the same lender. Relation (Amount) measures the relationship intensity based on the past amount of loans the firm has borrowed from the same lender. Disclosure requirement is measured with the prospectus disclosure requirement index from La Porta et al. (2005), which ranges from 0 to 1 with 1 represent the highest disclosure. Creditor right is the creditor right index from DSM (2007) that measures the degree to which creditor rights are protected in a country. Rule of law index is from La Porta et al. (2007). Bond market development is measured as market value of private sector debt securities to GDP and Stock market development is measured as market capitalization to GDP, both measures are calculated as average from 1995 to 2005. Bank concentration is calculated as the percentage of a country's commercial banking assets owned by its largest 3 banks. Country risk index is from ICRG that measures a country's financial, economic, and political risk. Borrower size is the log of total assets. Tangibility is measured as PPE to total assets, profitability is ROA, and leverage is total debt to assets. Switch Lender is a dummy variable that equals to 1 if this is the first loan with a new lender. Number of lenders measures the number of participating banks in the syndicated loan. Dummy variables for loan purpose and loan types are included in the model but not reported. Standard errors are adjusted for heteroskedasticity and borrower country level clustering. T stats are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.*

	(1)	(2)	(3)	(4)	(5)	(6)
Relation (Number)	17.24**	230.24***	227.51***			
	[2.38]	[3.98]	[2.99]			
Relation (Amount)				16.52*	116.17***	156.05**
				[1.71]	[2.78]	[2.17]
Relation* Disclosure Requirement		-	-138.42**		-69.93***	-100.20**
		138.62***	[2.41]		[-2.72]	[-2.00]
		[-3.98]				
Relation*Creditor Right*Rule of Law		-0.49**	-0.43*		-0.41**	-0.41*
		[-2.07]	[-1.71]		[-2.02]	[-1.75]
Relation*Bond Market Development		-88.33*	-52.08		-44.32*	-18.44
		[-1.78]	[-1.38]		[-1.78]	[-0.85]
Relation*Bank Concentration		-	-142.78**		-72.34**	-93.56**
		131.59***	[-2.32]		[-2.40]	[-1.98]
		[-2.94]				
Relation*French Law			3.05			-12.04
			[0.10]			[-0.51]
Relation*German Law			-13.06			-13.13
			[-0.25]			[-0.66]
Relation*Scandivia Law			-7.93			-21.21
			[0.29]			[-0.65]
Switch Lender	-5.32	-2.54	4.52	2.85	3.25	1.84
	[1.52]	[0.53]	[1.15]	[0.64]	[0.75]	[0.45]
Investment Grade	-11.66***	-11.04***	-12.28***	-11.64***	-11.09***	-12.23***
	[-3.62]	[-3.37]	[-3.46]	[-3.62]	[-3.42]	[-3.49]
Ungraded	11.42**	11.51**	11.46**	11.45**	11.48**	11.42**
	[2.53]	[2.62]	[2.55]	[2.52]	[2.60]	[2.54]
Log (deal Amount)	2.05	2.55	1.38	-0.51	0.01	-1.42
	[0.43]	[0.53]	[0.29]	[-0.11]	[0.00]	[-0.31]
Number of Lenders	-0.53**	-0.55**	-0.48**	-0.53**	-0.55**	-0.48**
	[-2.57]	[-2.54]	[-2.51]	[-2.55]	[-2.58]	[-2.55]
Deal Maturity	0.14***	0.14***	0.14***	0.14***	0.14***	0.14***
	[4.41]	[4.45]	[4.38]	[4.39]	[4.42]	[4.38]
Tangibility	-7.68***	-7.64***	-8.07***	-7.65***	-7.64***	-8.07***
	[-5.18]	[-5.14]	[-5.36]	[-5.15]	[-5.24]	[-5.48]
Profitability	-1.29***	-1.27***	-1.36***	-1.29***	-1.28***	-1.37***
	[-3.22]	[-3.15]	[-3.32]	[-3.25]	[-3.15]	[-3.15]

Borrower Size	-13.90***	-13.89***	-14.02***	-13.96***	-13.94***	-14.01***
	[-5.28]	[-5.32]	[-5.54]	[-5.36]	[-5.37]	[-5.59]
Leverage	66.35***	67.61***	69.38***	66.61***	67.51***	69.28***
	[5.37]	[6.65]	[6.10]	[5.42]	[5.70]	[6.15]
Creditor Right * Rule of Law		-3.49	-3.64	-3.80	-3.36	-3.30
		[-1.36]	[-1.51]	[-1.21]	[-1.52]	[-0.69]
GDP growth rate		-12.06**	-8.73**	-12.32**	-8.78**	-8.74**
		[-2.54]	[-1.99]	[-2.57]	[-2.00]	[-2.00]
Log (GNP per Capita)		-11.76***	-10.32***	-11.60***	-10.19**	-10.12**
		[-2.85]	[-2.71]	[-2.74]	[-2.66]	[-2.65]
Inflation rate		2.59*	2.38*	2.54*	2.41*	2.39*
		[1.84]	[1.90]	[1.82]	[1.91]	[1.91]
Country Risk		-0.42	-0.41	-0.45	-0.42	-0.46
		[-0.26]	[-0.26]	[-0.27]	[-0.28]	[-0.30]
Disclosure Requirement		-38.49	-37.82	-57.60	-40.47	-35.30
		[-1.07]	[-1.11]	[-1.50]	[-1.17]	[-1.08]
Bond Market/GDP		23.57	21.18	11.80	21.36	17.16
		[1.05]	[0.95]	[0.50]	[0.94]	[0.76]
Stock Market/GDP		11.91	11.72	11.45	11.65	11.73
		[1.05]	[1.15]	[1.19]	[1.21]	[1.25]
Bank Concentration		-51.19**	-49.56	-66.50*	-52.41	-48.36
		[-1.30]	[-1.29]	[-1.64]	[-1.34]	[-1.28]
French Law		-32.67**	-33.35**		-32.76**	-30.78*
		[-2.00]	[-2.06]		[-2.00]	[-1.90]
German Law		-27.71*	-26.07*		-27.45*	-23.56*
		[-1.82]	[-1.92]		[-1.81]	[-1.74]
Scandinavian Law		-49.09**	-48.04**		-49.06**	-46.13**
		[-2.43]	[-2.33]		[-2.43]	[-2.25]
Year	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	No	No	Yes	No	No
Observations	3225	3225	3225	3225	3225	3225
Adj R <sup>2</sup>	0.4425	0.4012	0.32	0.32	0.32	0.32

**Table IV: Impact of Country Legal Regimes and Institutions on Benefits of Relationship: Propensity Score Approach:** *This table examines the impact of country level legal and institutional factors on relationship loan cost using propensity score matching approach. Panel A compares the loan and borrower characteristics between the relationship loan and its nearest 5 matching non-relationship loans based on propensity score. Panel B compares the difference in AISD between the relationship loan and its matching non-relationship loans by borrower country's creditor rights, disclosure regulation, and borrower's relationship intensity with its relationship bank. Panel C presents the results from the OLS model that examines the determinants of difference in interest rate. The dependent variable is the difference in interest spread between the relationship loan and its matching non-relationship loans. Relation (Number) measures the relationship intensity between the borrower and the lender based on the past number of loans the firm has borrowed from the same lender. Relation (Amount) measures the relationship intensity based on the past amount of loans the firm has borrowed from the same lender. Disclosure requirement is measured with the prospectus disclosure requirement index from La Porta et al. (2005), which ranges from 0 to 1 with 1 represent the highest disclosure. Creditor right is the creditor right index from DSM (2007) that measures the degree to which creditor rights are protected in a country. Rule of law index is from La Porta et al. (2007). Bond market development is measured as market value of private sector debt securities to GDP and Stock market development is measured as market capitalization to GDP, both measures are calculated as average from 1995 to 2005. Bank concentration is calculated as the percentage of a country's commercial banking assets owned by its largest 3 banks. Standard errors are adjusted for heteroskedasticity and borrower country level clustering. T stats are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.*

Panel A. Matching Loan and Firm Characteristics						
	Log (Firm Size)	Firm Leverage	Firm Profitability	Loan Maturity (Months)	Loan Size (Millions)	
Non-Relationship Loan	8.28	0.34	0.054	58	793	
Relationship Loan	8.28	0.35	0.057	56	753	

  

Panel B. Difference in Interest Rate			
	Creditor Right	Disclosure Requirement	Relationship Intensity
Top Half	-5.63** [-2.16]	-0.382 [-0.16]	6.32** [2.19]
Bottom Half	9.56*** [2.76]	11.52** [2.07]	-4.76 [-1.48]

  

Panel C. Regression Results							
	(1)	(2)	(3)	(4)	(5)	(6)	
Intercept	-40.65 [-1.10]	195.57** [2.29]	202.54* [1.78]	-45.72 [-1.17]	194.35* [1.73]	181.03* [1.69]	
Relation (Number)		32.83*** [2.85]			21.38** [2.03]		
Relation (Amount)			11.73** [2.02]			9.84* [1.74]	
Disclosure Requirement		-153.41*** [-2.71]	-166.91*** [-3.08]		-170.68*** [-3.32]	-171.62*** [-2.79]	
Creditor Right*Rule of Law		-1.29** [-2.56]	-1.33** [-2.32]		-1.18** [-2.43]	-1.19** [-2.28]	
Bond Market/GDP		-16.24 [-0.57]	-11.14 [-0.29]		-1.62 [-0.13]	-1.34 [-0.05]	
Stock Market/GDP		-8.98 [-1.05]	-5.56 [-0.62]		-5.40 [-0.60]	-4.73 [-0.47]	
Bank Concentration		-51.56 [-1.23]	-63.98 [-1.51]		-54.98 [-1.37]	-61.43 [-1.49]	
German Law		-59.35**	-63.80***		-60.67***	-68.32***	

French Law		[-2.60]	[-3.65]		[-2.83]	[-3.03]
		-52.35**	-55.78**		-46.78**	-57.56**
Scandinavian Law		[-2.08]	[-2.46]		[-2.50]	[-2.45]
		-85.28***	-75.50***		-82.67***	-79.78***
Log (GNI)		[-3.29]	[-4.06]		[-4.65]	[-4.02]
		-0.24	-1.26		-0.49	-0.69
Deal Maturity	0.16***	[-0.09]	[-0.38]		[-0.15]	[-0.16]
	[3.36]	0.156***	0.162***	0.127***	0.125***	0.125***
Loan Size	6.61	[3.02]	[3.15]	[3.55]	[3.67]	[3.18]
	[3.09]	2.96	2.89	5.47**	3.75	3.60
Tangibility	-6.94	[1.19]	[1.18]	[2.47]	[1.35]	[1.49]
	[-1.86]	-9.47***	-7.16***	-7.63***	-7.59***	-7.30***
Profitability	-1.93**	[-4.06]	[-3.25]	[-4.28]	[-3.76]	[-3.74]
	[-2.33]	-2.66***	-2.25***	-2.23**	-2.54***	-2.24***
Borrower Size	-13.87***	[-4.14]	[-2.89]	[-2.21]	[-2.79]	[-3.12]
	[-4.42]	-13.59***	-13.25***	-14.54***	-15.00***	-13.51***
Leverage	82.85***	[-5.03]	[-5.67]	[-4.59]	[-5.59]	[-4.26]
	[5.41]	115.96***	113.58***	91.63***	109.08***	112.74***
Industry	Yes	[6.08]	[6.52]	[5.96]	[7.03]	[8.61]
Year	Yes	Yes	Yes	Yes	Yes	Yes
Country	No	No	No	No	No	No
Observations	1323	1323	1323	1323	1323	1323
Adj R <sup>2</sup>	0.1837	0.2833	0.2812	0.1862	0.2869	0.2825

**Table V. Firm Level Information Opacity and Benefits of Relationship Lending**

*This Table examines the cross-country determinants of the impact of firm level information asymmetry on the benefits of relationship lending. Two measures of firm level information opacity based on analyst followings are used. Forecast\_Error is the the absolute value of the analyst forecast error (actual earnings minus the mean estimation of the earnings by analysts), deflated by stock price. Forecast\_Stdev is the standard deviation of analysts' earnings forecast adjusted by the mean. Panel A reports the results using the baseline regression where the dependent variable is AISD on the loans. Panel B reports the results using propensity score matching approach where the dependent variable is the difference in AISD between each relationship loan and its matching non-relationship loans. Relation (Number) measures the relationship intensity between the borrower and the lender based on the past number of loans the firm has borrowed from the same lender. Relation (Amount) measures the relationship intensity based on the past amount of loans the firm has borrowed from the same lender. Disclosure requirement is measured with the prospectus disclosure requirement index from La Porta et al. (2005), which ranges from 0 to 1 with 1 represent the highest disclosure. Creditor right is the creditor right index from DSM (2007) that measures the degree to which creditor rights are protected in a country. Rule of law index is from La Porta et al. (2007). Bond market development is measured as market value of private sector debt securities to GDP and Stock market development is measured as market capitalization to GDP, both measures are calculated as average from 1995 to 2005. Bank concentration is calculated as the percentage of a country's commercial banking assets owned by its largest 3 banks. Standard errors are adjusted for heteroskedasticity and borrower country level clustering. T stats are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.*

Panel A. Baseline Model Regression Results				
	(1)	(2)	(3)	(4)
Relation (Number)	223.59*** [3.18]	188.56*** [2.76]		
Relation (Amount)			131.94*** [3.61]	80.86** [2.57]
Relation*Forecast_Error	13.60*** [2.93]		7.02** [2.66]	
Relation*Forecast_Stdev		13.75** [2.01]		5.63** [2.34]
Relation* Disclosure Requirement	-132.25*** [-3.35]	-108.14*** [-2.77]	-60.08** [-2.58]	-47.87* [-1.72]
Relation*Creditor Right*Rule of Law	-1.13** [-2.00]	-1.03* [-1.87]	-0.84** [-2.33]	-0.58* [-1.75]
Relation*Bond Market Development	-81.68* [-1.70]	-116.00* [-1.77]	-60.78* [-1.94]	-70.54* [-1.91]
Relation*Bank Concentration	-155.40*** [-4.21]	-161.06*** [-3.94]	-94.65** [-2.59]	-64.31* [-1.94]
Forecast_Error	0.33 [0.39]		0.64 [0.64]	
Forecast_Stdev		4.60** [2.05]		5.87** [2.15]
Residual Stock Return Volatility				
Control Variables				
Industry Dummy				
Year Dummy				
Observations	1813	2338	1813	2338
Adj R <sup>2</sup>	0.3713	0.3230	0.3723	0.3376

Panel B. Propensity Score Matching Approach Results				
	(1)	(2)	(3)	(4)
Forecast_Error	4.38***		20.74***	
	[2.80]		[2.87]	
Forecast_Stdev		12.80***		37.16***
		[3.88]		[3.23]
Opacity* Disclosure Requirement			-26.48**	-46.78**
			[-2.38]	[-2.05]
Opacity * Creditor Right*Rule of Law			-0.97*	-1.34*
			[-1.91]	[-1.93]
Relation (Number)	33.19**	27.20**	34.24**	27.96**
	[2.17]	[1.99]	[2.16]	[1.99]
Disclosure Requirement	-133.27***	-119.08**	-217.83***	-199.8***
	[-2.92]	[-2.17]	[-3.27]	[-3.29]
Creditor Right*Rule of Law	-1.07**	-1.06*	-1.74**	-2.01**
	[-2.08]	[-1.87]	[-1.97]	[-2.45]
Bond Market/GDP	-25.12	-19.72	-24.13	-15.95
	[-1.07]	[-0.83]	[-1.36]	[-0.89]
Stock Market/GDP	-4.02	-8.78	-7.31	-9.24
	[-0.56]	[-0.74]	[-0.89]	[-1.12]
Bank Concentration	-27.73	-29.81	-21.43	-37.77
	[-0.88]	[-0.89]	[-0.80]	[-1.20]
German Law	-54.87**	-51.41**	-58.67**	-51.04**
	[-2.63]	[-2.36]	[-2.82]	[-2.34]
French Law	-43.81**	-42.31*	-47.18**	-38.85*
	[-1.98]	[-1.68]	[-1.96]	[-1.74]
Scandinavian Law	-63.85***	-62.32***	-63.35***	-65.76***
	[-3.67]	[-2.91]	[-3.00]	[-3.60]
Constant	235.67*	225.79*	314.75**	326.02**
	[1.64]	[1.74]	[2.47]	[2.32]
Control	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Observations	880	1026	878	1026
Adj R <sup>2</sup>	0.3386	0.2898	0.3586	0.2898

**Table VI. Relationship Lending and Collateral Requirement**

*This table reports the results from the probit model that examines the impact of relationship intensity on collateral requirement and whether the effects vary by country. The dependent variable is a dummy variable that equals to 1 if the loan is secured and 0 otherwise. Relation (Number) measures the relationship intensity between the borrower and the lender based on the past number of loans the firm has borrowed from the same lender. Relation (Amount) measures the relationship intensity based on the past amount of loans the firm has borrowed from the same lender. Disclosure requirement is measured with the prospectus disclosure requirement index from La Porta et al. (2005), which ranges from 0 to 1 with 1 represent the highest disclosure. Creditor right is the creditor right index from DSM (2007) that measures the degree to which creditor rights are protected in a country. Rule of law index is from La Porta et al. (2007). Bond market development is measured as market value of private sector debt securities to GDP and Stock market development is measured as market capitalization to GDP, both measures are calculated as average from 1995 to 2005. Bank concentration is calculated as the percentage of a country's commercial banking assets owned by its largest 3 banks. Standard errors are adjusted for heteroskedasticity and borrower country level clustering. T stats are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.*

	(1)	(2)	(3)	(4)
Relation (Number)	-0.796 [-0.79]		-0.77 [-0.53]	
Relation (Amount)		-0.69 [-0.62]		-0.49 [-0.29]
Relation* Disclosure Requirement	-0.441 [-0.37]	-0.298 [-0.70]	0.42 [0.24]	0.231 [0.48]
Relation*Creditor Right*Rule of Law	-0.044** [-2.16]	-0.036** [-2.24]	-0.10* [-1.93]	-0.055* [-1.90]
Loan Size	0.178** [1.98]	0.153** [1.98]	0.723*** [4.93]	0.724*** [4.98]
Tangibility	-0.059 [-0.42]	-0.012 [-0.54]	-0.33 [-1.13]	-0.32 [-1.17]
Profitability	-0.023*** [-3.56]	-0.027*** [-2.79]	-0.017 [-0.74]	-0.022 [-0.98]
Borrower Size	-0.433*** [-4.59]	-0.425*** [-6.77]	-0.840*** [-10.85]	-0.875*** [-11.95]
Leverage	0.713** [2.02]	0.756** [2.01]	2.91*** [3.92]	2.70*** [4.32]
Disclosure Requirement	-0.464 [-0.77]	-1.546 [-1.49]	-3.07** [-2.28]	-3.68** [-2.39]
Creditor Right*Rule of Law	-0.122 [-1.36]	-0.211 [-1.33]	0.046 [0.06]	0.016 [0.09]
Log (GNI)	-0.013 [-0.70]	-0.012 [-0.12]	-0.27 [-1.25]	-0.014 [-0.79]
German Law	-0.325 [-1.19]	-0.322 [-1.18]	-0.012 [-0.63]	-0.17 [-0.44]
French Law	0.004 [0.10]	0.005 [0.10]	0.01 [0.52]	0.043 [0.86]
Scandinavian Law	0.344 [0.71]	0.361 [0.72]	0.32* [1.67]	0.35 [1.00]
Other Control				
Year				
Industry				
Country				
Observations	1523	1523	526	526
Pseudo R <sup>2</sup>	0.4659	0.4658	0.6382	0.6113

**Table VII. Relationship Lending and Loan Maturity**

*This table reports the results from the OLS model that examines the impact of relationship intensity on loan maturity and whether the effects vary by country. The dependent variable is the log of loan maturity in months. Relation (Number) measures the relationship intensity between the borrower and the lender based on the past number of loans the firm has borrowed from the same lender. Relation (Amount) measures the relationship intensity based on the past amount of loans the firm has borrowed from the same lender. Disclosure requirement is measured with the prospectus disclosure requirement index from La Porta et al. (2005), which ranges from 0 to 1 with 1 represent the highest disclosure. Creditor right is the creditor right index from DSM (2007) that measures the degree to which creditor rights are protected in a country. Rule of law index is from La Porta et al. (2007). Bond market development is measured as market value of private sector debt securities to GDP and Stock market development is measured as market capitalization to GDP, both measures are calculated as average from 1995 to 2005. Bank concentration is calculated as the percentage of a country's commercial banking assets owned by its largest 3 banks. Standard errors are adjusted for heteroskedasticity and borrower country level clustering. T stats are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.*

	(1)	(2)	(3)	(4)
Relation (Number)	-0.432** [-2.12]		-0.486** [-2.02]	
Relation (Amount)		-0.232*** [-2.76]		-0.067* [-1.79]
Relation* Disclosure Requirement	0.049 [0.16]	-0.055 [-0.69]	0.051 [0.49]	-0.063 [-0.41]
Relation*Creditor Right*Rule of Law	-0.004 [-1.17]	-0.005 [-1.26]	-0.008** [-2.05]	-0.009** [-2.16]
Loan Size	0.123** [2.03]	0.125** [2.19]	0.171*** [2.96]	0.164** [2.70]
Tangibility	0.085*** [3.86]	0.084 [3.82]	0.078*** [2.91]	0.081 [3.75]
Profitability	0.021 [1.34]	0.018 [1.27]	0.028 [1.21]	0.028 [1.28]
Borrower Size	-0.028** [-2.26]	-0.033** [-2.55]	-0.043** [-2.35]	-0.061** [-2.64]
Leverage	-0.081 [-0.93]	-0.092 [-1.07]	-0.093 [-1.06]	-0.091 [-1.00]
Disclosure Requirement	-0.300 [-0.63]	-0.253 [-0.52]	0.092 [0.51]	-0.114 [-0.64]
Creditor Right*Rule of Law	0.071 [0.96]	0.083 [1.11]	0.003 [0.47]	0.001 [1.25]
Log (GNI)	-0.055 [-0.88]	-0.043 [-0.81]	-0.011 [-0.28]	-0.01 [-0.21]
German Law	-0.393* [-1.64]	-0.403* [-1.64]	-0.049 [-0.31]	-0.046 [-0.28]
French Law	-0.074 [-0.37]	-0.077 [-0.38]	0.046 [0.38]	0.049 [0.39]
Scandinavian Law	0.156 [0.92]	0.151 [0.90]	0.125 [1.01]	0.124 [0.98]
Other Control	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Observations	6524	6524	1976	1976
Adj R <sup>2</sup>	0.5899	0.5900	0.3896	0.3888

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