Nimble banks

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Abstract

We examine how organizational flexibility influences investment decisions. We develop a novel measure of decentralized decision-making based on observed differences in the pricing of loans across subsidiaries of a banking group. We find that decentralized banks earn economically meaningful higher spreads on loans to borrowers with comparable characteristics. We provide evidence that this can be explained by them better exploiting lending opportunities arising from high, and urgent, demand. They do so by being more flexible in terms of the industries and countries they lend to, and by reacting more quickly to changes in aggregate lending conditions. Overall, the results suggest that a decentralized organization yields material benefits by facilitating more flexible decision-making.

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1 Introduction

We show a novel benefit to operating firms in a decentralized way: flexibility. The latter permits undertaking more profitable investments by being able to pursue a larger set of opportunities, and by reacting to them faster.

We investigate investment decisions in the banking industry, which offers two advantages. First, the vast majority of large banks operate through a web of global subsidiaries, making the question of whether or not to decentralize very relevant. Second, banks compete globally on a single "product" (making loans) and this product and its pricing (the interest rate) are fairly standardized.

We first introduce a framework that shows how decentralization promotes flexibility, and that there is a trade-off with organizational costs. We consider an environment with a limited number of (highly) profitable lending opportunities that appear unpredictably. We think of those as driven by temporary, possibly urgent, funding demands by firms that allow banks to charge higher rates. There are also (very) unprofitable projects that can be mistaken for other projects. Centrally-operated banks can avoid those projects through hard requirements on projects and/or through requiring central approval. The downside to a hard requirement is that a bank may not be able to capitalize on a profitable opportunity (as that opportunity may not meet the hard criteria) and finance an average project instead. The bank may also miss out on opportunities that are only available temporarily due to delay caused by central approval. Decentralized banks have full flexibility in their project choice, implying that in principle they can pursue all opportunities. However, in order to avoid that they mistakenly choose the unprofitable project, they require better training and higher skills, which comes at a cost.

The framework yields several predictions. First, decentralized banks (in expectation) lend at higher interest rates (conditional on project characteristics). Second, they are more likely to fund borrowers with high and urgent demand. Third, they pursue a wider set of opportunities and react faster to common information, that is, they act more flexibly.

To test these predictions, we develop a novel measure of decentralized decision-making. Unlike measures of decentralization used in prior literature (which are predominantly based on formal authority), it is derived from *actual* decisions.[1] Specifically, a firm is deemed to be centralized when its subsidiaries make *similar* decisions when presented with *similar* investment opportunities. In the context of banks, centralization can take the form of a central loan approval system, or the requirement for certain loans (for example, exceeding a size threshold) to be approved by the parent. In either case, centrally-run operations should result in more similar decisions.

Following practice in the banking literature, we measure decisions through the pricing of loans (that is, the interest rate set by a bank). We use for this the market for syndicated loans. This market operates world-wide, and most large corporates and large banks participate in it. We also have comprehensive data on individual lending decisions in this market, allowing to control for "project" characteristics. Another interesting feature of the market is that within a loan there are typically different types of banks, passive ones, and active ones that also set pricing, which allows to differentiate between the decision to join a lending syndicate and the pricing of the loan.

Decentralization of a bank is then measured by the extent to which its subsidiaries deviate *differently* from the global pricing of loans. For example, a banking group with subsidiaries that consistently charge 10 bps higher rates on a certain project type is deemed to be centrally run, whereas a group that has some subsidiaries charging the global rate and others 20 bps more is deemed to be decentralized. Formally, the decentralization measure is constructed from all subsidiary-pairs of a group across all loans they originate over a given time period. We verify that our measure has informational content by showing that it is related to survey-based measure of lending decentralization and also show that it correlates with common determinants of decentralization identified by prior literature.

We then examine the three predictions. We first investigate whether when decentralized banks are in a syndicate, interest rates are higher. Controlling for a wide set of firm

[1]Formal and real authority may differ for several reasons (Aghion and Tirole, 1997). For instance, a superior with formal power may in practice just rubber stamp decisions of a subordinate.

and loan-factors (such as leverage or loan collateralization) we find this to be the case. The effect is economically large: A one standard deviation increase in decentralization is associated with 22bps increase in the loan spread, about 12% of the mean. This suggests that decentralization affords banks material benefits (according to our framework this does not imply though that decentralized banks are necessarily more profitable since a decentralized structure is also more costly to operate). The result is robust to a wide set of specifications. It also continues to hold when we instrument subsidiary-level decentralization with determinants of decentralization measured for the other subsidiaries of the group.[2] Controlling separately for subsidiary-level determinants, this isolates variation exogenous the subsidiary in question.

Our model also predicts that the pricing benefit arises due to decentralized banks better taking advantage of opportunities arising from borrower demand. Consistent with this we find that when a borrower has high demand, decentralized banks are more likely to lend to that borrower. There is also evidence that these banks lend more when there is urgent demand, as proxied by funding of a leveraged buyout (LBO). Finally, we also provide evidence that decentralized banks lend more flexibly: they are less bound to specific industries and countries when pursuing a new opportunity. Also, they react first to aggregate changes in lending conditions, as proxied by the beginning of a credit cycle in the borrower country.

We are careful to distinguish our channel from several alternative explanations, in particular the presence of *soft information* and *subsidiary heterogeneity*. Subsidiaries of a group may have different endowments with soft information, which may result in them pricing loans differently unrelated to decentralization. The potential for soft information is somewhat limited from the outset in our setting (the borrowers in the syndicated loan market are large firms for which a wide range information tends to be readily available) and we carry out tests that more directly exclude soft information. Most importantly, our results also hold when we create the dispersion measure exclusively using differences in the pricing of *observeable* borrower characteristics. An informational explanation is

[2]Our analysis suggests that the level of decentralization implemented for a specific subsidiary depends both on characteristics of that subsidiary and characteristics of the rest of the group.

also inconsistent with decentralized banks reacting differently to *observeable* changes in borrower demand and *aggregate* lending conditions, as well as with them being less specialized in terms of industries and countries. Subsidiaries may also be subject to heterogeneous external conditions, resulting in different hurdle rates. For example, when the internal capital market of a bank works only imperfectly, subsidiaries with a scarcity of capital may demand an extra compensation for lending. Again, this may create dispersion across subsidiaries unrelated to decentralization. Our results seem inconsistent with that channel as they are also present when we control for individual subsidiaries having different hurdle rates in each period.

The empirical literature on decentralization (both firms and banks) has emphasized that benefits to decentralization arise because of better information (either about borrowers, in the form of soft or private information, or about local economic conditions) and because of better usage a such information, allowing for example a better reaction when local circumstances change. Our paper shows a novel benefit to decentralization: the ability to consider a larger set of opportunities. This benefit is neither driven by better information, nor by being better able to response to local shocks.

Analyzing firms, Acemoglu, Aghion, Lelarge, Van Reenen, and Zilibotti (2007) have shown the importance of non-public information: Firms that are young, are closer to the technology frontier, or operate in heterogeneous environments, are more likely to be decentralized. Huang, Li, Ma, and Xu (2017) show that when the distance to the government is farther, SOE's in China are more likely to be decentralized. Aghion, Bloom, Lucking, Sadun, and Van Reenen (2021) find that firms that delegated more power to local plant managers prior to Great Recession outperformed centralized counterparts in sectors that were hardest hit by the subsequent crisis. Bandiera, Best, Khan, and Prat (2021) analyze the consequences of autonomy of procurement officers in Pakistan, and find that autonomy reduces procurement prices with no quality reductions. Kala (2024) studies a policy reform in India where managers of SOE are granted more autonomy, and finds that this increases spending on labor and capital, resulting in greater value added.

A significant number of papers have also analyzed the organizational structure of

banks specifically, again focusing often on informational aspects. Closely related to this point, Liberti and Mian (2009) show that greater hierarchical/geographical distance between the information collecting agent and the loan approving officer leads to less reliance on subjective information. Canales and Nanda (2012) introduce a survey-based measure of decentralization, finding that decentralized banks give larger loans to small firms and firms with soft information. Skrastins and Vig (2019) show that increasing the number of managerial layers within a bank branch induces credit rationing, reduces loan performance, and generates standardization in loan contracts. Dlugosz, Gam, Gopalan, and Skrastins (2024) introduce a novel measure of bank organizational structure based on where branch deposit rates are set. They document the effect of delegation on deposits and on the banks' ability to react to local shocks (e.g. mortgage lending).

The remainder of the paper is organized as follows. The next section introduces a framework for banks deciding about whether to operate decentrally or centrally, showing that banks that decide to operate decentrally can pursue a larger set of lending opportunities. The section also derive a set of empirical predictions. Section 3 introduces our measure of decentralization and Section 4 introduces the data. Section 5 shows that the measure correlates with survey evidence of lending decentralization, but not other dimensions of decentralization. Section 6 examines the lending behaviour of decentralized banks, examining the three predictions of our framework.

2 Decentralization and opportunistic lending: A framework

There are two dates (0 and 1) and two types of projects (regular and inferior). Projects require one unit of funds at date 0. At date 0 one of the regular projects is always in a normal state, and the other in the high state, with equal probability. A project in the normal state will return 1 at date 1, and a project in the high state $1 + r$ ($r > 0$). We interpret the high state as high demand for funds by a borrower, and hence a willingness to pay for a higher interest rate on a loan. For each regular project, there is also one

inferior project that returns 0 at date 1.

Screening. In the process of originating projects at date 0 (that is, deciding on which firm to lend to), a (local) bank manager learns whether a regular project is in the high state or not. At date 0, one of the two regular projects (with equal likelihood) also has an identifiable characteristic that is commonly observed and which distinguishes it from an inferior project. Without incurring a cost c, however, the bank manager cannot tell the other regular project apart from its corresponding inferior project. The cost c can be seen as the extra cost of hiring a skilled manager, or the cost of training her. Another interpretation is that the inferior project provides private benefits to the manager, which can be avoided by reducing agency conflict (at a cost c), for example, by increasing equity or by setting an incentive scheme. The cost has to be incurred before projects are observed.

Organizational Structure. Banks can finance one project, and can be run in two ways:

First, they can require local bank managers to select only a project with the identifiable characteristic, which we interpret as centralization. This can be given several interpretations:

1. The bank runs a centralized approval system that allows only projects with specific characteristics to be funded. For example, the bank may require a project to have an external risk assessment (credit rating), to be sufficiently transparent, or to be in an industry that the bank has expertise in (to avoid that the project is mistaken for a inferior project).

2. In the absence of the cost c, only the center can distinguish regular from inferior projects. The identifiable characteristic may then indicate a project with limited urgency, allowing for time for the local manager to relay information to the central manager and for the latter to approve it. By contrast, an urgent project may only be available for a limited duration and can thus not be funded in time if such approval is required.

3. Similarly, only projects of limited complexity may be funded. This may be because

review of a complex project by the central manager takes too much time (and hence the opportunity vanishes) or because the central manager does not find it worthwhile its time to review complex projects.

4. Finally, preparing a project for review may be costly to the local manager and involve a lengthy process. A project with the identifiable characteristic is always approved, whereas those without it are only approved with a 50% probability. If rejected, there may be limited time for implementing a new project (and the preparation cost has to be incurred again). Local managers may therefore not find it worthwhile to send such a project for review.

The downside to a centralized approach is that the bank cannot capitalize on all opportunities that arise. Therefore, the bank may want to adopt a decentralized approach instead, by giving managers full discretion in combination with incurring the cost c. This allows the bank to take advantage of all opportunities, but is also a costlier structure to run. Note that decentralization without incurring the cost never dominates a centralized structure. [3][4]

This leads to a simple decision of what organizational form a specific bank should choose: A centralized bank earns $\frac{r}{2}$ in expectation from originating projects, whereas a decentralized one earns r. Thus, if for the bank's cost c it holds that

$$\frac{r}{2} > c, \tag{1}$$

it has higher profits from allowing flexible project choice, in other words, it should be decentralized. Note that both types of banks do not differ in what type of project they undertake (they both undertake a regular project), they only differ in how they avoid bad projects (the centralized bank does this through limiting project choice, the decentralized

[3]Suppose that, without training, a local manager faces a (small) risk of choosing the inferior project even when the identifiable characteristic is present. In this case, decentralization is strictly dominated by centralization.

[4]Note that we have assumed that the return on a project is independently distributed to whether it fulfills the observeable criteria. One may argue that when it is more difficult to finance (because there are less banks that are available to process it, or because it is urgent), returns may be higher. This would only serve to strengthen the benefit of decentralization.

through training).

Equilibrium: The above considers a single bank and returns ("lending rates") r that are given. Consider now a mass 1 of banks that potentially differ in their cost c (for example, due to differences in agency conflicts). Suppose that costs are continuously distributed on $[\underline{c},\overline{c}]$ with $0 < \underline{c} \leq \overline{c}$ (the case of $\underline{c} = \overline{c}$ admits the special cost of homogenous banks). Denote with $F(c)$ the mass of banks that have costs smaller or equal to c. Also assume that the (excess return) r on the high-project is declining in the mass of banks choosing that project (this is reduced form for imperfect competition in the project market):$r = r(\cdot)$ with $r'(\cdot) < 0$. Denote with $d \in [0,1]$ the mass of banks that operates decentralized. The mass of banks investing in a high-return project is then $(1-d)\frac{1}{2} + d = \frac{1+d}{2}$. In an interior equilibrium, this pins down the share of decentralized banks d^* through the condition

$$\frac{1}{2}r(\frac{1+d^*}{2}) = F^{-1}(d^*), \tag{2}$$

that is, for the marginal bank the profits from decentralization and centralization are equalized. Existence of the interior equilibrium is guaranteed by $\underline{c} < \frac{1}{2}r(\frac{1}{2})$ and $\overline{c} > \frac{1}{2}r(1)$. In such an equilibrium, banks with low c will choose decentralization (consistent with the prior section showing that banks with low agency problems are more likely to operate decentralized), and all others centralized. In case all banks are identical ($\underline{c} = \overline{c}$), the equilibrium condition still pins down the mass of banks that operate in a decentralized manner, however, individual banks are then indifferent as to their organizational form.

From the above framework we can derive several predictions.

1. *Decentralized banks can lend at higher interest rates on the same type of project:* This is because all banks choose the same type of project in equilibrium (regular projects) but decentralized banks fund projects that can be charged higher rates on average (since $1 + \frac{r}{2} > 1$). Note that even though this is an excess-return (that is, it is not a compensation for risk or other factors), this does not necessarily imply that these banks have higher profits due to the cost c (for the marginal bank that

has costs that fulfill the equation above, the profits from operating in a centralized or decentralized manner are in fact identical).

2. *Decentralized banks are more likely to lend when a borrower has high (temporary) demand:* This is a direct prediction of the framework and explains the origin of the excess return r. Since borrower demand is measured based on observable characteristics, it also shows that the returns are not due to private information about a project. Note that this prediction does not imply any (directional) causality, it may also be that borrowers with urgent demands contact banks that are known to react fast and flexible.

3. Decentralized banks are more flexible cross-sectionally and intertemporally. Decentralized banks in each period choose the projects that offer the highest return in that period. This implies that their project choice will vary more with current conditions, in other words, they are less specialized (in industries or countries) over time (notably, lack of specialization also speaks against an informational interpretation of our results as lower specialization is associated with inferior information, see, e.g., Acharya, Hasan, Saunders, 2006). They will also respond faster to emerging lending opportunities because they do not require approval by central.

3 Decentralization measure

3.1 Explanation of the measure

Organizational forms, and the level of decentralization, are difficult to quantify. This is because they often have many different dimensions.

In particular, the extent to which lending decisions are decentralized depends on many dimensions of the organization. Most large banks runs some form of a centralized system for loan approvals, however, they can differ widely in how much power they leave to local loan officers. For example, is there an automated loan approval following input of select data? What is the (dollar) threshold below which a subsidiary make own decisions? How

often does the parent overrule proposals by subsidiary? At which level are the data inputs, in particular credit ratings, set? Larger banks often also have regional credit committees, which are between the subsidiary and the headquarter. Their influence amounts to an intermediate layer of decision-making.

Another important point is divergence of formal and real authority. A large part of the literature has focused on *de jure* measures of decentralization ("who has the *power* to set interest rates"). For example, Bandiera, Best, Khan, and Prat (2021) analyze formal autonomy of procurement officers, and Kala (2024) formal authority of local managers in SOE. Dlugosz, Gam, Gopalan, and Skrastins (2024) study whether local bank branches have to the power to set their own deposit rates.

However, formal control may differ materially from actual decision-making (Aghion and Tirole, 1997). For example, a superior may have formal power but in practice just rubber-stamp decisions, or may be too busy to interfere. Or, a subordinate has the formal power but does not want to offend superior so takes decisions that please the latter.[5] Another possible dimension is that a subsidiary may have complete independence in decision-making (both in terms of formal and real authority) but may in practice follow group-level thinking (for instance, because it has received central training).

Our measure quantifies decentralization through actual decision-making. The idea is as follows. In a more centralized operation, different subsidiaries should evaluate a borrower of a given type similarly as they apply firm-wide lending criteria, resulting in similar decisions. In a more decentralized setting, subsidiaries make their own decisions, resulting in different lending outcomes. We thus quantify decentralization by the extent to which different subsidiaries of a group reach different decisions when presented with a comparable lending decision. Specifically we will measure whether different subsidiaries of a group deviate differentially from the global pricing of loans.

We will have a exhaustive discussion of sources of price differences below, but let us use the examples of animal spirits. Each manager (local or central) may in a given year be

[5]Survey evidence which is used by some papers (for example, Beqiraj, Cao, De Haas and Minetti (2025) use the BEPS survey of subsidiaries in Eastern Europe) is somewhat inbetween formal and real authority, see in particular the questions in Section 5

optimistic or pessimistic. In a decentral organization this will result in different managers displaying different attitudes in their lending, where in a fully centralized organization lending will fully reflect the optimism of the central manager. Another example are individual errors when making lending decisions. If one puts two equally intelligent people in separate rooms and asks them to evaluate the same loan proposal, they will end up with (slightly) different assessments, which will tend to produce more dispersion in a decentral organization.

Our measure has two distinct features. First, it is a comprehensive measure of decentralization, capturing the various possibly dimensions of decentralization that may be present in organizations. Second, it is a measure derived from actual decision-making, and thus incorporates the notion of real authority.

We will derive our measure from lending decisions in the *syndicated loan market*. This is a worldwide market for large loans to (predominantly large) corporates, and large number of banks and their subsidiaries take part in it. We have granular data on individual loan decisions in this market, allowing to control for a wide set of factors.

3.2 Construction of the measure

Consider that a subsidiary s uses the following pricing model

$$r_{s,f,t} = a_{s,t} + A_s X_{f,t} + D_{f,t} + \varepsilon_{s,f,t}, \tag{3}$$

where $r_{s,f,t}$ is the interest rate charged to firm f in year t, X is a vector of borrower and loan characteristics (such as leverage and collateralizing of the loan), and $D_{f,t}$ is firm demand (among others, indicating the presence of the high-state in our framework). Our construction of the decentralization measure starts from how the subsidiary deviates from the *global* pricing of firms, which can be written

$$res_{s,f,t} := r_{s,f,t} - r_{f,t} = (a_{s,t} - a_t) + (A_s - A)X_{f,t} + \varepsilon_{s,f,t} \tag{4}$$

(in our empirical implementation, the demand term $D_{f,t}$ will be absorbed by borrower-

year fixed effects).

The decentralization measure of subsidiary s is defined as the expected pricing deviation on a loan made by this subsidiary, and a loan made by other parts of the same group (subsumed into a single hypothetical subsidiary $-s$)

$$DI_s(t) = E[|res_{s,t} - res_{-s,t}|]. \tag{5}$$

In a fully centralized group, we would expect similar pricing deviations on loans, resulting in zero (or low) $DI_s(t)$. However, in a decentralized setting, loan decisions will be made by independent loan officers in each subsidiary, resulting in higher $DI_s(t)$.

Equation (4) shows that there are three sources of pricing differences: loan pricing by the subsidiary may differ from other loans issued by the group due to a different constant pricing difference of loans in each period ($a_{s,t}$), due to different pricing of observable factors A_s, and due to idiosyncratic pricing of specific borrowers $\varepsilon_{s,f,t}$.

Let us start with pricing differences due to observable factors (A_s). This is the cleanest measure as it cannot be confounded by soft information (which could result in differences in the firm-specific terms $\varepsilon_{f,t}$) nor by different hurdle rates for a subsidiary (for example, a subsidiary may face capital shortages in a given year, and hence require a higher a_t). Such a difference may arise when for example a subsidiary has different attitudes towards specific industries or borrower types (such as large and small firms).

Next, pricing differences arise due to subsidiaries pricing loans generally different in a given year ($a_{s,t}$). This may be due to different views on the credit cycle, or animal spirits.

Finally, we consider dispersion arising from only the attitude towards specific borrowers ($\varepsilon_{s,f,t}$). One interpretation is really the one of an error term. Each individual will look at each loan decisions differently, and hence arrive at different results. For example, Gao, Karolyi and Pacelli (W2018) show that distracted loan officers price loans differently. Another one, are personal tastes vis-a-vis the firm. Karolyi (2018) finds that loan officers charge different rates in the syndicated loan market to borrowers with whom they have a personal relationship (distinct from the relationship between bank and firm). In addition, Ravina (2024) finds that loan officers may charge different rates depending on

borrower gender, beauty and race, and that this depends on borrower characteristics (for example, a male may charge different rates to a female than a female).

To calculate DI, we first run a global regression on all loans in the sample, yielding estimates of $\widehat{a}_t$, $\widehat{A}$ and $\widehat{D}_{f,t}$. From this we can calculate the global pricing of a specific loan ($r_{f,t} = \widehat{a}_{s,t} + \widehat{A}X_{f,t} + D_{f,t}$), and hence the pricing deviation by a subsidiary on this loan ($res_{s,t}$). We approximate $E[|res_{s,t} - res_{-s,t}|]$ by the average distance in all pricing deviations of all possible loan pairs formed of loans of subsidiary s and other loans made by the group. Denote by $F_s(t)$ and $F_{-s}(t)$ the set of all loans made by subsidiary s and the other subsidiaries, with $F_s = \{f_{1,s}, f_{2,s}, ..f_{n_s(t),s}\}$ and $F_{-s} = \{f_{1,-s}, f_{2,-s}, ..f_{n_{-s}(t),s}\}$. The measure is then calculated as

$$\widetilde{DI}_s(t) = \frac{\sum_{x=1}^{n_s(t)} \sum_{y=1}^{n_{-s}(t)} |res_{s,x,t} - res_{-s,y,t}|}{n_s(t)\, n_{-s}(t)} \tag{6}$$

In robustness, we also consider a normalized DI measure. The motivation is that deviations from global pricing (in absolute terms) may be larger for loans that have higher spreads, resulting in a higher $DI-$measure. To account for this, we scale pricing errors by the level of global pricing for that loan. This results in the following measure:

$$\widetilde{DI} - N_s(t) = \frac{\sum_{x=1}^{n_s(t)} \sum_{y=1}^{n_{-s}(t)} \left| \frac{res_{s,x,t}}{r_{x,t}} - \frac{res_{-s,y,t}}{r_{y,t}} \right|}{n_s(t)\, n_{-s}(t)} \tag{7}$$

Note: A simpler alternative to the $DI-$measure (which is based on (average) loan pairs) is to calculate the difference in the *average spreads* of loans issued by subsidiary s and other subs of the group

$$\left| \sum_{x=1}^{n_s(t)} \frac{res_{s,x,t}}{n_s(t)} - \sum_{y=1}^{n_{-s}(t)} \frac{res_{-s,y,t}}{n_{-s}(t)} \right| \tag{8}$$

However, this (partially) averages out the firm-specific terms $\varepsilon_{s,f,t}$ and $\varepsilon_{-s,f,t}$. This problem is compounded by the fact that the number of loans varies widely across subsidiaries (some subsidiaries issue more than 100 loans in a year, others only a few) and groups. As a result, subsidiaries (and groups) that issue more loans would appear less decentralized

based on that measure (as for them the firm-specific terms would be more averaged out).

3.3 Numerical example for lending dispersion and lending advantage

In the following we consider a simple example that illustrates how a decentralized bank has both higher DI (Section 3.2 and lends at higher rates (Section 2). In the framework of 2, DI is zero regardless of organizational form. However, suppose that managers make (random) adjustments in the pricing of loans.

Specifically, consider that the low-state project gets on average charged 200bps in the market, and a high-state project 220bps. Loan officers make pricing adjustment of 10bps and -10bps (with equal likelihood) on a specific project. In the case of a centralized bank, the pricing error for a project is fully correlated across subsidiaries (for example, because the lending rate adjustment is prescribed by the central approval system) whereas for a decentralized bank it is independently distributed across subsidiaries. DI for a centralized bank is then 0, whereas for a decentralized bank it is 10bps.[6] At the same time, the expected interest rate charged by a centralized bank is 210bps, whereas for a decentralized bank it is 220bps. Thus, there is a positive relationship between DI and average rates.

4 Data

We will use data on syndicated loans from the DealScan database provided by Loan Pricing Corporation (LPC). Our sample comprises 93839 syndicated loans issued between 2000 and 2019. Syndicates consist of lead arrangers (who set the pricing) and passive participants. For the construction of the measure we will focus on the lead arrangers, treating loans with more than one lead arranger as separate observations.

[6]Unrelated to decentralization, a subsidiary may charge different rates across all projects. For example, a specific subsidiary of a group may charge a 10bps higher rates on both projects because of a scarcity of capital. For this reason, in our empirical implementation we will include subsidiary-year fixed effects, and hence our pricing dispersion measure will not be affected (in other words, it will only be affected by interest rate deviations at a subsidiary that differ across projects).

The loans are issued by 1118 subsidiaries affiliated with 327 bank groups. On average, each bank group has 3 subsidiaries that issue loans over the sample period, with a median of 2. A single loan package often contains multiple facilities, and our analysis will take place at the facility level. Each subsidiary issues an average of 30 facilities per year, ranging from 1 to 1725, with a median of 4.

To obtain residuals, we run first the following loan pricing model:

$$Spread_{f,l,t} = \beta_1 * Loan\ Terms_f + \beta_2 * Loan\ Size_f + \beta_3 * Loan\ Type_f + \beta_4 * Loan\ Purpose_f + \lambda_{l,t} + \epsilon_{f,l,t} \quad (9)$$

Here, the dependent variable $Spread_{f,l,t}$ represents the spread (interest rate r minus the risk free rate) in the loan facility f to the borrower l in year t. The independent variables, $Loan\ Terms_f$, encompass other loan terms such as *Covenant*, *Collateral*, and *Maturity*, as well as *Loan Size*, *Loan Type*, and *Loan Purpose*. As discussed we include borrower x year fixed effects ($\lambda_{l,t}$), which controls for demand but also borrower risk. Summary statistics of the variables in the regression are listed in Table **??**.

For a specific loan and lender (lead arranger) s, the global model gives us the deviation from the global pricing: $\epsilon_{f,l,t} = res_{s,f,l,t}$. From equations 6 and 7 we can then calculate the decentralization indices DI and $DI - N$. Table **??** reports the summary statistics at various levels of aggregation. For comparison, we also calculate a dispersion measure matching loans of a subsidiary with subsidiaries belonging to other groups. For example, the median of DI at the sub-year level is 20bps, whereas the same measure across groups is 29bps. This indicates, that on average, loan pricing within groups is somewhat centralized.

5 Survey data on decentralization

The purpose of this section is to provide external validation for DI. We will do this by examining how it correlates with survey data on bank centralization. For this purpose, we use the first wave of BEPS surveys (which captures the period 2005-2011). These surveys

are carried out by the EBRD and are nationally representative surveys of banks in mostly European transition countries.[7] Several of the banks are also foreign subsidiaries of global banking groups that are active in the syndicated loan market. The survey contains several questions relating to the organization of decision-making in the group, such as

- "How important is the influence of your parent bank in shaping the credit risk assessment of clients?"
- "Does your parent bank set annual targets for your bank in terms of credit growth?"

A link to the survey including the questions can be found here (the most relevant questions are in Q47 and Q50).

Table **??** displays the results of regressions of the BEPS survey response on our integration measures. The variable *Average relevant* represents the averaged responses from banks to questions that we deemed relevant to lending integration. A higher value in the BEPS data indicates that the bank is more integrated (thus, we expect a negative correlation between DI and the BEPS variables).

Given the limited number of subsidiaries that are both present in the survey and in the syndicated loan market, we start reporting regressions that use the DI at the loan-pair level (that is, we do not average as in equation 6) and cluster standard errors at the subsidiary level. This allows to better make use of the fact that the precision of DI will vary significantly across subsidiaries (because subsidiaries differ widely in the amount of loans they issue) and of the fact that sometimes there are several lead arrangers (see below). For the BEPS measure, we aggregate responses on all (decentralization) questions deemed to be relevant to lending (*Average relevant*), and create a separate index from all questions deemed less relevant to lending (*Average irrelevant*). As an example, the latter includes questions about how centralized operational risk management is. We view those as a placebo test (that is, our measures should display higher correlations with the questions relevant to lending and/or decentralization, and less to others). Columns (1) and (2) show the results without and with *Average irrelevant*. In each case, the coefficients

[7] Beqiraj, Cao, De Haas and Minetti (2025) also use the BEPS survey to measure decentralization.

of *Average relevant* are negative and significant, while the coefficients of *Average irrelevant* are insignificant.

Column (3) takes into account that, across individual loans, the power of individual lenders to set prices may vary as there may be more than one lead arranger. Specifically, we weigh observations by the inverse of the number of lead arrangers. We see that the coefficient on the variable of interest increases in absolute terms.

In column (4), we run regressions at the subsidiary-level. The coefficients of *Average relevant* are negative and significant in both regressions. It should be noted that we only have a very limited number of observations in this regression (we could match our data with BEPS survey data for 135 subsidiaries, however, and among these, only 16 provided responses to decentralization-relevant questions). Figure **??** provides the scatter plot of DI and *Average relevant*, showing a meaningful negative relationship.

These results provide evidence that DI is negatively related to survey responses about centralization of lending. At the same time, it is not related to survey responses about centralization of other decisions, suggesting that it picks up lending-specific information.

Table **??** reports correlations on the individual survey responses underlying *Average relevant* (these question can be found here here). A large number of individual question responses are strongly negatively related to our measure.

6 Nimbleness

In this section we examine the predictions of our model. We will investigate the behaviour of decentralized banks, in terms of whether they can join a syndicate when lending rates are high, and under what conditions they joint a syndicate. In contrast to the analysis of pricing decisions, we will now also examine the behaviour of banks that are not lead arrangers in the syndicate, that is, are not directly involved in the pricing. We use the five-year (lagged) average of a subsidiary as a measure of dispersion.

Table 5 investigates first whether, controlling for project characteristics, decentralized banks earn higher interest rates (Prediction 1). In this analysis we relate the loan spread

earned by a subsidiary on a given loan to its decentralization measure, controlling for borrower and loan controls. Importantly, in this regression we do not include borrower (x year) FE as this would control for the presence of a "high-state" project (we return to these fixed effects in Table 7). In contrast to the construction of DI we now consider also lenders that are not syndicate leaders. According to the framework in Section 2, decentralized banks are more flexible in their lending, this also applies to joining a syndicate as a passive member.

Column (1) presents first a regression with decentralization averaged at the group-level, and column (2) then moves to our baseline specification which uses subsidiary-level decentralization. In either case, the coefficient on the decentralization measure obtains a positive coefficient and is significant. In economic terms, a one standard deviation change in the difference measure in the baseline results in a change in the loans spread of 22 bps, which is considerable. This suggests that decentralized banks can lend at economically meaningful higher rates. Since the regressions control for borrower controls such as leverage and profitability, this suggests also higher risk-adjusted interest rates.

In column (3) we additionally include subsidiary-level controls. Among them, size is significant and with a positive sign. Large subsidiaries are thus able to charge higher interest rates, possibly reflecting higher bargaining power.

In column (4) we compare high and low decentralization banks. For this we only consider banks in the top and bottom quartile in terms of DI, and assign an indicator variable for belonging to the top quartile. The indicator variable is again positive and significant.

In column (5) we investigate pricing differences with subsidiaries of other groups. A specific subsidiary may price things generally different, regardless of whether relative to the rest of its group, or other groups. If this is the case, our difference measure may not pick up decentralization, but general discretion in loan pricing (for a discussion of the latter, see Cerqueiro, Degryse and Ongena, 2011). To investigate, we construct a difference measure that is based on the pricing difference with subsidiaries of other groups. Specifically, for each (within) group subsidiary-pair, we replace the second subsidiary with a

random subsidiary (not belonging to this group). Column (5) shows our decentralization measure remains significant with similar coefficient. In addition, the across-group difference measure is insignificant.

Columns (6) and (7) contains our instrumental variable (IV) analysis, to alleviate concerns about endogeneity. Such endogeneity may arise, for example, because a subsidiary has low leverage, and is hence decentralized (because agency conflicts are then limited). At the same time, due to absence of leverage constraints, the subsidiary may have flexibility in pursuing lending opportunities. This endogeneity may hence produce a positive correlation between decentralization and lending rates.

Our IV exploits that decentralization is also determined by group-wide characteristics. For example, the group may implement centralized loan approval system for all subsidiaries because its subsidiaries have predominantly high leverage – even though an individual subsidiary has low leverage.

We thus consider as instrument with group-wide determinants of decentralization (excluding the subsidiary itself), controlling separately for subsidiary-level determinants. Column (6) reports the first stage.

The first two determinants considered, group size (total assets) and number of subsidiaries, are measures of organizational complexity and size. The potential for managerial overload (Aghion and Tirole, 1997) suggests that larger and more complex firms should establish more decentralized structures. Consistent with this, we find that size (for both group and subsidiary) is positively and significantly related to decentralization. The number of subsidiaries is insignificant, possibly reflecting high correlation with group size.

We next consider two proxies for incentive conflicts between the parent and the subsidiary.[8] Our first variable measures the potential for risk-shifting (Jensen and Meckling, 1976) at the subsidiary level. Risk-shifting incentives are particularly pronounced in our context as banks can easily increase the variance and risk of their operations. Our (in-

[8]This has not received much attention in the empirical literature on decentralization. An exception is Aghion et al, 2021) who view a large negative shock as potentially increasing incentive conflict given that the agent is likely to be subject to limited liability.

verse) proxy for risk-shifting is equity over assets. For subsidiaries that have large equity (low leverage) the potential to shift risks are limited as they are far away from defaulting. Hence their incentives are aligned with other stakeholders, limiting distortion in decision-making. We would thus expect groups with subsidiaries that have large equity to choose more decentralized structures. Consistent with this, we observe that equity over assets (for both group and subsidiary) obtains a positive coefficient in the regression.

Whereas the first proxy measured the *potential* for incentive conflicts, the second proxy considers the *ability* of groups to deal with incentive conflicts. If managerial actions and their economic consequences are easily observed, incentive conflicts can be alleviated, for example, by making remuneration conditional on performance. However, this requires a stable economic environment in which managerial actions are reflected in outcomes with limited noise. By contrast, when local economic environments are volatile, observing local performance will be less insightful for principals. We proxy local economic volatility by the volatility of the subsidiary's ROA (calculated as an average over the sample period). Following our argumentation, we would expect groups to be less inclined to choose decentralized structures when local uncertainty in their subsidiaries is high. Consistent with this we find that there is a negative relationship between the volatility of ROA and decentralization, and that this relationship is significant (for both group and subsidiary).[9].

The first stage of the IV thus confirms that both group and subsidiary-level variables are determinants of decentralization. Column (7) shows that the second-stage of the IV. The coefficient of interest is of similar magnitude as in the baseline test, and remains highly significant. The Hansen-tests indicates validity of the instruments. Our IV-regression is hence consistent with a causal interpretation of our main result.

In columns (8) we consider only cross-border loans. Prior literature has emphasized that local presence provides banks with information advantages. This is thus a sample where it is unlikely that a lender posses material informational advantages. The coefficient

[9]It should be noted that the volatility of the local environment may also have separate effects on decentralization as in this case local information becomes more important, favouring decentralization (Dessein, Lo, Minami, 2022). However, we later present results suggesting that our results are less likely to be driven by informational considerations

remains positive and significant, consistent with our mechanism being orthogonal to information.

To reduce the influence of noise, we have used the dispersion measure averaged over a five-year period. Column (9) shows next that the results are similar for the one-year measure.

The expected pricing difference between two loans is expected to be greater in absolute terms if both loans have higher spreads. Column (10) considers an alternative decentralization measure that corrects for this. For the construction of this measure, loan pricing residuals are first divided by their predicted spreads, making them more comparable. The coefficient on $DI - N$ remains positive and significant. The implied economic magnitude is similar to the baseline model (20bps instead of 21bps).

Table 6 examines next different sources of loan rate dispersion. As discussed in Section 3, there are three sources of pricing differences. Columns (1) to (3) reproduce the baseline specification from Table 5, but now isolate each source separately (that is, pricing differences due to A, a_t) and $\varepsilon_{f,t}$). In all three cases, the coefficient is positive and significant.

An interesting question is the relative importance of the different dimensions. A comparison of economic significance (based on standard deviation changes) shows that are all important. The highest effect are for the pricing of observable factors and the error term (21 to 22 bps); the lowest effect is for the yearly effect (15bps).

There are two important takeaways from these exercises. The first is that lending decisions create dispersion among different dimensions, which are all important and have similar consequences for loan pricing. The second is that our results are not driven by dispersion due to soft information or differences in hurdle rates (see the discussion in Section 3).

Our model predicts that the reason why decentralized banks earn on average higher rates is by lending more to firms with high demand (Prediction 2). Columns (1)-(3) of Table 7 examines this prediction using different proxies for high demand. In column (1) we directly identify borrower demand in a given year. For this we regress total

borrowing of a firm in a year on borrower fixed effects (to control for average demand by this firm) and lender-year fixed effects (to control for supply effects).[10] We then regress the decentralization of each lender on borrower demand. In column (1) borrower demand obtains a positive and significant coefficient. This provides first evidence that decentralized banks lend more when demand is high.

In column (2) we exploit a sudden materialization of demand, in the form leveraged buy outs (LBOs). These are large, fairly unanticipated increases in the demand for loans. They are also loan demands that have to be satisfied quickly, that is, there is urgency. As such, they are ideal loans for flexible banks. In column (2) we can see a positive and significant coefficient on LBOs, that is, when there is a LBO, decentralized banks are more likely to lend. Importantly, LBOs (and to a large extent, borrower demand generally) are observeable factors, suggesting that the difference does not arise due to the presence of soft information.

Murfin and Petersen (2016) investigate seasonal periods of high demand. They show that firms that borrow in certain periods during the year (specifically, January, February and August) have more urgent demand and also pay higher interest rates. They show that this price differential can be sustained in an equilibrium where banks specialize in different periods and borrowers have heterogeneous demands. It is a priori not clear whether decentralized banks are part of the group that specialize on high demand months. The reason is that such months are fully known and thus do not require extra flexibility on the side of banks. In column (3) we include the high-demand periods of Murfin and Peterson, and find no significant association. As said, this may reflect that the benefit of decentralized banks is that they can act more flexibly, but in this case the (seasonal) incidence of high-demand is already known.

The remaining columns of the table consider another way to examine the effect of demand: the inclusion of borrower fixed effects in the loan pricing regression. If the pricing advantage of decentralized banks is due to borrower demand, then the advantage should weaken if we include such fixed effects. We include subsequently finer fixed effects

[10]The matching of lenders to borrower may be endogenous. We thus run an alternative exercise excluding lender-year fixed effects, and obtain similar results.

(borrower FE, pseudo-demand effects akin to Degryse et al. (2019) and borrower-year fixed effects). We can see that in each case, the coefficient shrinks in size, confirming the (high) demand-side interpretation of our results. Among others, this rules out explanations based on decentralized banks charging higher rates on the same borrower, for example due to higher bargaining power.

Interestingly, the results remain significant even when we control for borrower-year fixed effects (the economic significance though is small: a one standard deviation change in the dispersion measure is associated with a 1.5 bps higher rate). A potential reason for this is within-year variation in borrower demand, as considered previously in the table (e.g., due to LBOs or seasonal variation in urgency).

Table 8 and 9 examine next whether decentralized banks indeed behave more flexible (Prediction 3). A first dimension in that respect is that when a bank want to exploit lending opportunities (due to high demand), it has to be flexible as to which industries and countries it lends to (as the opportunity may only materialize in a given pocket in the market). Columns (1)-(3) in Table 8 investigate this using bank-level concentration of lending portfolios. These are calculated as the HHI of a bank's loan shares in a given year to either i) specific industries, ii) specific countries, iii) specific industry-country pairs. The regression results indicate that decentralized banks have less concentrated portfolios (indicated by a low HHI) on either of the three dimensions. The results suggest that decentralized banks are indeed more flexible in their lending, allowing them to be more opportunistic.

Table 9 considers the "speed" dimension of flexibility. As predicted by the model, decentralized banks can react faster to lending opportunities. This affords them with advantages even for commonly observed lending opportunities. Specifically, in this regression we exploit the credit cycle of countries. For each (borrower) country we create a dummy for the four quarters prior to the peak of the credit cycle, and a dummy for the four quarters past the peak, plus the peak itself (the omitted category are periods in which there is no expansion of the credit cycle). We then regress the dispersion of each lender in the syndicate on the credit cycle dummies. The regressions show that

decentralized banks lend more before the peak of the cycle (relative to non-peak times). Following the peak, this effect vanishes. This result is consistent with decentralized banks reacting faster to developments in (aggregate) conditions.[11].

7 Conclusions

This paper has examined how organizational flexibility influences investment decisions. We developed a novel measure of decentralization based on observed differences in the pricing of loans across subsidiaries within banking groups. We found that decentralized banks earn economically meaningful higher spreads on loans to borrowers with comparable characteristics. There was evidence that this can be explained by decentralized banks better exploiting lending opportunities arising from high demand and higher urgency. They do so by being more flexible in terms of the industries and countries they lend to, and by reacting more quickly changes in aggregate lending conditions. Overall, the results suggest that a decentralized organization provides material benefits by enabling more flexible decision-making.

[11]Interestingly, this suggests that decentralization may also result in benefits to financial stability as prior literature has shown that destabilizing loans are made during the later part of the cycle

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Figure 1: Correlations between *DI* and BEPS survey responses

This figure plots DI averaged at the subsidiary level against the average score of relevant questions in the BEPS survey.

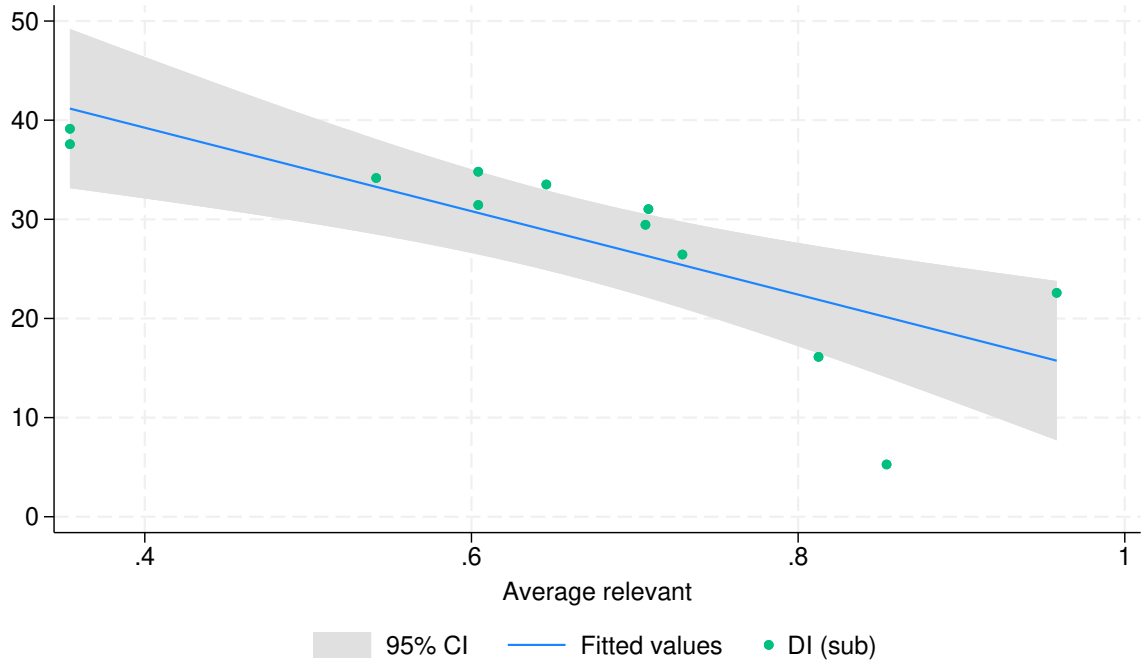


Table 1: Summary statistics for global pricing model

The table presents the summary statistics of variables in the global pricing model.

	Observations	Mean	Median	SD	Min	Max
Spread	324,496	224.1	200	155.6	17.50	825
Loan size	324,496	19.13	19.23	1.592	14.90	22.41
Covenants	324,496	0.206	0	0.438	0	1.386
Collateral	324,496	0.472	0	0.499	0	1
Maturity	324,496	60.90	60	30.93	6	235
Revolver	324,496	0.375	0	0.484	0	1
Loan Purpose	324,496	0.352	0	0.478	0	1

Table 2: Summary statistics for *DI*

	Observations	Mean	Median	SD	Min	Max
DI (loan-pair)	6,046,074	41.49	20.34	65.41	0	765.0
DI (loan-pair, other groups)	6,046,074	43.39	21.29	66.18	0	819.4
DI (sub-year)	4,908	27.70	22.35	22.80	2.32e-17	478.0
DI (sub-year, other groups)	4,908	34.29	29.87	22.55	0	481.1
DI (group-year)	1,470	27.60	22.33	22.41	2.32e-17	222.6
DI (group-year, other groups)	1,470	35.25	32.17	17.26	0.714	149.9
DI (group)	153	29.26	24.81	16.65	1.73e-14	107.0
DI (group, other groups)	153	35.97	34.72	11.36	10.83	94.48

Table 3: Summary statistics for the baseline interest rate and decentralization regressions

	Observations	Mean	Median	SD	Min
Spread	76,328	161.0	122.7	17.50	750
DI (group)	76,328	33.42	13.76	10.14	81.70
DI (sub)	76,328	33.82	14.47	10.08	83.56
DI top quartile	76,328	0.265	0.441	0	1
DI (rest of group)	74,320	32.20	15.28	9.636	89.61
DI (other groups)	76,328	38.60	12.87	16.41	76.67
DI-N (sub)	76,328	0.152	0.0676	0.0427	0.381
DI (sub, lagged 1-year average)	71,790	33.63	17.80	6.576	99.95
DI (slopes)	74,205	130.9	32.35	55.96	210.9
DI (sub-year)	74,205	3.338	2.928	0.0380	16.64
DI (residual)	74,205	30.91	15.43	4.524	80.27
SD(loan residuals)	75,654	44.46	19.46	6.683	108.0
Loan size	76,328	19.65	1.459	14.91	22.35
Covenants	76,328	0.433	0.568	0	1.609
Collateral	76,328	0.373	0.484	0	1
Borrower size	76,328	13.78	2.131	8.578	19.00
Borrower ROA	76,328	0.884	3.453	-1.161	25.88
Borrower leverage	76,328	0.290	0.223	0	1.137
Has credit	76,328	0.173	0.378	0	1
Maturity	76,328	52.05	24.42	7	216
Revolver	76,328	0.476	0.499	0	1
Loan Purpose	76,328	0.357	0.479	0	1
Demand	75,543	0.523	1.070	-4.375	4.203
LBO	76,328	0.0501	0.218	0	1
High demand month	76,328	0.185	0.388	0	1
Specialization (sector)	76,328	0.0708	0.105	0.000000439	1
Specialization (country)	76,328	0.372	0.328	0	1
Specialization (country-sector)	76,328	0.0411	0.0953	0	1

Table 4: Correlations with BEPS survey responses

This table shows regressions of *DI* on BEPS responses at loan level and subsidiary level. *t-statistics* in parentheses are calculated using standard errors clustered by subsidiary. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

	OLS		GLS	OLS
	(1)	(2)	(3)	(4)
	DI (loan-pair)	DI (loan-pair)	DI (loan-pair)	DI (sub)
Average relevant	-23.079***	-26.293***	-39.310***	-42.083***
	(-12.49)	(-20.37)	(-13.47)	(-4.07)
Average irrelevant		4.611		
		(1.73)		
Observations	15953	15953	15953	12
Adjusted R^2	0.009	0.009	0.020	0.586

Table 5: Correlations with individual BEPS survey questions

This table shows correlations between *DI* and BEPS responses at the loan-pair level. *t-statistics* in parentheses are calculated using standard errors clustered by subsidiary. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

vq47d	-6.659***	(-4.28)
vq47h	-6.674***	(-3.28)
vq47l	-5.942	(-1.49)
vq50a	-30.399**	(-2.60)
vq50b	-12.838***	(-5.16)
vq50c	4.004	(0.61)
vq50d	1.580	(0.23)
vq50e	-15.068***	(-4.17)
vq50f	-10.465**	(-2.40)
vq51e	-10.743	(-1.28)
vq51f	-14.861***	(-4.16)
vq51h	-18.920***	(-18.66)
Observations	15953	

Table 6: Decentralization and interest rates

This table presents the impact of integration measures on loan spread. t-statistics, shown in parentheses, are calculated using standard errors clustered at the combined subsidiary-year level, except for regressions 1, in which standard errors are clustered at the group-year level. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

	Baseline sample							Cross-border loans	Baseline sample	
	OLS					IV		OLS	OLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Spread	Spread	Spread	Spread	Spread	DI (sub)	Spread	Spread	Spread	Spread
DI (group)	1.401***									
	(13.94)									
DI (sub)		1.310***	1.460***		1.199***		1.178***	0.765***		
		(14.19)	(11.01)		(11.14)		(4.21)	(11.02)		
DI top quartile				52.591***						
				(14.87)						
DI (other groups)					0.280**					
					(2.17)					
DI (sub, lagged 1-year average)									0.720***	
									(10.53)	
DI-N (sub)										290.643***
										(13.95)
Mean bank size in rest of group						3.761***				

						(4.16)				
Number of subs						-0.954***				
						(-3.16)				
Mean equity/assets in rest of group						56.206***				
						(4.18)				
Mean sd(ROA) in rest of group						-132.517***				
						(-3.24)				
Bank size			0.766			1.505***	-0.174			
			(1.21)			(3.37)	(-0.24)			
Equity/assets			28.991***			9.315**	0.989			
			(4.09)			(2.15)	(0.14)			
sd(ROA)			-35.970			18.708	-20.601			
			(-0.73)			(0.85)	(-0.46)			
Loan size	-15.765***	-15.733***	-15.997***	-13.021***	-15.774***	0.183	-22.952***	-20.462***	-15.202***	-15.759***
	(-23.92)	(-23.79)	(-17.82)	(-16.03)	(-23.92)	(1.29)	(-28.62)	(-32.91)	(-21.15)	(-23.99)
Covenants	-7.475***	-7.776***	-13.959***	-16.280***	-7.714***	0.982**	0.101	1.381	-6.929***	-8.711***
	(-4.23)	(-4.61)	(-6.00)	(-7.14)	(-4.59)	(2.24)	(0.03)	(0.78)	(-3.92)	(-5.12)
Collateral	93.967***	94.047***	97.466***	88.553***	93.926***	2.070***	99.507***	97.213***	97.102***	93.530***
	(52.77)	(52.56)	(42.60)	(36.89)	(52.59)	(5.56)	(34.38)	(50.63)	(53.29)	(52.23)
Borrower size	-2.679***	-2.678***	-2.509***	-2.709***	-2.687***	-0.105*	-3.193***	-2.988***	-2.776***	-2.698***
	(-9.47)	(-9.66)	(-7.15)	(-6.79)	(-9.69)	(-1.79)	(-6.40)	(-8.66)	(-9.79)	(-9.76)
Borrower ROA	-0.041	-0.041	-0.059	-0.257	-0.042	-0.052*	-0.287	-0.498***	-0.031	-0.052

	(-0.28)	(-0.28)	(-0.30)	(-1.19)	(-0.29)	(-1.75)	(-1.09)	(-2.89)	(-0.21)	(-0.36)
Borrower leverage	17.052***	17.096***	16.339***	19.666***	17.056***	0.385	15.987***	23.368***	17.149***	17.217***
	(7.00)	(7.17)	(5.55)	(5.48)	(7.17)	(0.90)	(3.90)	(7.92)	(7.03)	(7.25)
Has credit	26.342***	26.351***	26.903***	33.216***	26.369***	0.343	22.821***	21.346***	26.333***	25.913***
	(15.55)	(15.62)	(12.61)	(14.08)	(15.68)	(1.10)	(8.33)	(11.67)	(15.17)	(15.51)
Maturity	0.482***	0.480***	0.441***	0.446***	0.481***	-0.016***	0.409***	0.477***	0.484***	0.489***
	(14.91)	(15.09)	(10.70)	(9.13)	(15.11)	(-3.33)	(6.78)	(12.19)	(14.36)	(15.40)
Revolver	-27.055***	-26.997***	-25.991***	-27.846***	-26.975***	-0.060	-27.452***	-27.632***	-26.348***	-27.441***
	(-22.19)	(-22.94)	(-15.22)	(-16.42)	(-22.95)	(-0.40)	(-13.13)	(-23.15)	(-21.16)	(-23.41)
Loan Purpose	3.859***	4.041***	3.273*	5.126**	3.946***	0.885***	-6.850***	-4.778***	6.009***	3.306**
	(2.64)	(2.78)	(1.78)	(2.29)	(2.71)	(2.91)	(-2.99)	(-3.04)	(3.78)	(2.29)
Observations	76328	76328	44395	39236	76328	20917	20917	45414	71790	76328
Adjusted R^2	0.370	0.369	0.380	0.351	0.370		0.373	0.419	0.365	0.371
Year FE	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Kleibergen-Paap F p value							0.001			
Hansen J p value							0.203			

Table 7: Dispersion decomposition

t-statistics, shown in parentheses, are calculated using standard errors clustered at the combined subsidiary-year level. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

	(1)	(2)	(3)
	Spread	Spread	Spread
DI (slopes)	0.486***		
	(13.38)		
DI (sub-year)		3.278***	
		(7.68)	
DI (residual)			1.246***
			(14.58)
Loan size	-16.037***	-15.350***	-16.838***
	(-23.82)	(-21.02)	(-25.89)
Covenants	-9.693***	-7.346***	-6.420***
	(-5.44)	(-4.16)	(-3.88)
Collateral	95.298***	98.238***	93.640***
	(52.77)	(55.57)	(51.56)
Borrower size	-2.670***	-2.645***	-2.733***
	(-9.45)	(-9.32)	(-9.76)
Borrower ROA	-0.069	-0.105	-0.031
	(-0.47)	(-0.71)	(-0.21)
Borrower leverage	16.987***	16.208***	16.838***
	(7.04)	(6.64)	(7.04)
Has credit	25.880***	27.135***	25.107***
	(15.47)	(15.52)	(15.00)
Maturity	0.509***	0.483***	0.480***
	(15.60)	(14.56)	(15.04)
Revolver	-28.788***	-26.859***	-28.173***
	(-23.52)	(-21.85)	(-23.86)
Loan Purpose	3.338**	5.981***	2.054
	(2.21)	(3.73)	(1.42)
Observations	74205	74205	74205
Adjusted R^2	0.374	0.365	0.381
Year FE	Yes	Yes	Yes

Table 8: Demand and urgency

This table investigates whether decentralized banks are more likely to lend when a borrower has high demand. *t*-statistics, shown in parentheses, are calculated using standard errors clustered at the borrower-year level in regressions 1 and 2, and at the combined subsidiary-year level in regressions 3 to 12. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)
	DI (sub)	DI (sub)	DI (sub)	Spread	Spread	Spread
Demand	0.380***					
	(4.87)					
LBO		2.912***				
		(5.47)				
High demand month			0.066			
			(0.43)			
DI (sub)				0.246***	0.182***	0.039***
				(7.14)	(5.82)	(3.85)
DI-N (sub)						
Loan size	-0.046	1.328***	1.329***	-20.967***	-9.770***	-4.831***
	(-0.93)	(12.76)	(12.73)	(-31.88)	(-20.60)	(-10.57)
Covenants	0.348***	0.046	-0.135	-10.573***	-8.966***	-4.249
	(2.91)	(0.14)	(-0.41)	(-4.63)	(-6.66)	(-0.98)
Collateral	1.335***	3.672***	4.016***	82.429***	31.803***	-35.366***
	(9.28)	(13.25)	(14.08)	(31.12)	(16.21)	(-7.97)
Borrower size	-0.071***	-0.018	-0.019	-5.113**	3.598***	
	(-2.70)	(-0.60)	(-0.65)	(-2.40)	(3.02)	
Borrower ROA	0.019	-0.009	-0.008	0.406*	0.221	
	(1.22)	(-0.56)	(-0.48)	(1.93)	(0.93)	
Borrower leverage	0.179	-0.417	-0.436	14.033***	9.257**	
	(0.71)	(-1.53)	(-1.60)	(4.04)	(2.33)	
Has credit	0.155	1.899***	1.873***	7.620***	-6.829**	
	(0.96)	(6.56)	(6.49)	(3.91)	(-2.29)	
Maturity	-	0.008**	0.010***	0.697***	0.430***	0.600***
	(-0.11)	(2.52)	(3.23)	(19.49)	(12.92)	(16.09)
Revolver	-0.029	0.860***	0.839***	-28.574***	-26.140***	-22.112***
	(-0.42)	(5.30)	(5.17)	(-21.69)	(-27.47)	(-27.99)

Loan Purpose	1.016***	3.619***	3.495***	-12.077***	-12.564***	-15.950***
	(9.78)	(11.73)	(11.40)	(-5.89)	(-10.85)	(-6.15)
Observations	105356	106649	106649	76068	76015	75359
Adjusted R^2	0.394	0.176	0.174	0.739	0.748	0.899
Year FE	Yes	Yes	Yes	-	Yes	-
BCIYS FE	No	No	No	Yes	No	-
Borrower FE	No	No	No	No	Yes	-
Borrower-year FE	No	No	No	No	No	Yes

Table 9: Lending focus

This table shows how flexibility allows decentralized banks to make different lending decisions. *t*-statistics, shown in parentheses, are calculated using standard errors clustered at the combined subsidiary and year levels. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

	(1)	(2)	(3)
	Specialization (sector)	Specialization (country)	Specialization (country-sector)
DI (sub)	-0.001***	-0.002***	-0.001***
	(-5.03)	(-4.61)	(-4.83)
Observations	58905	35087	135254
Adjusted R^2	0.010	0.013	0.009
Year FE	Yes	Yes	Yes

Table 10: Reaction to cycle

t-statistics, shown in parentheses, are calculated using standard errors clustered at the borrower * year-quarter levels. * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level.

	(1)
	DI (sub)
Pre-peak credit cycle quarters [t-4,t-1]	1.102***
	(5.96)
Post-peak credit cycle quarters [t,t+4]	0.696***
	(3.92)
Loan size	-0.022
	(-0.44)
Covenants	-0.644***
	(-3.45)
Collateral	0.830***
	(3.54)
Borrower size	0.083
	(0.56)
Borrower ROA	-0.017
	(-0.47)
Borrower leverage	-0.472
	(-0.90)
Has credit	0.844*
	(1.71)
Maturity	0.001
	(0.60)
Revolver	-0.352***
	(-5.14)
Loan Purpose	0.470***
	(3.62)
Observations	79520
Adjusted R^2	0.306
p value of H0: Post <= Pre	0.042
Year-quarter FE	Yes
Borrower FE	Yes