

Bank culture, risky lending, and systemic risk

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ABSTRACT

We explore the role of bank corporate culture on systemic stability through the lens of credit decisions. Using a widely-used corporate culture framework in organizational behavior literature, we show that banks classified as having a “compete-dominant” culture are more likely to offer credit to sub-investment grade borrowers. Our results are robust to using an exogenous shock that addresses lender-borrower matching and isolates credit demand from credit supply. Whilst “compete-dominant” banks charge a higher loan spread from risky borrowers, they require fewer covenant conditions. As a result, they incur greater losses in bad times and contribute more to systemic risk. Our findings offer novel insights on how corporate culture of individual banks can affect industry-wide stability.

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1. Introduction

As a part of the debate about banking industry reform, corporate culture of banks is seen by many as a root cause of risk taking behaviors and the consequent instability in the financial system². Our paper examines this conjecture via the lens of bank lending. Not only does bank lending have an important role on financial stability as well as economic growth (Allen, Qian, & Qian, 2005; King & Levine, 1993; Laeven & Levine, 2009), it is also an activity that still requires personal judgements from people within the organization, namely credit officers. Therefore, bank lending is potentially a key channel where we can identify the influence of corporate culture on financial stability.

We draw on the recent literature on corporate culture (Fiordelisi & Ricci, 2014; Fiordelisi, Li, & Stentella-Lopes, 2016; Fiordelisi, Raponi, & Rau, 2014; Thakor, 2015) and examine culture at the bank level. Specifically, we analyze 10-K reports of banks using textual analysis and extract their dominant corporate culture dimensions according to the Competing Value Framework (CVF). Developed in the organizational behavior literature (Cameron, Quinn, DeGraff, & Thakor, 2006; Quinn & Rohrbaugh, 1983), the CVF identifies four corporate culture dimensions: *compete*, *create*, *control* and *collaborate*. Under the CVF, these four cultural dimensions represent distinct ways of how organizations can enhance their values. Therefore, these different dimensions compete for a bank's limited financial, time and human resources. How the bank responds to the tension created by these competing values shape the bank's culture and ultimately the way people in the bank behave.

[Figure 1 about here]

Figure 1 summarizes the attributes of these four cultural orientations. Two cultural orientations – create and compete, share an *external* focus and place an emphasis on risk-taking, adaptability competitiveness and aggressiveness. *Compete-oriented firms* embrace risk taking through aggressive

² At the Workshop on Reforming Culture and Behavior in the Financial Service Industry, the president and chief executive officer of the Federal Reserve Bank of New York made a remark that the financial industry loses public trust not because of a few “rogue traders” but because of the culture of the firms. The Netherlands’ central bank argues that the key to preventing financial crises and misconduct scandals may not be stricter regulations, but to oversee culture and behavior as part of the supervisory framework (De Nederlandsche Bank, 2015). The UK’s Financial Conduct Authority planned to conduct a review on culture in banking contributed to banking scandals (see “UK draws line under ‘banker bashing’ after scrapping assessment” in *Financial Times*, 30 December 2015).

competition and placing focus on customer demand. Value drivers of compete-oriented firms are market share, goal achievement, and profitability. *Create-oriented firms*, whilst also embraces risk taking, focus on innovation, vision and constant change. Their value drivers are innovative outputs, transformation and agility. The other two cultural orientations – collaborate and control, share an internal focus and place an emphasis on predictability, conformity, teamwork, and employee involvement. These two dimensions can be seen as less focused on risk taking. *Control-oriented firms* achieve predictability through a focus on control, efficiency and process capability. Their value drivers are efficiency, timeliness and conformity. *Collaborate-oriented firms* achieve predictability through harmony of people within the organization. They focus on human development and commitment and the value drivers of these organizations are commitment, communication and development of their human capital.

We first examine the link between these four cultural dimensions and credit decisions. Our overall results indicate that banks classified as having a “*compete-dominant*”³ culture are the riskiest in term of credit decisions whereas “*control-dominant*” banks are the most prudent⁴. Specifically, using the borrower-level credit rating data from the Dealscan database, we find that borrowers of *compete-dominant* banks are 3.3% more likely to be sub-investment grade borrowers (or “risky borrowers”, defined as unrated borrowers or those rated below BBB) whilst borrowers of control-dominant banks are 8.8% likely to be risky. Our results are robust to the inclusion of various bank characteristics, borrower characteristics, loan characteristics, governance variables, various forms of standard error clustering, the exclusion of “too-big-to fail” banks from the sample, and various ways of defining risky borrowers and bank dominant cultures.

³ A compete-dominant bank is defined as a bank whose frequency of words associated with the compete culture is in the top quartile in more than half of our sample period. Other bank cultural dimensions (create-dominant, control-dominant, and collaborate-dominant) are also constructed in a similar way. Our results are robust to various thresholds of how a dominant culture is defined.

⁴ We also find that “create-dominant” banks tend to be riskier and “collaborate-dominant” banks tend to be more prudent, but to a lesser extent than “compete-dominant” and “control-dominant” banks.

To provide support for a causal interpretation that corporate culture influences bank credit decisions, we examine the relation between dominant culture variables and the propensity of lending to risky borrowers around short periods (3, 4 and 5 months) surrounding the Russian crisis in 1998. This default event arguably allows us to identify the causal effect of bank dominant culture on lending for the following reasons. First, we examine the change in lending decisions of each bank after the default announcement compared to its decisions prior; thus, we should be able to eliminate any unobserved time-invariant factors that influence bank lending decisions. Second, because we examine the effect of this default event on lending decisions in the short-run, this event can plausibly be considered an exogenous shock and does not accompany any change in unobserved time-variant firm characteristics. Lastly, to the extent that this default event is exogenous to the US economy (Chava & Purnanandam, 2011), it can be argued that this shock is not related to a borrower's decision to apply for a loan or the choice of its lender; Therefore, the documented relation between culture and change in lending decisions should not be confounded by the effect of bank-borrower matching. We find that borrowers of the *compete-dominant* banks are less likely to be risky after the default announcement compared to the period before the announcement. This is consistent with the view that *compete-dominant* banks, which exhibit riskier lending behaviors, refrain from extending loans to risky borrowers after the Russian default announcement, whilst banks with other cultures are relatively more prudent and do not see any need to adjust their lending behavior. This provides some support of the causal interpretation that culture of banks can determines their lending decisions.

To further alleviate the concern that our results are driven by risky borrowers choosing to borrow from *compete-dominant* banks, we also examine the relation between our dominant culture measures and lending in residential mortgage, where we can observe the complete pool of applicants. We find that when we examine loan approval rates, holding constant characteristics of both banks and residential borrowers and any unobserved characteristics that is local to the county in each particular year, *compete-dominant* banks are associated with less stringent lending standards whereas *control-dominant* banks are associated with more stringent lending standards. This provides further evidence that dominant culture of banks can influence their lending decisions.

We also find that bank dominant cultures also determine how risky borrowers are treated in their loan contracts. We find that *compete-dominant* banks require fewer covenants on their sub-investment grade loans while charging risky borrowers a higher loan spread. This is consistent with the view that *compete-dominant* banks seek more profit by assuming more risk. On the other hand, *control-dominant* banks require significantly more covenants from risky borrowers. Interestingly, whilst *control-dominant* banks charge more from sub-investment grade borrowers, the loan spread they charge investment grade borrowers is significantly lower. This is consistent with their cultural orientation of risk minimization i.e. *control-dominant* banks place emphasis on post-lending monitoring and are willing to sacrifice profit to attract borrowers with desirable credit risk.⁵

Next, we examine the consequences of bank lending behaviors. In particular, we are interested in finding whether the differences in lending practices leads to the differences in the riskiness of the loan portfolio. We find that *compete-dominant* banks are associated with overall riskier bank-level loan portfolios. Specifically, we find that *compete-dominant* banks on average have a significantly higher level of loan growth compared to other banks. However, this higher level of growth comes at the expense of loan performance. We find that the fraction of non-performing loan is also significantly higher for *compete-dominant* banks. In contrast, we do not find the level of loan growth of control-dominant banks to be statistically different from other types of banks, but their fraction of non-performing loan is significantly lower.

We further divide our sample based on the overall industry performance and find evidence that *compete-dominant* banks exhibit a higher level of systemic risk. When the overall banking industry performs well (overall annual industry performance is above the sample median), the level of lending to sub-investment grade borrowers and loan growth is significantly higher for compete-dominant banks whilst there is no evidence that these banks have a higher level of bad loans. However, we find that the level of bad loan for compete-dominant banks is significantly higher when the banking industry is under distress⁶. The results we find for *compete-dominant* banks resonate with the prediction of Raghuram

⁵ We find evidence that create- and collaborate-dominant banks behave in a similar way to compete- and control-dominant banks respectively.

⁶ In contrast, we do not find that borrowers of control-dominant banks are more risky in good times but they are significantly less likely to be risky borrowers in bad times. There is no statistical difference in lending growth

Rajan (2005) that risky banks only show signs of distress when the overall financial sector is in distressed.

We finally show that our dominant culture variables are also associated with systematic risk, using the ΔCoVaR measure of Adrian and Brunnermeier (2016).⁷ We find that ΔCoVaR is significantly larger for compete-dominant banks, suggesting that banks with this dominant culture make a significantly greater contribution to instability of the financial system. On the other hand, we find the systemic risk contribution of control-dominant banks to be significantly lower. Our overall evidence suggests that bank lending is a channel by which culture could influence the overall stability of the financial system. This is consistent with the view of financial regulators, popular press and practitioners that corporate culture of individual banks has an impact on systemic stability.

This paper makes four important contributions to the literature. First, to the best of our knowledge, this paper provides the first empirical evidence on the link between corporate culture of individual banks and stability of the overall financial markets. Specifically, we show that credit decision is a mechanism by which cultural orientation of banks can affect financial stability. This paper is a timely response to an increasing concern by the public and regulators about how bank culture of banks may determine their behavior. Using the lending channel, our paper serves as a first step for regulators to understand the economic impact of culture in the financial sector.

Second, we shed a new light on factors contributing to banking crisis. We show that banks with compete-dominant culture make silent contributions to financial stability during favorable industry conditions, and only realize their losses when the industry is in distressed. This is in line with Rajan's prediction of how bank risk-taking culture can have a grave impact on financial stability.

Third, we contribute to an extensive strand of the literature that explores the determinants of bank-level risk taking. Rather than using aggregate risk measures such as z-score, volatility or tail risk (Bai & Elyasiani, 2013; Berger, Kick, & Schaeck, 2014; Saunders, Strock, & Travlos, 1990) or adverse

throughout the industry cycle and the level of bad loans is significantly lower than other banks in both good and bad periods.

⁷ ΔCoVaR measures the estimated change in Value-at-Risk (VaR) of all financial institutions (systemic VaR) when the institution's VaR change from its normal state to its distress state. Essentially, it measures the extent to which the financial system is closer to distress when a financial institution is becoming distressed.

outcomes such as loan defaults or regulatory sanctions (Ho, Huang, Lin, & Yen, 2016; Nguyen, Hagendorff, & Eshraghi, 2015), we explore bank credit decisions. Given the role of bank commercial credits to the economy, it is especially important to understand the factor underlying lending decisions. In this paper, we find that dominant culture of lenders is a strong determinant of their choice of borrowers in term of riskiness and also the characteristics of the loan terms.

Finally, we contribute to the literature on corporate culture. Although corporate culture is deemed to be very important, empirical works in the area are still limited, mainly due to challenges in measuring corporate culture. Prior studies use various measures, such as local religiosity (Adhikari & Agrawal, 2016; Hilary & Hui, 2009; McGuire, Omer, & Sharp, 2012), CEO cultural heritage (Liu, 2016), corporate philanthropy (Bereskin, Campbell, & Kedia, 2013) and employee surveys (Guiso, Sapienza, & Zingales, 2015), to capture culture of individual firms and find that corporate culture is related to many firm outcomes. In banking, Fahlenbrach, Robert and Stulz (2012) shows that banks which perform poorly in a previous banking crisis in 1998 also exhibit bad performance in the 2008 crisis. They attribute their findings to corporate culture of some banks making their performance more sensitive to crises. We show in our setting that compete-dominant banks tend to suffer from losses when the overall financial industry is in distress, and thus provide a more direct link between bank culture and performance.

2. Literature and hypothesis

2.1. Bank culture and credit decisions

Despite advances in credit scoring technology and automation of the underwriting process, credit decisions remain by and large activities that require human decision and evaluation of borrower's soft information (Brown, Westerfeld, Schaller, & Heusler, 2012; D. Campbell, 2012; Filomeni et al., 2016). These activities require personal judgement of the credit officer⁸ and cannot be fully regulated

⁸ Indeed, the extant literature documents that lending outcomes can be determined by various characteristics of the credit officers, including their psychological factors {Agarwal:2014tg, Cortes:2016ur}, compensation incentives (e.g. Cole, Kanz, & Klapper, 2015), or career concerns (Filomeni, Udell, & Zazzaro, 2016; e.g. Tzioumis & Gee, 2013).

ex ante. Driven by the desire to conform to the group norm (Cialdini and Trost 1998), credit officers may make decisions based on how similar loan cases are decided in the past or how they expected other credit officers to make decisions. This opens up the possibility that corporate culture may become a coordination mechanism (O'Reilly, 1989) and a determinant of how credit decisions are made.

Hypothesis 1: Corporate culture of banks explains their credit decisions.

2.2. *The Competing Value Framework and bank culture*

The Competing Value Framework (henceforth known as the CVF) originated from the work of Quinn and Rohrbaugh (1983) and was further developed by Cameron et al. (2006). Under the CVF, organizational culture is classified into four quadrants: compete, create, control, and collaborate. Each of these cultural quadrants is associated with different corporate orientations, value drivers and effectiveness criteria as shown in Figure 1.

The *create* and *compete* cultural dimensions share an *external* focus. Firms that belong to these two quadrants place an emphasis on risk-taking, adaptability, competitiveness, and aggressiveness. The *create* cultural dimension has a mantra of “create, innovate, and envision the future”. Organizational effectiveness of create-oriented firms is in connection with entrepreneurship, vision and continuous change. They aim to develop new technologies, innovative product-line extensions, and radical new process breakthroughs. Firms in the *compete* dimension typically compete aggressively with speed being an essential factor in maintaining the firm’s competitive advantage. The mantras of this quadrant are: “compete hard, move fast, and play to win”. Specifically, market share gains and growth in profitability are among the major indicators for success of firms in this cultural dimension.

The *collaborate* and *control* cultural dimensions share an *internal* focus. Firms that belong to these two dimensions place an emphasis on risk-taking, adaptability, competitiveness, and aggressiveness. Firms in the *collaborate* cultural dimension are associated with the mantra of “human development, human empowerment, human commitment” which determine effectiveness and success of an organization. Activities anchored in the Collaborate quadrant generate the most value when “stability must be maintained in the face of uncertainty” (Cameron et al., 2006). Firms in the *control*

dimension might be best reflected by the mantra of being: “better, cheaper, and surer”. Organizational effectiveness of these firms is associated with capable processes, substantial predictability and control.

How does a bank’s corporate culture influence its lending decisions? In lending to clients, banks consume various types of risk, most notably default risk, in exchange for interest revenues. Default risk is a major concern for banks because higher default risk renders the banks’ ability to recover the principal and interest payments. As a result, banks would not lend to marginal borrowers whom they deem unable to repay the loans. We argue that the willingness to grant loans to marginal borrowers and consume future default risk varies across banks and is influenced by the bank’s culture. We hypothesize that externally-focused banks, especially the compete-oriented ones, are more willing to grant loans to marginal borrowers in exchange for immediate loan growth and revenues. In contrast, control- and collaborate-oriented banks focus on safety and therefore, are more likely to turn down marginal borrowers; even if this may hinder their immediate growth⁹.

Hypothesis 2: Banks with an externally focused culture are more likely to make risky credit decisions.

3. Data and variables

3.1. Measuring bank corporate culture

We first download 10-K reports from the Edgar website (www.sec.gov) for all listed US firms over the period 1993-2007 (1993 is the earliest year 10-K reports are made available and 2007 is the final year in Dealscan coverage). We include one filing per firm per each calendar year. We then parse the 10-K reports into vectors of words. We then employ textual analysis on these 10-K reports of commercial banks to identify Cameron et al.’s (2006) four dimensions of corporate culture (*compete*, *create*, *control* and *collaborate*). Our text analysis is motivated by the idea that the words and expressions used by members of an organization reflect the culture that they develop overtime (Levinson, 2003).¹⁰

⁹ This is consistent with a theoretical model developed by Song and Thakor (2015). In their model, a bank has a choice between a safety-oriented culture vs a growth oriented culture.

¹⁰ Our approach is similar to Fiordelisi and Ricci (2014). Most of the prior works use annual rankings of companies or employee surveys (see e.g. Barger, Lehn, & Smith, 2015; Guiso et al., 2015). These measures, however,

The exact bag of words used for measuring each cultural dimension is from Fiordelisi and Ricci (2014) and is provided in Figure 2. Fiordelisi and Ricci (2014) compile a large set of synonyms for each cultural dimension from those described in Cameron et al. (2006) and the Harvard IV-4 Psychosocial Dictionary.¹¹ For example, words like “fast, expand, performance, win” are to be associated with compete, words like “envision, freedom, venture” are to be associated with create, words like “cooperate, human, partner” are to be associated with collaborate and words like “monitor, competence, long-term” represent control. The raw score of each cultural dimension is the frequency of its synonyms scaled by the total number of words in the annual report. For instance, if there are 634 compete-related synonyms mentioned in a 27,110-word annual report, the raw *Compete* measure would be 2.34%.

Crucially, while aspects of all four cultural dimensions could co-exist in any organization, only one or two dimensions typically dominate. Further, some aspects may be subjected to specific events occurring to the firm or the industry in a given year and therefore, may fluctuate over time. These fluctuations are temporary and do not necessarily reflect a firm’s long-run cultural orientation.¹² This suggests that the raw cultural scores can be noisy. In the next two steps, we transform the raw scores into measures that reflect a firm’s *dominating* corporate culture.

The first step involves computing four dominant cultural dimensions for each firm-year. Similar to Fiordelisi et al. (2016), we define *compete-year-dominant* as a dummy variable that equals one if a firm’s raw *compete* score is in the top quartile among all banks for that year, and zero otherwise¹³. The same definition applies for all other three cultural measures. In the second step, we construct four measures of time-invariant dominant culture for each bank: *create-dominant*, *compete-dominant*, *control-dominant*, and *collaborate-dominant*. A bank is considered to have a *compete-dominant* if more

suffer from a number of shortcomings. First, firms pay to participate in the survey and therefore, have the incentives to manipulate the survey responses, resulting in significant measurement errors. Second, these surveys are restricted to a small subset of very large firms, making result generalization difficult (see the reviews by Moniz (2015))

¹¹ The Harvard IV-4 Psychosocial Dictionary is commonly used source of word classification, in part because its composition is beyond the control of the researcher and the possible impact of research subjectivity is significantly reduced (Loughran & McDonald, 2011).

¹² This is analogous to human personality. A person can either be an introvert or an extrovert but rarely both. Further, although an extrovert would spend most of her time mixing with the crowd, she may occasionally prefer to spend some quiet time alone.

¹³ This approach also alleviates concerns that certain words are more common in the English dictionary. Essentially, to be classified as having a dominant culture in that year, the frequency of culture-related keywords in the bank’s 10-K reports must be higher relative to other 10-K reports in the same year.

than half of its sample observations are classified as *compete-year-dominant*. We use the same approach to identify *create*, *collaborate* and *control* cultural dimensions. This second step acknowledges the fact that corporate culture tends to persist over time (Fahlenbrach et al., 2012; Van den Steen, 2010).¹⁴ It is worth noting that a bank can be classified as having no dominant culture or having two dominant cultures, although the latter case is rare.

3.2. Bank loans

We obtain data on loan contracts from LPC-Reuter's Dealscan database. The Dealscan database includes both price and non-price terms of the loans. Our loan sample includes all dollar-denominated loans made by US lenders to US borrowers. Some loan packages or deals consist of several facilities for the same borrower but with different types. Following prior studies (e.g. Faleye & Krishnan, 2015), we consider each facility as a separate sample observation.

3.3. Final sample

To construct our final sample, we obtain additional financial information of bank holding companies (BHCs) from the Call Reports database (FFIEC 031/041 and FR Y-9C). To merge our culture variables to Call Reports, we use CRSP Compustat link table and the PERMCO-RSSD link table from Federal Reserve Bank of New York. We manually link the BHCs to the loan data on Dealscan using the lender's name and state. To obtain financial information about the borrowers, we merge the loan data with the Compustat database using the link table from Chava and Roberts (2008).

Our final sample comprises 658 bank-years for 79 unique banks that lend to 5,482 unique borrowers between 1993 and 2007. Table 1 provides descriptive statistics of our sample. Panel A reports summary statistics for banks while Panel B reports statistics for borrowers.

Table 1 about here

¹⁴ This also rules out the possibility that our results are driven by specific events occurring to the firm or the industry in a given year. In the robustness section, we show that as we alternate the cut off points, the results vary consistently with the notion of "dominating culture". For instance, when we move the threshold of dominating culture from top 25% (dominating) to top 10% (ultra-dominating), the coefficient estimates become economically larger.

4. Corporate culture and bank credit decisions

Our first goal is to establish the link between corporate culture of banks and their propensity of making risky lending decisions. For this purpose, we define risky lending decisions as loans extended to non-investment grade borrowers, i.e., those who do not have a long-term Standard and Poor's credit rating or its credit rating is rated BB+ or below.¹⁵

Our empirical model is as follows:

$$\begin{aligned} \Pr(\text{Risky lending}_{i,t}) \\ = \Phi(\alpha_0 + \alpha_1 \times \text{Compete-dominant}_i + \alpha_2 \times \text{Create-dominant}_i + \alpha_3 \\ \times \text{Control-dominant}_i + \alpha_4 \times \text{Collaborate-dominant}_i + \mathbf{X}_{i,t}\boldsymbol{\Gamma} + \varepsilon_{i,t}) \end{aligned} \quad (1)$$

The dependent variable (*Risky lending*) is a dummy variable that equals one if the borrower does not have a long-term Standard and Poor's credit rating or its credit rating is rated BB+ or below. This variable reflects the bank's decision to assume significant credit risk by lending to unrated or non-Investment grade borrowers. The four key independent variables are the four CVF cultural dimensions. Because some banks in our sample are classified as having no dominant culture, the four coefficients represent the difference between banks with a dominant culture and those without a dominant culture.

The vector \mathbf{X} represents the control variables. To isolate the impact of banks' cultural orientation from their economic capability to grant a loan, we include in our model several bank characteristics. These include bank size, charter value, leverage and return on assets. To control for the possibility that banks rely on other information apart from the borrower's credit rating to make credit decisions, we include several characteristics of borrowers into our empirical model. These include borrower size, market-to-book ratio, return on assets and leverage ratio. We also include a dummy

¹⁵ An ideal way to measure risk-taking in lending decisions is to look at loan approval rates, that is, the likelihood that a risky borrower successfully obtains loans from a given bank. However, the Dealscan database only covers successful applications and not the rejected ones. Therefore, instead of using approval rates, we measure risky lending using the propensity that the loans are approved to risky lenders. This measure is subjected to endogenous borrower-lender matching and we discuss this in further details in Section 4.2.

variable that equals 1 if the borrower and the lender have similar dominating corporate culture. We also include various loan characteristics. This includes the natural logarithm of the loan's deal amount and the natural logarithm of maturity period. We also account for relationship lending by including a dummy that equals 1 if the borrower has a prior loan from the bank in the last three years. All regressions include year, borrower's SIC-2 industry and borrower's state fixed effects, allowing us to control for differences in loan characteristics across time, industries and states. All test statistics are computed based on robust standard errors clustered at the borrower-level.

Table 2 about here

Table 2 reports our baseline estimation results. Overall, we find that banks make credit decisions in a manner that is consistent with their dominant culture. Borrowers of compete-dominant banks are 3% more likely than borrowers from banks with no dominant culture to be unrated or rated below BBB. This is consistent with their profit and growth orientation. In contrast, borrowers of control-dominant banks are 7% less likely to be risky borrowers, in line with their safety-focused culture. We do not find the coefficient for collaborate-dominant and create-dominant to be statistically significant.

In Column 5, we report the estimation results when all corporate culture measures included in the same regression specification. We find the coefficient estimates in this column to be very similar to those reported in Columns 1 to 4, suggesting that our corporate culture measures are highly orthogonal to each other.

The control variables have the expected signs. Banks with high leverage are more likely to lend to risky borrowers. In contrast, banks that face high opportunity costs of excessive risk-taking – large and high charter-value banks – refrain from making risky lending. Finally, risky loans are more likely to be granted when borrowers have a prior relationship with their lenders.

4.1. Robustness checks

In Table 3, we conduct a number of robustness tests on the relation between a bank's culture and its lending behavior. First, instead of clustering the standard errors at the borrower-level, we cluster them

at the bank-year, bank-borrower-year, and borrower-year level. As shown in Columns 1 to 3, our results are insensitive to how the standard errors are clustered.

Table 3 about here

Furthermore, loans can have different types and purposes, which may affect their propensity of being approved. Following Giannetti and Yafeh (2012), we include in the regressions additional dummy variables for loan types and loan purposes (Column 4) and find that our results continue to hold.

We further alternate our regression specifications by excluding unrated borrowers from the sample. The new dependent variable equals 1 for sub-investment grade borrowers (BB+ rating and below) and 0 otherwise. As shown in Column (5), the coefficients for *compete-dominant* and *control-dominant* remain significant and have the same sign as in the baseline results. Interestingly, the coefficient for *create-dominant* becomes positive and statistically significant. This suggests that create-dominant banks are also inclined to making sub-investment lending, but refrains from lending to unrated borrowers – the riskiest borrowers. This result indicates similarities in behavior between banks with create and compete cultural orientation, both of which are on the external focus quadrants of the CVF.

Next, there can be a concern that our results are driven by a subset of very large banks, i.e., those with a “too-big-too-fail” attitude and thus, are more prone to take risk (Stern and Feldman, 2004). To address this, we exclude the top 5 largest banks (ranked by assets at the end of 2007).¹⁶ As shown in Column 6, our results remain robust.

Further, there are several mergers and acquisitions (M&A) taking place during the sample period and this may add noise to our cultural measures. Specifically, the 10-K reports of both the acquirer and the target may be dominated by information about the M&A deal and therefore, they may not necessarily reflect the banks’ cultural values. We thus exclude the years during which the merger takes place and display robust results in Column 7.

Finally, we show that our results are not sensitive to the choice of cutoff points. We first relax our “dominating” threshold. In the baseline model, a firm-year is defined to be *create-dominant* if its

¹⁶ Our results are also robust to excluding top 10 largest banks.

raw create measure is in the top 25% among all banks for that year. For robustness, we reclassify a firm-year to be *create-dominant* if its create measure is in the top 10% among all banks for that year. Columns (8) displays the robust results. We also relaxes our “majority” threshold by setting it to 67% (top 1/3) of the sample instead of 50% (top 1/2). The results are unaffected, as shown in Column 9.

4.2. Endogeneity

Our empirical results show that borrowers of compete-dominant banks are more likely be risky borrowers whereas borrowers of control-dominant banks are less likely to be risky ones. These findings are consistent with the view that credit culture of compete-dominants banks leads to riskier credit decisions whereas control-dominant banks make less risky decisions. However, we recognize that endogeneity is a concern with our results. Specifically, the results can be biased by unobservable factors that may affect both a bank’s lending decisions and its cultural orientation. Additionally, it is plausible that borrowers choose their banks based on public information (including the bank’s annual report) and risky borrowers are more inclined to borrow from banks that are classified as compete-dominant. To alleviate these concerns, we examine the change in credit decisions around the Russian Crisis in 1998.

This Russian Crisis started with an announcement of the Russian government to default their sovereign debt obligations on the 17th August 1998 (Kho, Lee, & Stulz, 2000). This followed by the suspension of ruble trading on 28th August 1998 and the massive capital flight from Brazil on 3rd September 1998. Many US banks that have dealings with these countries experience significant losses, liquidity constraint and worsened stock performance (Gatev, Schuermann, & Strahan, 2009).¹⁷ This results in an industry-wide contagion effect, putting the entire US banking sector under significant distress during mid-August and early September 1998.¹⁸

The Russian default event produces a negative shock to a bank’s sentiment with regards to its default risk. As a result, this event could induce the bank to curb their risky credit supply decisions in the short term. If culture matters with regards to credit decisions (our hypothesis), we anticipate that

¹⁷ Gatev, Strahan and Schuermann (2004) show that bank stocks perform very poorly during this period, losing 10% of market capitalization in a short window.

¹⁸ Importantly, our results hold regardless of whether the banks actually have exposures to Russian or Brazilian markets.

banks with risky credit culture would make a larger adjustment to their lending behavior. We argue that this default event allows us to identify the causal effect of bank dominant culture on lending for the following reasons. First, because we examine the change in lending decisions of each bank after the default announcement compared to its decisions before, we should be able to eliminate any unobserved *time-invariant* factors that influence how a bank makes lending decisions. Second, because we evaluate the effect of the shock on lending decisions in the short run, this shock is not likely to accompany any change in unobserved *time-variant* firm characteristics. Due to these first two reasons, we argue that in this setting the dominant culture measures are not likely to be correlated with both time-variant and time-invariant unobserved bank characteristics. Lastly, to the extent that this default event is exogenous to the US economy (Chava & Purnanandam, 2011), this shock arguably is not related to a borrower's decisions to apply for a loan or the choice of its lender. Therefore, the documented relation between culture and change in lending decisions should not be confounded by the effect of bank-borrower matching.

To implement our identification strategy, we select short-term event windows of three, four and five months surrounding the crisis (i.e. from June 1998 to October 1998)¹⁹ and construct a difference-in-difference model where the dummy variables indicating dominant cultures are interacted with a dummy variable *Post Russian default*, which equals one for all months on and after August 1998. The coefficients of interest are the interaction between the cultural dummy variables and *Post Russian default*. If bank culture does not determine credit decisions, all banks should exhibit a similar change in lending, or lack thereof, after the shock and none of the interaction coefficients would be significant.

Table 4 about here

Table 4 reports the results. Across all three event windows, only the coefficient estimates for *Compete-dominant * Post Russian default* are negative and statistically significant. This indicate that only compete-dominant banks change their lending behavior as a result of the Russian default

¹⁹ Short event windows are consistent with the idea that the Russian default only produces a temporary, short-term negative sentiment to bank lending decisions rather than creating a permanent, long-term effect.

announcement. This is consistent with the view that compete-dominant banks have the riskiest credit culture and are most affected by the negative sentiment brought about by Russian default news. On the other hand, banks with other dominant culture do not exhibit any change in lending, which is consistent with the explanation that their credit culture is already relatively cautious prior to the default event. Importantly, our results hold when we exclude banks that have direct exposures to Russian or Brazilian markets²⁰. This supports our view that the change in lending is due to the short-term negative sentiment and not the change in their ability to lend. Overall, this set of results support our conjecture that dominant culture of banks can explain their lending behavior.

To further alleviate the concern that the results are driven by compete dominant banks being chosen by risky borrowers, we examine whether our dominant culture measures can determine lending decisions in residential mortgage, where we can observe the complete pool of applicants²¹. We combine our sample of banks with 10-K reports available on SEC Edgar with the mortgage application data from the Home Mortgage Disclosure Act (HMDA) Loan Application Registry. Following Agarwal et al (2012), we aggregate the data at the bank-county-year level. Our dependent variable is *Loan Approval Rate*, defined as the number of loan applications approved divided by the total number of all loan applications received.

To examine whether bank culture affect lending in residential mortgage, we estimate a linear probability model of *Loan Approval Rate* on the four dominant culture variables. All models include county-year fixed effects to account for the annual variation in economic fundamentals in each county. In addition, we control for various bank characteristics (size, leverage, profitability, and charter value) and characteristics of the loan applications reviewed by a given bank on a given county-year (fraction of female applicants, fraction of minority applicants, and loan-to-income ratio). Thus, our parameter estimates for the dominant culture variables reflect the lending decisions relative to the bank without that particular dominant culture, holding constant characteristics of both banks and borrowers and any unobserved characteristic that is local to the county in each particular year. Standard errors are clustered by county.

²⁰ These results are available upon request.

²¹ In contrast to the syndicate loan data where we can only observe approved loans.

Table 5 about here

The results are reported in Table 5. We find that *compete-dominant* banks are associated with a higher loan approval rate (18.8%) whilst *control-dominant* banks are associated with a lower approval rate (32.3%). This indicates that lending standards are less stringent amongst compete-dominant banks whereas they are more stringent amongst control-dominant banks. Overall, the evidence is consistent with our results on syndicate loans, supporting the hypothesis that the dominant culture of banks can influence their lending decisions.

4.3. Bank culture and loan contracts

So far we find that compete-dominant banks are associated with risky lending and that control-dominant banks are associated with more cautious lending choices. In this section, we examine the effect of a bank's culture on a broader set of loan characteristics. In addition to influencing whether loans are granted to risky borrowers, a bank's culture could also affect how it sets out the terms in the loan contracts.

As compete cultural orientation focuses on growth and profits, we expect compete-dominant banks to impose fewer covenant requirements on their borrowers in exchange for higher revenues (in the form of a higher loan spread). In contrast, we expect control-dominant banks to exercise precaution and impose more covenant conditions on their borrowers. Furthermore, this pattern is expected to be stronger among loans made to unrated and sub-investment grade borrowers, i.e., marginal cases that require lenders to exercise discretion. Corporate culture differences are likely to be most salient in these situations.

To examine whether dominant cultures can determine loan characteristics, we regress the number of covenants and the natural logarithm of drawn all-in spread on the culture variables. We also include the same control variables as those in Equation 1. Table 6 reports the regression results.

Table 6 about here

Columns 1 and 2 report the results for the full sample. Consistent with their performance-driven culture, we find that compete-dominant banks require fewer covenants and compensate for the lower covenant requirements by charging their borrowers higher interest rates. Further, we find *create-dominant* to behave in a similar manner as compete-dominant banks, i.e., they impose fewer loan covenants and ask for a higher loan spread.

In contrast, banks with *control-dominant* and *collaborate-dominant* cultures require more loan covenants from their borrowers, suggesting that these banks use loan covenants to reduce ex-post lending uncertainty. Further, we do not find evidence that these two cultural dimensions explain the variation in loan spreads. Overall, our results suggest that bank lending behavior can be distinguished along two major dimensions – external (compete and create) versus internal (control and collaborate).

Next, we split our sample into sub-investment grade loans (Columns 3 and 4) and investment grade loans (Columns 5 and 6). We find that our results are mainly driven by the terms of risky, i.e., unrated and sub-investment grade loans. Specifically, Columns 3 and 4 show that compete- and create-dominant banks require fewer covenants in exchange for a wider loan spread, which is consistent with our results for the full sample. We do not find evidence that these two cultural dimensions explain loan terms in the investment grade sample.

Whilst *collaborate-dominant* does not significantly explain the number of covenants in the investment-grade subsample, we find that the coefficient *control-dominant* is positive and significant in the subsample. This indicates that control-dominant banks also impose a greater number of covenants even for less risky loans. Further, we find that the *control-dominant* enters the model significantly with a negative coefficient in the loan spread equation. This implies that control-dominant banks are willing to reward safe borrowers by charge lower interest. This paints a stark opposite picture from compete-dominant banks, which requires fewer covenants but asks for a higher spread.

Overall, our results in this section indicate that bank cultural orientations do not only determine their choice of borrowers, but also explain characteristics of the loan contracts.

5. Bank culture and systemic stability

We find that bank cultural orientations determine their choice of their borrowers and how they set the terms of the loan contracts, but what are the consequences of these choices? In this section, we examine the relation between bank culture and individual bank risk as well as the bank's contribution to the risk of the financial system.

5.1. Bank culture and loan performance

In this section, we examine whether bank dominant cultures can determine the characteristics of their loan portfolios. We focus on two key characteristics – portfolio growth and the proportion of non-performing loan. Our empirical model is as follows:

$$y_{i,t} = \alpha_0 + \alpha_1 \text{create-dominant} + \alpha_2 \text{compete-dominant} + \alpha_3 \text{collaborate-dominant} + \alpha_4 \text{control-dominant} + \mathbf{X}_{i,t} \mathbf{\Gamma} + \varepsilon_{i,t} \quad (2)$$

where the dependent variable, $y_{i,t}$, is loan portfolio characteristics.

Loan portfolio growth is measured as the percentage change in total loans relative to the previous year. The proportion of non-performing loans is measured as a percentage of total assets.

Following Ellul and Yerramilli (2013), we control for the bank's size, ROA, charter value, Tier-1 Capital, Deposits/Assets, Loans/Assets, Liabilities/Assets, as well as its deposit concentration at the state-level. Additionally, we control for bank governance characteristics, including the number of the directors on board and the fraction of independent directors.

Table 7 about here

Table 7 reports the results. We find that in Panel A of Table 7, the coefficient for *Compete-dominant* are positive and significant, suggesting that compete banks enjoy an 89% faster lending growth relative to other banks. This fast lending growth, however, comes at a cost of a 17% higher fraction of non-performing loans (Panel B). Thus, there is no “free lunch” to risky lending: while enjoying a fast lending growth, the lender has to assume higher losses from defaulted borrowers. In contrast, Panel B shows that control banks enjoy a 27.9% lower fraction of bad loans, a reward for their

caution when originating loans. Interestingly, control banks do *not* face a slower lending growth rate relative to other banks.

Overall, these findings highlight the consequences of different types of lending behavior. It implies that banks that choose to have a competitive-oriented culture gain more utility from earning more while banks that choose to have a control-oriented culture gain more utility from avoiding losses.

5.2. Industry distress, risky lending, and loan performance

In this section, we examine whether lending behaviors of banks and their loan performance vary across normal versus distress time. An industry distress is defined as a dummy that equals 1 for years when the number of bank failures²² is greater than the sample median, and 0 otherwise. Distress at the industry-level is plausibly exogenous to the culture of individual banks. To test this hypothesis, we partition the sample into two subsamples based on whether or not the banking industry is under distress and re-estimate both our loan- and bank-level analyses. Table 8 reports the results.

[Table 8 about here]

Panel A of Table 8 demonstrates a sharp contrast in bank lending behavior during normal and distress time. During normal time, compete banks continuously extend loans to risky borrowers (Column 1) and, as a result, enjoy a phase of extraordinarily fast lending growth (Column 3). Only when distress hits and bad loans start to materialize (Column 6) that compete banks stop their risky lending activities (Column 2) and accordingly their lending growth comes to a sudden halt (Column 4).

Interestingly, compete-dominant banks do not have to “pay” for their risky lending behavior immediately. That is, they only incur a significantly higher fraction of bad loans during distress (Column 6) but not during normal time (Column 5). Control banks, in contrast, incur a substantially lower fraction of bad loans when distress hits. Thus, their safe lending practices pay-off when crisis hits.

²² Data obtained from the FDIC website (<https://www.fdic.gov/bank/individual/failed/banklist.html>)

5.3. Bank culture and systemic risk measures

So far we show that banks' cultural orientations affect how they lend as well as that it affects growth and potential losses of their loan portfolios and that performance of compete-dominant banks tend to be cyclical and in line with industry distress. We next investigate the possibility that the culture of individual banks also affects systemic bank risk. As banks operate in an interconnected manner, activities of individual banks could produce large risk spillovers to other financial institutions. Thus, through the lending channel, a bank culture could have far-reaching consequences on the stability of the financial system.

To capture systemic risk in the banking sector, we employ ΔCoVaR from Adrian and Brunnermier (2016). ΔCoVaR captures the estimated change in Value-at-Risk of all financial institutions (systemic VaR) when the bank VaR changes from its normal state to a distress state. Essentially, it measures the extent to which the financial system is closer to distress when a bank is becoming distressed. The more negative the measure, the closer the financial system is to distress when the bank is in distressed, suggesting that the bank contributes more to systemic risk.

To test the hypothesis that bank culture can determine overall systemic risk, we estimate a similar model as Equation (1) but replace the dependent variable with our two systemic risk measure. If banks of certain cultures increase systemic risk, we would anticipate that the coefficient for that cultural dimension is negative.

Table 9 about here

Table 9 reports the results. Consistent with our expectations, the coefficient of *compete-dominant* is negative and statistically significant, implying that banks having a compete-oriented culture make a larger contribution to the overall systemic risk. In contrast, the evidence suggests that control-oriented banks' contributions to systemic risk are smaller, consistent with their safety-oriented business model. Taken together, a bank's culture not only influences its stand-alone risk but also produces large risk spillovers to the overall banking industry.

6. Conclusion

In this paper, we document an important link between bank corporate culture and bank behavior. Specifically, we find evidence that banks with different dominant cultural orientations behave in different ways with regards to lending. Banks with a compete-dominant culture are associated with a higher propensity of lending to borrowers that can be deemed riskier i.e. those unrated or with a sub-investment grade credit rating. This leads to a higher growth in loan portfolio but results in a higher proportion of non-performing loan. In contrast, banks with a control-dominant culture are associated with a lower propensity of risky lending, which is shown in our empirical finding to result in a safer loan portfolio with regards to non-performing loan. Crucially, we show that compete-dominant banks contribute to industry-level systematic risk to a significantly greater degree compared to other banks, whilst control-dominant banks' contribution to systematic risk is significantly lower. This implies that bank cultural orientation is an important factor that influences the stability of the financial sector.

Our work has a strong implication on the role of culture in the financial sector. Not only do we show that culture of individual banks influences their risk and performance at the bank level but also has a significant impact on the systemic risk of the financial sector as a whole. We conclude that our work is an important first step for both the academic literature and players in the banking sector towards a better understanding of the role of culture in the banking industry.

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Table 1: Summary statistics

This table reports the summary statistics for the banks and borrowers in the sample. The sample includes all loans made by US lenders to US borrowers from 1993 to 2007. Panel A reports bank characteristics and Panel B reports borrower characteristics. Definitions of all variables are included in Appendix I.

Variables	N	Mean	STD	1 st	50 th	99 th
Bank characteristics						
Compete-dominant	571	0.159	0.366	0.000	0.000	1.000
Create-dominant	571	0.084	0.278	0.000	0.000	1.000
Control-dominant	571	0.040	0.197	0.000	0.000	1.000
Collaborate-dominant	571	0.114	0.318	0.000	0.000	1.000
Bank size	571	17.050	1.456	14.160	16.930	20.620
Bank charter value	353	2.340	0.963	0.945	2.126	5.766
Bank leverage	571	0.915	0.017	0.859	0.917	0.952
Bank ROA	571	1.195	0.373	0.054	1.203	2.050
Bank deposit	542	0.688	0.104	0.306	0.689	0.877
Bank lending	571	0.614	0.149	0.083	0.657	0.821
State HHI	570	0.394	0.184	0.116	0.373	1.000
Bank board size	450	16.340	4.908	8.000	16.000	29.000
Bank board independence	450	0.765	0.151	0.304	0.800	1.000
Bank bad loans	311	5.603	3.507	0.063	5.058	15.600
Bank lending growth	497	0.009	0.085	-0.299	0.011	0.263
Δ CoVaR	571	0.012	0.005	0.002	0.012	0.026
Borrower characteristics						
Borrower size	17,179	6.784	1.995	2.564	6.689	11.910
Borrower market-to-book	17,179	3.127	64.000	-7.800	1.959	21.470
Borrower leverage	17,179	2.567	39.360	-13.340	1.449	28.060
Borrower ROA	17,179	0.114	0.148	-0.338	0.118	0.407
Unrated/Non-investment grade	17,179	0.770	0.421	0.000	1.000	1.000

Table 2: Lender culture and risky lending

This table reports the probit estimation results where the dependent variable equals 1 for unrated borrowers or those rated BB+ or worse, 0 for borrowers rated BBB or better. Definitions of all variables are included in Appendix I. Each model includes year, borrower's sic-2 industry, and state fixed effects. Robust standard errors are clustered at the borrower-level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Dependent variable: Dummy equals 1 for unrated borrowers or those rated BB+ or worse					
	(1)	(2)	(3)	(4)	(5)
Compete-dominant	0.088*** (2.657)				0.095*** (2.670)
Create-dominant		-0.006 (-0.229)			0.025 (0.881)
Control-dominant			-0.211** (-2.352)		-0.211** (-2.302)
Collaborate-dominant				0.026 (0.657)	0.065 (1.516)
Bank size	-0.016** (-2.529)	-0.019*** (-3.019)	-0.020*** (-3.385)	-0.019*** (-3.124)	-0.017*** (-2.792)
Bank charter value	-0.085*** (-6.534)	-0.083*** (-6.369)	-0.085*** (-6.525)	-0.083*** (-6.384)	-0.085*** (-6.540)
Bank leverage	0.001 (0.294)	0.004 (1.265)	0.005 (1.570)	0.004 (1.235)	0.001 (0.422)
Bank ROA	7.926*** (7.071)	8.683*** (8.017)	8.764*** (8.134)	8.638*** (7.990)	7.820*** (6.962)
Borrower size	-0.821*** (-21.273)	-0.821*** (-21.302)	-0.821*** (-21.274)	-0.821*** (-21.271)	-0.820*** (-21.290)
Borrower market-to-book	-0.007*** (-2.895)	-0.007*** (-2.890)	-0.007*** (-2.889)	-0.007*** (-2.890)	-0.007*** (-2.895)
Borrower leverage	0.004** (2.560)	0.004** (2.558)	0.004** (2.552)	0.004** (2.557)	0.004** (2.553)
Borrower ROA	-2.523*** (-6.545)	-2.523*** (-6.540)	-2.522*** (-6.538)	-2.521*** (-6.537)	-2.517*** (-6.533)
Ln (Deal amount)	-0.008 (-0.259)	-0.008 (-0.251)	-0.008 (-0.277)	-0.008 (-0.249)	-0.008 (-0.278)
Deal maturity	0.008*** (6.258)	0.008*** (6.211)	0.008*** (6.315)	0.008*** (6.209)	0.008*** (6.336)
Relationship lending	0.043* (1.664)	0.041 (1.597)	0.040 (1.552)	0.042 (1.626)	0.044* (1.700)
Year dummies	Yes	Yes	Yes	Yes	Yes
Borrower sic-2 dummies	Yes	Yes	Yes	Yes	Yes
Borrower state dummies	Yes	Yes	Yes	Yes	Yes
Observations	41,313	41,313	41,313	41,313	41,313
Pseudo- R ²	0.492	0.492	0.492	0.492	0.492

Table 3: Lender culture and risky lending – Robustness checks

This table presents various robustness tests. Columns (1)-(3) report results where standard errors are clustered at the bank-year, bank-borrower-year, and borrower-year, respectively. Column (4) reports results with additional loan type and loan purpose fixed effects. Column (5) reports results where unrated borrowers are not included, and the dependent variable equals 1 when borrowers rated BB+ and below. Column (6) reports results where we exclude loans made by top 5 banks. Column (7) reports results where we exclude loans made during transitional year after a merger. Column (8) reports results where we define the threshold for ‘dominating’ culture to be in the top 10%. Column (9) reports results where we define the threshold for ‘persistent’ dominating culture to be two-thirds of the sample. Definitions of all variables are included in Appendix I. Each model includes year, borrower’s sic-2 industry, and state fixed effects. Robust standard errors are clustered at the borrower-level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	Cluster by bank-year (1)	Cluster by bank- borrower-year (2)	Cluster by borrower- year (3)	Add loan type and loan purpose FE (4)	Junk grade vs. investment grade only (5)	Exclude top 5 banks (6)	Exclude post-merger year (7)	Dominating threshold at 90% (8)	Majority threshold at 67% (9)
Compete-dominant	0.087** (2.535)	0.087*** (2.702)	0.087*** (2.855)	0.063* (1.821)	0.119*** (2.939)	0.107*** (2.955)	0.089** (2.243)	0.201** (2.179)	0.072** (2.231)
Create-dominant	0.028 (0.873)	0.028 (1.007)	0.028 (1.188)	0.028 (0.996)	0.102*** (3.230)	0.047 (1.308)	0.035 (1.200)	-0.099 (-1.084)	-0.068* (-1.667)
Control-dominant	-0.208* (-1.656)	-0.208** (-2.054)	-0.208** (-2.362)	-0.312*** (-3.374)	-0.213** (-2.087)	-0.221** (-2.436)	-0.181** (-1.975)	-0.274*** (-2.862)	-0.225** (-2.408)
Collaborate-dominant	0.044 (1.147)	0.044 (1.195)	0.044 (1.316)	0.052 (1.186)	0.043 (0.849)	0.060 (1.370)	0.044 (0.963)	- (-)	0.040 (1.084)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sic-2 dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower state dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,088	41,088	41,088	40,997	26,350	28,704	36,210	41,313	41,313
Pseudo- R ²	0.513	0.513	0.513	0.527	0.431	0.521	0.492	0.492	0.493

Table 4: 1998 Russian default and bank lending behavior

This table reports the probit estimation results where the dependent variable equals 1 for unrated borrowers or those rated BB+ or worse, 0 for borrowers rated BBB or better. *Post Russian default* is a dummy that equals 1 for all months on and after August 1998. Column (1), (2) and (3) respectively report results using three-month (July 1998 to September 1998), four-month (July 1998 to October 1998) and five-month (June 1998 to October 1998) windows surrounding the Russian default event. Column (4) reports results of a placebo test where the post- and pre-Russian default periods are falsely defined to be exactly one year prior to the actual default date. Definitions of all variables are included in Appendix I. Each model includes year, borrower's sic-2 industry, and state fixed effects. Robust standard errors are clustered at the borrower-level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	3-month	4-month	5-month	Placebo event 1 year prior to August 1998
Compete-dominant * Post Russian default	-0.085** (-2.204)	-0.087** (-2.091)	-0.086** (-2.124)	0.004 (0.097)
Create-dominant * Post Russian default	-0.016 (-0.346)	-0.027 (-0.619)	-0.030 (-0.685)	-0.062 (-1.505)
Control-dominant * Post Russian default	-0.066 (-0.498)	-0.091 (-0.692)	-0.089 (-0.711)	0.101 (0.635)
Collaborate-dominant * Post Russian default	0.041 (0.699)	0.046 (0.828)	0.054 (1.050)	0.005 (0.080)
Post Russian default	-0.005 (-0.100)	-0.020 (-0.461)	-0.017 (-0.413)	-0.091* (-1.796)
Compete-dominant	0.077** (2.268)	0.058 (1.444)	0.065* (1.747)	0.026 (0.660)
Create-dominant	-0.046 (-1.179)	-0.021 (-0.540)	-0.007 (-0.183)	0.045 (1.235)
Control-dominant	-0.015 (-0.140)	-0.024 (-0.229)	-0.013 (-0.124)	0.097 (0.664)
Collaborate-dominant	0.012 (0.241)	-0.007 (-0.144)	-0.013 (-0.281)	0.027 (0.533)
Other controls	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Borrower sic-2 dummies	Yes	Yes	Yes	Yes
Borrower state dummies	Yes	Yes	Yes	Yes
Observations	1,198	1,582	2,003	54,195
Pseudo- R ²	0.703	0.641	0.604	0.491

Table 5: Lender culture and risky lending – residential mortgage

This table reports the OLS estimation results where the dependent variable is *Loan approval ratio*, defined as the number of approved loan divided by the number of loan applications. The data is from the Home Mortgage Disclosure Act (HMDA) Loan Application Registry and is aggregated at the bank-county-year level. Definitions of all variables are included in Appendix I. Robust standard errors are clustered at the county-level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Dependent variable = Loan approval ratio	
	(1)
Compete-dominant	0.188*** (0.050)
Create-dominant	-0.078 (0.048)
Control-dominant	-0.323*** (0.085)
Collaborate-dominant	0.015 (0.032)
Ln(Total Income)	0.001 (0.001)
Fraction of female applicants	-0.095*** (0.005)
Fraction of minority applications	-0.222*** (0.003)
Bank size	-0.014*** (0.002)
Bank charter value	0.015*** (0.001)
Bank leverage	-0.214*** (0.049)
Bank ROA	-0.000 (0.000)
County * year fixed effects	Y
Observations	372457
R ²	0.122

Table 5: Lender culture and other loan terms

This table reports the OLS regression results of borrowers' financial covenants (columns 1-3) and loan spread (columns 4-6) on measures of lender's dominant corporate. Definitions of all variables are included in Appendix I. Each model includes year, borrower's sic-2 industry, and state fixed effects. Robust standard errors are clustered at the borrower-level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	Debt covenants			Loan spread		
	All borrowers	Sub-investment grade	Investment grade	All borrowers	Sub-investment grade	Investment grade
	(1)	(2)	(3)	(4)	(5)	(6)
Compete-dominant	-0.041** (-2.513)	-0.055*** (-2.777)	0.021 (1.097)	0.045*** (3.991)	0.029*** (2.916)	-0.002 (-0.117)
Create-dominant	-0.096*** (-6.215)	-0.106*** (-5.514)	-0.001 (-0.085)	0.047*** (4.617)	0.053*** (5.43)	-0.02 (-1.617)
Control-dominant	0.208*** (3.319)	0.224*** (2.719)	0.094* (1.782)	0.011 (0.248)	0.104** (2.369)	-0.096* (-1.695)
Collaborate-dominant	0.060*** (3.032)	0.066*** (2.919)	0.009 (0.328)	0.012 (0.985)	-0.004 (-0.394)	0.029 (1.574)
Bank size	0.006* (1.865)	0.003 (0.686)	0.001 (0.233)	-0.016*** (-7.257)	-0.013*** (-5.880)	-0.002 (-0.842)
Bank charter value	0.003 (0.456)	0.012 (1.367)	-0.011 (-1.587)	-0.045*** (-9.931)	-0.027*** (-6.390)	-0.014** (-2.192)
Bank leverage	0.003 (-1.568)	0.007*** (3.172)	-0.005*** (-3.438)	0.007*** (6.537)	0.007*** (6.748)	0.006*** (4.213)
Bank ROA	-0.768 (-1.144)	-1.177 (-1.533)	1.752*** (-2.597)	5.245*** (13.694)	3.223*** (9.895)	1.346** (2.086)
Borrower size	-0.114*** (-7.764)	-0.085*** (-4.710)	-0.165*** (-6.328)	-0.230*** (-19.926)	-0.084*** (-8.577)	-0.092*** (-3.825)
Borrower MTB	-0.001*** (-3.012)	-0.001*** (-2.791)	-0.001 (-0.761)	0.000 (-1.301)	0.000 (-0.821)	-0.001 (-0.602)
Borrower leverage	0.001** (2.38)	0.001** (2.121)	0.004 (-0.992)	0.001 (1.413)	0.000 (1.303)	0.002 (0.373)
Borrower ROA	0.316*** (2.708)	0.391*** (3.269)	-0.670*** (-2.733)	-1.731*** (-18.931)	-1.173*** (-16.367)	-1.512*** (-4.644)
Ln (Loan amounts)	0.069*** (4.616)	0.075*** (4.208)	0.055** (-2.367)	0.019 (1.610)	-0.020** (-2.177)	0.002 (0.092)
Average maturity	0.010*** (13.992)	0.010*** (12.048)	0.003*** (-2.833)	0.003*** (5.500)	0.000 (-0.544)	0.000 (0.200)
Ln (Spread)	0.511*** (23.684)	0.446*** (17.596)	0.400*** (9.894)	- (-)	- (-)	- (-)
Covenants	- (-)	- (-)	- (-)	0.218*** (23.394)	0.093*** (13.045)	0.253*** (9.267)
Relationship lending	-0.018 (-1.364)	0.012 (0.719)	0.025 (1.352)	0.038*** (4.308)	0.521*** (32.256)	0.560*** (7.987)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Borrower Industry	Yes	Yes	Yes	Yes	Yes	Yes
Borrower State	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30877	23080	7797	30877	23080	7797
R ²	0.376	0.266	0.431	0.491	0.529	0.556

Table 6: Lender culture and loan outcomes

This table reports the OLS regression results. The dependent variables are the percentage change in total assets relative to prior year (Panel A) and fraction of non-performing loans (Panel B). Definitions of all variables are included in Appendix I. Each model includes year, borrower's sic-2 industry, and state fixed effects. Robust standard errors are clustered at the borrower-level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: Bank lending growth		Dependent variable: Loan growth				
		(1)	(2)	(3)	(4)	(5)
Compete-dominant	0.025*** (2.675)				0.027*** (2.661)	
Create-dominant		0.005 (0.336)			0.011 (0.701)	
Control-dominant			-0.015 (-1.134)		-0.004 (-0.311)	
Collaborate-dominant				0.003 (0.433)	0.008 (0.908)	
Bank size	0.002 (0.856)	0.000 (0.116)	0.000 (0.037)	0.001 (0.336)	0.002 (0.599)	
Bank ROA	-0.002 (-0.221)	-0.001 (-0.044)	-0.001 (-0.089)	-0.001 (-0.043)	-0.004 (-0.353)	
Bank capital	0.005* (1.936)	0.006* (1.906)	0.006** (1.997)	0.006* (1.914)	0.006** (2.049)	
Bank deposits	0.019 (0.336)	0.002 (0.030)	0.003 (0.046)	0.004 (0.076)	0.029 (0.497)	
Bank lending	-0.165*** (-3.622)	-0.181*** (-3.489)	-0.186*** (-3.666)	-0.186*** (-3.544)	-0.167*** (-3.384)	
Bank leverage	-0.629* (-1.744)	-0.621 (-1.637)	-0.583 (-1.498)	-0.630* (-1.672)	-0.604 (-1.607)	
Bank HHI	-0.016 (-1.066)	-0.012 (-0.775)	-0.013 (-0.852)	-0.012 (-0.784)	-0.014 (-0.947)	
Board size	-0.002*** (-2.636)	-0.002** (-2.443)	-0.002** (-2.141)	-0.002** (-2.509)	-0.002** (-2.296)	
Board independence	0.024 (1.032)	0.028 (1.210)	0.028 (1.192)	0.027 (1.142)	0.024 (1.028)	
Year dummies	Yes	Yes	Yes	Yes	Yes	
Observations	317	317	317	317	317	

Panel B: Bank nonperforming loans					
	Dependent variable: Non-performing loans/Total assets				
	(1)	(2)	(3)	(4)	(5)
Compete-dominant	0.927** (2.344)				0.892** (2.058)
Create-dominant		1.436 (1.457)			1.775* (1.785)
Control-dominant			-1.560*** (-3.244)		-1.234** (-2.264)
Collaborate-dominant				0.329 (0.712)	0.523 (1.118)
Bank size	0.801*** (4.620)	0.652*** (3.747)	0.653*** (3.584)	0.737*** (4.146)	0.660*** (3.725)
Bank ROA	-1.441*** (-2.908)	-1.429*** (-2.932)	-1.442*** (-3.006)	-1.440*** (-3.002)	-1.459*** (-2.929)
Bank capital	0.260 (1.503)	0.264 (1.524)	0.313* (1.802)	0.267 (1.556)	0.308* (1.753)
Bank deposits	-1.522 (-0.569)	-1.882 (-0.705)	-2.413 (-0.913)	-2.164 (-0.808)	-0.629 (-0.231)
Bank lending	12.443*** (13.889)	11.792*** (12.582)	11.362*** (12.664)	11.470*** (11.942)	11.926*** (12.249)
Bank leverage	-12.752 (-1.105)	-14.999 (-1.307)	-8.936 (-0.746)	-14.920 (-1.276)	-7.947 (-0.659)
Bank HHI	-1.101 (-1.454)	-0.899 (-1.172)	-1.000 (-1.336)	-0.898 (-1.183)	-0.902 (-1.213)
Board size	-0.054 (-1.446)	-0.044 (-1.129)	-0.016 (-0.387)	-0.052 (-1.374)	-0.016 (-0.356)
Board independence	-0.860 (-0.632)	-0.989 (-0.707)	-0.804 (-0.581)	-0.811 (-0.584)	-1.295 (-0.921)
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	290	290	290	290	290

Table 7: Distress vs. Non-distress Periods

Distress is defined as a dummy that equals 1 for years when the number of bank failures is greater than the sample median, and 0 otherwise. All variables are described in detail in Appendix I. The analysis is conducted at bank level. Each model includes year, borrower's sic-2 industry, and state fixed effects. Robust standard errors are clustered at the bank level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	Sub-investment grade lending		Loan growth		Bad loans	
	Distress = 0	Distress = 1	Distress = 0	Distress = 1	Distress = 0	Distress = 1
	(1)	(2)	(3)	(4)	(5)	(6)
Compete-dominant	0.110*** (2.839)	0.054 (1.541)	0.024** (1.988)	0.028 (1.655)	0.104 (0.173)	1.207* (1.749)
Create-dominant	0.037 (1.238)	0.000 (0.011)	-0.002 (-0.100)	0.033 (1.399)	6.155*** (4.965)	0.130 (0.130)
Control-dominant	-0.081 (-0.658)	-0.282*** (-2.664)	-0.025 (-1.316)	0.021 (0.983)	-1.666** (-2.438)	-2.217*** (-2.790)
Collaborate-dominant	0.009 (0.218)	0.070 (1.253)	0.000 (-0.014)	0.019 (1.447)	0.460 (0.785)	1.037 (1.336)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Borrower sic-2 dummies	Yes	Yes	Yes	Yes	Yes	Yes
Borrower state dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,857	28,158	179	153	151	139
Pseudo- R^2 / R^2	0.497	0.500	0.266	0.431	0.529	0.556

Table 8: Bank culture and systemic risk

This table reports the OLS regression results. The dependent variable is Adrian and Brunnermeier's (2016) measure of ΔCoVaR , which is the difference between the CoVaR conditional on a bank being in distress and the CoVaR conditional on a bank operating in its median state. Definitions of all variables are included in Appendix I. Each model includes year, borrower's sic-2 industry, and state fixed effects. Robust standard errors are clustered at the borrower-level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	Dependent variable = ΔCoVaR (x100)				
	(1)	(2)	(3)	(4)	(5)
Compete-dominant	-0.182*** (-3.287)				-0.164*** (-2.830)
Create-dominant		0.025 (0.345)			-0.003 (-0.033)
Control-dominant			0.202*** (3.220)		0.160** (2.347)
Collaborate-dominant				0.003 (0.075)	-0.002 (-0.050)
VaR	4.485** (2.406)	2.648 (1.386)	3.791* (1.874)	2.641 (1.386)	5.213*** (2.684)
Bank size	-0.002 (-0.096)	0.008 (0.434)	0.016 (0.938)	0.010 (0.540)	0.005 (0.288)
Bank ROA	0.179*** (4.126)	0.161*** (3.816)	0.167*** (3.965)	0.161*** (3.807)	0.182*** (4.234)
Bank capital	-0.003 (-0.179)	-0.003 (-0.175)	-0.010 (-0.624)	-0.002 (-0.160)	-0.008 (-0.542)
Bank deposits	-0.080 (-0.288)	-0.048 (-0.166)	-0.070 (-0.244)	-0.054 (-0.188)	-0.091 (-0.319)
Bank lending	-0.549*** (-4.272)	-0.421*** (-3.502)	-0.357*** (-2.899)	-0.432*** (-3.481)	-0.479*** (-3.159)
Bank leverage	1.203 (0.974)	1.089 (0.870)	0.447 (0.344)	1.112 (0.886)	0.672 (0.503)
Bank HHI	0.173* (1.721)	0.128 (1.304)	0.126 (1.291)	0.126 (1.286)	0.168* (1.657)
Board size	-0.007* (-1.728)	-0.008* (-1.917)	-0.011*** (-2.683)	-0.008** (-1.994)	-0.009** (-2.232)
Board independence	0.061 (0.619)	0.050 (0.490)	0.038 (0.386)	0.047 (0.464)	0.052 (0.538)
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	327	327	327	327	327

Appendix I: Definitions of variables

Variable	Definition	Source
Bank characteristics		
Compete	The number of times a firm uses the words contained in the bag of words for <i>Compete</i> divided by the total number of words in its 10k.	10K reports
Create	The number of times a firm uses the words contained in the bag of words for <i>Create</i> divided by the total number of words in its 10k.	10K reports
Control	The number of times a firm uses the words contained in the bag of words for <i>Control</i> divided by the total number of words in its 10k.	10K reports
Collaborate	The number of times a firm uses the words contained in the bag of words for <i>Collaborate</i> divided by the total number of words in its 10k.	10K reports
Compete-year-dominant	A dummy that equals to 1 if a firm's Compete score is in the top quartile among all banks in that year and 0 otherwise	10K reports
Create-year-dominant	A dummy that equals to 1 if a firm's Create score is in the top quartile among all banks in that year and 0 otherwise	10K reports
Control-year-dominant	A dummy that equals to 1 if a firm's Control score is in the top quartile among all banks in that year and 0 otherwise	10K reports
Collaborate-year-dominant	A dummy that equals to 1 if a firm's Collaborate score is in the top quartile among all banks in that year and 0 otherwise	10K reports
Compete-dominant	A dummy that equals to 1 if more than half of a firm's sample observations are classified as compete-year-dominant	10K reports
Create-dominant	A dummy that equals to 1 if more than half of a firm's sample observations are classified as create-year-dominant	10K reports
Control-dominant	A dummy that equals to 1 if more than half of a firm's sample observations are classified as control-year-dominant	10K reports
Collaborate-dominant	A dummy that equals to 1 if more than half of a firm's sample observations are classified as control-year-dominant	10K reports
Bank size	Natural logarithm of total assets (BHCK2170)	FR Y-9C
Bank charter value	Market value of equity divided by the book value of equity	CRSP, FR Y-9C
Bank leverage	Book value of liabilities divided by book value of total assets	FR Y-9C
Bank ROA (%)	Earnings before interest and taxes (EBIT) divided by book value of total assets (BHCK2170)	CRSP, FR Y9-C
Bank lending	Ratio of total loans (BHCK2122) divided by total assets	FR Y-9C
Bank deposits	Ratio of total deposits (BHDM6631+BHFN6631 + BHDM6636 + BHFN6636) divided by total assets	FR Y-9C
Bank capital	Ratio of Tier-1 Capital (BHCK8274) divided by total assets	FR Y-9C
Bank HHI	Index measuring the concentration of deposits at the state level	FR Y-9C
Bank lending growth	The percentage of change in total assets relative to prior year	FR Y-9C
Bank nonperforming loans	Ratio of loans past due day 90 days or more (BHCK5525) and nonaccrual loans (BHCK5526) divided by total assets	FR Y9-C
Board size	The number of directors sitting on the board	BoardEx
Board independence	The fraction of non-executive directors on the board	BoardEx
Loan characteristics		
Ln (Deal amount)	Natural logarithm of loan amount	Dealscan
Deal maturity	The number of calendar months between the loan origination date and loan maturity date	Dealscan
Covenants	The number of financial covenants	Dealscan
Ln(Spread)	Natural logarithm of the all-in-drawn loan spread	Dealscan
Relationship lending	A dummy variable that equals to one if a borrower has another loan from the same bank in the three years period prior to the loan origination.	Dealscan
Borrower characteristics		
Sub-investment grade	A dummy equals 1 if the borrower has a sub-investment credit rating grade (i.e., unrated or rated BBB and below)	Compustat

Borrower size	Natural logarithm of total assets (BHCK2170)	Compustat
Borrower market-to-book	Market value of equity divided by the book value of equity	Compustat
Borrower leverage	Book value of liabilities divided by book value of total assets	Compustat
Borrower ROA	Earnings before interest and taxes (EBIT) divided by book value of total assets (BHCK2170)	Compustat

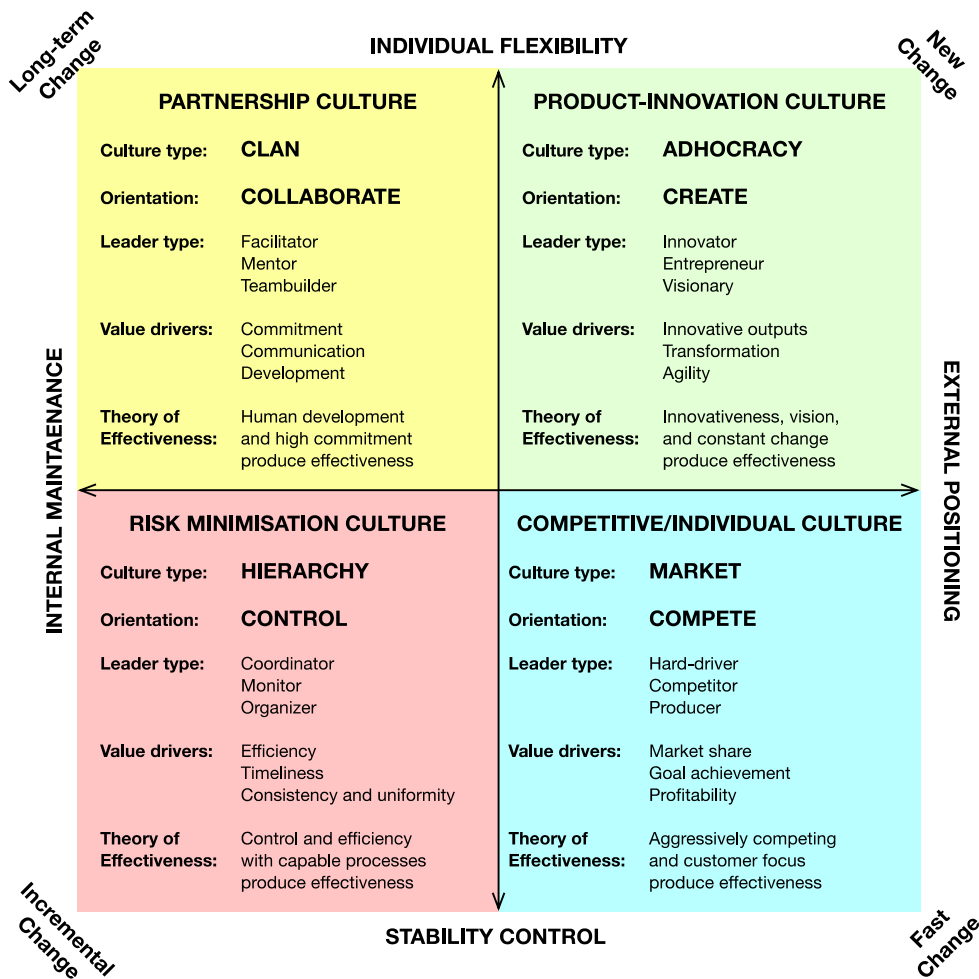


Figure 1: Four cultural dimensions (Cameron et al., 2006; Thakor, 2015)

Culture type	Bag of words
Control	capab*, collectiv*, commit*, competenc*, conflict*, consens*, control*, coordin*, cultur*, decentr*, employ*, empower*, engag*, expectat*, facilitator*, hir*, interspers*, involv*, life*, long-term*, loyal*, mentor*, monit*, mutual*, norm*, parent*, partic*, procedur*, productiv*, retain*, reten*, skill*, social*, tension*, value*
Compete	achiev*, acqui*, aggress*, agreem*, attack*, budget*, challeng*, charg*, client*, compet*, customer*, deliver*, direct*, driv*, excellen*, expand*, fast*, goal*, growth*, hard*, invest*, market*, mov*, outsourc*, performanc*, position*, pressur*, profit*, rapid*, reputation, result*, revenue*, satisf*, scan*, succes* signal*, speed*, strong, superior, target*, win*
Collaborate	boss*, burocr*, cautio*, cohes*, certain*, chief*, collab*, conservat*, cooperat*, detail*, document*, efficien*, error*, fail*, help*, human*, inform*, logic*, method*, outcom*, partner*, people*, predictab*, relation*, qualit*, regular*, solv*, share*, standard*, team*, teamwork*, train*, uniform*, work group*
Create	adapt*, begin*, chang*, creat*, discontin*, dream*, elabor*, entrepre*, envis*, experim*, fantas*, freedom*, futur*, idea*, init*, innovat*, intellec*, learn*, new*, origin*, pioneer*, predict*, radic*, risk*, start*, thought*, trend*, unafra*, ventur*, vision*

Figure 2: Bag of words (Fiordelisi & Ricci, 2014)