

Individualism, Formal Institutional Environments, and Bank Capital Decisions

Abstract

We examine how individualism affects bank capital decisions worldwide and in the United States at the state level. Based on a sample of 7,034 banks in 68 countries, we establish three major findings. First, individualism is negatively and significantly associated with bank regulatory capital, and the association is independent of the influence of formal institutional environments. Second, effective legal enforcement magnifies individualism's negative effect on bank regulatory capital. Finally, focusing on the United States, we also find that banks in individualistic states hold less regulatory capital than banks in collectivist states do. Effective state-level legal enforcement magnifies the effect of individualism. Our findings suggest that individualism constrains regulators, as regulatory guidelines or formal institutional factors operate very differently depending on the informal institutional environment.

JEL classifications: G21, G32, K12, M14

Keywords: Individualism, formal institutional environments, legal enforcement, regulatory capital

1. Introduction

This study examines how informal institutional environments influence bank capital decisions. Prior banking studies typically focus on the traditional determinants of bank capital structure (Gropp and Heider, 2010; Schaeck and Cihák, 2012, 2014), though recent studies show interest in the macroeconomic and formal institutional determinants of bank capital structure. For instance, Anginer et al. (2016) show that banks with good internal governance tend to hold less capital. Schepens (2016) finds that reducing dependence on the tax shield can be a useful tool for regulators to encourage banks to increase their capital ratios. Also, Bitar and Tarazi (2019) document that banks hold higher capital ratios in countries with stronger creditor protections. However, research on whether informal institutional environments, such as cultural values, affect bank regulatory capital decisions is still scarce.

Bank capital requirements, or “regulatory capital,” are central tools to ensure financial stability. However, too-stringent capital requirements may impede bank investments and constrain economic growth. As a result, a balance ensures a flow of funds to finance economic activities and protect the overall stability of the financial system. Understanding the determinants of bank regulatory capital is important as they provide both investors and regulators with a tool to discipline bank managers’ risk-taking behavior while securing economic growth.

Given this link between bank capital decisions and financial stability, it is important to investigate the determinants of cross-country or cross-region regulatory capital decisions. The Basel Committee on Banking Supervision (BCBS), at least at the international level, provides specific guidelines, such as Basel I, II, and III, on minimum capital requirements. However, the variation in regulatory capital ratios across countries implies that the BCBS standardized guidelines for capital requirements are not equally implemented.

We seek to understand how informal institutional environments affect bank decisions to hold more or less regulatory capital by investigating the influence of cultural values. Kaufman et al. (2018) qualify culture as a mental guidance about what is appropriate versus inappropriate, legal versus illegal, and right versus wrong. Held (2017) describes culture as “shared norms within an organization that are evidenced through behavior.”¹ In the banking literature, Berger et

¹ From the speech of Michael Held, the Executive Vice President of the Federal Reserve Bank of New York, titled “Reforming culture and conduct in the financial services industry: How can lawyers help?”

al. (2021) characterize culture as pervasive and it can invade everything in a society, including the corporate culture of banks. As a measure of culture, we focus on Hofstede's (2001) distinction between individualism and collectivism, which is considered as the key cultural measure in cross-cultural studies.²

Prior research on non-financial institutions shows that individualism affects trading volume (Chui et al., 2010), dividends policy (Shao et al., 2010), debt maturity (Zheng et al., 2012; Chui et al., 2016), the level of corruption (Zhen et al., 2013), cash holdings (Chen et al., 2015), mergers (Ahern et al., 2015), stock prices (Eun et al., 2015), and risk-taking (Mihet, 2013; Gaganis et al., 2019; Dang et al., 2019). We argue that if individualism can affect non-financial institutions' decision making then it would be surprising if it does not affect bank capital decisions. In addition, individualism may be more embedded in the bank culture compared to non-financial institutions since bank managers tend to take on excessive risk to increase their expected returns at the expense of bank capital (Berger et al., 2021). While banks need to maintain higher capital ratios than non-financial institutions³ for financial stability considerations,⁴ they may understate or manipulate their risk-weighted assets to avoid higher capital requirements (Blum, 2008; Cathcart et al., 2015). Such a behavior was evident during the subprime crisis where bank culture was used as an excuse to break regulation (Deloitte, 2013; PWC, 2014; KPMG, 2016). Culture excuse can encourage wrong or risky practices and going beyond regulation as long as they lead to high bank performance, bonuses, and high pay packages at the end of the year (Callero, 2017; Bitar et al., 2019). We conjecture that managers in individualistic countries view lower capital as an opportunity to prosper and develop. Managers are indeed more likely to increase bank leverage and engage in various medium- and long-term investments and therefore keep their regulatory capital as low as possible. Collectivist

² Cline and Williamson (2017) argues that Hofstede's measure of individualism is the main cultural dimension in international studies. It is considered as the most comprehensive in terms of both the range of countries and the number of involved respondents (Chui et al., 2010). In addition, both banks and individualism influence economic development. Banks have a unique role in allocating resources and ensuring economic growth (Levine, 2005; Zheng et al., 2013). Individualism is referred to as the only cultural value that empirically affects economic development (Gorodnichenko and Roland, 2011).

³ The literature provides evidence on the important role of culture in firm capital decisions (Zheng et al., 2012; Chui et al., 2016). Due to their uniqueness, banks hold more capital than nonfinancial institutions and, for financial stability considerations, are subject to specific capital requirements. To our knowledge there is no empirical study on how culture affects bank capital decisions.

⁴ Berger et al. (2021) argue that bank failure can trigger widespread economic costs affecting other financial institutions through their interconnectedness, governments by requiring bailouts using taxpayers' money, and borrowers in the real economy.

societies, however, have a holistic view of the financial system. They prefer overall stability instead of individual success and personal achievement. As such, banks there could maintain regulatory capital at levels well above the standardized minimum requirements imposed by BCBS and national authorities. We therefore expect that individualism has a negative effect on bank regulatory capital.

Using a large sample of 7,034 banks from 68 countries for the 2000–2015 period, we find that bank managers tend to hold less regulatory capital in individualistic countries. Such an effect is economically meaningful, as a one-standard-deviation increase in individualism leads to a decline in bank regulatory capital of approximately 8.29 percentage points. We also find that, in individualistic countries, banks hold a lower regulatory capital buffer (i.e., the amount of capital in excess of minimum regulatory requirements, which can exceed the Basel III requirements and vary across countries).

We further investigate whether individualism differently influences regulatory capital after controlling for formal institutional environment. North (1990) and Williamson (2000) propose a hierarchy of institutional environments where informal and formal rules of the game define institutions. According to Kaufmann et al. (2018), a formal institutional environment represents rules and government structure; an informal institutional environment focuses on culture. The findings show that individualism continues to affect bank regulatory capital negatively, even after including numerous formal institutional variables.

Finally, we find that in countries with more effective legal enforcement, individualism has a more pronounced effect on regulatory capital ratios compared to countries with less effective legal enforcement. North (1990) and Kaufmann et al. (2018) contend that implementing the same formal rules in different countries with different cultures may have multiple economic outcomes. Our results are consistent with this view.

In our robustness tests, we conduct the same analysis by focusing on banks in the United States. We find that banks tend to hold less regulatory capital in more individualistic states within the United States. In addition, individualism influences bank regulatory capital more radically in states with stronger federal legal enforcements. Hence, our results remain unchanged when limiting the sample to American banks.

On the whole, these findings indicate that individualism affects bank capital decisions. Our findings are robust when we address concerns related to potential omitted bank characteristics, macroeconomic and institutional factors, Basel III additional capital buffers, religion, and other cultural dimensions. They are also robust when we rerun our analyses using alternative measures of bank capital and individualism, as well as alternative subsamples. Finally, the results remain significant when using a two-step system generalized method of moments to deal with endogeneity, a Heckman estimation technique to overcome self-selection bias, and a battery of additional estimation techniques. These techniques check the sensitivity of our results to a potential set of outliers, heterogeneity of the dependent variable, heteroskedasticity of standard errors, and potential bias due to confounding variables.

We assert that taking culture into account sheds light on several puzzles in finance. We demonstrate that culture affects bank capital decisions, leading to different financial and regulatory outcomes across countries. In particular, identifying the channels through which formal institutional environments complement informal institutional environments is a way to understand why standardized capital requirements do not necessarily have the same financial outcomes across countries. We view our results as the first empirical evidence that culture does matter, which has important policy implications on bank capital decisions. Our findings suggest that regulatory capital can be viewed as a constraint by bank managers in individualistic countries. In addition, for banks in countries where laws are properly enforced, the signaling role of regulatory capital is less important and the effect of individualism on bank regulatory capital is more significant.

This work contributes to the literature in two ways. First, while the literature shows that culture influences bank risk-taking and performance, its effects on bank capital decisions have been neglected so far. For example, Berger and al. (2021) show that informal institutional environment matters to better understand bank failures around the world. They find that individualism and masculinity positively affect bank failures. In addition, Boubakri et al. (2017) find that banks in countries with high uncertainty avoidance, high power distance, and collectivism perform better during the 2007-2009 subprime crisis. Mourouzidou-Damtsa et al. (2019) show that banks in countries with individualistic and hierarchical cultural values tend to take more risk; however, this behavior is weaker during the subprime crisis. Also, Bitar et al.

(2019) highlight that the relation between regulation and bank performance is stronger in countries with less individualistic and more feminist cultural values. Our findings show that individualism, which promotes self-interest, personal goals, independence, and overconfidence, has a negative effect on bank regulatory capital ratios. Bank managers perceive a less strict regulatory environment as an avenue for innovation and success. They are likely to take on more risk while keeping their regulatory capital as low as possible. The findings are consistent with the corporate finance literature, which provides evidence that individualism and national culture influence firms' capital decisions, cash holdings, and the cost of debt (Chui et al., 2002; Li et al., 2011; Chen et al., 2015; Chui et al., 2016; El Ghoul et al., 2017).

Second, we contribute to the literature on formal institutional environment and bank capital decisions. Al-Raheb et al. (2019) find that formal institutional environments have a strong effect on bank regulatory capital ratios in developing countries with weak stock markets. Bitar and Tarazi (2019) find that an institutional environment with strong creditor protection affects bank regulatory capital differently in countries with dual banking systems. The banking literature has however, so far, not focused on the link between the two sides of institutional environment, i.e. formal and informal, covered in the literature on the hierarchy of institutional environment (North, 1990; Williamson, 2000; Kaufmann et al., 2018). In this paper, we consider the joint effect of formal and informal institutional environment on bank capital decisions rather than the effect of formal or informal institutional environment separately. We focus on the effectiveness of legal enforcement as one of the formal institutional channels through which culture can affect bank capital decisions. We argue that banks in individualistic countries with effective legal enforcement tend to hold less regulatory capital than banks operating in individualistic countries with less effective legal enforcement because investments are better protected. Our findings are consistent with this view and in line with the corporate finance literature on the important role of legal enforcement, as a part of formal institutional environment, along with informal institutions on financial decision making (Cline and Williamson, 2017; Daher et al., 2017; Kaufmann, 2018).

The rest of the paper is organized as follows. The next section discusses the relevant literature and the hypotheses. Section 3 describes the data sources, the empirical model, and descriptive statistics. Section 4 presents the results. Section 5 performs additional robustness

checks focusing on banks in the United States and using a two-step system generalized method of moments, as well as a Heckman estimation technique. The last section concludes.

2. Related literature

The conjecture that informal institutional environments such as cultural values influence firm managers' decisions is rooted in the sociology and psychology literatures (Schwartz, 1994; Hofstede, 2001; House, 2004). Ahern et al. (2015) find that cultural values likely affect individuals' preferences for working with colleagues in significant ways. For instance, managers may choose to work with colleagues who share the same cultural values, at the expense of efficient work outcomes. Cline and Williamson (2017) argue that cultural values can explain the behavior of individuals by establishing reference points to define right and wrong in societies. In this paper, we focus on individualism, which Hofstede (2001) calls the most influential cultural dimension.

Individualism reflects the distinction between individual autonomy and collective (group-based) decision-making processes. In countries where individualism is the norm, individuals devote special attention to maximize their self-interest, personal goals, and achievements, without considering the well-being of the country at large (Ahern et al., 2015). Chen et al. (2015) relate individualism to overconfidence. Berger et al. (2021) find that bank managers take on larger portfolio risks in individualistic countries. Because individualistic countries reward individual success and profit, risk-taking incentives for individuals are higher than in collectivist countries. In addition, independent decisions involve riskier behavior, because individual risk-taking is more tolerated (Shupp and Williams, 2008) and risk-management oversight is weaker than in collectivist countries (Berger et al., 2021).

In contrast, collectivist countries accommodate collective interest, group goals, and promote holistic thinking and working styles. Such countries have a more favorable view of government regulation and supervision. Also, Chui et al. (2010) claim that people in collectivist countries tend to self-monitor by adjusting their behavior to meet social expectations. They prefer power from above in order to limit independent choices that are inconsistent with socially approved actions. In this respect, collectivism emphasizes circumscribing individual decisions in the name of protecting the wider interests of the social group. Accordingly, if collectivist cultures

view business development as a trade-off to social stability, they will prefer more regulation and policies that govern bank activities.

Given this background, we posit that holding regulatory capital varies between managers in individualistic countries and managers in collectivist countries. Managers in individualistic countries are often overconfident (Chen et al., 2015) about bank insolvency risk, and as a result they may underestimate actual risk exposure compared to managers in collectivist countries. Conversely, managers in collectivist countries are more likely to prioritize the protection of public image. Holding higher regulatory capital is an internal source of funds to protect banks against default and thus is a signal to regulators and the public that the bank is sound and well managed. Because managers in individualistic countries seek personal success and profits, and they tend to be overoptimistic, they are more likely to increase their investments and engage in riskier activities (Berger et al., 2021) while holding lower regulatory capital ratios. Moreover, managers in countries with individualistic cultural values perceive a less regulated banking system as an avenue for opportunities and personal triumph (Cline and Williamson, 2017). In sum, we expect banks to hold less regulatory capital ratios in countries with individualistic cultural values and this discussion leads to our first hypothesis:

Hypothesis 1. Individualism is negatively related to bank regulatory capital ratios

However, this discussion disregards the work of North (1990) and Williamson (2000), who propose a hierarchy of institutional environments. Although Williamson (2000) qualifies institutions as very complex, both studies commonly define institutions as the formal and informal rules of the game. According to Kaufmann et al. (2018), formal institutions represent rules and government structure; informal institutions focus on culture.

Prior research indicates that formal institutional environment affects firms and bank capital decisions. Although the corporate finance literature provides abundant evidence that formal institutional environment influences firms' financing decisions (e.g., Fan et al., 2012, Öztekin and Flannery, 2012; Cho et al., 2014; Öztekin, 2015; Turk-Ariss, 2016; Daher, 2017), few empirical studies examine how formal institutional factors affect bank capital decisions. Recently, AlRaheb et al. (2019) find that the effect of formal institutional environments have a significant effect on bank regulatory capital ratios in developing countries with weak stock

markets. . Bitar and Tarazi (2019) show that when creditor protections are high, banks in developing countries tend to increase their regulatory capital ratios.

Therefore, we refer to the banking and the corporate finance literature to control comprehensively for formal institutional environment. Specifically, we control for legal systems (Turk-Ariss, 2016), bank monitoring and supervision (Bitar et al., 2018; AlRaheb et al., 2019), and legal enforcement (Cline and Williamson, 2017; Daher et al., 2017; Kaufmann, 2018). We argue that a formal institutional environment that rigorously protects bank investments in equity and debt markets and enforces contracts with borrowers encourages better functioning and lower risk exposure than does a formal institutional environment that is less effective in protecting bank investments (Levine, 1998). As a result, banks in countries with effective, formal institutional environments may tend to hold less regulatory capital than banks in countries with less effective institutional environments. In particular, we expect the role of bank capital as a monitoring and protection mechanism to be less important, because banks expect an effective legal enforcement environment to protect their investments. As a result, we expect banks to hold less regulatory capital in countries with effective legal enforcement, yielding the following hypothesis:

Hypothesis 2. Effective legal enforcement environment is negatively related to bank regulatory capital ratios.

Finally, North (1990) and Cline and Williamson (2017) contend that implementing the same formal rules in different countries with different cultures may lead to multiple economic outcomes. Consequently, a particular set of formal institutions, such as legal enforcement, may produce different regulatory outcomes depending on a country's cultural values. Thus, although we focus on the influence of informal (individualism) and formal institutional environment (particularly legal enforcement) on bank capital decisions, we expect that their combined effect may also influence bank regulatory capital. Accordingly, if banks in individualistic countries prefer to hold lower regulatory capital, and more effective legal enforcement encourages managers to use debt, we expect individualism to have a stronger effect on bank regulatory capital decisions in countries with effective legal enforcement. Thus, we formulate our third hypothesis as follows:

Hypothesis 3. The negative effect of individualism on bank regulatory capital is stronger in countries with effective legal enforcement.

3. Data and empirical model

To address our research question (i.e., the effect of individualism on bank regulatory capital), we use an initial sample of 9,928 banks operating in 110 countries. We double check the data and exclude countries with fewer than three banks, as well as banks with negative regulatory capital ratios. We also exclude Armenia, Azerbaijan, Bahrain, Belarus, Bermuda, Botswana, Cyprus, Dominican Republic, Georgia, Kazakhstan, Mauritius, Nicaragua, Oman, and Sri Lanka because they lack data on the Hofstede (2001, 2010) individualism index. This reduces the sample to 7,034 banks from 68 countries for the 2000-2015 period. Data on bank-level control variables are from BankScope and Fitch Solutions.

Our main dependent variable is the bank regulatory capital ratio known as capital adequacy ratio, or *Regulatory capital*. Imposed by the Basel Committee on Banking Supervision (BCBS), this ratio is the sum of tier 1 capital and tier 2 capital, divided by risk-weighted assets. The regulatory capital ratio must equal at least 8% under the Basel III rules.

To measure individualism, we refer to the Hofstede (2001, 2010) cultural dimensions and use his notion of individualism, *Individualism*, as our main independent variable. Hofstede's dimension on individualism varies between 0 and 1, with higher (lower) values indicating more individualistic (collectivist) countries. The main advantage of this proxy on individualism is that a large number of studies use it and validate it (Cline and Williamson, 2017).

Following prior research on bank capital decisions in international studies, we include bank-level, macroeconomic, natural resources, and demographic control variables. The bank-level variables are those considered as determinants of bank capital structure: bank *Size*, *Liquidity*, *Tangibility*, and *Credit risk* (Demirgüç-Kunt et al., 2013; De Jonghe and Öztekin, 2015; Schepens, 2016; Anginer et al., 2018; Berger et al., 2021).

Second, we control for differences in economic conditions, given that prior research finds these to be associated with bank capital decisions (Houston et al., 2011; Bitar and Tarazi, 2019;

Berger et al., 2021). Accordingly, we include *GDP growth rate*, *Domestic credit to private sector*, and *Inflation*.

Third, we account for *International trade* and natural resources rents (i.e., *Oil rent*, *Gas rent*, and *Mineral rent*). North (1990) argues that engaging in complex international trade depends on the reliability of institutional and regulatory environments. As for natural resources, Cline and Williamson (2017) find that natural resources reduces the quality of formal institutions, since they can be used by individuals in power to exclude other groups (Djankov et al., 2008), which can damage institutions. We expect a positive effect of international trade on bank regulatory capital ratios and a negative effect of natural resources on bank regulatory capital ratios.

Finally, we control for demographic differences across countries using country's *population growth* and country's *surface*. Berger et al. (2007) and Cyree and Morris (2018) find that population growth reduces bank performance since countries with a large population are less wealthy and have less access to banks compared to countries with small population. As for surface, Berger et al. (2007) argue that bank managers seek personal rewards associated with building empires and expanding on broader geographical territory. However, their ambition is often constrained by transportation costs, price discrimination (Beck et al., 2019), and organizational diseconomies (Berger and Deyoung, 2001) related to weak corporate governance structure. Thus, we expect both variables to have a negative effect on bank regulatory capital ratios.

We examine the hypotheses presented above using the following baseline random-effect, Generalized Least Squares (GLS) regression model⁵ of bank regulatory capital decisions:

$$\begin{aligned} \text{Regulatory capital}_{i,j,t} \\ = \alpha + \beta \times \text{Individualism}_t + \varphi \times \text{Bank}_{i,j,t} + \gamma \times \text{Country}_{j,t} + \tau \times \text{YFE}_t + \varepsilon_{i,j,t} \end{aligned}$$

⁵ We follow Zheng et al. (2012) and Bitar and Tarazi (2019) and use a random-effect, GLS regressions for two reasons: First, regression models such as OLS ignore the panel structure of our data. Second the individualism index as well as other country-level formal and informal institutional variables are time-invariants and cannot be estimated using a fixed-effect analysis. Finally, we run Breusch-Pagan Lagrange Multiplier (LM) tests to decide between a random effect model and an OLS regression. The findings for the Breusch-Pagan tests are statistically significant at 1% level, indicating that random effect model is preferable in our analysis. We therefore conduct our estimations using random effects regressions.

Where $\text{Regulatory capital}_{i,j,t}$ is the regulatory capital ratio for bank i in country j during year t , as defined above. Individualism_t is the Hofstede's measure of individualism, as defined above. $\text{Bank}_{i,j,t}$ is a set of bank-level control variables, and $\text{Country}_{j,t}$ is a set of country-level control variables. YFE_t represents year fixed effects. Standard errors are at the bank-level, adjusted for both heteroskedasticity and within correlation.

Summary statistics are in table 1. Overall, we have 68 countries in our main analysis of the effect of individualism on bank regulatory capital; however, the sample size varies depending on the included variables. The descriptive statistics on *Individualism* and *Regulatory capital* suggest a large cross-country variation. This variation is further supported by macroeconomic and natural resources control variables, namely *GDP growth rate*, *Inflation*, and natural resources rents, indicating that it is important to control for these variables in our regressions.

INSERT TABLE [1] AROUND HERE

The relationship between individualism and bank regulatory capital is in figure 1. The graph shows that *Regulatory capital* exhibits a decreasing pattern as a function of higher individualistic cultural values. Countries that are more individualistic and tend to hold lower regulatory capital include the United States, Australia, the United Kingdom, the Netherlands, Canada, New Zealand, Italy, Denmark, Sweden, and France. Collectivist countries with tendencies to hold higher regulatory capital include Ghana, Nigeria, Panama, Venezuela, Indonesia, Costa Rica, Trinidad and Tobago, South Korea, Thailand, and Vietnam.

INSERT FIGURE [1] AROUND HERE

4. Main findings

We now address our main research question and examine how individualism affects bank regulatory capital decisions. Depending on the variables employed in our models, the number of countries in the regressions varies between 43 and 68. In the following subsections, we control for individualism using additional measures of informal and formal institutional environments. We also address concerns regarding the definition of *Individualism* and *Regulatory capital* using various alternative measures of individualism and capital ratios. Finally, we address endogeneity

issues, as well as possible self-selection bias in the choice of sample by using a two-step system generalized method of moments and Heckman estimation techniques.

4.1. *The effect of individualism on bank capital decisions*

Before turning to the bank-level and macroeconomic control variables, table 2 explores how individualism affects bank capital decisions. Panel A models 1-8 show that *Individualism* is negatively and significantly associated with *Regulatory capital* at the 1% level, confirming hypothesis 1 that banks in more individualistic countries tend to have lower regulatory capital ratios. For example, model 8 shows that a one-standard-deviation increase in *Individualism* (0.235) is associated with a decrease in *Regulatory capital* of approximately 0.016 ($=0.068 \times 0.235$) or 8.29% ($=0.016/0.193$; statistically significant at $p < 1\%$). Such a result is consistent with the conjecture that managers in individualistic countries are overconfident (Chen et al., 2015), engage in high-risk activities, and tend to adopt fewer risk-mitigation measures, such as holding higher capital ratios (Berger et al., 2021). They perceive a less strict regulatory environment as an avenue for success, innovation, and growth (Cline and Williamson, 2017). Indeed, the literature argues that their goal is to achieve personal success and profit while overestimating their own abilities (Chen et al., 2015). Some papers also show that managers tend to be overly optimistic about the precision of their decisions (Van Den Steen, 2004), which is also consistent with behavior leaning toward setting lower regulatory capital ratios.

Bank-level control variables generally have significant coefficients with the expected signs. As shown in models 1-2, we find that bank size (*Size*) is significantly negative, supporting the generally negative association between size and capital ratios in previous literature (Schepens, 2016; Anginer et al., 2016; Bitar and Tarazi, 2019). We further find that the coefficient estimates on liquidity (*Liquidity*) are positive and significant, suggesting that having more liquid assets implies less information asymmetry and therefore better capacity to raise capital (Bitar et al., 2018). The results further reveal a negative association between net loans to assets (*Asset diversity*) and regulatory capital, indicating that banks focusing on traditional financial intermediation instead of risky investments such as derivatives and securities tend to hold lower capital ratios. The coefficient estimates on fixed assets to assets (*Tangibility*) are significantly positive, showing that tangible assets are easier to value than intangible assets such as goodwill. Holding more tangible assets reduces uncertainty and increases a bank's capacity to

issue equity capital at lower cost compared to issuing debt. Finally, we find that bank credit risk is positively associated with regulatory capital, implying that riskier banks tend to hold more capital to protect themselves against default.

Next, we introduce four macroeconomic variables, three natural resources measures, and two geodemographic control variables. Gropp and Heider (2010) argue that macroeconomic and natural resources effects are more important for banks than firms because banks are more exposed to business cycle fluctuations. Table 2, panel A, models 3 to 6 report the results from adding *GDP growth rate*, *Domestic credit to private sector*, *Inflation*, *trade*, *Oil rent*, *Gas rent*, and *Mineral rent*. The findings show a positive effect of macroeconomic variables on bank capital decisions except for inflation. Banks in countries with rich natural resources and periods of economic growth tend to grant more credit to the private sector. Their profits could be higher, allowing them to accumulate more retained earnings to build their capital ratios. Finally, the results for individualism remain very robust even after adding two demographic measures (*Population growth* and the natural logarithm of a country's surface, *Surface*) (model 7).

We also include several measures of formal institutional quality and religion. Cline and Williamson (2017) argue that it is important to control for exogenous measures of institutional quality in the broadest possible matter, allowing for both direct and indirect effects of individualism on regulatory capital. La Porta et al. (2008) assert that common law countries tend to regulate markets less compared to civil law countries; Stulz and Williamson (2003) add to the legal-origin literature and show that religion has more explanatory power on how a country enforces regulation than does a country's legal origin.

Table 2, panel B, models 1-2 control for legal origin using the *Common law* and *Civil law* dummy variables, while models 3 to 8 control for religion using five dummy variables (*Catholic*, *Orthodox*, *Protestant*, *Muslim*, and *Buddhist*).⁶ In all models, individualism remains significantly negative in influencing bank regulatory capital. For instance, after controlling for common law, model 1 shows that a one-standard-deviation increase in *Individualism* (0.235) is associated with a decrease in *Regulatory capital* of approximately 0.02 ($=0.085 \times 0.235$) or 10.36% ($=0.02/0.193$; statistically significant at $p < 1\%$). Common law and civil law proxies appear insignificant. This

⁶ We identify five main religions in our sample: Catholic, Orthodox, Protestant, Muslim, and Buddhist. A dummy variable equals 1 if the largest proportion of the population practices the religion; it equals 0 otherwise.

insignificant association may be the result of high correlation between Hofstede's index of individualism and the two proxies of legal origins.⁷ As for religion, Catholic and Orthodox countries tend to hold higher regulatory capital compared to Protestant and Buddhist countries. Overall, panel B suggests that although factors such as legal origins and religion are complementary determinants of bank capital decisions, they do not alter the significantly negative effect of individualism.

INSERT TABLE [2] AROUND HERE

4.1.1 Individualism's effect on bank capital decisions: Additional informal and formal institutional environment variables

Our baseline results in table 2 show that individualism is persistently negatively associated with bank regulatory capital. The results remain robust after controlling for macroeconomic conditions, legal origins, and religion.

Now, we address concerns regarding how potential, omitted, informal institutional environment variables affect the association between individualism and bank regulatory capital decisions. We refer to Hofstede's cultural values and include five additional proxies of culture (i.e., *Masculinity*, *Uncertainty avoidance*, *Power distance*, *Long-term orientation*, and *Restraint*).⁸ We also borrow from the literature on trust (Guiso et al., 2006; Fungáčová et al. 2017) and use two measures from the World Values Surveys (i.e., confidence in women's organization and general trust).⁹

⁷ In our unreported results, we replace Hofstede's index of individualism with the GLOBE measure of collectivism and test the effect of common law and civil law on bank regulatory capital. The GLOBE measure of collectivism and both proxies of legal origins are less correlated. The results show that common law countries hold less regulatory capital compared to civil law countries, thus concurring with previous literature (Djankov et al., 2007; La Porta et al., 2008; Cline and Williamson, 2017).

⁸ *Masculinity* is similar to individualism in that it encourages winning and material success with a lack of empathy, team efforts, and communication skills. *Uncertainty avoidance* reflects the degree to which individuals feel uncomfortable with uncertain situations. *Power distance* expresses the degree to which individuals accept that power is distributed unequally among people. *Long-term orientation* refers to the degree to which individuals learn from their experiences to face present challenges and prepare for the future. *Restraint* represents individuals in a society that restricts individual success and emphasizes overall regulation and supervision.

⁹ We use the two trust measures to control for social capital. High-trust nations tend to prefer personal relations and believe that mutual respect is the key to successful business partnerships. We do not include confidence in women in organization variable in Table 3 Panel A model 8 because of the high correlation >.5 with the general trust variable included in the comprehensive regression model.

Table 3, panel A, models 1 to 5 reports the results for the impact of individualism on regulatory capital after controlling for the additional Hofstede's cultural values. Models 6 and 7 report the results after controlling for trust; model 8 reports the results after adding all the additional cultural values. The findings indicate that banks tend to hold less regulatory capital in masculine countries. Similar to the individualistic countries, masculinity focuses on personal success, risk-taking, and pushing boundaries to achieve higher performance, regardless of existing rules and regulations. In contrast, banks tend to hold more regulatory capital in trustful countries with long-term orientation, power distance, and restraints. Banks in countries with trustful cultural values that favor overall stability and lower uncertainty tend to hold higher capital ratios, reflecting their compliance with regulatory guidelines and their efficient monitoring mechanisms. Importantly, individualism remains significantly negative even after the inclusion of the additional cultural dimensions. According to model 8, a one-standard-deviation increase in individualism leads to a decline in bank regulatory capital of approximately 8.81 percentage points. Thus, although including additional cultural values slightly reduces the negative effect of individualism on bank capital decisions, this effect remains strong.

Despite using various additional measures of cultural values to control for the effect of individualism on bank capital decisions, the concern of missing omitted variables may still arise. For this purpose, we follow the literature on banking regulation and supervision and saturate our model with eight measures shown to influence bank risk and performance (Barth et al., 2013; Bitar et al., 2018; Berger et al., 2021). We use *Investment freedom* and *Business freedom* to control for regulatory efficiency and market openness. We expect a negative effect of investment freedom and business freedom on bank regulatory capital. Broader exposure to international markets as well as the increased level of facilities related to the creation of businesses without any regulatory burdens reflect strong institutional environment and a possibly lesser reliance on regulatory capital as a signalling mechanism on bank financial soundness (Bitar and Tarazi, 2019). We also use *Government spending*, *Government size*, and *Information sharing* to control for government effectiveness. We expect a negative effect of government spending and government size on bank regulatory capital and a positive effect of information sharing on bank regulatory capital. Strong government intervention implies less developed markets and financial systems while information sharing reflects transparency and better financial conditions. Accordingly, holding more regulatory capital may be a response to institutional and financial

underdevelopment (Öztekin, 2021). Finally, we use *Infrastructure quality index*, *Official supervisory power*, and *Capital stringency* to control for institutional and supervisory quality. We expect a negative effect of the three measures on bank regulatory capital since banks tend to rely less on bank regulatory capital as a protection mechanism in countries with effective institutional environment. Because these variables are highly correlated, we include them in separate models.

The results in table 3, panel B, models 1 and 2 show that banks in countries that favor business and investment freedom tend to hold less regulatory capital, indicating that creating businesses and new investments without regulatory burdens (such as licensing constraints and complex bureaucracy) encourages banks to increase their reliance on leverage. As for government effectiveness, models 3-4 show that banks tend to hold higher capital ratios in countries where the government intervenes in the economy and the financial markets. However, banks in countries that encourage transparency through information sharing tend to decrease their reliance on regulatory capital (model 5). In addition, models 6-7 show that banks in countries with better infrastructure and effective supervisory power tend to hold less regulatory capital. Finally, model 8 shows that stringent capital regulation is negatively related to bank regulatory capital, suggesting that the adoption of stringent rules related to the inclusion of revaluation gains as part of capital as well as the subsequent capital injection through assets other than cash and government securities may limit the bank's capacity to increase capital. More important, the association between individualism and bank regulatory capital remains negative and economically significant after controlling for additional measures of formal institutional environment.

INSERT TABLE [3] AROUND HERE

4.1.2 Regressions with regulatory capital buffers, alternative measures of capital, and individualism

Our results suggest so far that individualism is negatively associated with bank regulatory capital after controlling for various informal and formal institutional environment variables. Next, we question whether the findings survive alternative measures of capital and individualism. We also use bank capital buffers as an alternative for the regulatory capital ratio because prudential

regulators may have higher capital thresholds than the minimum required by Basel III. Finally, although during our sample period banks are essentially required to follow the Basel II guidelines, we control for heterogeneity in regulatory capital guidelines due to the implementation of Basel III.

We use three alternative measures to proxy for bank regulatory capital. Tier 1 divided by risk-weighted assets, *Tier 1/rwa*, represents bank core capital and is composed of common stocks, retained earnings, and noncumulative preferred stock. *Equity to total assets* is the traditional leverage ratio. Capital divided by total assets, *Tier 1+tier 2/total assets*, is the nonrisk-based capital ratio.¹⁰ Regulatory capital buffer, *Capital buffer*, is the difference between a bank's regulatory capital ratio and the minimum regulatory capital ratio imposed by national regulators. Finally, we include three dummy variables that equal 1 if a country drafts (defines), publishes, or put into force new guidelines on the Basel III regulatory capital ratio, capital conservation buffer (*CCB*), and the countercyclical buffer (*CyB*); it equals zero otherwise.¹¹

As shown in table 4, panel A, models 1-3, individualism is negatively associated with bank Tier 1 capital, the traditional (nonweighted) leverage ratio, and the nonrisk-based regulatory capital ratio, indicating that specific definitions of bank capital do not drive our results. Panel B shows that individualism's effect on bank capital buffers remains significantly negative. As for the inclusion of dummy variables, we only find a positive and significant association between Basel III and bank capital buffers. As banks move forward in implementing Basel III, they are required to rely more on high-quality capital and enhance the risk-weighted assets methodology that proved miscalibrated during the subprime crisis. Therefore, with the new reform in place, banks must adjust their regulatory capital ratios by increasing their buffers, which could explain the positive sign of *Basel III*.

As with alternative measures of culture, there is no single, definitive measure of individualism. This raises the possibility that the results may be sensitive to Hofstede's specific

¹⁰ Several studies cast doubt on the effectiveness of the risk-weighting methodology to assess bank exposure to risk and calculate bank regulatory capital (Cathcart et al., 2015; Dermine, 2015). We mitigate concerns about the risk-weighting methodology using alternative risk- and nonrisk-based measures of bank capital.

¹¹ The capital conservation buffer and countercyclical buffers are required by Basel III capital guidelines, in addition to the minimum regulatory capital ratio. Both buffers consist of common equity with a main objective to conserve bank capital of good quality. Information on Basel III's capital guidelines, the capital conservation buffer, and the countercyclical buffer is from the 2019 Financial Stability Institute (FSI) survey from the BIS, the Regulatory Consistency Assessment Programme (RCAP), and central bank websites for the different countries in the sample.

measure of individualism. Thus, we reestimate our models using alternative proxies of individualism from three sources. One is the adjusted Hofstede index of individualism in Tang and Koveos (2008), *Individualism TK*. We also use the Schwartz (1994) measures of *Embeddedness* and *Mastery*.¹² Although *Embeddedness* emphasizes on the importance of social relationships and common goals (interpreted as the opposite of individualism), *Mastery* reflects the dominating role in cultures (similar to our individualism measure). Finally, we refer to the Global Leadership and Organizational Behavior Effectiveness (GLOBE) project and use *Institutional collectivism* and *In-group collectivism* as two additional alternative proxies of individualism.¹³ Both proxies represent the extent to which organizational and societal institutional values encourage and reward collective actions, regulation, and supervision. The corresponding results in table 4, panel A, models 4 to 8 continue to indicate that the association between individualism and regulatory capital is significantly negative even after using alternative measures of individualism.

INSERT TABLE [4] AROUND HERE

4.2. *The effect of individualism on bank capital decisions in countries with more effective legal enforcement*

Next, we turn to the combined effect of informal and formal institutional environment and investigate whether the negative effect of individualism on bank capital decisions is magnified in countries with more effective legal enforcement. Motivated by the work of Cline and Williamson (2017) and Daher (2017), we argue that if formal institutions provide a legal mechanism through which banks can extend their financing activities (leverage) without having to worry about how effective contract enforcement is, then it is possible that legal enforcement magnifies individualism's influence on regulatory capital. The role of regulatory capital as a signalling mechanism on bank financial soundness is less pronounced possibly because in these countries laws are properly established and enforced. Thus, we expect a significantly negative association between individualism and regulatory capital in countries with more effective legal enforcement.

¹² Schwartz data is from a survey of more than 25,000 elementary school teachers and university students in 44 countries.

¹³ The GLOBE project involves survey questionnaires conducted on more than 17,300 executives in 951 organizations across 62 countries.

We use four measures to proxy for the quality of legal enforcement (*Legal_Enforce*): First, we use *Judicial/legal effectiveness*, which is an index that reflects the effectiveness and integrity of a country's legal and judicial system (e.g., judicial independence, judicial bribery, quality of legal framework, property protection, and parliament and police effectiveness). Second, we use *Corporate governance index*, which measures the internal governance structures of companies based on the protection of minority shareholders, the quality of training, the willingness to delegate authority, and the relationship between the board and the management team. Third, we use *Public sector ethics index*, which assesses factors related to public integrity, bribery, and favoritism in the public sector (e.g., honesty of politicians, diversion of public funds, trust in the postal office, and bribe frequencies for permits, utilities, and taxes). Finally, we use *Corporate illegal corruption index*, which measures the capacity of a country's government and legal system to recognize and protect against illegal political funding, bribery, and corruption in banking (e.g., formal money laundering and bribery for loans).

Developed by the World Bank in its 2004 Corporate Corruption and Ethics indices compilation, the four indexes are based on the Executive Opinion Survey (EOS) by the World Economic Forum in the Global Competitiveness Report. EOS covers various questions on bribery, legal corruption, and corporate ethics (Kaufmann, 2004). Daher (2017) claims that the EOS survey captures a country's business and economic situation, as well as its capacity to achieve sustainable levels of prosperity and growth in isolation compared to other countries. The four indexes take values between 0 and 1, with higher scores indicating more effective legal environments. Detailed definitions and data sources for these indexes are in table A.1 in the appendix.

Table 5, models 1 to 4 presents the findings after controlling for the quality of legal enforcement. In the four models, individualism is negatively associated with bank regulatory capital at the 1% level, consistent with hypothesis 1. Interestingly, the four proxies of legal enforcement are negatively associated with bank regulatory capital at the 1% level as well, thus confirming hypothesis 2. According to model 1, a one-standard-deviation increase in individualism is associated with a decrease in bank regulatory capital of 7.45 percentage points even after controlling for legal enforcement. Overall, we find that both effective legal enforcement and individualism have a significantly negative effect on bank capital decisions.

Next, we investigate the effect of legal enforcement on the association between individualism and bank regulatory capital by extending our baseline model as follows:

$$\begin{aligned} \text{Regulatory capital}_{i,j,t} &= \alpha + \beta \times \text{Individualism}_t + \beta' \times \text{Individualism}_t \times \text{Legal_Enforce}^{th} \\ &\quad + \varphi \times \text{Bank}_{i,j,t} + \gamma \times \text{Country}_{j,t} + \tau \times \text{YFE}_t + \varepsilon_{i,j,t} \end{aligned}$$

Table 5, panel A, models 5 to 8 report the effects on bank regulatory capital decisions after including the interaction between legal enforcement and individualism. Panel B, models 5 to 8 reports the effect of individualism on bank regulatory capital in countries with stronger legal enforcement. For this purpose, we consider above-median values of each of the four measures of legal enforcement, i.e. *Judicial/legal effectiveness*, *Corporate governance index*, *Public sector ethics index*, and *Corporate illegal corruption index*. This effect is given by $(\text{Individualism}_t + \text{Individualism}_t \times \text{Legal_Enforce}^{th})$ where $\text{Legal_Enforce}^{th}$ is a dummy variable that equals 1 if the value of each of the four measures of legal enforcement is above the 50th percentile (median) of the respective legal enforcement measure, and 0 otherwise. Thus, the effect of legal enforcement on bank regulatory capital ratios is given by (Individualism_t) in countries with a less effective legal enforcement and by $(\text{Individualism}_t \times \text{Legal_Enforce}^{th})$ in countries with stronger legal enforcement. We find that in countries with more effective legal enforcement, the negative association between individualism and regulatory capital is more pronounced, confirming hypothesis 3. Panel B shows that in individualistic countries where laws are properly established and enforced, banks tend to hold less regulatory capital. In sum, individualism influences bank capital decisions more significantly in countries where legal rules are properly enforced. All in all, our findings provide regulators and policy makers with an additional tool to create more favorable informal and formal conditions to implement Basel III's capital guidelines in a successful way.

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5. Additional analysis¹⁴ and robustness

5.1. The effect of individualism on bank capital decisions at the state level in the United States

Next, we investigate how individualism affects bank capital decisions at the state level in the United States. We focus on the United States for two reasons. First, the 3,549 banks in the United States represent some 50% of our sample, which could bias our results. Second, although the culture in the United States is individualistic (Hofstede, 2001; Tang and Koveos, 2008), Chen et al. (2015) assert that regions of the United States exhibit significant variations on this dimension.¹⁵ In addition, studying state-variations may help to learn more about the individualism dimension in general.

We use the Vandello and Cohen (1999) eight-item index on individualism-collectivism in the United States. The first three items cover family structure and living arrangements, and the rest are related to social, political, religious, and economic practices. In this index, higher values indicate greater collectivism, and lower values indicate greater individualism. Because we are interested in how individualism affects bank capital ratios at the state level, we define the state-level individualism index, *State individualism*, as -1 times the collectivism index, so that higher values indicate higher individualism.

Table A.2 in the appendix and figure 2 show the summary statistics of the state-level sample. All numbers, with the exception of the number of banks, are state or sample averages. The table shows that Illinois, Texas, Minnesota, Iowa, Wisconsin, Missouri, and California are the states with the largest representation in the sample. The means of our key variables, *Regulatory capital* and *State individualism*, are in models 2 and 3. Model 2 shows a large state variation in the regulatory capital ratio. The overall mean is 18.5% across the 50 states. However, some states have average regulatory capital ratios below 17% (North Dakota, Vermont, Minnesota, Iowa, Missouri, Montana, Delaware, Washington, Oregon, Nebraska, and Virginia), and some states have average regulatory capital ratios above 22% (New Jersey,

¹⁴ Additional control variables, sample compositions, and estimation techniques are reported in the online supplementary material appendices.

¹⁵ In unreported results, we explore whether the influence of individualism on bank capital decisions changes if we alter the sample composition to exclude the United States, the UK, Germany, Japan, Italy, and China. The results remain identical.

Arizona, Rhode Island, Idaho, and Nevada). We also show a significant variation in state individualism in model 3, which ranges from -72 for Louisiana to -31 for Montana.

INSERT FIGURE [2] AROUND HERE

The regression results are in table 6. In all models, we use the bank-level control variables employed in previous tables. As for macroeconomic control variables, we collect the state-level data on GDP growth, GDP per capita, inflation rates, international trade, population growth, and the state surface from the Bureau of Economic Analysis and the United States Census Bureau. We also control for year fixed effects and state-level fixed effects. Panel A, models 1 to 4 show that individualism is negatively and significantly associated with bank regulatory capital at the 1% level, confirming that the negative effect of individualism on regulatory capital remains robust within the United States.

We also control for legal enforcement along with individualism using the Federal Regulation and State Enterprise (FRASE) index, and we reexamine their combined effect on regulatory capital ratios at the state level. Created by McLaughlin and Sherouse (2017), the FRASE index shows how federal regulation affects the state, with higher values indicating that a state is more affected by federal legal enforcement relative to the rest of the nation. The findings in models 5 and 6 show that individualism and the FRASE indexes are negatively associated with bank regulatory capital. As for their interactions, Panel B, models 7 and 8 report the effect of individualism on bank regulatory capital in states with stronger federal legal enforcement taken at the above-median values of the FRASE index. This effect is given by $(State\ individualism_t + State\ individualism_t \times Federal\ Regulation^{th})$ where $Federal\ Regulation^{th}$ is a dummy variable that equals 1 if the value of the FRASE index is above the 50th percentile (median) of the distribution, and 0 otherwise. The findings indicate that individualism influences bank capital decisions more radically in states with stronger federal legal enforcement, concurring with our findings at the international level.

INSERT TABLE [6] AROUND HERE

5.2. Endogeneity and self-selection bias: System GMM and Heckman correction

Our results indicate so far that individualism is negatively associated with bank regulatory capital after controlling for various informal and formal institutional environment variables. We also find that the effect of individualism is magnified in countries with effective legal enforcement. We now address concerns about endogeneity and potential self-selection bias.

Endogeneity may arise due to simultaneity or reverse causality between regulatory capital and individualism. Although individualism affects bank regulatory capital, it is possible that environmental factors influence individualism, specifically via regulatory capital and the regulatory environment. Another concern relates to the cost of higher capital requirements. When costs are sufficiently high, banks may avoid stricter regulation by engaging in cross-border activities in countries with weaker regulations (Karolyi and Taboada, 2015), thus bonding with countries with more individualistic cultural values. This further highlights the necessity of addressing endogeneity using a two-step system generalized method of moments (GMM).

System GMM allows us to estimate the relationship between regulatory capital and individualism in levels and first differences simultaneously.^{16,17} By estimating these equations simultaneously, system GMM controls for heterogeneous endogeneity (stemming from time-invariant variables) and includes the dynamic structure of the relationship between regulatory capital, individualism, and bank characteristics. The rationale of using past regulatory capital and differences in explanatory variables as instruments is based on the fact that a manager's individualistic behavior can be related to current and past levels of regulatory capital, in addition to other bank characteristics (e.g., bank size, credit risk, etc.). If we observe current regulatory capital, the unanticipated component of the regulatory environment (i.e., the error term in the regression) may be uncorrelated with past observations of endogenous variables (individualism and the rest of the bank characteristics) when observation of lags goes sufficiently far back in time.

¹⁶ The level equation presents regulatory capital as a function of its past values (lagged values), observable bank characteristics (individualism and the rest of the exogenous variables), and the error term, including a fixed-effect component.

¹⁷ The difference equation presents year-to-year differences in the level equation. Accordingly, the difference equation presents the changes in year-to-year regulatory capital ratio as a function of the year-to-year lagged changes in regulatory capital ratio, year-to-year change in the exogenous variables, and the difference in error terms. Note that the fixed-effect error term disappears in the difference equation because it is by definition time-invariant.

As with any two-step system GMM, the major challenge is to find the appropriate instruments. Fortunately, the recent literature provides several appropriate instruments for individualism. In particular, the literature (e.g., Licht et al., 2007; Cline and Williamson, 2017; Berger et al., 2021) shows that language helps to explain cultural clusters, because language can channel cultural values across generations. In addition, it also shows that pathogen history, ethnic fractionalization, and religion can play an important role in determining cultural values. We argue that it is less likely that these instruments have a direct effect on bank regulatory capital ratios today. Instead, they might influence bank regulatory capital through their effect on individualism. Thus, we follow the literature (e.g., Licht et al., 2007; Fincher et al., 2008; Cline and Williamson, 2017; Berger et al., 2021) and use pronoun drop, pathogen history, ethnic fractionalization, and protestant as instruments. Data on pronoun drop and pathogen history is from Davis et al. (2016) and Fincher et al. (2008), respectively, and data on ethnic fractionalization and protestant is from La Porta et al. (2006) and the CIA's World Factbook, respectively.

Table 7 panel A outlines the effects on bank capital decisions after including the interaction between legal enforcement and individualism. Panel B, models 1 to 4 report the effect of individualism on bank regulatory capital in countries with more effective legal enforcement. We obtain the regressions using the two-step system GMM proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The reported Hansen test for overidentifying restriction confirms the validity of our instruments. The use of the two-system GMM requires testing autocorrelation to detect the dynamic specification of the endogenous and dependent variables. The null hypothesis of no first-order (AR(1)) auto-correlation is always rejected, which confirms the Wooldridge (2002) test results. The Arellano and Bond (1991) test, however, does not reject the null hypothesis of no second-order serial correlation (AR(2)), thus supporting the use of the system GMM to ensure the robustness of our results.

The results in panel A, models 1 to 4 continue to show that for banks in countries with more effective legal enforcement, the negative association between individualism and regulatory capital is more pronounced. Panel B also reports the effect of individualism on bank regulatory capital in countries with more effective legal enforcement taken at the above-median values of each of the four measures of legal enforcement ($Individualism_t + Individualism_t \times$

Legal_Enforceth). The findings show that in individualistic countries where laws are properly established and enforced, banks tend to hold lower regulatory capital ratios, thus providing additional support to hypothesis 3 and that endogeneity concerns do not drive our results.

Finally, we use the Heckman (1979) selection approach to correct for a potential self-selection bias in the sample choice between banks in individualistic countries and banks in less individualistic countries. In a first step, we estimate a probit model that regresses a dummy variable (selection equation). It equals 1 if a country's Hofstede index of individualism is greater than or equal to the median; it equals zero otherwise. We regress the dummy variable on three instruments (i.e., pronoun drop, pathogen history, and ethnic fractionalization). The regressions also include bank- and country-level control variables and year fixed effects.

In the second regression (outcome equation), we use bank regulatory capital as the dependent variable and Hofstede's index of individualism as the independent variable, along with the four proxies of legal enforcement, the same control variables, and a self-selection parameter (the inverse Mills ratio) estimated from the first-stage regression. The findings from the second-stage regressions are in table 7, panel A, models 5 to 8; they show once again that for banks in countries with more effective legal enforcement, the negative effect of individualism on regulatory capital is more pronounced. Panel B models 5 to 8 also show that the effect of individualism on regulatory capital is magnified in countries with more effective legal enforcement.

INSERT TABLE [7] AROUND HERE

6. Conclusion

This paper examines whether informal institutional environments, such as cultural values, can explain variations in bank capital decisions around the world. Specifically, we investigate how individualism — which stresses independence, overconfidence, risk-taking, success, and profit-making — affects bank regulatory capital in 68 countries for the 2000-2015 period. Our findings indicate that individualism significantly decreases bank reliance on regulatory capital, an effect that is independent from formal institutional environment. These findings are statistically and economically significant, and they are consistent with the conjecture that managers in individualistic countries tend to be overly optimistic about the precision of their decisions. In line

with Berger et al. (2021), bank managers in these countries position themselves to fail by taking on more risk without adopting risk-mitigation measures such as holding higher capital ratios.

We further investigate whether the effect of individualism on bank capital decisions dissipates after controlling for formal institutional environment. Motivated by Williamson (2000) and Kaufmann et al. (2018), who define institutions as both informal and formal rules of the game, we find that individualism persistently and negatively affects bank regulatory capital even after the inclusion of formal institutional environment. In addition, North (1990) contends that implementing the same formal rules in different countries with different cultures may lead to multiple economic outcomes. Following this line of investigation, our results indicate that more effective legal enforcement strengthens how individualism affects the regulatory capital that banks hold. This is possibly because strong formal institutions provide a legal mechanism through which banks can extend their financing activities (leverage) without having to worry about the effectiveness of contract enforcement if borrowers' were to default. Accordingly, with stronger guarantees on their borrowers, managers believe they can hold even less capital without significantly affecting a bank's solvency.

Our findings are robust to alternative bank capital and culture measures, as well as a vector of country and bank-level control variables including bank regulation and supervision, religion, and other cultural dimensions. Specifically, our results also hold for regulatory capital buffers, even after accounting for differences in minimum requirements across countries. The results are also robust when accounting for endogeneity and self-selection bias, as well as a battery of alternative estimation techniques. Finally, our results remain unchanged when limiting the sample to American banks across U.S. states.

On the whole, and in line with Berger et al. (2021), who show that informal institutional environment is an important dimension to understand bank failures better, our study indicates that explaining cross-sectional differences in bank regulatory capital is as important as formal institutional environment. Bank supervisors and regulators should be aware that the complexity of institutional factors may constrain "one size fits all" regulatory guidelines. One possible solution for regulators and policy makers is to adapt regulatory capital ratios to individual countries' informal institutional environments without neglecting the effect of formal

institutional factors. Otherwise, changes to top-down regulatory capital may have limited success.

References

- Ahern, K.R., Daminelli, D., Fracassi, C. 2015. Lost in translation? The effect of cultural values on mergers around the world. *Journal of Financial Economics* 117, 165–189.
- AlRaheb, T., Nicolas, C., Tarazi, A. 2019. Institutional environment and bank capital ratios. *Journal of Financial Stability* 43, 1–24.
- Ang, J.B., Fredriksson, P. 2018. Culture, legal heritage and the regulation of labor. *Journal of Comparative Economics* 46, 616–633.
- Anginer, D., Demirgüç-Kunt, A., Huizinga, H., Ma, K. 2016. Corporate governance, and bank capitalization strategies, *Journal of Financial Intermediation* 26, 1–27.
- Anginer, D., Demirguc-Kunt, A., Huizinga, H., Ma, M. 2018. Corporate governance of banks and financial stability. *Journal of Financial Economics* 130, 327–346.
- Anginer, D., Demirgüç-Kunt, A., Mare, D.S. 2018. Bank capital, Institutional environment, and systemic stability. *Journal of Financial Stability* 37, 97–106.
- Arellano, M., Bond, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies* 58, 277–297.
- Arellano, M., Bover, O. 1995. Another look at the instrumental variables estimation of error-components models. *Journal of Econometrics* 68, 29–51.
- Barth, J.R. Lin, C., M., T., Seade, J., Song, F.M. 2013. Do bank regulation, supervision and monitoring enhance or impede bank efficiency? *Journal of Banking & Finance* 37, 2897–2892.
- Beck, T., Ongenab, S., Şendeniz-Yüncü, I. 2019. Keep walking? Geographical proximity, religion, and relationship banking. *Journal of Corporate Finance* 55, 49–68.
- Berger, A.N., Deyoung, R. 2001. The effects of geographic expansion on bank efficiency. *Journal of Financial Services Research* 19, 163–184.
- Berger, A.N., Dick, A.A., Goldberg, L.G., White, L.J. 2007. Competition from large, multimarket firms and the performance of small, single-market firms: Evidence from the banking industry. *Journal of Money, Credit and Banking* 39, 331–368.
- Berger, A.N., Li, X., Morris, C.S., Roman, R.A. 2021. The effects of cultural values on bank failures around the world. *Journal of Financial and Quantitative Analysis* 56, 945–993.
- Bitar, M., Hassan, M.K., Saad, W. 2019. Culture and the capital-performance nexus in dual banking systems, *Economic Modelling*, in press.
- Bitar, M., Pukthuanthong, K., Walker, T. 2018. The effect of capital ratios on the risk, efficiency and profitability of banks: Evidence from OECD countries. *Journal of International Financial Markets, Institutions, and Money* 53, 227–262.
- Bitar, M., Tarazi, A. 2019. Creditor rights and bank capital decisions: Conventional vs. Islamic banking. *Journal of Corporate Finance* 55, 69–104.
- Blum, J.M. 2008. Why Basel II may need a leverage ratio restriction, *Journal of Banking & Finance* 32, 1699–1707.
- Blundell, R., Bond, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics* 87, 115–143.

- Boubakri, N., Mirzaeib, A., Samet, A. 2017. National culture and bank performance: Evidence from the recent financial crisis. *Journal of Financial Stability* 29, 36–56.
- Callero, P.L., 2017. *The Myth of Individualism: How Social Forces Shape Our Lives*. Rowman & Littlefield, Lanham, Maryland.
- Cathcart, L., El-Jahel, L., Jabbour, R. 2015. Can regulators allow banks to set their own capital ratios? *Journal of Banking & Finance* 53, 112–123.
- Chen, Y., Dou, P.Y., Ghon Rhee, S., Truong, C., Veeraraghavan, M. 2015. National culture and corporate cash holdings around the world. *Journal of Banking & Finance* 50, 1–18.
- Cho, S. S., El-Ghoul, S., Guedhami, O., Suh, J. 2014. Creditor rights and capital structure: Evidence from international data. *Journal of Corporate Finance* 25, 40–60.
- Chui, A.C.W., Kwok, C.C.Y., Zhou, G. 2016. National culture and the cost of debt. *Journal of Banking & Finance* 69, 1–19.
- Chui, A.C.W., Lloyd, A.E., Kwok, C.C.Y. 2002. The determinants of capital structure: Is national culture a missing piece to the puzzle? *Journal of International Business Studies* 33, 99–127.
- Chui, A.C.W., Sheridan, T., Wei, K.C.J. 2010. Individualism and momentum around the world. *The Journal of Finance* 65, 361–392.
- Cline, B.N., Williamson, C.R. 2017. Individualism, democracy, and contract enforcement. *Journal of Corporate Finance* 46, 284–306.
- Cyree, K.B., Morris, B.C.L. 2018. The effects of income and population demographics on single-county bank performance. *Journal of Economics and Finance* 42, 174–190.
- Daher, M. 2017. Creditor control rights, capital structure, and legal enforcement. *Journal of Corporate Finance* 44, 308–330.
- Dang, T.L., Faff, R., Luong, H., Nguyen, L. 2019. Individualistic culture and crash risk. *European Financial Management* 25, 622–654.
- Davis, L.S., Abdurazokzoda, F. 2016. Language, culture and institutions: Evidence from a new linguistic dataset. *Journal of Comparative Economics* 44, 541–561.
- De Jonghe, O. Öztekin, Ö. 2015. Bank capital management: International evidence. *Journal of Financial Intermediation* 24, 154–177.
- Deloitte, 2013. Culture in banking under the microscope. The Deloitte bank survey 2013.
- Demirgüç-Kunt, A., Detragiache, E., Merrouche, O. 2013. Bank capital: Lessons from the financial crisis. *Journal of Money, Credit, and Banking* 45, 1147–1164.
- Dermine, J. 2015. Basel III leverage ratio requirement and the probability of bank runs. *Journal of Banking & Finance* 53, 266–277.
- Djankov, S. Montalvo, J.G. Reynal-Querol, M. 2008. The curse of aid. *Journal of Economic Growth* 13, 169–194.
- Djankov, S., McLiesh, C., Shleifer, A. 2007. Private credit in 129 countries. *Journal of Financial Economics* 84, 299–329.
- El Ghoul, S., Guedhami, O., Kwok, C.C.Y., Zheng, X. 2017. Zero-leverage puzzle: An international comparison. *Review of Finance* 22, 1063–1120.
- Eun, C.S., Wang, L., C. Xiao, S. 2015. Culture and R2. *Journal of Financial Economics* 115, 283–303.

- Fan, J.P., Titman, S., Twite, G. 2012. An international comparison of capital structure and debt maturity choices. *Journal of Financial and Quantitative Analysis* 47, 23–56.
- Fincher, C.L., Thornhill, R., Murray, D.R., Schaller, M. 2008. Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism. *Proceedings of the Royal Society B* 275, 1279–1285.
- Fungáčová, Z., Hasan, I., Weill, L. 2017. Trust in banks. *Journal of Economic Behavior & Organization* 157, 452–476.
- Gaganis, G., Hasan, I., Papadimitri, P., Tasiou, M. 2019. National culture and risk-taking: Evidence from the insurance industry. *Journal of Business Research* 97, 104–116.
- Gorodnichenko, Y., Roland, G., 2011. Which dimensions of culture matter for long-run growth? *American Economic Review* 101, 492–498.
- Gropp, R., Heider, F. 2010. The determinants of bank capital structure. *Review of Finance* 14, 587–622.
- Guiso, L., Sapienza, P., Zingales, L. 2006. Does culture affect economic outcomes? *Journal of Economic Perspectives* 20, 23–48.
- Heckman, J.J. 1979. Sample selection bias as a specification error. *Econometrica* 47, 153–161.
- Held, M. 2017. *Reforming Culture and Conduct in the Financial Services Industry: How Can Lawyers Help?* The Federal Reserve Bank of New York, United States.
- Hofstede, G., 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations*. Second ed. Sage, Thousand Oaks, CA.
- Hofstede, G.H. Hofstede, G.J. Minkov, M. 2010. *Cultures and Organizations: Software of the Mind: Intercultural Cooperation and its Importance for Survival*. Third ed., McGraw-Hill Education.
- House, R.J., Hanges, P.J.M., Javidan, Dorfman, P.W. Vipin, G. 2004. *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. Thousand Oaks: Sage.
- Karolyi, G.A., Taboada, A.G. 2015. Regulatory arbitrage and cross-border bank acquisition. *The Journal of Finance* 70, 2395–2450.
- Kaufmann, W. 2004. Corruption, governance and security: challenges for the rich countries and the world. *The Global Competitiveness Report 2004/2005*. World Economic Forum (chapter 2.1).
- Kaufmann, W., Hooghirmestra, R., Feeney, M.K. 2018. Formal institutions, informal institutions, and red tape: A comparative study. *Public Administration: An International Quarterly* 96, 386–403.
- KPMG, 2016. Evolving banking regulation (part five): Culture and conduct.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. 2006. What works in securities laws? *Journal of Finance* 61–32.
- La Porta, R., Lopez-de-Silvanes, F., Shleifer, A. 2008. The economic consequences of legal origins. *Journal of Economic Literature* 46, 285–332.
- Laeven, L., Levine, R. 2009. Bank governance, regulation and risk taking. *Journal of Financial Economics* 93, 259–275.

- Levine, R. 1998. The legal environment, banks, and long-run economic growth. *Journal of Money, Credit and Banking* 30, 596–613.
- Levine, R. 2005. Finance and growth: Theory and evidence. In P. Aghion St S. N. Durlauf (Eds) *Handbook of economic growth*: 865-934. San Diego, CA: E
- Li, K. Griffin, D., Yue, H., Zhao, L. 2011. National culture and capital structure decisions: Evidence from joint ventures in China. *Journal of International Business Studies* 42, 477–503.
- Licht, A., Chanan, G., Schwartz, S. 2007. Culture rules: the foundations of the rule of law and other norms of governance. *Journal of Comparative Economics* 35, 659–688.
- McLaughlin, P.A. Sherouse, O. 2017. The Impact of Federal Regulation on the 50 States. Available at SSRN: <https://ssrn.com/abstract=2939260>.
- Mihet, R. 2013. Effects of culture on firm risk-taking: A cross-country and cross-industry analysis. *Journal of Cultural Economics* 37, 109–151.
- Mourouzidou-Damtsaa, S., Milidonisb, A., Stathopoulousa, K. 2019. National culture and bank risk-taking. *Journal of Financial Stability* 40, 132–143.
- North, D.C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press, Cambridge, UK.
- Öztekin, Ö. 2021. Systemic banking crises, institutional environment, and corporate leverage. *Journal of Financial and Quantitative Analysis*, forthcoming, DOI: <https://doi.org/10.1017/S0022109020000861>.
- Öztekin, Ö. 2015. Capital structure decisions around the world: Which factors are reliably important? *Journal of Financial and Quantitative Analysis* 50, 301–323.
- Öztekin, Ö., Flannery, M.J. 2012. Institutional determinants of capital structure adjustment speeds. *Journal of Financial Economics* 103, 88–112.
- Price Waterhouse Cooper, 2014. Forging a winning culture.
- Schaeck, K., Cihak, M., 2012. Competition and capital ratios. *European Financial Management* 18, 836–866.
- Schaeck, K., Cihak, M., 2014. Competition, efficiency, and stability in banking. *Financial Management* 43, 215–241.
- Schepens, G. 2016. Taxes and bank capital structure, *Journal of Financial Economics* 120, 585–600.
- Schwartz, S. 1994. Beyond individualism-collectivism: new cultural dimensions of values. In: *Individualism and Collectivism: Theory, Method and Applications*. Sage, Newbury Park, CA, pp. 85–119.
- Shao, L., Kwok, C.C.Y., Guedhami, O. 2010. National culture and dividend policy. *Journal of International Business Studies* 41, 1391–1414.
- Shupp, R.S., Williams, A.W. 2008. Risk preference differentials of small groups and individuals. *The Economic Journal* 118, 258–283.
- Stulz, M., Williamson, R. 2003. Culture, openness, and finance. *Journal of Financial Economics* 70, 313–49.

- Tang, L., Koveos, P. 2008. A framework to update Hofstede's cultural value indices: Economic dynamics and institutional stability. *Journal of International Business Studies* 39, 1045–1063.
- Turk-Ariss, R. (2016). Legal systems, capital structure, and debt maturity in developing countries. *Corporate Governance: An International Review* 24. , 130–144.
- Van den Steen, E. 2004. Rational overoptimism (and other biases). *American Economic Review* 94, 1141–1151.
- Vandello, J., Cohen, D. 1999. Patterns of individualism and collectivism across the United States. *Journal of Personality and Social Psychology* 77, 279–292.
- Williamson, O.E. 2000. The new institutional economics: taking stock, looking ahead. *Journal of Economic Literature* 38, 595–613.
- Wooldridge, J.M. 2002. *Econometric Analysis of Cross-Section and Panel Data*. MIT Press, Cambridge.
- Zheng, X., El Ghouli, S., Guedhami, O., Kwok, C.C.Y. 2012. National culture and corporate debt maturity. *Journal of Banking & Finance* 36, 468–488.
- Zheng, X., El Ghouli, S., Guedhami, O., Kwok, C.C.Y. 2013. Collectivism and corruption in bank lending. *Journal of International Business Studies* 44, 363–390.

Figures

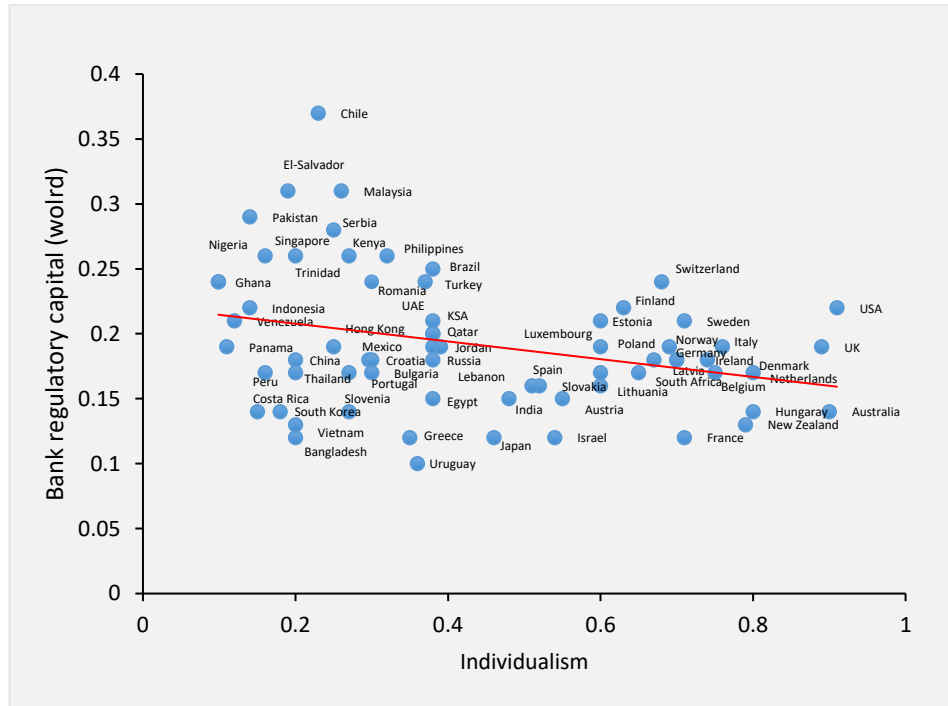


Fig. 1. Individualism and bank regulatory capital around the world. The figure reports the mean values for Hofstede's index on individualism-collectivism. The index is scaled between 0 and 1, where a higher value indicates more individualistic countries. The figure also reports the mean values for *Regulatory capital*, calculated as tier 1 + tier 2 divided by risk-weighted assets. *Regulatory capital* varies between 0 and 1, where a higher value indicates that a bank is more adequately capitalized from a regulatory compliance perspective.

Tables

Table 1

Summary descriptive statistics

The table reports descriptive statistics for bank- and country-level control variables. Bank-level statistics in panel A are from a sample of 7,034 banks in 68 countries during the 2000–2015 period. Data is from Bankscope and Fitch Solutions. Capital ratios are *Regulatory capital*, *Tier 1/rwa*, *Equity to total assets*, and *Tier 1 + Tier 2/ta*. Bank-level control variables are *Size* (proxied by the logarithm of total assets), *Liquidity* (liquid assets divided by deposits and short-term funding), *Asset diversity* (net loans to total assets), *Tangibility* (fixed assets to total assets), and *Credit risk* (loan loss reserves divided by gross loans). Country-level statistics in panel B are from 68 countries during 2000–2015. Statistics fall into five subgroups. Panel B.1 presents six proxies on individualism. Panel B.2 presents seven proxies on various additional cultural values. Panel B.3 presents four proxies on legal enforcement. Panel B.4 presents additional control variables on legal origins, religion, and institutional environment. Panel B.5 presents macroeconomic, natural resources, and geodemographic control variables. Variables are defined in appendix A.1.

Variables	# Obs.	Mean	S.D.	Median	Min.	Max.
Panel A. Bank-level data						
Regulatory capital	113,928	0.193	0.132	0.157	0.085	0.376
Tier 1/rwa	106,395	0.18	0.139	0.144	0.067	0.367
Equity to total assets	127,032	0.112	0.081	0.097	0.023	0.755
Tier 1+ Tier 2/ta	103,994	0.119	0.065	0.104	0.045	0.577
<i>Bank-level control variables</i>						
Size	127,035	5.764	1.852	5.445	2.463	11.791
Liquidity	125,776	0.144	0.154	0.097	0.014	0.931
Asset diversity	126,902	0.604	0.172	0.628	0.04	0.916
Tangibility	126,719	0.017	0.012	0.014	0.01	0.079
Credit risk	112,255	0.021	0.032	0.013	0.01	0.131
Panel B. Culture, formal institutions and macroeconomic variables						
<i>Panel B.1 Measures of individualism</i>						
Individualism	111,119	0.437	0.235	0.38	0.1	0.91
Individualism TK	101,312	0.555	0.274	0.565	0.11	1
Embeddedness	103,826	3.717	0.368	3.725	3.03	4.5
Mastery	103,826	3.946	0.158	3.94	3.66	4.41
Institutional collectivism	101,932	4.312	0.419	4.31	3.41	5.26
In-group collectivism	101,932	5.041	0.723	5.28	3.46	6.18
<i>Panel B.2 Additional measures of culture</i>						
Masculinity	104,562	0.485	0.194	0.495	0.05	1
Uncertainty avoidance	104,562	0.659	0.218	0.68	0.08	1
Power distance	104,562	0.604	0.219	0.64	0.11	1
Long term orientation	103,077	0.444	0.209	0.415	0.13	1
Restraint	53,445	0.464	0.219	0.445	0	1
Confidence in women's organizations	102,206	2.611	0.226	2.6	2.2	3.45
General trust	104,541	4.949	0.671	4.95	3.57	6.46
<i>Panel B.3 Legal enforcement measures</i>						
Judicial/Legal effectiveness integrity index	104,170	0.529	0.261	0.51	0.05	0.95
Corporate governance index	104,170	0.535	0.224	0.49	0.17	0.95
Public sector ethics index	104,170	0.463	0.245	0.41	0.08	0.94
Corporate illegal corruption index	104,170	0.559	0.245	0.5	0.12	0.97
<i>Panel B.4 Legal origins, religion, and institutional environment</i>						
Common law	104,562	0.111	0.314	0	0	1
Civil law	104,562	0.568	0.495	1	0	1
Catholic	104,562	0.383	0.486	0	0	1
Orthodox	104,562	0.099	0.298	0	0	1
Protestant	104,562	0.173	0.378	0	0	1
Muslim	104,562	0.197	0.398	0	0	1
Mix (Common & Muslim)	104,562	0.037	0.189	0	0	1
Buddhist	104,562	0.086	0.281	0	0	1
Investment freedom	104,416	0.606	0.173	0.61	0.19	0.91
Business freedom	104,416	0.71	0.121	0.72	0.48	0.98
Government spending	104,416	0.616	0.219	0.64	0.08	0.93
Government size	104,418	6.367	1.255	6.48	3.54	9.05
Information sharing	102,699	0.904	0.294	1	0	1
Infrastructure quality index	104,280	5.825	1.897	5.61	1.5	9.15
Official supervisory power	102,287	10.876	2.187	11.13	4	14
Stringent capital regulation	104,536	7.171	0.902	7.5	2	10
<i>Panel B.5 Macroeconomic, natural resources and geo-demographic control variables</i>						
GDP growth rate	104,562	0.021	0.024	0.022	-0.148	0.345
Domestic credit to private sector	104,562	0.637	0.261	0.531	0.175	1.598

Inflation rate	104,562	0.025	0.032	0.023	-0.007	1.686
International trade	104,562	0.432	0.342	0.299	0.198	1.634
Oil rent	104,996	0.735	2.956	0.277	0	54.942
Gas rent	104,996	0.311	0.521	0.1	0	11.84
Mineral rent	105,162	0.167	0.794	0.028	0	20.961
Population growth	105,162	0.766	0.767	0.859	-2.851	16.332
Ln(surface)	105,162	14.921	1.859	16.081	3.912	16.654

Table 2

The effect of individualism on bank regulatory capital: Baseline results

This table reports GLS random effect regressions with a measure of regulatory capital as the dependent variable and Hofstede's (2001, 2010) index on individualism as the primary independent variable. *Regulatory capital* is bank Tier 1 plus Tier 2 capital, divided by risk-weighted assets. *Individualism* is the degree to which individuals are integrated into groups, computed by the extent to which a society defines individuals primarily as autonomous in decision-making (high individualism) or as interdependent members of a larger community where decision-making is the product of a collective decision (high collectivism). Panel A reports the results for the effect of individualism on bank capital decisions after controlling for bank-level, macroeconomic, natural resources, and demographic variables. Panel B reports the results for the effect of individualism on bank capital decisions after controlling for bank-level, macroeconomic, legal origins, and religion. Variables are defined in appendix A.1. Standard errors are clustered at the bank-level and are reported below their coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

<i>Panel A. Controlling for bank-level, macroeconomic, and natural resources</i>								
Dep. variable: Regulatory capital ratio								
Model #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individualism	-0.103*** (0.008)	-0.139*** (0.009)	-0.091*** (0.010)	-0.115*** (0.009)	-0.114*** (0.009)	-0.114*** (0.009)	-0.091*** (0.010)	-0.068*** (0.010)
Size	-0.032*** (0.001)	-0.041*** (0.001)	-0.037*** (0.001)	-0.035*** (0.001)	-0.035*** (0.001)	-0.035*** (0.001)	-0.035*** (0.001)	-0.037*** (0.001)
Liquidity	0.004*** (0.001)	0.004*** (0.001)	0.015** (0.007)	0.015** (0.007)	0.015** (0.007)	0.015** (0.007)	0.015** (0.007)	0.015** (0.007)
Asset diversity	-0.328*** (0.009)	-0.325*** (0.009)	-0.321*** (0.009)	-0.319*** (0.009)	-0.32*** (0.009)	-0.318*** (0.009)	-0.318*** (0.009)	-0.322*** (0.009)
Tangibility	0.328*** (0.073)	0.307*** (0.073)	0.343*** (0.073)	0.313*** (0.073)	0.322*** (0.073)	0.317*** (0.073)	0.322*** (0.073)	0.355*** (0.073)
Credit risk			-0.123*** (0.041)	-0.122*** (0.040)	-0.121*** (0.040)	-0.119*** (0.040)	-0.122*** (0.040)	-0.125*** (0.041)
GDP growth rate			0.08** (0.033)					0.055 (0.035)
Domestic credit to private sector			0.038*** (0.005)					0.035*** (0.005)
Inflation			0.016 (0.044)					-0.01 (0.053)
International trade			0.015*** (0.004)					0.015** (0.007)
Oil rent				0.001*** (0.000)				0.001*** (0.000)
Gas rent					0.013*** (0.002)			0.012*** (0.002)
Mineral rent						0.005*** (0.001)		0.006*** (0.001)
Population growth							-0.001 (0.001)	-0.001 (0.001)
Ln(surface)							-0.005*** (0.001)	-0.002 (0.001)
Constant	0.65*** (0.015)	0.746*** (0.017)	0.646*** (0.017)	0.688*** (0.016)	0.687*** (0.016)	0.686*** (0.016)	0.747*** (0.020)	0.654*** (0.027)
Observations	111,119	111,119	104,562	104,996	104,996	105,162	105,162	104,363
YFE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.231	0.239	0.245	0.235	0.235	0.235	0.234	0.316
<i>Panel B. Controlling for legal origins and religion</i>								
Dep. variable: Regulatory capital ratio								
Model #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individualism	-0.085*** (0.012)	-0.093*** (0.010)	-0.085*** (0.009)	-0.084*** (0.010)	-0.058*** (0.010)	-0.09*** (0.010)	-0.092*** (0.010)	-0.097*** (0.010)
Size	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)
Liquidity	0.014** (0.007)	0.015** (0.007)	0.014** (0.007)	0.015** (0.007)	0.014** (0.007)	0.015** (0.007)	0.015** (0.007)	0.014** (0.007)
Asset diversity	-0.321*** (0.009)	-0.321*** (0.009)	-0.32*** (0.009)	-0.321*** (0.009)	-0.32*** (0.009)	-0.321*** (0.009)	-0.32*** (0.009)	-0.321*** (0.009)
Tangibility	0.344*** (0.073)	0.343*** (0.073)	0.344*** (0.073)	0.34*** (0.073)	0.342*** (0.073)	0.344*** (0.073)	0.344*** (0.073)	0.345*** (0.073)
Credit risk	-0.123*** (0.041)	-0.123*** (0.041)	-0.126*** (0.041)	-0.126*** (0.041)	-0.128*** (0.041)	-0.123*** (0.041)	-0.123*** (0.041)	-0.125*** (0.041)
GDP growth rate	0.082** (0.034)	0.078** (0.034)	0.089*** (0.033)	0.083** (0.033)	0.084** (0.033)	0.08** (0.033)	0.08** (0.033)	0.077** (0.033)
Domestic credit to private sector	0.038*** (0.005)	0.039*** (0.005)	0.038*** (0.005)	0.04*** (0.005)	0.037*** (0.005)	0.038*** (0.005)	0.038*** (0.005)	0.04*** (0.005)
Inflation	0.018	0.014	0.018	0.01	0.02	0.016	0.017	0.009

International trade	(0.045) 0.014*** (0.004)	(0.045) 0.015*** (0.004)	(0.045) 0.013*** (0.004)	(0.045) 0.015*** (0.004)	(0.044) 0.016*** (0.004)	(0.045) 0.015*** (0.004)	(0.045) 0.015*** (0.004)	(0.045) 0.013*** (0.004)
Common law	-0.003 (0.004)							
Civil law		-0.003 (0.003)						
Catholic			0.018*** (0.004)					
Orthodox				0.047*** (0.011)				
Protestant					-0.023*** (0.004)			
Muslim						0.002 (0.010)		
Mix (Common & Muslim)							-0.01 (0.018)	
Buddhist								-0.019*** (0.007)
Constant	0.644*** (0.017)	0.648*** (0.017)	0.641*** (0.016)	0.640*** (0.017)	0.641*** (0.016)	0.645*** (0.017)	0.647*** (0.017)	0.651*** (0.017)
Observations	104,562	104,562	104,562	104,562	104,562	104,562	104,562	104,562
YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.235	0.235	0.236	0.234	0.235	0.235	0.235	0.236

Table 3

The effect of individualism on bank regulatory capital: Controlling for additional informal and formal institutional environment

The table reports the GLS random effect regressions with a measure of regulatory capital as the dependent variable and Hofstede's (2001, 2010) index on individualism as the primary independent variable. *Regulatory capital* is bank Tier 1 plus Tier 2 capital, divided by risk-weighted assets. *Individualism* is the degree to which individuals are integrated into groups, computed by the extent to which a society defines individuals primarily as autonomous in decision-making (high individualism) or as interdependent members of a larger community where decision-making is the product of a collective decision (high collectivism). Panel A reports the results for the effect of individualism on bank capital decisions after controlling for additional informal institutional environment variables. Panel B reports the results for the effect of individualism on bank capital decisions after controlling for additional formal institutional environment variables. Variables are defined in appendix A.1. Standard errors are clustered at the bank-level and are reported below their coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

<i>Panel A. Controlling for additional informal institutional environment variables</i>								
Dep. variable: Regulatory capital ratio								
Model #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individualism	-0.088*** (0.009)	-0.095*** (0.010)	-0.069*** (0.012)	-0.082*** (0.011)	-0.076*** (0.011)	-0.099*** (0.011)	-0.105*** (0.010)	-0.072*** (0.016)
Size	-0.036*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.036*** (0.001)	-0.022*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.022*** (0.001)
Liquidity	0.014** (0.007)	0.015** (0.007)	0.015** (0.007)	0.015** (0.007)	0.004* (0.002)	0.015** (0.007)	0.015** (0.007)	0.004* (0.002)
Asset diversity	-0.321*** (0.009)	-0.321*** (0.009)	-0.32*** (0.009)	-0.324*** (0.010)	-0.223*** (0.010)	-0.325*** (0.010)	-0.321*** (0.009)	-0.227*** (0.010)
Tangibility	0.345*** (0.073)	0.344*** (0.073)	0.342*** (0.073)	0.38*** (0.074)	-0.115 (0.079)	0.375*** (0.075)	0.347*** (0.073)	-0.123 (0.080)
Credit risk	-0.125*** (0.041)	-0.123*** (0.041)	-0.126*** (0.041)	-0.113** (0.044)	-0.05 (0.061)	-0.121*** (0.046)	-0.108*** (0.041)	-0.025 (0.062)
GDP growth rate	0.069** (0.033)	0.075** (0.034)	0.075** (0.033)	0.184*** (0.033)	0.18*** (0.032)	0.089*** (0.034)	0.046 (0.034)	0.114*** (0.030)
Domestic credit to private sector	0.038*** (0.005)	0.038*** (0.005)	0.041*** (0.005)	0.032*** (0.005)	0.002 (0.005)	0.043*** (0.005)	0.034*** (0.004)	-0.006 (0.005)
Inflation	0.009 (0.045)	0.014 (0.045)	0.009 (0.045)	0.007 (0.032)	-0.056* (0.032)	-0.026 (0.034)	0.013 (0.045)	-0.065** (0.032)
International trade	0.011*** (0.004)	0.014*** (0.004)	0.017*** (0.004)	0.016*** (0.004)	0.018*** (0.005)	0.008* (0.005)	0.016*** (0.004)	0.017*** (0.005)
Masculinity	-0.05*** (0.010)							-0.039*** (0.002)
Uncertainty avoidance		-0.011 (0.011)						0.017 (0.015)
Power distance			0.044*** (0.015)					0.057*** (0.022)
Long term orientation				0.016*** (0.006)				0.026* (0.014)
Restraint					0.028** (0.012)			0.014 (0.019)
Confidence in Women in organization						0.023*** (0.009)		
General trust							0.01*** (0.002)	0.011*** (0.002)
Constant	0.675*** (0.018)	0.655*** (0.018)	0.608*** (0.020)	0.63*** (0.017)	0.493*** (0.016)	0.601*** (0.032)	0.609*** (0.017)	0.418*** (0.034)
Observations	104,562	104,562	104,562	103,077	53,445	102,206	104,541	53,436
YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.238	0.235	0.235	0.235	0.216	0.235	0.236	0.262

Panel B. Controlling for additional formal institutional environment variables

Dep. variable: Regulatory capital ratio								
	Regulatory efficiency and market openness		Government effectiveness		Institutional and supervisory quality			
Model #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individualism	-0.079*** (0.011)	-0.076*** (0.011)	-0.085*** (0.010)	-0.091*** (0.010)	-0.038*** (0.012)	-0.083*** (0.010)	-0.079*** (0.011)	-0.095*** (0.012)
Size	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.036*** (0.001)	-0.037*** (0.001)
Liquidity	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.015** (0.007)	0.014** (0.007)	0.014** (0.007)
Asset diversity	-0.322*** (0.009)	-0.322*** (0.009)	-0.321*** (0.009)	-0.321*** (0.009)	-0.323*** (0.009)	-0.322*** (0.009)	-0.326*** (0.009)	-0.323*** (0.009)
Tangibility	0.336*** (0.073)	0.338*** (0.073)	0.342*** (0.073)	0.344*** (0.073)	0.37*** (0.075)	0.344*** (0.073)	0.367*** (0.073)	0.354*** (0.074)
Credit risk	-0.113***	-0.12***	-0.117***	-0.119***	-0.119**	-0.125***	-0.108***	-0.121***

	(0.041)	(0.041)	(0.041)	(0.041)	(0.046)	(0.041)	(0.041)	(0.045)
GDP growth rate	0.035	0.062*	0.072**	0.094***	0.14***	0.112***	0.066*	0.096**
	(0.034)	(0.032)	(0.033)	(0.035)	(0.036)	(0.034)	(0.035)	(0.038)
Domestic credit to private sector	0.041***	0.041***	0.039***	0.041***	0.036***	0.041***	0.034***	0.057***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
Inflation	-0.007	-0.001	0.005	0.023	0.003	0.026	0.025	0.021
	(0.045)	(0.044)	(0.045)	(0.046)	(0.037)	(0.046)	(0.040)	(0.050)
International trade	0.019***	0.015***	0.016***	0.016***	0.023***	0.016***	0.011**	0.005
	(0.005)	(0.004)	(0.004)	(0.004)	(0.006)	(0.005)	(0.004)	(0.005)
Investment freedom	-0.036***							
	(0.010)							
Business freedom		-0.044***						
		(0.016)						
Government spending			0.034***					
			(0.009)					
Government size				0.004***				
				(0.001)				
Information sharing					-0.01***			
					(0.001)			
Infrastructure quality index						-0.027**		
						(0.012)		
Official supervisory power							-0.002***	
							(0.001)	
Capital stringency regulation								-0.005**
								(0.002)
Constant	0.663***	0.672***	0.624***	0.615***	0.685***	0.665***	0.668***	0.683***
	(0.017)	(0.019)	(0.018)	(0.019)	(0.020)	(0.020)	(0.018)	(0.021)
Observations	104,416	104,416	104,416	104,418	102,699	104,280	102,287	100,840
YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.235	0.236	0.235	0.235	0.239	0.236	0.24	0.234

Table 4

The effect of individualism on bank regulatory capital: Alternative dependent and independent variables

The table reports the GLS random effect regressions. Panel A reports the results for the effect of individualism on bank capital decisions using alternative dependent and independent variables. Alternative dependent variables include *Tier 1/rwa*, *Equity to total assets*, and *Tier 1+Tier 2 /total assets*. Alternative independent variables include from Tang and Koveos (2008) the adjusted Hofstede index of individualism, Individualism TK, Schwartz (1994) measures of embeddedness and mastery, and the Global Leadership and Organizational Behavior Effectiveness (GLOBE) proxies on institutional collectivism and in-group collectivism. Panel B reports the results for the effect of individualism on bank capital buffers defined as the difference between a bank's regulatory capital ratio and the minimum regulatory capital ratio imposed by national prudential regulators. Variables are defined in appendix A.1. Standard errors are clustered at the bank-level and are reported below their coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively

<i>Panel A. Alternative dependent and independent variables</i>								
Dep. variable:	Tier 1/rwa	Equity to total assets	Tier 1+Tier 2 /total assets	Regulatory capital ratio				
Model #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individualism	-0.097*** (0.015)	-0.077*** (0.006)	-0.082*** (0.006)					
Size	-0.042*** (0.002)	-0.022*** (0.001)	-0.021*** (0.001)	-0.036*** (0.001)	-0.035*** (0.001)	-0.035*** (0.001)	-0.034*** (0.001)	-0.036*** (0.001)
Liquidity	0.039** (0.019)	0.003* (0.001)	0.008** (0.004)	0.014** (0.007)	0.015** (0.007)	0.015** (0.007)	0.015** (0.007)	0.014** (0.007)
Asset diversity	-0.421*** (0.022)	-0.079*** (0.005)	-0.058*** (0.005)	-0.33*** (0.009)	-0.324*** (0.009)	-0.324*** (0.009)	-0.328*** (0.009)	-0.327*** (0.009)
Tangibility	0.774*** (0.149)	0.523*** (0.048)	0.442*** (0.044)	0.385*** (0.076)	0.357*** (0.074)	0.361*** (0.074)	0.391*** (0.076)	0.379*** (0.075)
Credit risk	-0.07 (0.133)	-0.04 (0.025)	-0.025 (0.028)	-0.108** (0.050)	-0.117*** (0.041)	-0.112*** (0.041)	-0.083** (0.040)	-0.102** (0.041)
GDP growth rate	0.132** (0.061)	0.083*** (0.022)	0.099*** (0.023)	0.165*** (0.042)	0.154*** (0.038)	0.195*** (0.039)	0.199*** (0.040)	0.153*** (0.038)
Domestic credit to private sector	0.06*** (0.006)	0.011*** (0.002)	0.018*** (0.002)	0.041*** (0.005)	0.05*** (0.005)	0.045*** (0.005)	0.041*** (0.005)	0.043*** (0.005)
Inflation	-0.007 (0.064)	0.017 (0.026)	0.084 (0.064)	0.004 (0.042)	0.052 (0.049)	0.074 (0.049)	0.079 (0.068)	0.017 (0.038)
International trade	-0.005 (0.005)	0.001 (0.002)	-0.003 (0.002)	0.008 (0.005)	0.043*** (0.005)	0.026*** (0.005)	0.037*** (0.005)	0.029*** (0.005)
Individualism TK				-0.095*** (0.010)				
Embeddedness					0.026*** (0.005)			
Mastery						-0.066*** (0.013)		
Institutional collectivism							0.013*** (0.005)	
In-group collectivism								0.036*** (0.004)
Constant	0.72*** (0.030)	0.339*** (0.011)	0.326*** (0.009)	0.661*** (0.018)	0.45*** (0.022)	0.821*** (0.056)	0.49*** (0.021)	0.401*** (0.016)
Observations	101,100	109,214	100,137	101,312	103,826	103,826	101,932	101,932
YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.182	0.195	0.22	0.24	0.234	0.235	0.238	0.24
<i>Panel B. The effect of individualism on bank capital buffers</i>								
Dep. variable :	Capital buffers	Capital buffers	Capital buffers	Capital buffers	Capital buffers	Capital buffers	Capital buffers	Capital buffers
Model #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individualism	-0.106*** (0.008)	-0.126*** (0.009)	-0.072*** (0.010)	-0.102*** (0.009)	-0.101*** (0.009)	-0.1*** (0.009)	-0.076*** (0.011)	-0.06*** (0.011)
Size	-0.036*** (0.001)	-0.041*** (0.001)	-0.037*** (0.001)	-0.035*** (0.001)	-0.035*** (0.001)	-0.035*** (0.001)	-0.035*** (0.001)	-0.036*** (0.001)
Liquidity	0.004*** (0.001)	0.004*** (0.001)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)
Asset diversity	-0.319*** (0.009)	-0.325*** (0.009)	-0.321*** (0.009)	-0.319*** (0.009)	-0.32*** (0.009)	-0.319*** (0.009)	-0.319*** (0.009)	-0.322*** (0.009)
Tangibility	0.368*** (0.073)	0.32*** (0.072)	0.355*** (0.073)	0.324*** (0.072)	0.332*** (0.072)	0.328*** (0.072)	0.332*** (0.072)	0.367*** (0.073)
Credit risk			-0.119*** (0.044)	-0.115*** (0.044)	-0.114*** (0.044)	-0.112** (0.044)	-0.116*** (0.044)	-0.121*** (0.045)
Basel III	0.011***	0.01***	0.008***	0.01***	0.011***	0.01***	0.009***	0.01***

	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
CCB			0.002	-0.004	-0.004	-0.003	-0.006	0.005
			(0.010)	(0.009)	(0.009)	(0.010)	(0.009)	(0.010)
CyB			-0.006	-0.002	0.001	-0.001	-0.001	-0.005
			(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)
GDP growth rate			0.067*					0.026
			(0.035)					(0.038)
Domestic credit to private sector			0.042***					0.039***
			(0.005)					(0.005)
Inflation			0.032					-0.041
			(0.057)					(0.061)
International trade			0.017***					0.021***
			(0.004)					(0.007)
Oil rent				0.001**				0.001***
				(0.000)				(0.000)
Gas rent					0.013***			0.012***
					(0.002)			(0.002)
Mineral rent						0.005***		0.006***
						(0.001)		(0.001)
Population growth							0.001	-0.001
							(0.001)	(0.001)
Ln(surface)							-0.005***	0.001
							(0.001)	(0.001)
Constant	0.583***	0.654***	0.542***	0.591***	0.586***	0.587***	0.65***	0.523***
	(0.015)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)	(0.021)	(0.029)
Observations	109,758	109,758	103,391	103,668	103,668	103,834	103,812	103,203
YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.247	0.242	0.235	0.235	0.236	0.235	0.234	0.239

Table 5

The effect of individualism on bank regulatory capital: Controlling for legal enforcement

The table reports the GLS random effect regressions with a measure of regulatory capital as the dependent variable and Hofstede's (2001, 2010) index on individualism as well as legal enforcement as the primary independent variables. *Regulatory capital* is bank Tier 1 plus Tier 2, divided by risk-weighted assets. *Individualism* is the degree to which individuals are integrated into groups, computed by the extent to which a society defines individuals primarily as autonomous in decision-making (high individualism) or as interdependent members of a larger community where decision-making is the product of a collective decision (high collectivism). *Legal enforcement* represents a country's judicial independence, the level of judicial bribery, the quality of the legal framework, the protection of private property, and the effectiveness of the parliament and the police. We use four proxies: the judicial/legal effectiveness integrity index, the public sector ethics index, the corporate governance index, and the corporate illegal corruption index. Panel A reports the results for the effect of individualism and legal enforcement and their interactions on bank capital decisions. Panel B reports the results for the effect of individualism on bank capital decisions using the above-median legal enforcement scores. Variables are defined in appendix A.1. Standard errors are clustered at the bank-level and are reported below their coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Individualism, legal effectiveness, and bank capital decisions								
Dep. variable: Regulatory capital ratio								
Model #	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Individualism	-0.061*** (0.011)	-0.064*** (0.010)	-0.073*** (0.011)	-0.063*** (0.011)	-0.046* (0.025)	-0.036 (0.025)	-0.054* (0.031)	-0.047 (0.029)
Size	-0.037*** (0.001)	-0.037*** (0.001)	-0.036*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)	-0.037*** (0.001)
Liquidity	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)
Asset diversity	-0.32*** (0.009)	-0.321*** (0.009)	-0.321*** (0.009)	-0.321*** (0.009)	-0.321*** (0.009)	-0.321*** (0.009)	-0.321*** (0.009)	-0.321*** (0.009)
Tangibility	0.341*** (0.073)	0.341*** (0.073)	0.341*** (0.073)	0.341*** (0.073)	0.341*** (0.073)	0.342*** (0.073)	0.342*** (0.073)	0.341*** (0.073)
Credit risk	-0.126*** (0.042)	-0.125*** (0.042)	-0.123*** (0.042)	-0.125*** (0.042)	-0.125*** (0.042)	-0.125*** (0.042)	-0.123*** (0.042)	-0.125*** (0.042)
GDP growth rate	0.11*** (0.036)	0.108*** (0.036)	0.109*** (0.036)	0.108*** (0.036)	0.113*** (0.037)	0.114*** (0.038)	0.112*** (0.037)	0.111*** (0.038)
Domestic credit to private sector	0.043*** (0.005)	0.041*** (0.005)	0.042*** (0.005)	0.043*** (0.005)	0.042*** (0.005)	0.039*** (0.005)	0.041*** (0.005)	0.042*** (0.005)
Inflation	0.013 (0.047)	0.016 (0.047)	0.016 (0.047)	0.012 (0.047)	0.016 (0.049)	0.021 (0.048)	0.02 (0.049)	0.015 (0.049)
International trade	0.018*** (0.004)	0.017*** (0.004)	0.018*** (0.004)	0.018*** (0.004)	0.018*** (0.005)	0.015*** (0.004)	0.017*** (0.005)	0.017*** (0.005)
Judicial/legal effectiveness	-0.043*** (0.010)				-0.028 (0.028)			
(2) Judicial/legal effectiveness × Individualism					-0.025 (0.040)			
Corporate governance index		-0.039*** (0.008)				-0.009 (0.026)		
(2) Corporate governance index × Individualism						-0.045 (0.037)		
Public sector ethics index			-0.031*** (0.011)				-0.009 (0.036)	
(2) Public sector ethics index × Individualism							-0.036 (0.050)	
Corporate illegal corruption index				-0.044*** (0.0118)				-0.029 (0.031)
(2) Corporate illegal corruption index × Individualism								-0.025 (0.044)
Constant	0.653*** (0.017)	0.656*** (0.017)	0.65*** (0.017)	0.655*** (0.017)	0.646*** (0.020)	0.64*** (0.021)	0.64*** (0.021)	0.648*** (0.021)
Observations	104,170	104,170	104,170	104,170	104,170	104,170	104,170	104,170
YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.237	0.237	0.236	0.236	0.237	0.237	0.236	0.237
Panel B. Marginal effects, countries with better legal enforcement ((1) × (2))								
					-0.067*** (0.015)	-0.076*** (0.015)	-0.079*** (0.015)	-0.084*** (0.012)
t-test (p-value)					0.00***	0.00***	0.00***	0.00***

Table 6

The effect of individualism on bank regulatory capital in the United States

The table reports the GLS random effect regressions with a measure of regulatory capital as the dependent variable and the Vandello and Cohen (1999) index on individualism, as well as legal enforcement as the primary independent variables. *Regulatory capital* is bank Tier 1 plus Tier 2 divided by risk-weighted assets. This ratio must be at least 8% under the Basel I, II, and III rules. *State individualism* is -1 times the individualism-collectivism index from Vandello and Cohen (1999). We measure legal enforcement in the United States using the Federal Regulation and State Enterprise (FRASE) index, which shows how the state is affected by federal regulation with higher values, indicating that a state is more affected by federal legal enforcement relative to the rest of the nation. Panel A reports the results for the effect of individualism and legal enforcement and their interactions on bank capital decisions in the United States. Panel B reports the results for the effect of individualism on bank capital decisions using the above median legal enforcement scores. Variables are defined in appendix A.1. Standard errors are clustered at the bank-level and are reported below their coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Individualism, legal effectiveness, and bank capital decisions

Dep. variable: Regulatory capital ratio

Model #	Individualism and bank capital decisions				Controlling for legal enforcement			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) State individualism	-0.13*** (0.015)	-0.414*** (0.125)	-0.131*** (0.015)	-0.135*** (0.016)	-0.143*** (0.015)	-0.389*** (0.126)	-0.081** (0.032)	-0.278** (0.131)
Size	-0.032*** (0.002)	-0.034*** (0.002)	-0.025*** (0.002)	-0.025*** (0.002)	-0.032*** (0.002)	-0.034*** (0.002)	-0.025*** (0.001)	-0.027*** (0.002)
Liquidity	0.122*** (0.017)	0.121*** (0.017)	0.091*** (0.032)	0.091*** (0.032)	0.122*** (0.017)	0.121*** (0.017)	0.091*** (0.032)	0.09*** (0.032)
Asset diversity	-0.267*** (0.013)	-0.27*** (0.013)	-0.23*** (0.018)	-0.23*** (0.018)	-0.268*** (0.013)	-0.27*** (0.013)	-0.231*** (0.018)	-0.234*** (0.018)
Tangibility	0.176** (0.082)	0.175** (0.082)	0.178 (0.118)	0.178 (0.118)	0.177** (0.082)	0.176** (0.082)	0.179 (0.118)	0.187 (0.118)
Credit risk	-0.153 (0.126)	-0.143 (0.126)	-0.348*** (0.093)	-0.348*** (0.093)	-0.156 (0.126)	-0.144 (0.127)	-0.346*** (0.094)	-0.349*** (0.095)
GDP growth rate	0.001*** (0.001)	0.008*** (0.002)	0.002*** (0.001)	0.003** (0.001)	0.001** (0.000)	0.008*** (0.002)	0.002*** (0.001)	0.009** (0.004)
Ln GDPPC	0.029*** (0.008)	0.021* (0.011)	0.017** (0.008)	0.016** (0.008)	0.029*** (0.008)	0.021* (0.012)	0.019** (0.008)	0.019 (0.012)
Inflation	-1.092*** (0.103)	-1.105*** (0.104)	-0.78*** (0.200)	-0.781*** (0.200)	-1.125*** (0.102)	-1.117*** (0.104)	-0.777*** (0.199)	-0.77*** (0.197)
International trade			-0.026*** (0.009)	-0.026*** (0.009)			-0.028*** (0.009)	-0.021* (0.011)
Population growth				-0.002 (0.003)				
Ln(surface)				0.016*** (0.006)				
Federal regulation					-0.019*** (0.004)	-0.006 (0.005)	-0.016 (0.010)	-0.006 (0.011)
(2) Federal regulation × Individualism							-0.032* (0.018)	-0.034* (0.019)
Constant	0.15* (0.090)	0.109 (0.154)	0.219*** (0.083)	0.238*** (0.083)	0.17* (0.090)	0.129 (0.155)	0.228*** (0.0847)	0.121 (0.166)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	No	Yes	No	No	No	Yes	No	Yes
Observations	52,258	52,258	26,804	26,804	52,258	52,258	26,804	26,804
Wald Ch2	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Overall R-sq.	0.311	0.348	0.323	0.326	0.312	0.348	0.313	0.348

Panel B. Marginal effects, states with better legal enforcement ((1) × (2))

	-0.123*** (0.016)	-0.327** (0.127)
t-test (p-value)	0.00***	0.00***

Table 7

The effect of individualism on bank regulatory capital: Addressing endogeneity and self-selection bias

This table reports regressions with a measure of regulatory capital as the dependent variable and Hofstede's (2001, 2010) index on individualism, as well as legal enforcement and their interactions as the independent variables. *Regulatory capital* is bank Tier 1 plus Tier 2, divided by risk-weighted assets. *Individualism* is the degree to which individuals are integrated into groups, computed by the extent to which a society defines individuals primarily as autonomous in decision-making (high individualism) or as interdependent members of a larger community where decision-making is the product of a collective decision (high collectivism). *Legal enforcement* represents a country's judicial independence, the level of judicial bribery, the quality of the legal framework, the protection of private property, and the effectiveness of both the parliament and the police. We use four proxies: the judicial/legal effectiveness integrity index, the public sector ethics index, the corporate governance index, and the corporate illegal corruption index. Panel A models 1 to 4 report the results after using two system GMM regressions. We employ four instruments: pronoun drop, pathogen, ethnic fractionalization, and protestant. Panel B models 5 to 8 report the results after using Heckman estimation techniques. Panel B reports the marginal effect of individualism on bank capital decisions in countries with more effective legal enforcement. We employ three instruments: pronoun drop, pathogen, and ethnic fractionalization. The Heckman outcome equation uses bank regulatory capital as the dependent variable and Hofstede's index of individualism as the independent variable, along with the four proxies of legal enforcement, the same control variables, and a self-selection parameter (the inverse Mills ratio) estimated from the first-stage regression. Panel B reports the results for the effect of individualism on bank capital decisions using the above-median legal enforcement scores. Variables are defined in appendix A.1. Standard errors are clustered at the bank-level and are reported below their coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. The effect of individualism on bank capital decisions: Addressing endogeneity and correcting for a potential self-selection bias

Dep. var: Regulatory capital ratio								
Model #	Two-system GMM				Heckman estimation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag regulatory capital	0.22*** (0.024)	0.255*** (0.024)	0.249*** (0.026)	0.247*** (0.027)				
(1) Individualism (IND)	0.169 (0.288)	0.29 (0.249)	0.864* (0.443)	0.5 (0.461)	-0.032 (0.038)	0.001 (0.032)	-0.054 (0.038)	-0.044 (0.047)
Size	-0.005 (0.007)	-0.017** (0.008)	-0.013* (0.007)	-0.015** (0.007)	-0.037*** (0.001)	-0.037*** (0.001)	-0.038*** (0.001)	-0.037*** (0.001)
Liquidity	-0.02 (0.022)	0.04* (0.024)	-0.037 (0.028)	-0.036 (0.031)	0.014** (0.007)	0.014** (0.007)	0.014** (0.007)	0.014** (0.006)
Asset diversity	-0.130** (0.055)	-0.173*** (0.061)	-0.156*** (0.058)	-0.133** (0.063)	-0.322*** (0.009)	-0.322*** (0.009)	-0.322*** (0.009)	-0.322*** (0.009)
Tangibility	0.211 (0.309)	0.355 (0.289)	0.303 (0.294)	0.398 (0.314)	0.337*** (0.073)	0.338*** (0.073)	0.337*** (0.073)	0.337*** (0.073)
Credit risk	0.35 (0.230)	0.267 (0.230)	0.232 (0.216)	0.305 (0.235)	-0.118*** (0.043)	-0.117*** (0.044)	-0.116*** (0.043)	-0.118*** (0.043)
GDP growth rate	0.959* (0.533)	-0.017 (0.411)	0.427 (0.450)	0.441 (0.478)	0.122*** (0.039)	0.128*** (0.039)	0.119*** (0.039)	0.117*** (0.039)
Domestic credit to private sector	0.372*** (0.072)	0.368*** (0.075)	0.4*** (0.066)	0.395*** (0.069)	0.043*** (0.005)	0.042*** (0.005)	0.042*** (0.005)	0.042*** (0.005)
Inflation	-2.085** (0.936)	-1.45** (0.607)	-0.366 (0.686)	-0.559 (0.737)	0.014 (0.050)	0.018 (0.050)	0.018 (0.051)	0.013 (0.050)
International trade	0.1** (0.039)	0.318*** (0.098)	0.307*** (0.087)	0.241** (0.099)	0.019*** (0.006)	0.014** (0.006)	0.019*** (0.006)	0.02*** (0.007)
Inverse Mills					-0.001 (0.001)	-0.003** (0.001)	-0.001 (0.001)	-0.001 (0.001)
Judicial/legal effectiveness	0.813*** (0.221)				-0.02 (0.040)			
(2) Judicial/legal effectiveness × Individualism	-0.87** (0.357)				-0.055 (0.069)			
Corporate governance index		0.786*** (0.178)				0.018 (0.034)		
(2) Corporate governance index × Individualism		-0.72** (0.337)				-0.119** (0.055)		
Public sector ethics index			1.4*** (0.360)				-0.015 (0.050)	
(2) Public sector ethics index × Individualism			-1.716** (0.674)				-0.037 (0.083)	
Corporate illegal corruption index				0.949*** (0.319)				-0.034 (0.049)
(2) Corporate illegal corruption index × Individualism				-1.004 (0.619)				-0.03 (0.085)
Constant	0.287 (0.179)	-0.129 (0.106)	-0.407* (0.212)	-0.221 (0.198)	0.647*** (0.022)	0.642*** (0.022)	0.643*** (0.023)	0.651*** (0.025)
Observations	95,968	96,024	96,024	96,024	103,696	103,696	103,696	103,696
Wald Ch2					0.00***	0.00***	0.00***	0.00***
R-sq.					0.238	0.238	0.237	0.238
Fisher (Prob > F, p-value)	32.61 (p=.000)	32.13 (p=.000)	34.83 (p=.000)	32.73 (p=.000)				
Arellano-Bond AR(1) (z, p-value)	-2.64 (p=0.008)	-3.3 (p=0.000)	-3.34 (p=.001)	-3.42 (p=.001)				

Arellano-Bond AR(2) (z, p-value)	1.51 (p=.145)	-0.6 (p=0.549)	0.36 (p=.719)	0.19 (p=.848)				
Hansen test (Chi-square, p-value)	2.11 (p=.550)	2.14 (p=0.343)	1.24 (p=.539)	1.17 (p=.557)				
<i>Panel B. Marginal effects, countries with better legal enforcement ((1) × (2))</i>								
	-0.559*** (0.144)	-0.356*** (0.104)	-0.339*** (0.140)	-0.343*** (0.105)	-0.078*** (0.025)	-0.106*** (0.023)	-0.08** (0.024)	-0.069*** (0.028)
t-test (p-value)	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***

Appendix

Table A.1

Variable definitions and data sources

Variable	Definition	Data sources
Dependent variables		
Regulatory capital	The capital adequacy ratio. It is the sum of bank Tier 1 plus Tier 2 capital as a percentage of risk-weighted assets. This ratio must be at least 8% under the Basel I, II and III guidelines.	Bankscope and Fitch Solutions
Tier 1/rwa	The ratio of core capital. It is Tier 1 capital divided by risk-weighted assets computed under the Basel rules. Banks must maintain minimum Tier 1 capital of at least 6% under Basel III guidelines	As above
Equity to total assets	Equity capital divided by total assets.	As above
Tier 1+ Tier 2/ta	Tier 1 plus Tier 2 capital divided by total assets.	Authors' calculations based on Bankscope and Fitch Solutions
Independent variables		
<i>Bank-level control variables</i>		
Size	The natural logarithm of bank total assets.	Authors' calculations based on Bankscope and Fitch Solutions
Liquidity	The ratio of liquid assets to deposits and short-term funding.	Bankscope and Fitch Solutions
Asset diversity	The ratio of bank net loans to total assets.	Authors' calculations based on Bankscope and Fitch Solutions
Tangibility	The ratio of bank fixed assets to total assets.	Bankscope and Fitch Solutions
Credit risk	The ratio of bank loan loss reserves to gross loans.	
<i>Macroeconomic, natural resources, and geodemographic control variables</i>		
GDP growth rate	The annual growth rate of a country's GDP.	World Development Indicators (WDI)
Domestic credit to private sector	Domestic credit to the private sector divided by a country's GDP. This ratio represents the financial resources, such as loans from financial institutions to the private sector.	As above
Inflation rate	The inflation rate, based on changes in the consumer price index.	As above
International trade	The sum of a country's exports and imports of goods and services, divided by GDP.	As above
Oil rent	Oil rents as a percentage of a country's GDP.	As above
Gas rent	Gas rents as a percentage of a country's GDP.	As above
Mineral rent	Mineral rents as a percentage of a country's GDP.	As above
Population growth	The annual percentage of a country's population growth	As above
Ln(surface)	The natural logarithm of a country's surface area in sq. km.	Authors' calculations based on the CIA's World Fact Book.
<i>Measures of individualism</i>		
Individualism	Hofstede's cultural index on individualism.	Hofstede (2001, 2010)
Individualism TK	Tang and Koveos updated cultural index on individualism.	Tang and Koveos (2008)
Embeddedness	Schwartz's cultural index on embeddedness.	Schwartz (1994)
Mastery	Schwartz's cultural index on mastery.	As above
Institutional collectivism	The Global Leadership and Organizational Behavior Effectiveness (GLOBE)'s index on institutional collectivism	House et al. (2004)
In-group collectivism	The Global Leadership and Organizational Behavior Effectiveness (GLOBE)'s index on in-group collectivism.	House et al. (2004)
<i>Additional measures of culture</i>		
Masculinity	Hofstede's cultural index on masculinity.	Hofstede (2001, 2010)
Uncertainty avoidance	Hofstede's cultural index on uncertainty avoidance.	As above
Power distance	Hofstede's cultural index on power distance.	As above
Long term orientation	Hofstede's cultural index on long-term orientation.	As above
Restraint	Hofstede's cultural index on restraint.	As above
General trust	A general trust measure to proxy for social capital. General trust is based on the following question: "Generally speaking, would you say that most people can be trusted, or that you need to be very careful on dealing with people?"	World Value Surveys (1999, 2005, 2008, 2010)
Confidence in women's organizations	A specific trust measure to proxy for confidence. Confidence in women's organizations is based on the following question: "I am going to name a number of organizations. For each one, could you tell me how much	As above

Variable	Definition	Data sources
	confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?"	
<i>Measures of legal enforcement</i>		
Judicial/legal effectiveness integrity index	An index of the level of judicial independence and bribery, the quality of the legal framework, the protection of private property, and the effectiveness of the parliament and the police. The index takes values between 0 and 1, with higher scores indicating more effective legal environments.	World Bank (2004)
Corporate governance index	An index of the internal governance structure of banks based on the protection of minority shareholders, the quality of training, the willingness to delegate authority, and the relationship between the board and the management team. The index takes values between 0 and 1, with higher scores indicating more effective internal governance structure and efficient legal environments.	As above
Public sector ethics index	This index captures factors related to public integrity, bribery, and favoritism in the public sector (such as honesty of politicians, diversion of public funds, trust in postal offices, and bribe frequencies for permits, utilities, and taxes). The index takes values between 0 and 1, with higher scores indicating that the public sector abides by ethical values and an effective legal system.	As above
Corporate illegal corruption index	This index captures factors related to corporate ethics, illegal political funding, and corruption in banking (such as formal money laundering and bribery for loans). The index takes values between 0 and 1, with higher scores indicating that the public sector abides by ethical values and an effective legal system.	As above
<i>Measures of legal origins, religion, and institutional environment</i>		
Common law	A dummy variable that equals 1 if a country has an English legal origin and zero otherwise.	Authors' calculations based on the CIA's World Fact Book.
Civil law	A dummy variable that equals 1 if a country has a French Napoleonic legal origin and it subcategories such as the Germanic law, the Nordic law, and the Chilean law, and zero otherwise.	As above
Catholic	A dummy variable that equals 1 if a country's religion practiced by the largest proportion of the population is Catholic, and zero otherwise.	As above
Orthodox	A dummy variable that equals 1 if a country's religion practiced by the largest proportion of the population is Orthodox, and zero otherwise.	As above
Protestant	A dummy variable that equals 1 if a country's religion practiced by the largest proportion of the population is Protestant, and zero otherwise.	As above
Muslim	A dummy variable that equals 1 if a country's religion practiced by the largest proportion of the population is Muslim, and zero otherwise.	As above
Mix (Common & Muslim)	A dummy variable that equals 1 if a country has an English legal origin and the religion practiced by the largest proportion of the population is Muslim, and zero otherwise.	As above
Buddhist	A dummy variable that equals 1 if a country's religion practiced by the largest proportion of the population is Buddhism, and zero otherwise.	As above
Investment freedom	A measure of market openness; investment freedom reflects a variety of restrictions typically imposed on investments, such as the treatment of foreign investments, land ownership, foreign exchange, expropriation of investments without fair compensation, and capital movement. This index takes values between 0 and 1, with higher values indicating more investment freedom and market openness.	www.heritage.org ; 2015 Index of Economic Freedom
Business freedom	A measure of regulatory efficiency; business freedom reflects the processes related to the creation of businesses without any regulatory burden, such as constraints on licensing new businesses (e.g., high registration fees, long and complex registration procedures, and bureaucracy) and rigid bankruptcy procedures. This index takes values between 0 and 1, with higher values indicating more efficient business regulation.	As above
Government spending	A measure of government intervention; government spending reflects the level of government expenditures as a percentage of a country's GDP. Government expenditures represent excessive government spending that causes budget deficits and the accumulation of sovereign debt. This index takes values between 0 and 1, with higher values indicating more government intervention in the economy.	As above
Government size	A measure of government effectiveness; government size reflects the extent to which governments rely on political process to allocate resources, goods, and services instead of relying on individual choice and markets. This index takes values between 0 and 10, with higher values indicating less market freedom and inefficient governmental processes.	www.fraserinstitute.org ; 2015 Economic Freedom of the World
Information sharing	This measure on information transparency equals 1 if public credit registries are available in a country, and zero otherwise. Public credit registries are databases managed by a government agency such as the central bank or the	Djankov et al. (2007)

Variable	Definition	Data sources
Infrastructure quality index	superintendent of banks. These registries collect information on the standing of borrowers in the financial system and make it available to creditors. This index on the quality of institutional environment reflects the “facilities for and ease of communication between headquarters and the operation, and within the country,” as well as the quality of the transportation system. This index takes values between 0 and 10, with higher values indicating better quality and efficient institutional environment.	La porta et al. (1999)
Official supervisory power	This index is based on surveys by Barth et al., 2004; Barth et al., 2006; and Barth et al., 2008 (2004, 2006, 2008, see details therein). It increases by 1 if the answer is yes to questions 1-14 of their survey, with no increase if the answer is no. The variable thus ranges between 0 and 14, with greater values indicating more supervisory power: (1) Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank? (2) Are auditors legally required to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse? (3) Can supervisors take legal action against external auditors for negligence? (4) Can the supervisory authorities force a bank to change its internal organizational structure? (5) Does the institution disclose off-balance-sheet items to supervisors? (6) Can the supervisory agency order the bank’s directors or management to constitute provisions to cover actual or potential losses? (7) Can the supervisory agency suspend directors’ decisions to distribute dividends? (8) Can the supervisory agency suspend directors’ decisions to distribute bonuses? (9) Can the supervisory agency suspend directors’ decisions to distribute management fees? (10) Can the supervisory agency supersede bank shareholder rights and declare the bank insolvent? (11) Does banking law allow a supervisory agency or any other government agency (other than a court) to suspend some or all ownership rights at a problem bank? (12) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency (other than a court) supersede shareholder rights? (13) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency (other than a court) remove and replace management? (14) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency (other than a court) remove and replace directors?	Authors’ calculations based on the Bank Regulation and Supervision Surveys (2001, 2003, 2007, 2011, and 2016)
Capital stringency regulation	An index on whether the bank capital requirement reflects certain risk elements and deducts certain market value losses from capital before minimum capital adequacy is determined. The index takes values between 0 and 10, with higher values indicating more stringent requirements and verified supervision in terms of capital deductions, disbursement and injections.	As above

Table A.2

Summary statistics of state-level individualism index in the United States

This table presents the summary statistics for all the states in our sample. *RCAP* is Tier 1 plus Tier 2 divided by risk-weighted assets. *State individualism* is -1 times the individualism-collectivism index of Vandello and Cohen (1999). *GDP growth*, *GDP per capita*, *Inflation rates*, *International trade*, *Population*, and *Surface* are the state-level control variables. *FRASE index* is the Federal Regulation and State Enterprise measure, which shows how federal regulation affects the state, with higher values indicating that a state is more affected by federal legal enforcement relative to the rest of the nation.

State	# of banks	RCAP	State individualism	GDP growth	GDP per capita	International trade	Population	Surface	FRASE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Alabama	70	0.194	-0.57	1.181	38,074.19	0.19	4,798,777	135,767	1.412
Alaska	4	0.216	-0.48	0.325	71,488.75	0.114	719,768.9	1,723,337	1.847
Arizona	10	0.229	-0.49	1.687	42,013.5	0.154	6,482,380	295,234	1.097
Arkansas	53	0.197	-0.54	0.7	36,393.88	0.129	2,933,747	137,732	1.41
California	142	0.192	-0.6	13.4	55,366.5	0.288	3.76	423,972	1.218
Colorado	39	0.18	-0.36	1.712	53,689.75	0.091	5,120,024	269,601	1.186
Connecticut	36	0.193	-0.5	1.556	67,836.56	0.16	3,583,125	14,357	1.233
Delaware	5	0.166	-0.55	0.4	69,465.44	0.266	907,231	6,446	1.141
Florida	91	0.201	-0.54	5	41,870.56	0.156	1.91	170,312	1.085
Georgia	119	0.179	-0.6	2.875	46,874.31	0.228	9,797,276	153,910	1.387
Idaho	6	0.244	-0.42	0.4	37,135.13	0.168	1,584,519	216,443	1.324
Illinois	295	0.191	-0.52	4.512	54,432.81	0.251	1.29	149,995	1.257
Indiana	72	0.188	-0.57	1.881	45,551.75	0.236	6,513,667	94,326	1.494
Iowa	157	0.163	-0.39	0.931	48,066.5	0.139	3,064,039	145,746	1.306
Kansas	111	0.184	-0.38	0.837	46,346.69	0.162	2,868,665	213,100	1.378
Kentucky	83	0.199	-0.53	1.1	39,569.25	0.322	4,364,461	104,656	1.489
Louisiana	88	0.212	-0.72	1.4	50,936.81	0.509	4,568,718	135,659	2.208
Maine	23	0.2	-0.45	0.337	39,934.5	0.132	1,327,952	91,633	1.185
Maryland	43	0.176	-0.63	2.012	54,137.31	0.104	5,829,357	32,131	1.103
Massachusetts	82	0.191	-0.46	2.712	62,527.56	0.135	6,611,283	27,336	1.086
Michigan	65	0.175	-0.46	2.862	42,919.31	0.367	9,887,990	250,487	1.216
Minnesota	180	0.163	-0.41	1.831	53,628.63	0.172	5,343,076	225,163	1.233
Mississippi	48	0.171	-0.64	0.606	32,909.25	0.276	2,975,390	125,438	1.377
Missouri	147	0.165	-0.46	1.719	44,645.88	0.107	6,009,885	180,540	1.227
Montana	30	0.166	-0.31	0.243	39,666.94	0.163	997,804.7	380,831	1.54
Nebraska	97	0.169	-0.35	0.6	51,737.94	0.101	1,840,950	200,330	1.495
Nevada	10	0.312	-0.52	0.825	50,726.06	0.115	2,728,070	286,380	0.936
New Hampshire	15	0.176	-0.43	0.4	49,577.31	0.21	1,320,266	24,214	0.888
New Jersey	59	0.226	-0.59	3.35	58,747.69	0.296	8,816,571	22,591	1.227
New Mexico	19	0.182	-0.51	0.55	42,085.38	0.057	2,071,985	314,917	1.198
New York	111	0.195	-0.53	7.987	62,798.31	0.157	1.95	141,297	1.278
North Carolina	45	0.205	-0.56	2.731	45,721.19	0.169	9,658,358	139,391	1.297
North Dakota	51	0.149	-0.37	0.231	53,944.31	0.152	688,841.6	183,108	1.287
Ohio	121	0.207	-0.45	3.487	46,493.5	0.198	1.16	116,098	1.239
Oklahoma	94	0.175	-0.42	1	42,230.75	0.091	3,787,736	181,037	1.243
Oregon	18	0.169	-0.33	1.1	43,800.69	0.189	3,867,977	254,799	0.999
Pennsylvania	125	0.198	-0.52	3.956	48,120.44	0.183	1.27	119,280	1.334
Rhode Island	5	0.242	-0.48	0.312	47,799.38	0.197	1,054,298	4,001	0.978
South Carolina	44	0.172	-0.7	1.1	37,945.13	0.316	4,678,809	82,933	1.347
South Dakota	39	0.179	-0.36	0.244	47,553.69	0.056	823,755.4	199,729	1.339
Tennessee	92	0.188	-0.56	1.744	43,116.94	0.312	6,398,879	109,153	1.292
Texas	232	0.193	-0.58	8.037	51,671.75	0.378	2.56	695,662	1.423
Utah	22	0.193	-0.61	0.762	44,476	0.186	2,813,386	219,882	1.285
Vermont	13	0.163	-0.42	0.2	43,193.69	0.279	625,896.8	24,906	1.086
Virginia	68	0.169	-0.6	2.712	53,152.69	0.091	8,092,138	110,787	1.178
Washington	44	0.168	-0.37	2.381	55,959.5	0.292	6,816,584	184,661	1.321
West Virginia	47	0.196	-0.48	0.4	36,283.69	0.16	1,853,408	62,756	1.548
Wisconsin	155	0.171	-0.46	1.731	46,655.06	0.158	5,704,388	169,635	1.182
Wyoming	18	0.172	-0.35	0.218	66,739	0.085	568,946.6	253,335	1.083