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# Individualism, formal institutional environment and bank capital decisions

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## Abstract.

We examine the effect of informal institutional environment on bank capital decisions worldwide as well as within the United States at the state level. Specifically, we focus on individualism and 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, an association which is independent of the influence of formal institutional environment per se. Second, effective legal enforcement magnifies the negative effect of individualism on bank regulatory capital. Finally, focusing on a single country, the United States, we also find that banks in individualistic states hold less regulatory capital than banks in collectivist states and the effect of individualism is magnified with effective legal enforcement at the state level. Our findings suggest that individualism serves as a constraint on regulators, as any given regulatory guidelines or formal institutional factors will operate very differently depending on the informal institutional environment.

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*JEL* classifications: G21, G32, K12, M14

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

## 1. Introduction

The goal of this study is to examine how informal institutional environment influences bank capital decisions. Prior banking studies have typically focused on the traditional determinants of bank capital structure (Gropp and Heider, 2010; Schaeck and Cihák, 2012, 2014). Recent studies have also shown 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. Bitar and Tarazi (2019) document that banks hold higher capital ratios in countries with stronger creditor protection. However, research on whether informal institutional environment, such as cultural values, has an effect on bank regulatory capital decisions is still scarce.

Bank capital requirements or “regulatory capital” are a central tool to ensure financial stability. However, too stringent capital requirements may impede bank investments and put constraints on economic growth. As a result, a balance is always maintained to ensure the flow of funds to finance economic activities while protecting 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 the minimum capital requirements. However, the variation in the level of 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 environment 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 the “shared norms

within an organization that are evidenced through behavior.”<sup>1</sup> As a measure of culture, we focus on Hofstede’s (2001) distinction between individualism and collectivism that is arguably related to bank capital decisions.<sup>2</sup>

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 are therefore incentivized to keep their regulatory capital as low as possible. Collectivist societies, however, have a holistic view over the financial system. They prefer overall stability instead of individual success and personal achievement. As such, banks could maintain regulatory capital at levels well above the standardized minimum requirements imposed by BCBS and national authorities. We therefore expect that individualism will have a negative effect on bank regulatory capital and collectivism a positive impact.

Using a large sample of 7,034 banks from 68 countries for the 2000–2015 period, we find that bank managers tend to hold lower 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 be higher than 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 environment where institutions can be defined as both informal and formal rules of the game. According to Kaufmann et al. (2018) formal institutional environment represents rules and government structure while informal institutional environment

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

<sup>2</sup> The literature provides evidence on the important role of culture in influencing firm capital decisions (Zheng et al., 2012; Chui et al., 2016). Due to their uniqueness banks hold less capital than firms and, for financial stability considerations, they are subject to specific capital requirements. To our knowledge no empirical study has been conducted on the effect of culture on bank capital decisions.

focuses on culture. The findings show that individualism continues to negatively affect bank regulatory capital even after the inclusion of numerous formal institutional variables.

Finally, we find that in countries with more effective legal enforcement, the effect of individualism on regulatory capital ratios is more pronounced compared to countries with less effective legal enforcement. North (1990) and Kaufmann et al. (2018) contend that the same formal rules implemented in different countries with different cultures may lead to 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 we re-run 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, as well as a battery of additional estimation techniques to check the sensitivity of our results to potential set of outliers, heterogeneity of the dependent variable, heteroscedasticity of standard errors, and a 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. Identifying the channels through which formal institutional environment can complement informal institutional environment can be considered as a way to understand why standardized capital requirements do not necessarily lead to the same financial outcome across countries. We view our results as a first empirical evidence that culture does matter and has important policy implications on bank capital decisions. Our findings suggest that regulatory capital can be seen as a constraint in individualistic countries. In addition,

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 in these countries.

This work contributes to the literature in two ways. First, we contribute to the literature showing that culture influences bank risk-taking and performance. For example, Berger and al. (2020) show that informal institutional environment matters to better understand bank failures around the world. They find that individualism and masculinity positively affect bank failures. Boubakri et al. (2017) find that banks in high uncertainty avoidance, high power distance, and collectivistic countries 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 weakened during the subprime crisis. Bitar et al. (2019) demonstrate that the relation between regulation and bank performance is stronger in countries with less individualistic and more feminist cultural values. Second, we also contribute to the literature on governance and bank risk-taking. Anginer et al. (2016) argue that corporate governance structure mirrors a country's legal requirements. They indicate that bank risk-taking during the financial crisis was due to ineffective governance mechanisms. Their findings show that good governance can be associated with lower capital ratios. Anginer et al. (2018) add to these findings by providing evidence that a shareholder-friendly corporate governance is positively associated with bank risk taking, especially for larger banks. These findings are consistent with Laeven and Levine (2009)'s prior work on the notion that banking institutions' appetite for risk depends on specific government regulation, such as deposit insurance schemes, as well as the bank's corporate governance structure.

The rest of the paper is organized as follows. The next section discusses the relevant literature. Section 3 describes the data sources, the empirical model, and the 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 and a Heckman estimation technique. The last section concludes.

## 2. Related literature

The conjecture that informal institutional environment 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 are likely to affect individuals' preferences to work with their 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, referred to by Hofstede (2001) as the most influential cultural dimension.

Individualism reflects the distinction between individual autonomy and collective (group-based) decision-making process. 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. (2020) find that bank managers take on larger portfolio risks in individualistic countries than in collectivist countries. Because individualistic countries reward individual success and profit making, risk-taking incentives for individuals are higher than in collectivist countries. In addition, independent decisions involve riskier behavior, since individual risk-taking is more tolerated (Shupp and Williams, 2008) and risk management oversight is weaker than in collectivist countries (Berger et al. 2020).

In contrast, collectivist countries accommodate collective interest, group goals and promote a holistic thinking and working styles. Such countries have a more favorable view of government regulation and supervision. Chui et al. (2010) claim that people in collectivist countries tend to have high self-monitoring by adjusting their behavior to what is expected in their social environment. They prefer power from above in order to limit independent choices that are inconsistent with socially approved actions. In this respect, collectivism emphasizes on 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 bank managers' behavior in holding regulatory capital vary between managers in individualistic countries and managers in collectivist countries. Managers in individualistic countries are expected to be overconfident (Chen et al., 2015) about bank insolvency risk, and as a result, they could underestimate the actual risk exposure in comparison to managers from 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, a signal to both regulators and the public that the bank is sound and well managed. Because managers in individualistic countries seek personal success, profit making, and tend to be overoptimistic, they are more likely to increase their investments and engage in riskier activities (Berger et al. 2020) 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.

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

Prior research indicates that formal institutional environment affects firms and bank capital decisions. While 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; Kaufmann, 2018), few empirical studies examine the effect of formal institutional factors on bank capital decisions. Recently, AlRaheb et al. (2019) find that formal institutional environment in developing countries can act as a substitute for weak stock markets in increasing bank regulatory capital ratios. Bitar and Tarazi (2019) show that in the presence of a high protective environment for creditors, banks in developing countries tend to increase their regulatory capital ratios.

Therefore, we refer to the banking and the corporate finance literature and comprehensively control for formal institutional environment. Specifically, we control for legal



systems (Turk-Ariss, 2016), bank monitoring and supervision (Bitar et al., 2018a, b; 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 for banking institutions than a formal institutional environment that is less effective in protecting bank investments (Levine et al. 1998). As a result, banks in countries with an effective formal institutional environment may tend to hold lower regulatory capital than banks in countries with less effective institutional environment. Thus, the role of bank capital as a monitoring and protection mechanism is expected to be less important because banks expect their investments to be protected by an effective formal institutional environment. As a result, we expect banks to hold less regulatory capital in countries with a more efficient formal institutional environment.

Finally, North (1990) and Cline and Williamson (2017) contend that the same formal rules implemented 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, while 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. If banks in individualistic countries prefer to hold lower regulatory capital, and more effective legal enforcement encourages managers to use debt instead of capital, we then expect the effect of individualism on bank regulatory capital decisions to be 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 less than three banks and banks with negative regulatory capital ratios. We also exclude countries such as Armenia, Azerbaijan, Bahrain, Belarus, Bermuda, Botswana, Cyprus, Dominican Republic, Georgia, Kazakhstan, Mauritius, Nicaragua, Oman, and

Sri Lanka because they lack of 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 collected from BankScope and Fitch Solutions.

Our main dependent variable is the bank regulatory capital ratio known as capital adequacy ratio, *regulatory capital*. Imposed by the Basel Committee on Banking Supervision (BCBS), this ratio is computed as the sum of tier 1 capital + tier 2 capital divided by risk weighted assets. The regulatory capital ratio must be equal to 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 it has been used and validated across a large number of studies (Cline and Williamson, 2017).

Finally, we include bank-level, macroeconomic, natural resources, and demographic control variables. These variables represent the traditional determinants of bank capital structure such as bank *size*, *liquidity*, *tangibility*, *credit risk*, *GDP growth rate*, *domestic credit to private sector*, *inflation rate*, *international trade*, and natural resources rents, i.e. *oil rent*, *gas rent*, and *mineral rent*.

Summary statistics are reported in Table 1. Overall, we have 68 countries for 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 ratio 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 illustrated in Fig. 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 tendency 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 the effect of individualism on bank regulatory capital decisions. Depending on the variables employed in our models, the number of countries included in the regressions varies between 43 and 68. In the following subsections, we control for individualism using additional measures of informal and formal institutional environment. We also address concerns regarding the definition of individualism and regulatory capital ratio 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 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 the effect of individualism on bank capital decisions. Panel A, models 1–8 show that individualism is negatively and significantly associated with bank regulatory capital at the 1% level, indicating that banks in more individualistic countries tend to hold 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 bank regulatory capital ratio of approximately 0.016 ( $=0.068*0.235$ ) 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), they engage in high risk-taking activities and tend to adopt less risk compensating mitigation measures such as holding higher capital ratios (Berger et al. 2020). 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 making 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 a behavior leaning towards setting lower regulatory capital ratios.

As with bank-level control variables, they generally have significant coefficients with the expected signs. As shown in Models 1–2, we find that bank size (*Size*) loads 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, a better capacity to raise capital (Bitar et al., 2018). The results further reveal a negative association between net loans-to-asset (*Asset diversity*) and regulatory capital, indicating that banks focusing on the traditional function of financial intermediation instead of riskier investments, such as derivatives and securities, tend to hold lower capital buffers. The coefficient estimates on fixed assets-to-assets (*Tangibility*) loads significantly positive, showing that tangible assets are easier to value than intangible assets, such as goodwill. Holding more tangible assets reduces uncertainty and increases the bank's capacity of issuing 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 higher capital to protect themselves against default.

Next, we introduce four macroeconomic variables, three natural resources measures, and two geo-demographical control variables. Gropp and Heider (2010) argue that macroeconomic and natural resources effects are more important for banks compared to firms because they 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 credits 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 additional demographic

measures, i.e. *population growth* and the natural logarithm of 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 manner 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 *common law* and *civil law* dummy variables while models 3 to 8 control for religion using five dummy variables, i.e. *Catholic*, *Orthodox*, *Protestant*, *Muslim*, and *Buddhist*.<sup>3</sup> 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 bank regulatory capital ratio of approximately 0.02 (=0.085\*0.235) or 10.36% (=0.02/0.193; statistically significant at p<1%). Common law and civil law proxies appear to be insignificant. This insignificant association may be the result of high correlation between Hofstede's index of individualism and the two proxies of legal origins.<sup>4</sup> As for religion, Catholic and Orthodox countries tend to hold higher regulatory capital compared to Protestant and Buddhist countries. Overall, Panel B suggests that while other 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

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<sup>3</sup> We identified five main religions in our sample: Catholic, Orthodox, Protestant, Muslim, and Buddhist. A dummy variable that identifies the religion practiced by the largest proportion of the population is equal to 1 and 0 otherwise.

<sup>4</sup> In our unreported results, we have replaced Hofstede's index of individualism with the GLOBE measure of collectivism and tested 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).

#### 4.1.1 The effect on individualism 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 the effect of potential omitted informal institutional environment variables that can 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*.<sup>5</sup> 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 in organization and general trust.<sup>6</sup>

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 6–7 report the results after controlling for trust, and 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 regulation. 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 buffers, reflecting their compliance with regulatory guidelines and their efficient monitoring mechanisms. Finally, individualism remains significantly negative even after the

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<sup>5</sup> Although the literature refers to individualism as the most important dimension in explaining corporate culture (Ang and Fredriksson, 2018), several additional cultural dimensions have not previously received proper attention in the empirical literature. Masculinity is similar to individualism in the way that it encourages winning and material success with a lack of empathy, weak 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 put constraints on individual success and emphasizes on the overall regulation and supervision.

<sup>6</sup> We use the two trust measures to control for social capital. High trustful nations tend to prefer personal relations and believe that mutual respect is the key to a successful business partnership.

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, while the inclusion of 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 control for eight measures shown to influence bank capital structure (Barth et al. 2013; Bitar et al. 2018). We use *investment freedom* and *business freedom* to control for regulatory efficiency and market openness. We also use *government spending*, *government size*, and *information sharing* to control for government effectiveness. Finally, we use *infrastructure quality index*, *official supervisory power*, and *entry requirements* to control for institutional and supervisory quality. Since these variables are highly correlated, we include them in separate models.

The results presented in Table 3, Panel B, models 1–2 show that banks in countries that favor business and investment freedom tend to hold lower regulatory capital, indicating that the creation of businesses and new investments without any regulatory burden, such as constraints on licensing and complex bureaucracy procedures, encourages banks to increase their reliance on leverage. As for government effectiveness, models 3–4 show that banks in countries where the government intervenes in the economy and the financial markets tend to hold higher capital ratios. However, banks in countries that encourage transparency through information sharing tend to decrease their reliance on regulatory capital (model 5). Finally, models 6–8 show that banks in countries with better infrastructure, effective supervisory power, and simple entry requirements tend to hold more regulatory capital. More importantly, 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 to the use of alternative measures of capital and alternative measures of individualism. We also use bank capital buffers as an alternative for regulatory capital ratio since national prudential regulators may choose to have higher capital thresholds than the standardized minimum regulatory capital required by Basel III. Finally, while during our sample period banks were 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 stock, retained earnings and non-cumulative preferred stocks. *Equity to total assets*, defined as the traditional leverage ratio. Capital divided by total assets, *tier 1+tier 2/total assets*, included as the non-risk based capital ratio.<sup>7</sup> Regulatory capital buffer, *capital buffer*, is defined as the difference between a bank's regulatory capital ratio and the minimum regulatory capital ratio imposed by national prudential regulators. Finally, we include three dummy variables that take on a value of one if a country drafted (defined), published or put into force new guidelines on i) *Basel III's* regulatory capital ratio, ii) the capital conservation buffer, *CCB*, and iii) the countercyclical buffer, *CyB*, and zero otherwise.<sup>8</sup>

As shown in Table 4, Panel A, models 1-3, the results continue to show that individualism is negatively associated with bank tier 1 capital, the traditional (non-weighted) leverage ratio, and the non-risk based regulatory capital ratio, indicating that our results are not driven by specific definitions of bank capital. Panel B shows that the effect of individualism on

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<sup>7</sup> Several studies have shed doubts on the effectiveness of the risk-weighting methodology used to assess bank exposure to risk, and to calculate bank regulatory capital (Cathcart et al., 2015; Dermine, 2015). We try to mitigate concerns about the risk-weighting methodology using alternative risk- and non-risk based measures of bank capital.

<sup>8</sup> Capital conservation buffer and countercyclical buffers are two capital buffers required to be build-up 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 the presence of Basel III's capital guidelines, the capital conservation buffer, and the countercyclical buffer is collected 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 of the sample.



bank capital buffers remain 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 are moving forward in the implementation of Basel III, they are required to rely more on capital of good quality and enhance the risk-weighted assets methodology that proved to be miscalibrated during the subprime crisis. Therefore, with the new reform in place, banks are now required to 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 the specific measure of individualism developed by Hofstede. Thus, we re-estimate our models using alternative proxies of individualism from three sources. We use Tang and Koveos (2008) adjusted Hofstede's index of individualism, *individualism TK*. We also use Schwartz (1994) measures of *embeddedness* and *mastery*.<sup>9</sup> While embeddedness emphasizes on the importance of social relationships and common goals (interpreted as the opposite of our individualism measure), 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<sup>10</sup> and use *institutional collectivism* and *in-group collectivism* as two additional alternative proxies of individualism. 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

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<sup>9</sup> Schwartz data is collected from survey responses of more than 25,000 elementary school teachers and university students located in forty-four countries.

<sup>10</sup> The GLOBE project involves survey questionnaires conducted on more than 17,300 executives in 951 organizations across 62 countries.

#### 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. Thus, we expect a significantly negative association between individualism and regulatory capital in countries with more effective legal enforcement.

We use four measures to proxy for the quality of legal enforcement: First, we use *Judicial/legal effectiveness integrity index*, which reflects the effectiveness and the integrity of the legal and the judicial system in a country (e.g. judicial independence, judicial bribery, quality of legal framework, property protection, and parliament and police effectiveness). Second, we use the *corporate governance index*, which measures the internal governance structure 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 the *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 postal office, and bribe frequencies for permits, utilities, and taxes). Finally, we use the *corporate illegal corruption index*, which measures the capacity of a country's government and legal system to recognize and ensure the protection 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) conducted by the World Economic Forum under the Global Competitiveness Report. EOS covers various questions on bribery, legal corruption, and corporate ethics (Kauffman, 2004). Daher (2017) claims that the EOS survey captures a country's business and economic situation, and measures its capacity in achieving sustainable levels of prosperity and growth in isolation, and in

comparison with other countries. The four indexes take values between 0 and 1 with higher scores indicating more effective legal environment. Detailed definitions and data sources for these indexes are reported 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. Interestingly, the four proxies of legal enforcement are negatively associated with bank regulatory capital at the 1% level as well. According to model 1, a one standard deviation increase in individualism is associated with a decrease in bank regulatory capital by 7.45 percentage points even after controlling for legal enforcement. Thus, controlling for legal enforcement does not impede the significantly negative effect of individualism on bank capital decisions.

Table 5 Panel A, models 5 to 8 reports the effects on bank regulatory capital decisions after including the interaction between legal enforcement and individualism. Panel B, models 5 to 8 report the effect of individualism on bank regulatory capital in countries with more effective legal enforcement. We find that in countries with more effective legal enforcement, the negative association between individualism and regulatory capital is more pronounced. Panel B shows that in individualistic countries where laws are properly established and enforced, banks tend to hold lower regulatory capital. In sum, individualism influences bank capital decisions more significantly in countries where legal rules are properly enforced.

Overall, our findings provide regulators and policy makers with an additional tool to create more favorable informal and formal conditions to implement the Basel III's capital guidelines in a successful way.

INSERT TABLE [5] AROUND HERE

## **5. Additional analysis and robustness**

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

Next, we investigate the effect of individualism on 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 percent 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.<sup>11</sup> In addition, studying state-variations may help to learn more about the individualism dimension in general.

We use 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 of the items are related to social, political, religious, and economic practices. In this index, higher values indicate greater collectivism, and lower values indicate greater individualism. Since we are interested in the impact of individualism on bank capital ratios at the state level, we define the state-level individualism index, *state individualism*, as minus one times the collectivism index so that higher values taken by this variable indicate higher individualism.

Table A.2 in the Appendix and Fig. 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 mean of our key variables, regulatory capital and individualism-collectivism, is reported in models 2 and 3. Model 2 shows a large state variation in the regulatory capital ratio. The overall mean is 18.5 percent across the 50 states. However, some states have average regulatory capital ratios below 17 percent (North Dakota, Vermont, Minnesota, Iowa, Missouri, Montana, Delaware, Washington, Oregon, Nebraska, and Virginia), while some states have average regulatory capital ratios above 22 percent (New Jersey, Arizona, Rhode Islands, 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 reported 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,

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<sup>11</sup> In unreported results, we explore whether the influence of individualism on bank capital decisions changes if we alter the sample composition to exclude each of the following countries: the United States, the UK, Germany, Japan, Italy, and China. The results remain identical.

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 reexamine their combined effect on regulatory capital ratios at the state level. Created by McLaughlin and Sherouse (2017), FRASE index shows how the state has been 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. The findings in models 5 and 6 show that both individualism and FRASE indexes continue to be negatively associated with bank regulatory capital. As for their interactions, Panel B reports the effect of individualism on bank regulatory capital in states with stronger federal legal enforcement. The findings in models 7 and 8 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. While individualism affects bank regulatory capital, it is possible that individualism itself is influenced by environmental factors and specifically by regulatory capital and the regulatory environment. Another concern is related 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 creating a 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 the relationship between regulatory capital and individualism to be estimated in levels<sup>12</sup> and first differences simultaneously.<sup>13</sup> 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 the manager's individualistic behavior can be related to current and past level of regulatory capital in addition to other bank characteristics (e.g. bank size, credit risk, etc.). If current regulatory capital is observed, the unanticipated component of the regulatory environment (i.e. the error term in the regression) can be assumed to be uncorrelated with past observations of the endogenous variables (individualism, and the rest of the bank characteristics) when observation of lags goes sufficiently far back in time.

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. 2020) shows that language helps to explain cultural cluster, since language can be used in channeling 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 will 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. 2020) and use pronoun drop, pathogen history, ethnic fractionalization, and protestant as instruments. Data on pronoun drop and pathogen

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<sup>12</sup> 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.

<sup>13</sup> 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 of the exogenous variables, and the difference in error terms. Note that the fixed-effect error term disappears in the difference equation, since it is by definition time-invariant.

history is collected from Davis et al. (2016) and Fincher et al. (2008), respectively, while data on ethnic fractionalization and protestant is collected from La Porta et al. (2006) and the CIA's world fact-book, 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. The regressions are obtained using the two-step system GMM proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The reported Hansen test for over-identifying 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 shows that in individualistic countries where laws are properly established and enforced, banks tend to hold lower regulatory capital ratios, thus providing additional support that our results are not driven by endogeneity concerns.

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) – which takes on a value of one if a country's Hofstede index of individualism has a value greater than or equal to the median and zero otherwise – 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 (measured as the inverse Mills ratio) estimated from the first-stage regression. The findings from the second stage

regressions are presented in Table 7 Panel A models 5 to 8 and 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 environment, such as cultural values, can explain the variations in bank capital decisions around the world. Specifically, we investigate the role of individualism – which stresses independence, overconfidence, risk-taking, success and profit-making – in affecting 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 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. (2020), bank managers in these countries put themselves in the position to fail by taking on more risk while they are less likely to adopt risk compensating 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 the work of Williamson (2000) and Kaufmann et al. (2018) who define institutions as both informal and formal rules of the game, we find individualism to persistently negatively affect bank regulatory capital even after the inclusion of formal institutional environment. In addition, North (1990) contends that the same formal rules implemented 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 the effect of individualism on regulatory capital held by banks. This is possibly because, with stronger guarantees on their borrowers, managers consider that they can hold even less capital without significantly affecting the bank's solvency.



Our findings are robust to alternative bank capital and culture measures, 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 and hence even after accounting for differences in minimum requirements levels 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, in line with Berger and al. (2020) who show that informal institutional environment is an important dimension to better understand bank failures, our study indicates that it is as important as formal institutional environment to explain cross sectional differences in bank regulatory capital. Bank supervisors and regulators should be aware that the “one size fit all” regulatory guidelines may be constrained by the complexity of institutional factors. One possible solution for regulators and policy makers is to adapt regulatory capital ratios to individual countries’ informal institutional environment without neglecting the effect of formal institutional factors. Otherwise, changes to top-down regulatory capital may be met with limited success if informal institutional environment is not taken into account.

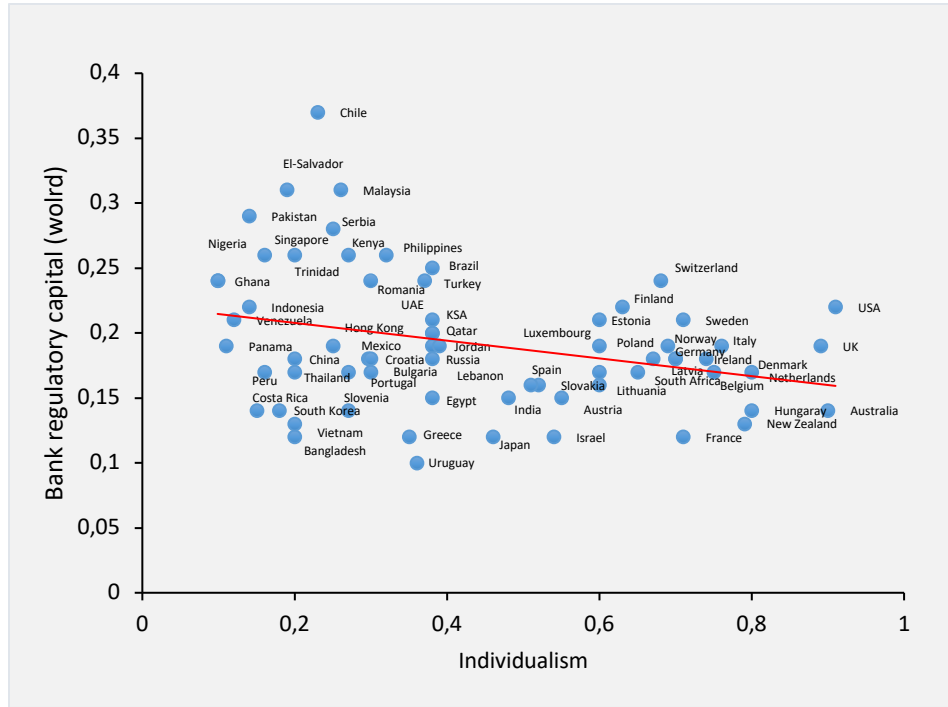
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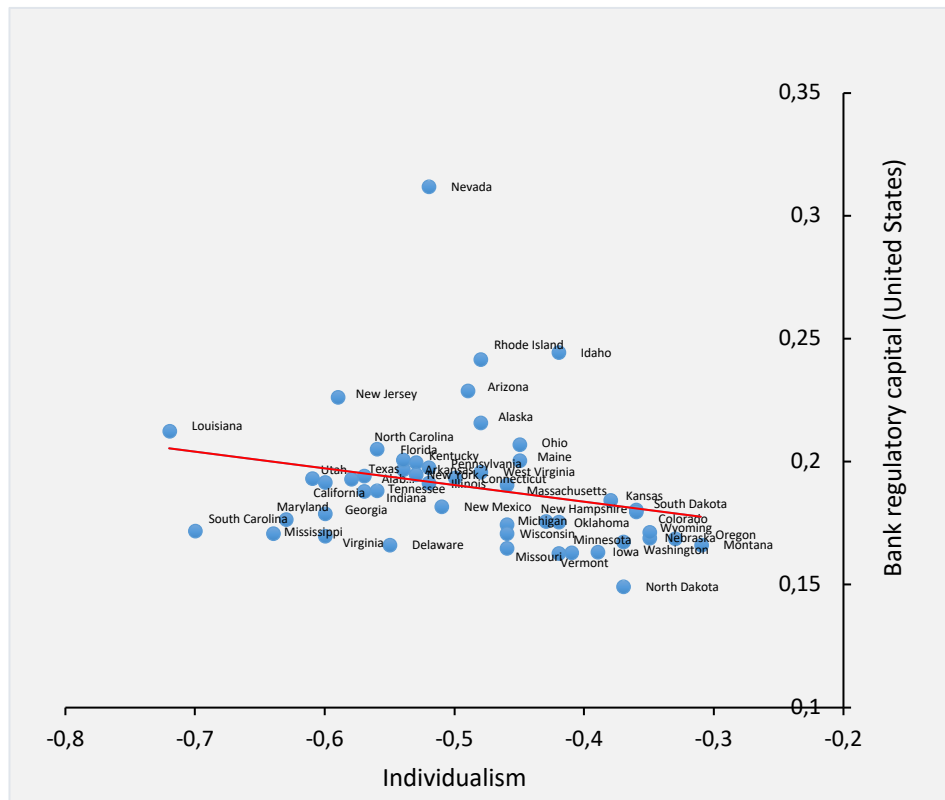
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# Figures



**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 ratio, calculated as Tier 1 + Tier 2 divided by risk-weighted assets. Regulatory capital ratio varies between 0 and 1, where a higher value indicates that a bank is more adequately capitalized from a regulatory compliance perspective.



**Fig. 2.** Individualism and bank regulatory capital across the United States. The figure reports the mean values for Vandello and Cohen (1999)'s state-level index on individualism-collectivism. This index is computed as minus one times the collectivism index so that higher state individualism values indicate higher individualism. The figure also reports the mean values for regulatory capital ratio, calculated as Tier 1 + Tier 2 divided by risk-weighted assets. Regulatory capital ratio 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 performed on a sample of 7,034 banks in 68 countries during the 2000–2015 period. Data is obtained from Bankscope and Fitch Solutions. Capital ratios are: *regulatory capital ratio*, *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* measured by liquid assets divided by deposits and short term funding; *asset diversity* measured by net loans to total assets; *tangibility* measured by fixed assets to total assets; *credit risk* measured by loan loss reserves divided by gross loans. Country-level statistics in Panel B are performed on 68 countries during the 2000–2015 period. Statistics are classified 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.4 presents macroeconomic, natural resources and geo-demographic control variables. Variables are defined in Appendix A.1.

Variables	# obs.	Mean	SD	Median	Min	Max
<b>Panel A. Bank-level data</b>						
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
<b>Panel B. Culture, formal institutions and macroeconomic variables</b>						
<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 organization	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
Entry requirements	104,536	7.274	0.981	7.66	3.56	8
<i>Panel B.4 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

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**Table 2**

The effect of individualism on bank regulatory capital: Baseline results

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 ratio 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). Panel A reports the results for the effect of individualism on bank capital decisions after controlling for bank-level, macroeconomic situation, 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 situation, legal origins, and religion. Variables are defined in Appendix A.1. \*, \*\*, \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

<i>Panel A. Controlling for bank-level, macroeconomic situation, 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*** (0.0012)
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 (0.045)	0.014 (0.045)	0.018 (0.045)	0.02 (0.045)	0.02 (0.044)	0.017 (0.045)	0.017 (0.045)	0.009 (0.045)

International trade	0.014*** (0.004)	0.015*** (0.004)	0.013*** (0.004)	0.015*** (0.004)	0.016*** (0.004)	0.015*** (0.004)	0.015*** (0.004)	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  
 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 ratio 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). 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. \*, \*\*, \*\*\* 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)	0.0043* (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						0.01*** (0.002)		
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

<i>Panel B. Controlling for additional formal institutional environment variables</i>								
Dep. Variable: Regulatory capital ratio								
Model #	Regulatory efficiency and market openness		Government effectiveness		Institutional and supervisory quality			
	(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*** (0.010)
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)	-0.036*** (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)	0.015** (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)	-0.321*** (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)	0.34*** (0.073)
Credit risk	-0.113*** (0.041)	-0.12*** (0.041)	-0.117*** (0.041)	-0.119*** (0.041)	-0.119** (0.046)	-0.125*** (0.041)	-0.108*** (0.041)	-0.127*** (0.041)

GDP growth rate	0.035 (0.034)	0.062* (0.032)	0.072** (0.033)	0.094*** (0.035)	0.14*** (0.036)	0.112*** (0.034)	0.066* (0.035)	0.083** (0.033)
Domestic credit to private sector	0.041*** (0.005)	0.041*** (0.005)	0.039*** (0.005)	0.041*** (0.005)	0.036*** (0.005)	0.041*** (0.005)	0.034*** (0.005)	0.041*** (0.004)
Inflation	-0.007 (0.045)	-0.001 (0.044)	0.005 (0.045)	0.023 (0.046)	0.003 (0.037)	0.026 (0.046)	0.025 (0.040)	0.012 (0.044)
International trade	0.019*** (0.005)	0.015*** (0.004)	0.016*** (0.004)	0.016*** (0.004)	0.023*** (0.006)	0.016*** (0.005)	0.011** (0.004)	0.017*** (0.004)
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)	
Entry requirements								0.005*** (0.001)
Constant	0.663*** (0.017)	0.672*** (0.019)	0.624*** (0.018)	0.615*** (0.019)	0.685*** (0.020)	0.665*** (0.020)	0.668*** (0.018)	0.612*** (0.020)
Observations	104,416	104,416	104,416	104,418	102,699	104,280	102,287	104,536
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	0.235

**Table 4**

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

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 /ta. Alternative independent variables include Tang and Koveos (2008) adjusted Hofstede's 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. \*, \*\*, \*\*\* 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)	0.0147** (0.00704)	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

*Panel B. The effect of individualism on bank capital buffers*

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	0.0042*** (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*** (0.001)	0.01*** (0.001)	0.008*** (0.002)	0.01*** (0.002)	0.011*** (0.002)	0.01*** (0.002)	0.009*** (0.002)	0.01*** (0.002)

CCB			0.002 (0.010)	-0.004 (0.009)	-0.004 (0.009)	-0.003 (0.010)	-0.006 (0.009)	0.005 (0.010)
CyB			-0.006 (0.009)	-0.002 (0.008)	0.001 (0.008)	-0.001 (0.008)	-0.001 (0.008)	-0.005 (0.009)
GDP growth rate			0.067* (0.035)					0.026 (0.038)
Domestic credit to private sector			0.042*** (0.005)					0.039*** (0.005)
Inflation			0.032 (0.057)					-0.041 (0.061)
International trade			0.017*** (0.004)					0.021*** (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)	0.001 (0.001)
Constant	0.583*** (0.015)	0.654*** (0.016)	0.542*** (0.017)	0.591*** (0.017)	0.586*** (0.017)	0.587*** (0.017)	0.65*** (0.021)	0.523*** (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

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 ratio 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 of legal enforcement: 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. \*, \*\*, \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

<i>Panel A. Individualism, legal effectiveness, and bank capital decisions</i>								
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
<i>Panel B. Marginal effects, countries with better legal enforcement ((1) × (2))</i>					-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

GLS random effect regressions with a measure of regulatory capital as the dependent variable and Vandello and Cohen (1999)'s index on individualism as well as legal enforcement as the primary independent variables. Regulatory capital ratio is bank Tier 1 plus Tier 2 divided by risk-weighted assets. This ratio must be equal to at least 8% under the Basel I, II, and III rules. State individualism is the minus one times the individualism–collectivism index of Vandello and Cohen (1999). Legal enforcement within the United States is measured using the Federal Regulation and State Enterprise (FRASE) index which shows how the state has been 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. \*, \*\*, \*\*\* 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)
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)	-0.270*** (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** (0.0818)	0.176** (0.0818)	0.179 (0.118)	0.187 (0.118)
Credit risk	-0.153 (0.126)	-0.143 (0.126)	-0.348*** (0.0935)	-0.348*** (0.0935)	-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)
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 ratio 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 of legal enforcement: 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 reports the results after using 2 system GMM regressions. We employ four instruments: pronoun drop, pathogen, ethnic fractionalization, and protestant. Panel B models 5 to 8 reports 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 (measures as 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. \*, \*\*, \*\*\* 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*

Model #	2-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)				
Arelleno-Bond AR(1) (z, p-value)	-2.64 (p=0.008)	-3.3 (p=0.000)	-3.34 (p=.001)	-3.42 (p=.001)				

Arelleno-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
<b>Dependent variables</b>		
Regulatory capital	This ratio is 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 maintained at a level of at least 8% under the Basel I, II and III guidelines.	Bankscope and Fitch Solutions
Tier 1/rwa	This ratio of core capital measures 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	This leverage ratio stands for equity capital divided by total assets.	As above
Tier 1+ Tier 2/ta	This measure is bank Tier 1 plus Tier 2 capital divided by total assets.	Authors' calculations based on Bankscope and Fitch Solutions
<b>Independent variables</b>		
<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 geo-demographic 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 private sector divided by a country's GDP. This ratio represents the financial resources such as loans provided by 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 organization	A specific trust measure to proxy for confidence. Confidence in women's organization 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 both the parliament and the police. The index takes values between 0 and 1 with higher scores indicating more effective legal environment.	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 environment.	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 office, 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 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 effective legal system.	As above
<i>Measures of legal origins, religion, and institutional environment</i>		
Common law	A dummy variable that takes on a value of one 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 takes on a value of one if a country has a French legal origin and zero otherwise.	As above
Catholic	A dummy variable that takes on a value of one 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 takes on a value of one 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 takes on a value of one 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 takes on a value of one 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 takes on a value of one 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 takes on a value of one 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 that are typically imposed on investments such as the treatment of foreign investments, land ownership, foreign exchanges, expropriation of investments without fair compensation, and capital movements. This index takes values between 0 and 1, with higher values indicating more investment freedom and market openness.	<a href="http://www.heritage.org">www.heritage.org</a> ; 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	<a href="http://www.fraserinstitute.org">www.fraserinstitute.org</a> ; 2015 Economic Freedom of the World

Variable	Definition	Data Sources
Information sharing	takes values between 0 and 10, with higher values indicating less market freedom and inefficient governmental processes. This measure on information transparency takes on a value of one 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 superintendent of banks. These registries collect information on the standing of borrowers in the financial system and make it available to creditors.	Djankov et al. (2007)
Infrastructure quality index	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, 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 Banking regulation and supervision database (The World Bank)
Entry requirements	This variable is based on surveys by Barth et al., 2004, Barth et al., 2006, Barth et al., 2008, see details therein). The variable increases by 1 if the answer is yes to questions 1–8 of their survey with no increase if the answer is no. The variable addresses 8 questions with higher values indicating stricter entry requirements: Regarding the legal submissions required for banking license: (1) is the legal submission drafted by-laws? (2) Does the legal submission require an intended organization chart? (3) Does the legal submission require first 3-year financial projections? (4) Does the legal submission require financial information on shareholders? (5) Does the legal submission require background/experience of future directors? (6) Does the legal submission require background/experience of future managers? (7) Does the legal submission require sources of funds in capitalization of new bank? (8) Does the legal submission require information on the intended market differentiation of new bank?	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 IND is the minus one 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 Federal Regulation and State Enterprise measure which shows how the state has been 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.

State	# of banks	RCAP	State IND	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