

Creditor rights and bank capital decisions: Conventional vs. Islamic banking

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Abstract.

For a sample of banks operating in 24 countries, we provide robust evidence that strong creditor rights is positively associated with capital adequacy ratio of conventional banks but not for Islamic banks. The results appear to be more positively associated with bank core capital compared to supplementary capital, suggesting that bank managers tend to increase their capital of good quality as a signalling mechanism to reflect better monitoring incentives and avoid losing control in an environment characterised by strong creditor protection. Islamic banks, however, appear to be less affected by creditor protection probably because of the profit loss sharing (PLS) principle that considers Islamic bank depositors as investors who agreed to share profits and losses with the bank, thus making the effect of creditor protection weaker or irrelevant in an Islamic banking context.

JEL classification: G29, G32, G33, K22

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1. Introduction

Do creditor rights affect bank capital decisions? Does this effect has the same impact on capital decisions of conventional banks and Islamic banks? To address these questions, we refer to the reasons why conventional banks are expected to hold higher capital ratios as well as the specificities of the funding structure of Islamic banks that might influence the association between creditor rights and capital decisions. While Cho et al. (2014) report that the corporate finance literature is still in its infancy when examining the role of factors such as creditor protection in influencing firms' financing decisions (Qian and Strahan, 2007; Acharya et al., 2011; Cho et al., 2013), the banking literature is not better fortunate and only report two studies by Houston et al. (2010) and Jayaraman and Thakor (2013). We extend these

studies along several dimensions. First, we refer to the constraints imposed by the *Sharia'a* law on creditors (depositors) of Islamic banks, which are mainly represented by the investment accounts holders, and investigate whether the profit loss sharing principle (PLS) can affect the association between creditor rights and capital ratios of these banks compared to conventional counterparts. Houston et al. (2010) argue that regulators force banks to hold higher capital ratios to incentivize them to monitor their investments and protect their depositors. Therefore, in the presence of high protective environment for creditor rights, bank managers will tend to avoid excessive reliance on deposit-debt financing and by extension any increase in leverage ratios. The intuition is that, in contrast to depositors of conventional banks, Islamic banks do not consider for depositors protection because the *Sharia'a* law expect depositors or investment account holders to share profit and losses and thus protection of their initial capital and returns is not allowed. Under these circumstances, we predict that creditor rights will have an insignificant effect on Islamic capital decisions while the opposite occurs for conventional banks. However, other factors such as competition between both bank types can require Islamic banks to protect their depositors to avoid any withdrawal risk which could be resulted in a significant effect on their capital decisions.

To empirically assess these views and examine the impact of creditor rights on conventional and Islamic banks' capital decisions, we use a sample of more than 417 banks operating in 24 countries for the period between 1999 and 2013. Using a Generalized Least Squares (GLS) regression, we find that creditor rights have a positive and significant effect on capital adequacy ratio of conventional banks while the effect is marginally positive and not always significant for Islamic banks. These results indicate that strong creditor protection encourage bank managers to increase their capital ratios as signalling mechanism of strong monitoring incentives which can be resulted in discouraging excessive risk taking and financial leverage.

In a four sets of sensitivity analyses, we check the reasons behind the positive (insignificant) association between creditor rights and conventional (Islamic) bank capital decisions. First, we decompose the capital adequacy ratio into core capital and supplementary capital and examine whether creditor protection has differential effect on both ratios. We posit that if capital is used as signalling mechanism to reflect strong monitoring incentives, then creditor rights are expected to have a positive and a more pronounced effect on core capital compared to supplementary capital. This is because core capital is considered as a capital of good quality and more reliable as signalling mechanism to creditors compared to supplementary capital (Demirgüç-Kunt et al., 2013; Anginer et al., 2014; Bitar et al. 2016).

Our results lend support to these expectations and show a positive and significant association between creditor rights and conventional banks' core capital and less significant association with conventional banks' supplementary capital while the results are insignificant for Islamic banks.

Second, we use component of creditor rights and find that allowing creditor to liquidate conventional bank assets and putting restrictions on any reorganisation plan forces bank managers and shareholders to increase core capital as a strong signalling mechanism to reinforce creditors trust in bank supervision. In addition, giving secured creditors the priority to claim over other creditors as well as giving them the opportunity to decide whether they should replace the existent management during insolvency induces conventional bank managers and shareholders to complement any increase in core capital with an increase in supplementary capital.

Third, we breakdown the sample taking into consideration bank heterogeneity across regions, countries' income inequalities, bank experience and economic fluctuations. The findings suggest that the positive association between creditor rights and capital is driven by mature conventional banks in the European Union and rich countries in the period that followed the subprime crisis while the findings are inconclusive for Islamic banks.

Fourth, we rely on the law and finance literature and trace the factors that might play a role in improving the association between creditor rights and capital adequacy ratio of both conventional and Islamic banks. We find that the strong positive association between creditor rights and capital ratios is more pronounced in common law, Buddhist and protestant countries, with democratic and durable political system, while the association is rarely significant for Islamic banks.

Finally, we use a battery of alternative estimation techniques, including additional control variables to mitigate the effect of omitted variables, an instrumental variable approach (IV) to control for endogeneity, a propensity score matching technique (PSM) to reduce effects related to any bias in sample size, and other estimation methods to further check the robustness of our main findings. Our findings provide once again a supportive evidence for our expectation.

Our study contributes to both conventional and Islamic banking literature in at least three important ways. First, we add to the regulatory literature by demonstrating the existence of a strong positive effect of creditor rights on bank capital decisions (by increasing bank capital adequacy ratios, in particular capital of good quality). This could provide regulators and policy makers with an additional tool to create more favorable conditions to implement the Basel III capital guidelines in a successful way. Second, our study contributes to the law and finance literature by showing that creditor rights, legal origins, religions

and political systems have a profound influence on conventional bank decisions to increase their capital ratios but not for Islamic banks. Third, we add to the comparative literature on conventional and Islamic banks (Beck et al. 2013; Abedifar et al. 2013; Mollah and Zaman, 2015, Mollah et al. 2016) by exploring the determinants of bank capital decisions and find compelling evidence of similarities between both bank types.

The rest of the paper is organized as follows. Section 2 briefly reviews the literature and develops our hypotheses. Section 3 describes the sample, the variables and the empirical model. Section 4 presents the main results. Section 5 report the sensitivity analyses while section 6 presents the alternative estimation techniques. Section 7 concludes.

2. Related literature and hypotheses

This paper adds to the growing literature on creditor rights by studying whether their role is significant in shaping capital ratios across developing countries and also by comparing their effect on conventional and Islamic banks. While corporate finance and banking literature provide abundant evidence on the importance of creditor rights in influencing bank and firm risk taking (Houston et al. 2010; Acharya et al. 2011, Jayaraman and Thakor, 2013) and lending decisions (Djankov et al. 2006; Qian and Strahan, 2007), few empirical studies investigate the impact of creditor rights on capital ratios. In corporate finance, Acharya et al. (2011) and Cho et al. (2013) show that firms in countries with strong creditor rights tend to rely less on leverage (especially long-term debt), suggesting that firm managers and shareholders are less willing to substitute safe capital such as equity with risky capital such as long term debt to avoid any loss of control in cases of financial distress. Qian and Strahan (2007) find that better protection of creditors facilitate firm access to the supply of credits at longer maturities and at lower interest rates because lenders are confident that will be able to take assets or at least threat to take assets in the event of firms default. In the banking literature, Houston et al. (2010) show that strong creditor rights are associated with higher capital ratios, indicating that banks to attract depositors in the presence of high protective environment for creditor rights. To increase their investments, banks need to attract more depositors by signalling a credible monitoring incentives to potential ones. According to the authors, one way to guarantee a credible bank monitoring and less involvement in risky behavior is through holding important amount of equity capital. By holding higher capital buffers banks are committing to a certain level of leverage without exploitation of depositors many. Such behavior reflects the “more skin in the game” policy documented by Demirgüç-Kunt et al. (2013) by which banks increase their capital ratios to assure depositors their willingness to internalize the costs of their default. Finally,

Jayaraman and Thakor (2013) explore the effect of bank capital on bank monitoring and summarize the role of bank capital into two categories: 1) the monitoring role of bank deposits and 2) the monitoring role of bank equity. In the first category, more demand on bank deposits increases bank fragility by creating a mismatch between short maturity liabilities and bank assets that are generally long term. This withdrawal risk by depositors/creditors can create a bank run and force costly-fire sale or liquidation which induce bank monitoring of its borrowers. In addition, the presence of sequential service constraint, where payments are made to demanders on a first-come-first-served should increase the monitoring role of bank towards its borrowers. According to Diamond and Rajan (2001) the threat of a bank run by depositors can induce banks' managers to use their expertise and skills to collect repayment from borrowers which help making loans more liquid. In the second category, Holmstrom and Tirole (1997) explain that higher bank equity leads to stronger monitoring incentives which can improve the borrower's capital-market access as well because of an improvement in its credit worthiness. The same conclusion was reached by Mehran and Thakor (2011) who argue about direct (allows the bank to retain a greater share of the monitoring rewards) and indirect (greater equity leads to higher probability of bank survival in the future thus reinforces the ex-ante incentives to monitor) benefits for holding higher equity.

We posit that if equity is used to incentivize banks to create a stronger monitoring tools by forcing bank managers to internalize a greater proportion of the costs of default, reduce risk taking and financial leverage, than, in the presence of high protective environment for creditor rights, bank managers will tend to avoid excessive reliance on deposit-debt financing because it increases mismatches between short maturity liabilities and bank assets as well as leverage behavior. This leads to the following hypotheses:

H1: *Creditor rights have a positive effect on capital ratio of conventional banks*

H2a: *Creditor rights have a negative effect on leverage ratio of conventional banks*

However, if equity is only used as a signalling mechanism to attract more depositors to finance the expansion of bank activities and investments, than, in the presence of high protective environment for creditor rights, bank managers will tend to attract more depositors and increase their leverage ratios. Accordingly, we pose the following hypothesis:

H2b: *creditor rights have a positive effect on leverage ratio of conventional banks*

In contrast to conventional banks, the funding structure of Islamic banks – which has to be *Sharia'a* compliant – is based on three main sources: Capital, demand deposits and profit-loss sharing investment accounts. First and unlike their conventional counterparts, Islamic banks are forbidden from using debt-

like instruments in building-up their capital buffers, which explain their high reliance on core capital and the quasi-absence of supplementary capital in the formation of their capital adequacy ratio. Second, Islamic banks' depositors are considered more like investment account holders (IAHs) than depositors. Through the use of restricted and unrestricted investment accounts, depositors of Islamic banks agree that profit and initial capital invested are related to the success of the investment and therefore deposit insurance and other forms of creditors' protection are prohibited because they contradict the PLS concept. Accordingly, the effect of creditor rights is neglected and should be a non-issue for Islamic banks. Under this perspective, we hypothesize the following:

H3a: *Creditor rights have no effect on capital ratio of Islamic banks*

In practice, however, the return rate on investment accounts depends on the level of competition between conventional and Islamic banks (IFSB, 2005). A highly competitive environment could generate commercial pressure on Islamic banks to pay profit rates equal or higher to interest rates proposed by conventional banks and absorb a portion of losses which normally should have been borne by IAHs to prevent the latter from withdrawing their funds from Islamic banks. In addition, regulatory authorities such as such as IFSB and AAOIFI can put pressure on Islamic banks to support IAHs and treat their accounts as a *Sharia*'a compliant substitute of conventional banks' deposits (IFSB, 2011).¹

To maintain an acceptable level of profits, Islamic banks smooth IAHs' profits by distributing retained earnings from special reserves called IRRs and PERs or by displacing commercial risk. The PER is used to reduce or neutralise the profit payouts fluctuation on investment deposits and by extension creating profit rates that are aligned with market rates of return on conventional deposits. Islamic banks can also use IRR to cover losses that might occur from time to time and grant a minimum level of return to the IAHs. Finally, Islamic banks can transfer the risk that arises from investments managed on behalf of the IAHs to their own capital by adjusting the shareholders' share of profits. By displacing commercial risk,² a part or all of *Mudarib* share of profits is donated to IAHs to preserve their confidence and secure a competitive return on their investments. Under these circumstances, Islamic banks prefer to hold capital buffers well above the minimum capital requirements to provide competitive payouts to IAHs and prevent

¹ Accordingly, the IFSB illustrated that, "By maintaining stable returns to (unrestricted investment account holders) regardless of whether it rains or shines (an Islamic bank) automatically sends a signal that (it) has a sustainable and low-risk earnings stream for (those account holders), while the reality may be quite different" (IFSB, 2010, p. 9).

² Such a situation often occur when the IAHs' funds are invested in projects based on long term *Murabahah* or *Ijarah* contracts at a profit rates that no longer meet current market expectations. It could also occur due to market risk and credit risk where the Islamic bank intervene to protect IAHs' returns from the poor performance of assets under its management (IFSB, 2005, p. 19).

any sudden deterioration of capital values due to commercial risk and regulatory pressure, especially in an environment characterized by higher protection of creditor rights. Consequently, we hypothesize the following:

H3b: *Creditor rights have a positive and significant effect on capital ratio of Islamic banks*

H3c: *Creditor rights have a negative and significant effect on leverage ratio of Islamic banks*

3. Sample and methodology

3.1. Sample construction

The data used to construct our capital ratios and other bank-level characteristics are collected from the Bankscope database. For each bank in the sample, we retrieve annual data from 1999 to 2013. Our initial sample includes more than 656 banks (including 149 Islamic banks) from 33 countries. We exclude countries such as Bahrain, Brunei, Cayman Islands, Gambia, Iraq, Palestinian territories, Philippines, Qatar, and Sudan because they have no available data on the creditor rights' index. We also exclude banks if they do not have at least 3 continuous observations and banks with negative capital ratios. Our final sample consists of more than 417 banks operating in 24 countries. Macroeconomic data such as GDP growth, inflation, oil and mineral rents are obtained from the World Bank's World Development Indicators (WDI), whereas financial development and institutional variables are obtained from various sources, such as the World Bank's Worldwide Governance Indicators (WGI), Djankov et al. (2007), the CIA's World Fact Book, and the Political Regime Characteristics and Transitions of Polity IV project.

3.2. Variables and empirical model

We follow Mollah and Zaman (2015) and use random-effect, Generalized Least Squares (GLS) regressions complemented with a difference-in-difference research design (Ghosh, 2016) to allow a more robust investigation of the effect of creditor rights on bank capital ratios. We prefer GLS technique for two reasons. First, regression models, such as OLS, ignore the panel structure of our data. Second, the creditor rights index and the Islamic bank dummy are time-invariant and cannot be estimated using a fixed-effect methodology. The difference-in-difference research design is used to capture whether differences for the effect of creditor rights on bank capital exist between both bank types. Accordingly, we employ the following regression models:

$$CAR_{ijt} = \alpha + \beta_1 \times CR_{jt} + \beta_2 \times Bank_chara_{ijt-1} + \beta_3 \times Macro_chara_{jt} + \sum_{T=1}^T \beta_t \times YFE_t + \varepsilon_{it} \quad (1)$$

$$CAR_{ijt} = \alpha + \beta_1 \times CR_{jt} + \beta_2 \times Islamic_i + \beta_3 \times CR_{jt} \times Islamic_i + \beta_4 \times Bank_chara_{ijt-1} + \beta_5 \times Macro_chara_{jt} + \sum_{T=1}^T \beta_t \times YFE_t + \varepsilon_{it} \quad (2)$$

where CAR_{ijt} is bank Capital Adequacy Ratio (CAR) defined as the sum of Tier 1 plus Tier 2 capital divided by risk weighted assets and off-balance sheet exposures, and must be at least 8% under Basel III rules. CR_{jt} is an index of creditor rights (CR) and measures the powers of secured creditors in cases of default. Following Cho et al. (2013) and Djankov et al. (2007) we define the index as the sum of four legal measures, i.e. no automatic stay (whether secured creditors are able to gain possession of assets after the petition for reorganization is approved), secured creditor paid first (whether secured creditors are ranked first in the distribution of proceeds of liquidating a bankrupt institution compared to other creditors such as government or workers), restrictions on reorganization (whether there are restrictions imposed, such as creditors' consent or minimum dividend, when a debtor files for reorganization), and no management stay (whether the creditors can change the incumbent management during the reorganization), with a value of one if a country's regulations provide that specific type of protection, and zero otherwise. The aggregate creditor rights index therefore ranges between zero and four with a higher value indicating stronger creditor protection. $Bank_deter_{ijt-1}$ is bank-level determinants of capital ratios suggested by the traditional banking and corporate finance literature, i.e. logarithm of total assets (size), return on average assets (profitability), loans to assets (diversification risk), liquid assets to deposits and short term funding (liquidity), and fixed assets to assets (tangibility). $Macro_deter_{jt}$ controls for difference between countries' economies and investigates the impact of macroeconomic variables, i.e. GDP growth, inflation rate, and natural resources, i.e. oil and mineral rents, on bank capital ratios. We also use The World Bank's Kaufmann et al. (2006) governance index to capture the role of institutional environment in shaping the financial development of economies. YFE_t are the year fixed effects, and ε_{it} is a white-noise error term assumed to be normally distributed with zero mean and constant variance, $\varepsilon_{it} \sim iid N(0, \sigma^2)$. An Islamic bank dummy (Islamic) and an interaction term between the Islamic bank dummy and the creditor rights index (Islamic \times creditor rights) are included in Eq. (2) following the difference-in-difference research design. Bank-level independent variables are lagged by one year because most of the right hand variables might take more than one year to show any pronounced effect. In addition, all bank-level variables are winsorized at the 1% and the 99% levels to mitigate the effect

outliers. Finally, we follow Beck et al. (2013) and Anginer and Demirgüç-Kunt (2014) and cluster at the bank level, instead of the country level for two reasons. First, some countries have a much larger number of observations than other countries in the sample. Second, we only have twenty four countries. Therefore, clustering at the country level might create biased results.

Table 1 presents summary statistics for the capital adequacy ratio, its components, the creditor rights scores as well as the bank level and the country level control variables for the 24 countries. The findings suggest a large cross-country variation in capital ratios. For instance, the capital adequacy ratio ranges from a minimum of 11.84% in Bangladesh to maximum of 29.74% in Syria. Creditor rights scores also vary substantially across countries. We find that countries such as Kenya, Lebanon and the United Kingdom rank towards the top of the creditor rights index whereas the Senegal, Tunisia, and Yemen rank towards the bottom. The macroeconomic control variables such as the GDP growth, inflation, oil and mineral rents also vary widely across countries, indicating that it is very important to control for these variables in our regressions.

[Insert Table 1 around here]

4. Main results

We begin the investigation by reporting the effect of creditor rights on bank capital adequacy ratios for a sample of conventional banks, a sample of Islamic banks and a sample that combines both bank types. Results are reported in Table 2. All regression models control for year fixed effects while Models (2), (4), (6), (8), (10), and (12) control for macroeconomic determinants. The Wald Chi² tests are highly significant for all models, and the R-squared are relatively high and similar to previous literature (Houston et al. 2011; Cho et al. 2013), suggesting that the models are representative and fit with the GLS, random effect regression justified in the previous section. The main insight that emerges from this investigation is that creditor protection has a positive and significant effect on the capital adequacy ratio for the full sample and the sample of conventional banks while the effect is less pronounced for the sample of Islamic banks, thus consistent with H1 and H3b. For instance, Models (1) and (2) load positively at the 5% level, implying that strong creditor rights lead to an increase in conventional banks' capital adequacy ratio while the results are only significant for Model (5) at the 10% level for Islamic banks. We also obtain very similar results for the full sample of conventional and Islamic banks (Models 9 to 12). Economically, the estimated coefficients on creditor protection in the four models vary between 0.3 and 0.4 for conventional banks and between 0.4 and 0.9 for Islamic banks, suggesting that a one-unit

increase in the creditor rights index is associated with an increase of regulatory capital of nearly have percentage point for conventional banks and a three quarters of a percentage point for Islamic banks. Taken together, these findings indicate that bank managers for both bank types have strong monitoring incentives, by holding higher capital buffers, in the presence of high protective environment for creditors although the results are marginal and not always significant for Islamic banks. Because IAHs agreed to share profits and bear losses when occur, any form of creditor protection should be irrelevant to Islamic bank depositors because it contradicts the *Sharia 'a* law. In practice, however, Islamic banks are sometimes forced to offer equal or higher return rates to IAHs using profit smoothing reserves such as PER and IRR or even bank capital, which could explain why Islamic banks tend to hold higher capital ratios than conventional banks. If competition is high, Islamic banks might decide to reinforce IAHs confident which could explain why creditor rights' coefficients enter with a weak positive sign with capital adequacy ratio of Islamic banks. Finally, the Islamic bank dummy shows no difference between conventional and Islamic banks in term of holding higher capital ratios as well as for the effect of creditor protection on Islamic banks' capital adequacy ratio compared to conventional counterparts.

We now investigate whether creditor rights induce banks to reduce their reliance on financial leverage to avoid any mismatches between short maturity liabilities and bank assets, which could be resulted in losing control over bank management. To do this, we use equity multiplier proxied by total assets to equity to control for financial leverage. Results presented in Table 2 show clear evidence of a negative and significant association between creditor rights and financial leverage for conventional banks, Islamic banks and the full sample although the effect is less pronounced on Islamic banks. These findings lend support to H2a and H3c, indicating that banks prefer to increase their capital ratios and rely less on financial leverage in an environment characterized by strong creditor protection.

[Insert Table 2 around here]

With regards to bank-level control variables, we find a negative and significant association between size and capital ratios for both bank types, possibly reflecting Beck et al. (2013) and Abedifar et al. (2013) argument that larger banks are more experienced and more reputable than smaller ones. In addition, large banks benefit from diversification and economy of scales, have lower bankruptcy costs and a better access to capital markets. Finally, large Islamic banks have a more privilege position in accessing *Sharia 'a* compliant debt instruments and leveraging the use of investment accounts, thus they rely less on capital. As for profitability, we find a positive and significant relation with capital ratios, possibly because banks in developing countries rely more on retained earnings especially if the economic and

financial environment is still not well developed. As a result, banks in these countries are more prone to information asymmetry and transaction costs making raising either debt or equity more expensive. The coefficient estimate of diversification risk shows negative association with capital ratios but only for conventional banks, suggesting that banks possessing important loan portfolios are less exposed to risk than banks that prefer to invest in derivatives, other types of securities, and non-traditional activities, and thus there is no need to hold higher capital buffers. The liquidity ratio report marginal association with Islamic banks' capital ratios, demonstrating that Islamic banks holding higher liquid assets tend to be less exposed to information asymmetry and, therefore, have a better capacity of raising equity than less liquid Islamic banks and conventional banks. Finally, the coefficient estimate for tangibility shows a positive and significant effect on bank capital ratios although the results do not hold their significance in all models. This can be explained by the fact that higher proportion of tangible assets in bank balance sheet impede moral hazard problems and allow banks to have a clearer view of the allocation of their resources and makes them less sensitive to information asymmetry. This implies that the cost of issuing equity is expected to be lower than the cost of raising debt. Therefore, the presence of tangible assets is positively associated with bank capital ratios.

As for country-level control variables, we find that inflation is negatively associated with capital ratios for both bank types possibly reflecting the tax shield benefit of debt and its positive association with bank leverage. We also find that banks operating in countries with higher oil and mineral rents have higher capital ratios, suggesting that banks can benefit from the prices of natural resources to increase their equity base in the form of retained earnings and/or reserves to protect against future changes in economic conditions (political instability, oil prices volatility, etc.).

5. Sensitivity analysis

5.1. Core capital and supplementary capital

In this subsection, we breakdown the capital adequacy ratio into its main components: core capital (Tier 1 capital) and supplementary capital³ (Tier 2 capital). According to Arnold et al. (2012) it is important to understand that some capital is better than other capital where investors view Tier 2 capital as less reliable than Tier 1 capital. In line with this, Demirgüç-Kunt et al. (2013) and Anginer et al. (2014) shed doubt about the composition of Tier 2 capital and how it may be the reason behind the

³ One important feature about Islamic banks is that they have a very small Tier 2 capital compared to conventional banks because they prohibit interest payment instruments such as subordinated debt (e.g. junior security and subordinated loans) that require interest payments.

ineffectiveness of capital ratios in absorbing losses during the subprime crisis. Therefore, if capital is used as signalling mechanism to reflect strong monitoring incentives, we expect a positive and significant association between creditor rights and core capital and a less pronounced or insignificant association between creditor rights and supplementary capital. Accordingly, we test the following supplementary hypotheses:

H4a: *Creditor rights have a positive effect core capital ratio of conventional banks*

H4b: *Creditor rights have a less pronounced or negligent effect on supplementary capital ratio of conventional banks*

Islamic banks, however, rely less on supplementary capital because the *Sharia'a* law prohibit dealing with debt instruments such as subordinated debt (e.g. junior security and subordinated loans) because they require interest payments. Taking into consideration these specificities as well as the explanation we provide in section 2, we posit the following:

H5a: *Creditor rights have no effect on core capital ratio of Islamic banks*

H5b: *Creditor rights have a positive and significant effect on core capital ratio of Islamic banks*

H5c: *Creditor rights have a less pronounced or negligent effect on supplementary capital ratio of Islamic banks*

Results are reported in Table 3 and show that creditor rights have a strong positive and significant effect on core capital ratio at 1% level and a marginal positive effect on supplementary capital ratio for conventional banks, thus confirming H4a and H4b. As for Islamic banks, we find a positive but insignificant association between creditor rights and both core and supplementary capital ratios although the creditor rights coefficient is almost two times bigger for core capital ratio than for supplementary capital ratio, thus lending support to H5a and H5c. Finally, we find that Islamic banks have lower supplementary capital compared to conventional banks (Model 6) while the interaction term between the Islamic bank dummy and the creditor rights index remain insignificant for both capital ratios.

[Insert Table 3 around here]

5.2. Components of creditor rights

To further shed light on the association between creditor protection and capital decisions, we run principal component analysis (PCA) on the four components of the creditor rights index – restrictions on

reorganization, no automatic stay, secured creditor paid first, and no management stay – to examine which combination of creditor rights’ components is more effective in affecting bank capital. The PCA findings shows that the first component loads restrictions on reorganization and no automatic stay while the second component combines secured creditor paid first and no management stay. We then use both components in our regression as follows:

$$\begin{aligned} \text{CAPITAL}_{ijt} = & \alpha + \beta_1 \times \text{CR_PCA}_{jt} + \beta_2 \times \text{Islamic}_i + \beta_3 \times \text{CR_PCA}_{jt} \times \text{Islamic}_i + \beta_4 \times \text{Bank_chara}_{ijt-1} \\ & + \beta_5 \times \text{Macro_chara}_{jt} + \sum_{T=1}^T \beta_t \times \text{YFE}_t + \varepsilon_{it} \quad (3) \end{aligned}$$

In Eq. (3), CAPITAL_{ijt} represents bank i 's core capital ratio and supplementary capital ratio while CR_PCA_{jt} are the components extracted from PCA as mentioned above. The results are presented in Table 4 and show that the component representing restrictions on reorganization and no automatic stay is behind the significantly positive effect on core capital ratio of conventional banks (at 1% level) while the second component appears to have a significantly positive effect on supplementary capital ratio of conventional banks (at 5% level). For the sample of Islamic banks, the results are positive but remain insignificant. The findings suggest that the bankruptcy codes by prohibiting an automatic stay of an assets (no automatic stay) and allowing automatic liquidations of insolvent bank by secured creditors, isolates managers and shareholders from controlling the bank, thus giving greater bargaining power to creditors against managers. Further, by restricting the bank management from filing for a reorganisation plan without creditor consent (restrictions on reorganization), it prioritizes once again creditors’ rights against managers. Therefore, under a strong creditor protection, bank managers – to avoid losing their bargaining advantages –tend to privilege capital of good quality (core tier capital) against other forms of capital (supplementary capital) as an effective signalling mechanism also confirming H.4a. Our results also show that both secured creditor paid first and no management stay are positively associated with supplementary capital ratios of conventional banks, indicating that if secured creditors are given the priority to claims compared to other creditors and also to replace management during insolvency, managers of conventional banks tend increase their use of supplementary capital as a complement to core capital.

5.3. Sample composition

Thus far, our results consistently suggest that creditor right index has a positive and significant effect on capital ratios of conventional banks while the effect is less pronounced on capital ratios of

Islamic banks. Now, we investigate whether our findings are driven by other factors related to regional effect, inequality in countries' income, bank experience, and periods of economic fluctuations.

We first investigate whether the main results are driven by the uneven distribution of observations across regions. We use Eqs. (4)–(5) and divide the sample into five sub-regions⁴ and we interact creditor rights (CR_{jt}) with five dummy variables that equal one for each specific region and zero otherwise (Reg_R).

$$CAR_{ijt} = \alpha + \sum_{R=1}^R \beta_R \times CR_{jt} \times Reg_R + \beta_2 \times Bank_chara_{ijt-1} + \beta_3 \times Macro_chara_{jt} + \sum_{T=1}^T \beta_t \times YFE_t + \varepsilon_{it} \quad (4)$$

$$CAR_{ijt} = \alpha + \sum_{R=1}^R \beta_R \times CR_{jt} \times Reg_R + \sum_{R=1}^R \beta_R \times CR_{jt} \times Reg_R \times Islamic_i + \beta_2 \times Bank_chara_{ijt-1} + \beta_3 \times Macro_chara_{jt} + \sum_{T=1}^T \beta_t \times YFE_t + \varepsilon_{it} \quad (5)$$

The results in Table 5 Panel A show important cross-regional variation in the effect of creditor rights on capital ratios for both bank types, suggesting that some of our results in Tables 2 to 4 are driven by regional differences. A good example is the relation between creditor rights and capital ratios in the EU and the SUB; the results in Table 5 indicate that the positive impact is mainly driven by conventional and Islamic banks in the EU and the SUB (only for conventional banks), reflecting the importance of other omitted factors such as countries' income inequalities, the effect of different periods of economic cycles and the level of bank experience, that could also influence the association between creditor rights and bank capital in these countries. In the EU, Islamic banks appear to rely more on profit smoothing mechanisms to provide a competitive rate of returns to IAHs, requiring these banks to displace commercial risk and absorb IAHs loss using bank capital. Therefore, because of pressure caused by conventional banking competition, Islamic banks tend to hold higher capital ratios to protect IAHs and avoid withdrawal risk, which could explain the significant positive association between creditor rights and bank capital in both Models (3) and (4). I also notice that the F-test (Wald) for the degree of significance between creditor rights' coefficients of Islamic and conventional banks is significant in all

⁴ These regions are: (i) Middle East and North Africa (MENA); (ii) European Union (EU); (iii) South East Asia and Pacific (SEA); and (iv) Sub-Saharan Africa. Moreover, I decompose the MENA region into two sub-regions: The MENA (i.e. larger MENA mentioned above) and (v) the Gulf Cooperation Council (GCC) countries, because I expect that GCC countries are economically and institutionally different than the rest of the MENA countries (Bitar et al., 2016).

models (except between Islamic banks), thus confirming that the association between creditor rights and capital adequacy ratio is not homogeneous across regions and different bank types.

[Insert Table 5 around here]

Second, we investigate whether the association between creditor rights and capital ratio is driven by other omitted factors, in particular we focus on countries' income inequalities. Djankov et al. (2007) argue that rich countries might have a more efficient system of bankruptcy and thus the legal enforcement for creditor protection is more important. Accordingly, we expect a strong positive effect of creditor rights on bank capital ratio in rich countries and both bank types. We use Eqs. (4)–(5) and interact creditor rights with two dummy variables: (1) Poor (equals 1 if bank GDP per capita < median and 0 otherwise) and (2) Rich (equals 1 if bank GDP per capita \geq median and 0 otherwise). Results in Table 5 Panel B show that the positive association between creditor rights and capital ratio is mainly driven by conventional banks in rich countries while the findings are positive but fail to be significant for Islamic banks. The results are consistently positive and significant at the 1% level in Models (1) and (2) and for the full sample, thus confirming Djankov et al. (2007) findings and our expectation.

Third, we test whether the effect of creditor rights on bank capital is affected by the level of experience for both bank types. We also use Eqs. (4)–(5) and interact creditor rights with three dummy variables that represent bank experience.⁵ Table 6 Panel A results are consistently showing a positive and significant effect (at the 1% level or better) of creditor rights on matured banks' capital ratios for both conventional banks and the full sample. I also notice that creditor rights have a positive and significant effect on the capital ratios of young Islamic banks compared to young conventional counterparts, and the rest of Islamic banks. The F-test (Wald) for the degree of significance between creditor rights' coefficients of Islamic and conventional banks is significant in almost all models, thus confirming that creditor protection through bank experience is associated with higher capital ratios for matured conventional banks. This association, however, is stronger for young Islamic banks than for young conventional banks, indicating that young Islamic banks refer to smoothing mechanisms to provide

⁵ Banks which have been operating for a period less than ten years old are categorized as young banks (equals 1 if young, 0 otherwise), and those which have been operating for a period ranging between ten and twenty years are considered middle-aged banks (equals 1 if middle-aged, 0 otherwise). Finally, other banks which have been operating for more than twenty years are considered mature banks (equals 1 if mature, 0 otherwise).

competitive rates to IAHs, thus explaining the positive association between creditor rights and small Islamic banks capital ratios, compared to young conventional banks, and the rest of Islamic banks.

[Insert Table 6 around here]

Finally, we control for the fluctuation of the economy between periods of growth and financial distress and examine whether the association between creditor rights and bank capital adequacy and core capital ratios is the same during different periods of an economic cycle. Because the sample includes the subprime crisis period, Table 6 Panel B compares the effect of creditor rights on bank capital for the periods before (1999–2006), during (2007–2009), and after (2010–2013) the crisis. To do this, we also use Eqs. (4)–(5) and interact creditor rights with three dummy variables that represent periods (cycles) before, during, and after the subprime crisis. We find that the strong positive effect in previous tables is mainly driven by banks in the post crisis period for the conventional banking sample as well as for the full sample. The effect is stronger for core capital than capital adequacy, thus confirming our earlier findings. As for the Islamic banking sample and the interaction term between creditor rights and Islamic bank dummy, the results remain insignificant for almost all models.

5.4. Further evidence from the law and finance literature

In this subsection, we refer to the law and finance literature and examine whether legal origins, religion and political systems can affect the association between creditor rights and bank capital decisions. According to Djankov et al. (2007) there are five main legal origins: English, French, German, Nordic, and Socialist. Because our study only concentrates on countries where conventional and Islamic banks operate, we count the existence of the first three legal origins: 1) the English legal origin refers to the common law on England, and colonies to which it spread, such as the KSA, the UAE, and Iran; 2) the French legal origin refers to the civil law of France, and of their formal colonies, such as Algeria, Indonesia, and Turkey; and 3) the German legal origin refers to the laws of the Germanic countries in central Europe such as Bosnia. As for religion, recent studies show that religion is an important determinant of Islamic banks' risk and performance (Abedifar et al. 2013, Mollah and Zaman, 2015; Mollah et al., 2016). Our sample includes three main religions: Muslim, Protestant, and Buddhism. We use the same equations in previous section and interact creditor rights with legal dummy variables (Panel A) and religion dummy variables (Panel B). Table 7 shows clear evidence that in Protestant, Buddhist and Common law countries, creditor protection has a significantly positive impact at 1% level on

conventional banks' capital adequacy ratios. These findings become significant at 5% and 10% level in countries that have civil law and Germanic legal origins when replacing capital adequacy ratio with core capital ratios in Panel A Models (2) and (6). In Panel B, Models (3) and (4), creditor protection yields a significantly positive impact at 1% level on Islamic banks' capital adequacy and core capital ratios in Buddhist and Protestant countries, suggesting that Islamic banks operating in Buddhist and Protestant countries often tend to smooth IAHs profits and provide a competitive rate of returns than Islamic banks operating in Muslim countries. By protecting IAHs interests, Islamic banks become more sensitive to creditor rights and thus decide to hold higher capital ratios.

[Insert Table 7 around here]

Another important factor that can play a key role in affecting the association between creditor rights and bank capital ratios is the state structure in each country. Next, we refer to two broad political systems: (i) plural democracy and (ii) mass party-autocracy. A democratic political system is mainly characterized with the freedom of expression where all citizens have the right to express their opinion and choose their leaders. In contrast, modern autocratic political system is characterized with a high degree of restriction or suppression of other political parties. It also exercises a high degree of directiveness over social and economic activities. We also use a polity index computed as the difference between democracy and autocracy scores with higher values indicate a more democratic system. Finally, we include a measure of political durability to capture the stability and the durability of political system in different countries. Data is collected from the Political Regime Characteristics and Transitions of Polity IV project. The results are presented in Table 8 Panels A for capital adequacy ratio and Panel B for core capital ratio. We document clear evidence that the association between creditor rights and capital ratios is stronger in countries that have a democratic and durable political system. This association is positive and significant for all conventional banks but rarely significant for Islamic ones.

[Insert Table 8 around here]

To summarize, in this section we rely on the law and finance literature and trace the factors that might play a role in improving the association between creditor rights and capital adequacy ratio of both conventional and Islamic banks. We find that the strong positive association between creditor rights and capital ratios is more pronounced for conventional banks operating in common law, Buddhist and protestant countries, with democratic and durable political system, while the association is rarely significant for Islamic banks.

6. Alternative estimation techniques

To examine the robustness of our main findings that creditor rights is positively associated with capital ratios, we run a battery of alternative estimation techniques. The results of these estimations are discussed in the following section and confirm our key findings.

6.1. Other estimation methods

In this subsection, we examine the robustness of results using three alternative econometric specifications and standard errors. Table 9 reports the results from regressing creditor rights on bank capital adequacy ratio. First, we use median regression because it is more robust to outliers and distributions with heavy tails. Second, we use truncated regressions to address any bias related to the upper and the lower distribution of observations for the dependent variable. We also correct for the heteroscedasticity of the standard errors using a White procedure. Third, we use a Newey–West test to correct autocorrelation among the residuals. Importantly, the estimated coefficients on creditor rights loads significantly positively on capital adequacy ratio in all these estimations and models except for the sample of Islamic banks, indicating that our main evidence on the positive relation between creditor rights and capital ratios is unaffected by the use of different estimation techniques.

6.2. Endogeneity

We now complement the analysis and perform several tests to address the issue of endogeneity which could bias the results. First, although the empirical model is designed to mitigate the effect of omitted variables through the inclusion of a large set of bank and country level control variables, one might argue that the positive association between creditor rights and capital ratios is driven by other missing control variables. Therefore, we refer to the literature on bank regulation, monitoring and supervision and control for additional country characteristics motivated by Barth et al. (2013) and Bitar et al. (2016). In Table 10, Panel A, we add to the baseline model nine control variables that reflect institutional environment: an index that measures regulatory barriers against bank engagement in securitized market activities, insurance activities, and real estate investments (activity restrictions); an index that captures the overall compliance of a country's banking system with the Basel capital guidelines (capital stringency), a measure that reflects the capacity of a country's regulatory authority to take corrective actions against bank management, bank owners and bank auditors in all circumstances (supervisory power); a proxy measuring the number of mandatory policies on information transparency

(market discipline); a variable controlling for entry restrictions in terms of obtaining a banking licence (entry requirements); a measure reflecting the informativeness of bank financial statements (information disclosure); an indicator examining whether an external audit is required by regulatory authorities to examine bank financial statements (audit); a proxy of the proportion of the ten biggest banks rated by international rating agencies (rated); and a dummy variable that takes on a value of 1 if a country has an explicit deposit insurance scheme and 0 otherwise (deposit insurance). In Panel A, we only report the results for the coefficient of creditor rights to save space. These coefficients provide clear evidence that the association between creditor rights and bank capital ratios is positive and significant in both the sample of conventional banks and the entire sample while the results remain insignificant for Islamic banks. Thus, our findings are not affected by the inclusion of an additional set of control variables.

Second, we use an instrumental variable approach (IV) to mitigate concerns of endogeneity. We first regress creditor rights index on instruments and regressors as reported in baseline models (i.e. Table 2). Then, the predicted values of creditor rights replace the index in baseline models. Current literature on Islamic and conventional banks is largely silent about endogeneity and lacks of specific instruments that can be used when examining the association between creditor rights and bank capital. In this study, we use two index of economic and financial development. The first index is the Heritage Foundation's economic freedom index based on 10 quantitative and qualitative factors, grouped into four main categories⁶ with higher values indicating healthier societies, cleaner environment, greater per capita wealth, human development, democracy, and poverty elimination. The second index is the Fraser institute's economic freedom in the world index computed as the average of 5 sub-indexes.⁷ We use these indexes because they capture the institutional environment that plays a key role in shaping the financial development of economies. Moreover, we argue that it is less likely that the both Indexes would have a direct effect on the bank capitalization ratios today. Instead, they might affect bank capital through their impact on countries' creditor rights. We follow Barth et al. (2009) and conduct an F-test of the excluded exogenous variables in the first-stage regressions. The null hypothesis of the test is that our instrument does not explain cross-sectional differences in capital regulatory guidelines and measures. We reject the null hypothesis at the 1% level in all models. The results of the second-stage regressions are reported in Table 10 Panel B.⁸ We use three estimation techniques: (1) Two Least Squares regression (2SLS), (2)

⁶ Rule of law, limited governmental intervention, efficient regulatory authorities, and market openness.

⁷ Size of government, legal system and property rights, sound money, freedom to trade internationally, and regulation.

⁸ I only report Chi2 and capital coefficients from the second-stage regressions and F-tests from the first-stage regressions to save space.

Limited Information Maximum Likelihood (LIML), and (3) Generalized Method of Moments (GMM). The second stage regression results show a clear evidence of a positive and significant association between creditor rights and capital ratios for both bank types in all models and across different estimation techniques. While the results for Islamic banks should be interpreted with caution because the instruments are not significant, the rest of results provide additional support for our earlier findings and suggest that results are not driven by endogeneity.

[Insert Table 10 around here]

6.3. Propensity score matching

We employ a propensity score matching (PSM) technique proposed by Rosenbaum and Raubin (1983) to verify the robustness of the results. PSM consists of matching observations of banks based on the probability of increasing the country's creditor rights. The comparison between banks in countries with higher creditor protection and banks in countries with lower creditor protection is then studied on the matched sample. To implement PSM we implement a creditor rights dummy variable that takes on a value of one if a country's creditor rights index has a value greater than or equal to the median, and zero otherwise. We then estimate a logit model where we regress the creditor rights dummy on all the control variables used in the baseline model and the year fixed effects. We use the scores estimated to match each observation between countries with higher and lower creditor rights. Additionally, we employ three different matching methods: K-nearest neighbors with the nearest neighbor with $n=5$, $n=7$, and $n=10$; the Gaussian Kernel matching; and the radius matching. In all matched samples (Models (1) and (3) in Table 10 Panel C), we continue to find evidence that matched conventional banks in countries with higher creditor rights have higher capital ratios compared to matched conventional banks in countries with lower creditor rights. We report the T statistics for the differences between the treated, countries with high creditor protection group and countries with low creditor protection control group for each of the methods. For creditor rights, the differences between the treated and control group varies between 0.952 and 1.093% for capital adequacy ratio of conventional banks, between 0.144 and 3.229% for capital adequacy ratio of Islamic banks, and between 0.623 and 1.366% for the entire sample. These differences are statistically significant at the 1% levels, except differences in the sample of Islamic banks.

7. Concluding remarks

The primary contribution of this paper is the investigation on whether creditor rights are an important feature in shaping bank capital decisions for a sample of conventional and Islamic banks

operating in 24 countries. Our findings consistently suggest that creditor protection – and in particular, its components related to the capacity of creditors to liquidate bank assets in cases of bankruptcy and putting restrictions on any plan for reorganisation by the bank management and thus giving greater bargaining power to creditors against managers and shareholders – has a positive and significant effect on conventional bank core capital. In addition, components that give secured creditors the priority to claims compared to other creditors and also to replace management during insolvency, put pressure on conventional bank managers to increase their supplementary capital to support any increase of core capital. This evidence points to the important of creditor protection as an additional tool that can be used by regulators and policy makers in aligning the interest of conventional bank managers and shareholders with their depositors. In this regard, our evidence is related to the work of Demirgüç-Kunt et al. (2013), who documented that by holding higher capital ratios bank owners become more prudent in their investment decisions, which reflect “a more skin in the game” policy creating a strong screening and monitoring incentives of bank investments, reducing excessive risk taking and financial leverage.

As regard Islamic banks, we find a marginally positive association between creditor rights and capital decisions. This association becomes rapidly insignificant across the different regressions and robustness checks. We relate this weak association to the specificities of Islamic banks where the PLS principle imposed by the *Sharia*'a law considers Islamic bank depositors as investors who agreed to share profits and losses with the bank, thus neglecting the effect of creditor protection although that under some circumstances (e.g. competition with conventional banks), Islamic bank managers could be forced to protect their depositors to avoid withdrawal risk.

As word of caution, although our results suggest that strong creditor protection put pressure on conventional banks to provide better monitoring incentives by increase their capital, the results were inconclusive for Islamic banks. A more robust investigation would be by creating two separate samples of Islamic banks according to the level of competition in their respective countries and examine whether creditor rights will appear with a strong positive effect on Islamic banks in countries with high competition. Such results could be expected because if competition is high, Islamic banks might decide to protect depositors by offering an equal or a superior rate of returns via smoothing mechanisms and the use of the bank own capital.

The current study adds to the conventional and Islamic banking comparative studies by shedding the light on the law and finance literature. While most of previous studies have examined the determinants of Islamic banks' profitability, efficiency and risk taking, compared to conventional

counterparts, our study tries to open the debate by arguing that institutional factors such as creditor rights, shareholders protection, investors protection, political environment, along with many other country level control variables are also important factors that could be used to evaluate bank financial soundness.

References

- Abedifar, P., Molyneux, P., and Tarazi, A. (2013) Risk in Islamic banking. *Review of Finance* **17**, 2035–2096.
- Acharya, V.V., Amihud, Y., and Litov, L. (2011) Creditor rights and corporate risk-taking, *Journal of Financial Economics* **102**, 150-166.
- Anginer, D., and Demirgüç-Kunt, A. (2014) Bank capital and systemic stability. Policy Research Working Paper No. 6948, The World Bank, Washington, DC.
- Anginer, D., Demirgüç-Kunt, A., and Zhu, M. (2014) How does bank competition affect bank systemic risk? *Journal of Financial Intermediation* **23**, 1–26.
- Arnold, B., Borio, C., Ellis, L., and Moshirian, F. (2012) Systemic risk, macroprudential policy framework, monitoring financial systems and the evolution of capital adequacy, *Journal of Banking & Finance* **36**, 3125–3132.
- Barth, J., Lin, C., Lin, P., and Song, F. (2009) Corruption in bank lending to firms: Cross country micro evidence on the beneficial role of competition and information sharing, *Journal of Financial Economics* **91**, 361–388.
- Beck, T., Demirgüç-Kunt, A., and Merrouche, O. (2013) Islamic vs. conventional banking: Business model, efficiency and stability, *Journal of Banking & Finance* **37**, 433–447.
- Bitar, M., Hassan, M.K., Pukthuanthong, K., and Walker, T. (2016) The performance of Islamic vs. conventional banks: A note on the suitability of capital ratios, Working paper, John Molson School of Business, Concordia University.
- Bitar, M., Saad, W., and Benlemlih, M. (2016) Bank risk and performance in the MENA region: The importance of capital requirements, *Economic Systems* **40**, 398–421.
- Cho, S. S., El-Ghoul, S., Guedhami, O., and Suh, J. (2014) Creditor rights and capital structure: Evidence from international data, *Journal of Corporate Finance* **25**, 40–60.
- Demirgüç-Kunt, A., Detragiache, E., and Merrouche, O. (2013) Bank capital: Lessons from the financial crisis, *Journal of Money, Credit and Banking* **45**, 1147–1164.
- Diamond, D.W., and Rajan, R.G. (2001) Liquidity risk, liquidity creation and financial fragility, *Journal of Political Economy* **109**, 287-327.
- Djankov, S., McLiesh, C. and Shleifer, A. (2007) Private credit in 129 countries, *Journal of Financial Economics* **84**, 299-329.
- Ghosh, S. (2016) Political transition and bank performance: how important was the Arab Spring? *Journal of Comparative Economics* **44**, 372–382.
- Holmstrom, B., and Tirole, J. (1997) Financial Intermediation, Loanable Funds, and the Real Sector, *Quarterly Journal of Economics* **112**, 663–91.
- Houston, J.F., Lin, C., Lin, P., and Ma, Y. (2010) Creditor rights, information sharing, and bank risk taking, *Journal of Financial Economics* **96**, 485–512.
- Islamic Financial Services Board (IFSB) (2005) Capital adequacy standard for institutions (other than insurance institutions) offering only Islamic financial services, Islamic Financial Services Board, Malaysia.

- Islamic Financial Services Board (IFSB) (2010) Guidance note on the practice of smoothing the profits payout to investment accounts holders, Islamic Financial Services Board, Malaysia.
- Islamic Financial Services Board (IFSB). (2011) Guidance note in connection with the IFSB capital adequacy standard: The determination of Alfa in the capital adequacy ratio for institutions (other than insurance institutions) offering only financial Islamic services, Islamic Financial Services Board, Malaysia.
- Jayaraman, S. and Thakor, A.V. (2013) The effect of creditor rights on bank monitoring, capital structure and risk-taking, Finance working paper 387, European Corporate Governance Institute.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R.W. (1997) Legal determinants of external finance, *The Journal of Finance* **52**, 1131–1150.
- Mehran, H., and Thakor, A.V. (2011) Bank capital and value in the cross section, *Review of Financial Studies* **24**, 1019-1067.
- Mollah, S. and Zaman, M. (2015) Shari'ah supervision, corporate governance, and performance: Conventional vs. Islamic banks, *Journal of Banking & Finance* **58**, 418–435.
- Mollah, S., Hassan, K., Al-Farooque, O., and Mobarek, A. (2016) The governance, risk-taking, and performance of Islamic banks, *Journal of Financial Services Research*, Forthcoming (In press).
- Qian, J. and Strahan, P. E. (2007) How laws and institutions shape financial contracts: The case of bank loans, *The Journal of Finance* **62**, 2803–2834
- Rajan, R.G., and Zingales, L. (1995) What do we know about capital structure? Some evidence from international data. *The Journal of Finance* **50**, 1421–1460.
- Rosenbaum, P.R. and Rubin, D.B. (1983) The central role of the propensity score in observational studies for causal effects, *Biometrika* **70**, 41–55.

Tables

Table 1
Summary statistics

	Capital adequacy	Core capital	Supplementary capital	Leverage	Creditor rights	Size	Profitably	Risk	Liquidity	Tangibility	Governance	GDP growth	Inflation	Oil	Minerals
<i>Panel A. Descriptive statistics by country</i>															
Albania	19.78	13.99	3.12	10.45	3.00	12.61	0.49	52.05	45.67	2.33	-0.39	5.03	3.15	2.11	0.24
Algeria	23.78	19.65	0.32	13.89	1.00	14.09	1.50	61.20	54.73	2.60	-0.87	3.61	9.00	22.99	0.12
Bangladesh	11.84	9.61	1.93	19.96	2.00	13.28	0.83	62.93	27.60	1.56	-0.89	5.82	5.43	0.11	0.00
Bosnia	21.51	23.62	2.57	7.81	3.00	12.15	0.42	73.64	49.35	5.49	-0.40	3.89	5.21	0.00	0.55
Egypt	16.67	13.34	2.47	13.91	2.00	14.53	0.85	41.42	37.78	1.20	-0.53	4.41	8.14	8.22	0.20
Indonesia	22.60	17.44	2.34	12.45	2.00	13.59	1.18	53.43	42.66	1.60	-0.63	5.11	10.67	4.14	1.65
Iran	16.71	17.30	0.97	13.85	2.00	16.03	1.47	60.22	30.33	3.59	-1.62	3.96	18.04	25.87	0.65
Jordan	22.21	20.99	1.05	10.82	1.00	14.64	1.13	44.89	42.18	1.63	-0.02	5.26	4.76	0.00	1.26
Kenya	24.43	22.29	1.50	8.27	4.00	11.97	1.58	66.21	41.86	2.91	-0.72	4.18	6.44	0.00	0.07
Kuwait	20.91	18.92	1.81	8.00	3.00	15.63	1.27	45.96	39.58	2.69	0.20	4.63	10.10	49.39	0.00
Lebanon	19.75	16.23	1.58	13.77	4.00	13.82	0.69	26.89	41.73	2.65	-0.55	4.34	2.14	0.00	0.00
Malaysia	20.66	17.75	2.47	11.47	3.00	15.14	0.89	50.31	45.16	0.49	0.35	5.13	3.48	6.63	0.11
Mauritania	27.60	.	.	6.54	1.00	11.49	1.28	50.58	50.03	5.56	-0.55	4.37	6.14	4.35	25.22
Pakistan	19.74	17.53	1.36	12.00	1.00	13.22	0.24	40.99	28.13	2.88	-1.01	4.05	10.94	0.83	0.05
Saudi Arabia	19.74	18.70	1.57	8.23	3.00	16.60	2.13	53.46	33.07	1.36	-0.22	5.10	6.58	43.80	0.02
Senegal	21.12	19.25	.	12.02	0.00	12.36	1.05	68.97	25.80	3.01	1.49	3.94	2.29	0.00	0.86
Singapore	28.51	26.00	1.57	10.88	3.00	15.31	1.04	46.52	35.23	0.41	0.33	5.77	0.87	0.00	0.00
South Africa	17.97	15.35	2.83	10.78	3.00	13.99	1.16	75.59	27.46	1.05	-1.52	3.34	7.10	0.12	2.18
Syria	29.59	26.87	1.62	10.37	3.00	13.45	0.46	35.27	79.44	3.94	-0.09	3.05	7.01	22.11	0.00
Tunisia	23.04	22.33	0.00	13.26	0.00	13.71	0.61	61.01	43.77	1.89	-0.12	4.11	3.54	3.76	0.65
Turkey	18.89	16.40	1.41	9.21	2.00	15.17	1.50	48.52	43.13	1.98	0.51	3.90	19.76	0.16	0.14
UAE	21.39	18.64	2.27	6.98	2.00	15.41	1.98	61.55	33.29	1.44	1.47	4.55	7.96	20.59	0.00
UK	21.00	15.54	3.51	12.85	4.00	14.32	0.37	37.45	70.65	0.86	-0.92	1.90	2.20	1.02	0.00
Yemen	29.74	19.22	1.33	9.99	0.00	12.34	0.62	24.06	51.44	2.45	-1.12	2.70	13.36	28.59	0.00
<i>Panel B. Descriptive statistics for conventional banks</i>															
N	3633	2565	2528	6257	360	6257	6227	6211	5820	6094	360	360	360	360	360
Mean	20.07	16.54	2.22	12.23	2.75	14.01	1.00	49.83	45.79	1.80	-0.47	3.89	6.20	4.13	0.70
Min	10.05	7.51	0.00	1.27	0.00	9.69	-9.54	3.06	2.16	0.01	-1.62	-15.09	-18.93	0.00	0.00
Q1	13.40	10.45	0.82	6.25	2.00	12.54	0.40	33.03	20.52	0.50	-0.91	2.37	2.17	0.05	0.00
Median	16.60	14.06	1.60	9.57	3.00	13.86	1.01	52.24	34.27	1.12	-0.68	3.95	4.35	0.96	0.01
Q3	22.74	19.11	3.32	13.75	4.00	15.31	1.75	67.24	57.84	2.21	-0.22	5.78	8.26	4.34	0.32
Max	49.01	42.25	8.70	105.49	4.00	19.89	8.23	88.74	314.97	13.43	1.66	17.32	54.18	59.60	44.64
SD	10.11	8.77	1.97	12.80	1.18	2.09	2.00	22.75	42.55	2.20	0.66	2.95	7.69	8.59	3.32
<i>Panel C. Descriptive statistics for Islamic banks</i>															
N	612.	537	526	926	360	926	923	916	876	909	360	360	360	360	360
Mean	22.69	20.26	1.56	10.56	2.24	14.10	0.59	53.73	46.91	2.43	-0.35	4.44	8.78	13.26	0.57
Min	9.43	7.70	0.00	1.18	0.00	10.76	-20.14	0.03	1.46	0.00	-1.93	-15.09	-18.93	0.00	0.00
Q1	13.01	11.00	0.42	5.58	2.00	12.64	0.31	41.51	19.00	0.59	-0.96	3.00	3.30	0.82	0.00
Median	16.03	14.10	1.10	9.28	2.00	14.28	0.84	58.85	28.89	1.56	-0.45	4.86	6.81	6.00	0.03
Q3	23.10	21.28	2.06	14.45	3.00	15.50	1.54	69.58	48.82	2.95	0.31	6.15	12.60	22.50	0.33
Max	86.00	79.80	5.25	24.78	4.00	16.93	14.58	98.86	546.19	17.23	1.66	17.32	54.18	59.60	44.64
SD	17.97	16.55	1.52	6.54	0.99	1.79	3.13	22.94	68.97	3.05	0.87	3.27	9.02	15.45	2.78

This table presents descriptive statistics by country for the full sample (Panel A), for the sample of conventional banks (Panel B), and for the sample of Islamic banks (Panel C). The reported values in Panel A are the means of the respective variables for each country, except creditor rights index, which is time invariant. The sample consists of 417 conventional and Islamic banks operating in 24 countries over the period 1999–2013.

Table 2

The impact of creditor rights on capital ratios and financial leverage

	Expected signs	Conventional banks				Islamic banks				Entire sample			
		Capital adequacy		Equity multiplier		Capital adequacy		Equity multiplier		Capital adequacy		Equity multiplier	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Creditor rights	?	0.354** (0.171)	0.417** (0.174)	-0.771** (0.335)	-0.873** (0.354)	0.918* (0.505)	0.46 (0.555)	-0.876* (0.451)	-0.857* (0.479)	0.364** (0.171)	0.440** (0.171)	-0.671** (0.329)	-0.784** (0.341)
Size	-	-0.688*** (0.089)	-0.709*** (0.088)	1.738*** (0.232)	1.754*** (0.235)	-1.287*** (0.327)	-1.681*** (0.308)	1.137*** (0.339)	1.496*** (0.363)	-0.713*** (0.085)	-0.75*** (0.085)	1.75*** (0.205)	1.81*** (0.211)
Profitability	+	0.090** (0.044)	0.082* (0.045)	-0.888*** (0.231)	-0.865*** (0.231)	0.219*** (0.077)	0.192*** (0.067)	-0.217*** (0.053)	-0.228*** (0.053)	0.096** (0.039)	0.083** (0.039)	-0.714*** (0.169)	-0.697*** (0.169)
Risk	+/-	-0.041*** (0.009)	-0.043*** (0.008)	-0.015 (0.020)	-0.015 (0.019)	-0.005 (0.009)	0.003 (0.010)	0.006 (0.015)	0.004 (0.015)	-0.036*** (0.007)	-0.038*** (0.007)	-0.017 (0.016)	-0.017 (0.016)
Liquidity	+/-	0.004 (0.004)	0.005 (0.004)	-0.013* (0.007)	-0.014* (0.007)	0.004 (0.003)	0.006* (0.004)	-0.006** (0.003)	-0.007** (0.003)	0.004* (0.002)	0.006** (0.003)	-0.012*** (0.004)	-0.013*** (0.005)
Tangibility	+/-	0.132* (0.068)	0.109 (0.071)	-0.719*** (0.235)	-0.741*** (0.242)	0.427** (0.157)	0.253 (0.156)	-0.229*** (0.071)	-0.173** (0.073)	0.168*** (0.063)	0.137** (0.065)	-0.598*** (0.175)	-0.596*** (0.179)
Governance	+/-	1.244*** (0.271)	1.167*** (0.272)	-2.77*** (0.599)	-2.668*** (0.606)	1.700*** (0.530)	1.674*** (0.534)	-0.752 (0.479)	-0.77* (0.452)	1.267*** (0.242)	1.164*** (0.241)	-2.465*** (0.500)	-2.36*** (0.503)
GDP growth	+		-0.022 (0.025)		-0.155** (0.064)		-0.053 (0.056)		0.059 (0.044)		-0.027 (0.023)		-0.121** (0.054)
Inflation	+/-		-0.025* (0.013)		0.026 (0.046)		-0.062** (0.026)		-0.004 (0.023)		-0.026** (0.011)		0.023 (0.039)
Oil	+		0.048*** (0.012)		-0.049 (0.035)		0.144*** (0.025)		-0.089*** (0.024)		0.062*** (0.012)		-0.068*** (0.026)
Mineral	+		0.159** (0.069)		-0.002 (0.031)		0.247* (0.146)		0.068** (0.033)		0.157** (0.067)		0.022 (0.029)
Islamic	?									-1.450 (1.227)	-1.211 (1.234)	-0.91 (1.508)	-0.774 (1.506)
Islamic × Creditor rights	?									0.453 (0.496)	0.099 (0.495)	-0.154 (0.617)	0.064 (0.634)
Constant		28.44*** (1.498)	28.71*** (1.480)	-11.02*** (4.085)	-10.21** (4.061)	33.26*** (5.080)	38.60*** (4.808)	-4.113 (5.027)	-8.648 (5.264)	28.48*** (1.406)	28.85*** (1.379)	-11.42*** (3.509)	-11.34*** (3.522)
N		3,129	3,020	4,978	4,844	445	423	742	719	3,574	3,443	5,720	5,563
Year dummy		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2		0.179	0.2198	0.1448	0.1486	0.2464	0.3819	0.2348	0.3227	0.1852	0.2325	0.1427	0.1504
Wald Chi2		0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 3
The impact of creditor rights on bank capital ratios: Components of capital adequacy ratio

	Expected	Conventional banks		Islamic banks		Entire sample	
		Core capital	Supplementary capital	Core capital	Supplementary capital	Core capital	Supplementary capital
		(1)	(2)	(3)	(4)	(5)	(6)
Creditor rights	?	0.547*** (0.188)	0.163* (0.093)	0.247 (0.604)	0.187 (0.158)	0.564*** (0.182)	0.176* (0.0928)
Size	-	-0.942*** (0.085)	0.378*** (0.045)	-2.096*** (0.344)	0.508*** (0.110)	-0.992*** (0.084)	0.375*** (0.043)
Profitability	+	0.188*** (0.059)	-0.055* (0.029)	0.365*** (0.073)	-0.079*** (0.024)	0.201*** (0.049)	-0.045** (0.022)
Risk	+/-	-0.043*** (0.011)	0.008 (0.005)	-0.013 (0.016)	0.000 (0.006)	-0.037*** (0.008)	0.004 (0.004)
Liquidity	+/-	-0.001 (0.009)	0.005 (0.004)	-0.000 (0.004)	0.001 (0.001)	0.002 (0.005)	0.002 (0.002)
Tangibility	+/-	0.009 (0.078)	0.16*** (0.048)	0.437** (0.178)	-0.085 (0.057)	0.104 (0.079)	0.108** (0.043)
Governance	+/-	1.672*** (0.249)	-0.575*** (0.148)	1.726*** (0.591)	-0.243 (0.234)	1.513*** (0.218)	-0.443*** (0.123)
GDP growth	+	-0.06 (0.021)	-0.009 (0.017)	-0.034 (0.073)	0.011 (0.023)	-0.021 (0.021)	-0.005 (0.014)
Inflation	+/-	-0.008 (0.011)	0.002 (0.006)	-0.049** (0.024)	-0.000 (0.011)	-0.014 (0.010)	0.004 (0.005)
Oil	+	0.019 (0.014)	0.009 (0.009)	0.146*** (0.023)	-0.015 (0.010)	0.048*** (0.013)	0.000 (0.007)
Mineral	+	0.206** (0.099)	0.036 (0.059)	0.189 (0.116)	-0.102*** (0.039)	0.2** (0.085)	0.025 (0.054)
Islamic	?					0.782 (1.250)	-0.656* (0.364)
Islamic × Creditor rights	?					-0.425 (0.532)	0.166 (0.177)
Constant		29.88*** (1.659)	-5.051*** (0.833)	44.00*** (5.035)	-6.025*** (1.617)	29.87*** (1.435)	-4.558*** (0.741)
N		2,194	2,167	369	364	2,563	2,531
Year dummy		Yes	Yes	Yes	Yes	Yes	Yes
R2		0.2707	0.1147	0.38	0.175	0.2825	0.1193
Wald Chi2		0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 4
Components of creditor rights and bank capital ratios

	Conventional banks				Islamic banks				Entire sample			
	Core capital		Supplementary capital		Core capital		Supplementary capital		Core capital		Supplementary capital	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CR_PCA1	0.46*** (0.150)		0.055 (0.071)		0.036 (0.524)		0.097 (0.157)		0.439*** (0.144)		0.062 (0.069)	
CR_PCA2		0.006 (0.181)		0.211** (0.105)		1.091 (0.667)		0.105 (0.147)		0.168 (0.191)		0.227** (0.098)
Size	-0.971*** (0.088)	-0.927*** (0.085)	0.383*** (0.045)	0.4*** (0.044)	-2.084*** (0.357)	-2.746*** (0.451)	0.506*** (0.114)	0.531*** (0.114)	-1.014*** (0.087)	-1.03*** (0.094)	0.377*** (0.043)	0.397*** (0.042)
Profitability	0.184*** (0.059)	0.182*** (0.059)	-0.056* (0.029)	-0.054* (0.029)	0.36*** (0.077)	0.461*** (0.113)	-0.08*** (0.025)	-0.08*** (0.024)	0.198*** (0.049)	0.2*** (0.059)	-0.046** (0.022)	-0.046** (0.022)
Risk	-0.042*** (0.011)	-0.044*** (0.011)	0.008 (0.005)	0.007 (0.005)	-0.012 (0.015)	-0.021 (0.020)	0.001 (0.006)	0.000 (0.006)	-0.036*** (0.008)	-0.04*** (0.009)	0.005 (0.004)	0.004 (0.004)
Liquidity	-0.001 (0.009)	0.000 (0.009)	0.006 (0.004)	0.006 (0.004)	-0.000 (0.004)	-0.002 (0.005)	0.002 (0.001)	0.002 (0.001)	0.003 (0.005)	0.005 (0.006)	0.002 (0.002)	0.002 (0.002)
Tangibility	0.003 (0.078)	-0.002 (0.080)	0.158*** (0.048)	0.16*** (0.048)	0.427** (0.177)	0.653** (0.261)	-0.089 (0.057)	-0.09 (0.056)	0.1 (0.079)	0.137 (0.093)	0.104** (0.043)	0.105** (0.043)
Governance	1.343*** (0.240)	1.563*** (0.314)	-0.644*** (0.158)	-0.422** (0.186)	1.741** (0.819)	3.189*** (0.876)	-0.3 (0.289)	-0.129 (0.237)	1.229*** (0.223)	1.635*** (0.308)	-0.54*** (0.138)	-0.294* (0.155)
GDP growth	-0.01 (0.021)	-0.019 (0.021)	-0.009 (0.017)	-0.013 (0.016)	-0.032 (0.073)	-0.088 (0.085)	0.0128 (0.024)	0.011 (0.024)	-0.017 (0.021)	-0.034 (0.023)	-0.004 (0.015)	-0.008 (0.0145)
Inflation	-0.009 (0.011)	-0.011 (0.011)	0.001 (0.006)	0.003 (0.006)	-0.051** (0.024)	-0.066** (0.032)	-0.001 (0.011)	-0.002 (0.011)	-0.016 (0.010)	-0.019* (0.011)	0.003 (0.005)	0.003 (0.005)
Oil	0.013 (0.014)	0.02 (0.014)	0.009 (0.009)	0.012 (0.009)	0.147*** (0.025)	0.216*** (0.032)	-0.015 (0.011)	-0.012 (0.009)	0.043*** (0.013)	0.062*** (0.016)	-0.001 (0.007)	0.003 (0.007)
Mineral	0.219** (0.101)	0.176* (0.096)	0.032 (0.059)	0.02 (0.059)	0.191 (0.116)	0.128 (0.192)	-0.1** (0.039)	-0.11*** (0.039)	0.211** (0.086)	0.154* (0.085)	0.023 (0.054)	0.011 (0.054)
Islamic									-0.33 (0.443)	0.788 (0.780)	-0.333* (0.194)	-0.415** (0.198)
Islamic × CR_PCA1									-0.301 (0.310)		0.209* (0.118)	
Islamic × CR_PCA2										0.377 (0.554)		-0.23 (0.150)
Constant	31.63*** (1.757)	31.12*** (1.713)	-4.734*** (0.845)	-4.874*** (0.822)	44.3*** (5.295)	55.61*** (6.802)	-5.64*** (1.637)	-5.86*** (1.584)	31.55*** (1.499)	31.92*** (1.676)	-4.2*** (0.749)	-4.37*** (0.732)
N	2,194	2,194	2,167	2,167	369	369	364	364	2,563	2,563	2,531	2,531
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.2701	0.2502	0.1086	0.1148	0.3806	0.3789	0.1684	0.1813	0.2815	0.2628	0.1136	0.1191
Wald Chi2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 5

The impact of creditor rights on capital ratios: controlling for regional effect and countries' income

	Conventional banks		Islamic banks		Entire sample	
	Capital adequacy (1)	Core capital (2)	Capital adequacy (3)	Core capital (4)	Capital adequacy (5)	Core capital (6)
<i>Panel A. Differences across regions</i>						
Creditor rights × MENA (β_1)	-0.176 (0.196)	-0.142 (0.249)	0.314 (0.835)	1.358 (1.151)	-0.0241 (0.189)	-0.0721 (0.230)
Creditor rights × GCC (β_2)	0.182 (0.430)	1.125** (0.493)	-0.413 (0.971)	-0.85 (1.046)	0.21 (0.401)	0.648 (0.451)
Creditor rights × EU (β_3)	0.471*** (0.176)	0.466** (0.200)	1.059* (0.608)	1.476** (0.582)	0.596*** (0.168)	0.526*** (0.180)
Creditor rights × SEA (β_4)	-0.0375 (0.236)	-0.177 (0.261)	0.217 (0.568)	-0.005 (0.557)	0.133 (0.229)	-0.135 (0.236)
Creditor rights × SUB (β_5)	0.675*** (0.226)	0.530** (0.216)	0.496 (0.458)	0.762* (0.426)	0.735*** (0.218)	0.507** (0.200)
Creditor rights × MENA × Islamic (β'_1)					-0.433 (0.552)	0.528 (1.007)
Creditor rights × GCC × Islamic (β'_2)					0.049 (0.296)	0.222 (0.338)
Creditor rights × EU × Islamic (β'_3)					-0.15 (0.260)	0.163 (0.407)
Creditor rights × SEA × Islamic (β'_4)					-0.389 (0.240)	-0.153 (0.238)
Creditor rights × SUB × Islamic (β'_5)					-0.306 (0.197)	0.35* (0.183)
Constant	30.26*** (1.526)	32.09*** (1.739)	38.99*** (4.962)	46.03*** (5.027)	29.85*** (1.438)	31.9*** (1.517)
N	3,020	2,194	423	369	3,443	2,563
Bank & country control	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat. H0: (β_1) = ... = (β_5)	27.52***	37.19***	5.23	18.59***	24.26***	27.65***
F-Stat. H0: (β'_1) = ... = (β'_5)					1.64	2.97
F-Stat. H0: (β_1) = ... = (β'_5)					43.09***	45.92***
R2	0.2467	0.3174	0.4156	0.4701	0.258	0.3276
Wald Chi2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
<i>Panel B. Differences between countries' income</i>						
Creditor rights × Poor (β_1)	0.214 (0.223)	0.391 (0.252)	0.099 (0.682)	-0.694 (0.707)	0.281 (0.209)	0.294 (0.231)
Creditor rights × Rich (β_2)	0.384** (0.175)	0.529*** (0.189)	0.438 (0.558)	0.168 (0.594)	0.468*** (0.164)	0.494*** (0.173)
Creditor rights × Poor × Islamic (β'_1)					-0.515 (0.362)	-0.155 (0.382)
Creditor rights × Rich × Islamic (β'_2)					-0.347* (0.192)	-0.148 (0.209)
Constant	29.15*** (1.522)	30.3*** (1.773)	38.83*** (4.846)	44.5*** (5.142)	29.09*** (1.424)	30.58*** (1.513)
N	3,020	2,194	423	369	3,443	2,563
Bank & country control	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat. H0: (β_1) = (β_2)	2.04	0.89	0.95	5.14**	2.61	1.98
F-Stat. H0: (β'_1) = (β'_2)					2.16	0.01
F-Stat. H0: (β_1) = ... = (β'_2)					16.94***	8.99**
R2	0.2222	0.2738	0.3966	0.4252	0.2385	0.2884
Wald Chi2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 6

The impact of creditor rights on capital ratios: controlling for bank experience and economic fluctuations

	Conventional banks		Islamic banks		Entire sample	
	Capital adequacy (1)	Core capital (2)	Capital adequacy (3)	Core capital (4)	Capital adequacy (5)	Core capital (6)
<i>Panel A. The effect of bank experience</i>						
Creditor rights \times Young (β_1)	0.02 (0.263)	0.118 (0.307)	1.173 (0.765)	1.043 (0.868)	0.073 (0.265)	-0.004 (0.284)
Creditor rights \times Middle (β_2)	0.16 (0.266)	0.019 (0.292)	0.816 (0.842)	0.936 (1.074)	0.234 (0.263)	-0.01 (0.291)
Creditor rights \times Mature (β_3)	0.46*** (0.178)	0.612*** (0.189)	0.137 (0.679)	0.063 (0.855)	0.536*** (0.171)	0.594*** (0.182)
Creditor rights \times Young \times Islamic (β'_1)					0.892** (0.442)	1.137** (0.510)
Creditor rights \times Middle \times Islamic (β'_2)					0.382 (0.436)	1.117* (0.607)
Creditor rights \times Mature \times Islamic (β'_3)					-0.752*** (0.251)	-0.419 (0.280)
Constant	29.59*** (1.544)	30.94*** (1.682)	42.05*** (7.093)	49.68*** (8.520)	29.7*** (1.553)	31.72*** (1.692)
N	2,869	2,099	419	365	3,288	2,464
Bank & country control	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat. H0: (β_1) = (β_2) = (β_3)	5.96*	10.41***	5.59*	3.42	5.62*	11.62***
F-Stat. H0: (β'_1) = (β'_2) = (β'_3)					12.01***	9.48***
F-Stat. H0: (β_1) = ... = (β'_3)					2975***	24.17***
R2	0.2438	0.3020	0.4136	0.4094	0.2523	0.2982
Wald Chi2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
<i>Panel B. The effect of economic fluctuations</i>						
Creditor rights \times Before (β_1)	0.29* (0.172)	0.017 (0.573)	-0.095 (0.629)	0.371 (0.861)	0.369** (0.161)	0.197 (0.170)
Creditor rights \times During (β_2)	0.263 (0.173)	0.181 (0.564)	-0.008 (0.613)	0.361 (0.865)	0.346** (0.161)	0.254 (0.170)
Creditor rights \times After (β_3)	0.359* (0.184)	0.637*** (0.188)	0.655 (0.540)	0.423 (0.622)	0.449*** (0.172)	0.615*** (0.173)
Creditor rights \times Before \times Islamic (β'_1)					-0.468* (0.273)	0.117 (0.332)
Creditor rights \times During \times Islamic (β'_2)					-0.365* (0.211)	0.009 (0.230)
Creditor rights \times After \times Islamic (β'_3)					-0.261 (0.177)	-0.184 (0.195)
Constant	26.87*** (1.484)	29.64*** (1.741)	33.99*** (4.630)	37.24*** (5.399)	26.84*** (1.382)	29.11*** (1.455)
N	3,020	2,194	423	369	3,443	2,563
Bank & country control	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat. H0: (β_1) = (β_2) = (β_3)	1.41	29.62***	6.24**	4.39	1.64	32.49***
F-Stat. H0: (β'_1) = (β'_2) = (β'_3)					0.75	1.34
F-Stat. H0: (β_1) = ... = (β'_3)					11.14**	34.07***
R2	0.2161	0.2527	0.3676	0.3629	0.2316	0.2703
Wald Chi2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 7
The impact of creditor rights on capital ratios: Controlling for legal origins and religion

	Conventional banks		Islamic banks		Entire sample	
	Capital adequacy (1)	Core capital (2)	Capital adequacy (3)	Core capital (4)	Capital adequacy (5)	Core capital (6)
<i>Panel A. The effect of legal origins</i>						
Creditor rights × English (β_1)	0.478*** (0.171)	0.537*** (0.188)	0.486 (0.561)	0.263 (0.604)	0.584*** (0.161)	0.532*** (0.170)
Creditor rights × French (β_2)	0.153 (0.206)	0.450* (0.249)	0.369 (0.674)	0.52 (0.686)	0.285 (0.192)	0.446** (0.226)
Creditor rights × Germany (β_3)	0.134 (0.269)	0.766** (0.380)	0.139 (0.541)	dropped	0.163 (0.255)	0.598* (0.323)
Creditor rights × English × Islamic (β'_1)					-0.533*** (0.204)	-0.239 (0.221)
Creditor rights × French × Islamic (β'_2)					-0.172 (0.292)	0.281 (0.346)
Creditor rights × Germany × Islamic (β'_3)					0.529*** (0.195)	dropped
Constant	29.63*** (1.547)	30.06*** (1.713)	38.91*** (4.985)	43.80*** (5.025)	29.37*** (1.449)	30.17*** (1.470)
N	3,020	2,194	423	369	3,443	2,563
Bank & country control	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat. H0: (β_1) = (β_2) = (β_3)	7.75**	0.91	0.67	0.78	7.7**	0.48
F-Stat. H0: (β'_1) = (β'_2) = (β'_3)					15.07***	1.93
F-Stat. H0: (β_1) = ... = (β'_3)					27.13***	12.31**
R2	0.2096	0.2679	0.3786	0.3856	0.2254	0.2807
Wald Chi2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
<i>Panel B. The effect of religion</i>						
Creditor rights × Buddhist (β_1)	0.789*** (0.233)	0.653** (0.288)	2.458*** (0.508)	2.625*** (0.540)	1.017*** (0.222)	0.834*** (0.271)
Creditor rights × Muslim (β_2)	-0.415** (0.189)	-0.415* (0.246)	-0.057 (0.532)	-0.318 (0.598)	-0.242 (0.183)	-0.395* (0.224)
Creditor rights × Protestant (β_3)	0.498*** (0.160)	0.426** (0.175)	1.338** (0.522)	1.298** (0.534)	0.624*** (0.154)	0.446*** (0.160)
Creditor rights × Buddhist × Islamic (β'_1)					0.987*** (0.200)	1.388*** (0.249)
Creditor rights × Muslim × Islamic (β'_2)					-0.324* (0.165)	-0.086 (0.179)
Creditor rights × Protestant × Islamic (β'_3)					0.00522 (0.202)	0.674*** (0.187)
Constant	31.81*** (1.517)	32.46*** (1.769)	38.33*** (4.746)	43.10*** (4.987)	31.16*** (1.428)	32.00*** (1.472)
N	3,020	2,194	423	369	3,443	2,563
Bank & country control	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
F-Stat. H0: (β_1) = (β_2) = (β_3)	82.27***	43.74***	81.35***	96.05***	84.41***	53.99***
F-Stat. H0: (β'_1) = (β'_2) = (β'_3)					32.61***	27.66***
F-Stat. H0: (β_1) = ... = (β'_3)					270.6***	208.08** *
R2	0.2679	0.3306	0.4502	0.4659	0.2827	0.3524
Wald Chi2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 8

The impact of creditor rights on capital structure

	Conventional banks			Islamic banks			Entire sample		
	Coefficient	N	R2	Coefficient	N	R2	Coefficient	N	R2
<i>Panel A. Using capital adequacy as dependent variable</i>									
Creditor rights × Democracy	0.202*** (0.053)	2,830	0.2375	0.205 (0.148)	415	0.3999	0.194*** (0.050)	3,245	0.2411
Creditor rights × Democracy 1	0.852** (0.338)	2,830	0.2228	0.701 (0.845)	415	0.4053	0.807** (0.314)	3,245	0.2309
Creditor rights × Democracy 2	1.797*** (0.353)	2,830	0.2416	3.178*** (0.969)	415	0.4201	1.858*** (0.333)	3,245	0.2514
Creditor rights × Polity	0.092*** (0.034)	2,830	0.2291	0.114 (0.079)	415	0.4055	0.08*** (0.029)	3,245	0.233
Creditor rights × Durability	2.146*** (0.745)	3,020	0.2375	4.365* (2.465)	423	0.4431	2.229*** (0.737)	3,443	0.247
<i>Panel B. Using Tier 1 capital as dependent variable</i>									
Creditor rights × Democracy	0.179*** (0.053)	2,158	0.2785	0.191 (0.179)	365	0.3861	0.176*** (0.047)	2,523	0.2902
Creditor rights × Democracy 1	1.045*** (0.328)	2,158	0.2811	1.289 (0.945)	365	0.4015	1.01*** (0.302)	2,523	0.2921
Creditor rights × Democracy 2	1.923*** (0.392)	2,158	0.2716	4.25*** (1.165)	365	0.4139	2.052*** (0.363)	2,523	0.2887
Creditor rights × Polity	0.075** (0.034)	2,158	0.2723	0.096 (0.098)	365	0.3889	0.026* (0.015)	2,523	0.2844
Creditor rights × Durability	1.568** (0.768)	2,194	0.2855	3.799 (2.444)	369	0.4835	1.759** (0.749)	2,563	0.3038

Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 9
Other estimation techniques and standard errors

	Conventional banks			Islamic banks			Entire sample		
	Median regression (1)	Truncated Regression (2)	Newey-West (3)	Median regression (4)	Truncated Regression (5)	Newey-West (6)	Median regression (7)	Truncated Regression (8)	Newey-West (9)
Creditor rights	1.133*** (0.347)	0.853*** (0.152)	0.53*** (0.094)	0.113 (0.733)	0.393 (0.307)	0.428 (0.277)	1.129*** (0.318)	0.857*** (0.147)	0.548*** (0.091)
Size	-0.624*** (0.109)	-0.879*** (0.067)	-0.578*** (0.042)	-1.777*** (0.415)	-1.901*** (0.240)	-1.514*** (0.175)	-0.642*** (0.111)	-0.91*** (0.065)	-0.614*** (0.040)
Profitability	0.587*** (0.109)	0.61*** (0.102)	0.376*** (0.057)	0.624*** (0.179)	0.101 (0.127)	0.252** (0.108)	0.524*** (0.102)	0.494*** (0.092)	0.326*** (0.053)
Risk	-0.075*** (0.014)	-0.082*** (0.007)	-0.052*** (0.005)	-0.051 (0.036)	-0.05*** (0.014)	-0.038*** (0.012)	-0.074*** (0.013)	-0.08*** (0.007)	-0.052*** (0.004)
Liquidity	0.022** (0.009)	0.026*** (0.006)	0.018*** (0.004)	0.02** (0.009)	0.012** (0.004)	0.01*** (0.003)	0.023*** (0.008)	0.026*** (0.005)	0.017*** (0.002)
Tangibility	0.236* (0.138)	0.186** (0.077)	0.097* (0.052)	0.441 (0.396)	0.558*** (0.201)	0.208 (0.143)	0.289** (0.120)	0.232*** (0.069)	0.118** (0.047)
Governance	1.836*** (0.354)	2.193*** (0.189)	1.347*** (0.112)	2.882*** (0.733)	2.107*** (0.379)	2.096*** (0.289)	1.853*** (0.335)	2.1*** (0.171)	1.39*** (0.103)
GDP growth	-0.228*** (0.046)	-0.209*** (0.038)	-0.147*** (0.026)	-0.091 (0.171)	-0.049 (0.093)	-0.069 (0.075)	-0.217*** (0.048)	-0.191*** (0.036)	-0.140*** (0.025)
Inflation	0.019 (0.033)	-0.01 (0.023)	0.002 (0.016)	-0.054 (0.054)	-0.094* (0.049)	-0.071** (0.035)	0.001 (0.026)	-0.017 (0.021)	-0.004 (0.014)
Oil	0.046*** (0.013)	0.066*** (0.008)	0.042*** (0.005)	0.145*** (0.040)	0.165*** (0.019)	0.135*** (0.017)	0.061*** (0.014)	0.082*** (0.008)	0.053*** (0.005)
Mineral	0.973* (0.526)	0.746*** (0.249)	0.280*** (0.067)	1.029** (0.500)	1.167*** (0.373)	1.098*** (0.310)	1.004** (0.493)	0.785*** (0.237)	0.296*** (0.072)
Islamic							1.47 (1.980)	-0.001 (0.851)	-0.876 (0.604)
Islamic × Creditor rights							-0.922 (0.819)	-0.324 (0.341)	-0.042 (0.248)
Constant	24.16*** (2.303)	31.16*** (1.332)	25.14*** (0.826)	41.61*** (6.386)	43.91*** (3.529)	36.66*** (2.788)	24.72*** (2.285)	31.36*** (1.213)	26.17*** (0.784)
N	3,020	3,020	3,020	423	387	423	3,443	3,407	3,443
Bank and Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.224	n.a.	0.2561	0.425	n.a.	0.4414	0.236	n.a.	0.2688
Wald Chi2	n.a.	0.000***	n.a.	n.a.	0.000***	n.a.	n.a.	0.000***	n.a.
F-test	n.a.	n.a.	46.47***	n.a.	n.a.	18.42***	n.a.	n.a.	52.25***

The dependent variable is capital adequacy ratio. Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.

Table 10
Controlling for endogeneity

<i>Panel A. Additional control for institutional environment</i>									
Additional control	Conventional banks			Islamic banks			Entire sample		
	Coef. on creditor rights	N	R2	Coef. on creditor rights	N	R2	Coef. on creditor rights	N	R2
Activity restrictions	0.534** (0.213)	2471	0.2328	-0.451 (0.881)	277	0.5334	0.529** (0.208)	2735	0.2645
Capital stringency	0.754*** (0.192)	2488	0.2451	-0.394 (1.155)	319	0.4609	0.767*** (0.190)	2807	0.2704
Supervisory power	0.766*** (0.240)	1835	0.2989	-0.496 (1.004)	252	0.4448	0.754*** (0.234)	2087	0.3202
Market discipline	0.428* (0.225)	2137	0.2267	-2.348** (0.984)	280	0.5373	0.393* (0.223)	2417	0.2502
Entry requirements	0.455** (0.201)	2496	0.2747	-0.965 (1.022)	319	0.5018	0.449** (0.199)	2815	0.2995
Disclosure	0.514*** (0.185)	2497	0.2677	-0.545 (0.827)	319	0.5621	0.479*** (0.183)	2816	0.2986
Audit	0.724*** (0.191)	2497	0.2194	-0.650 (1.109)	319	0.4392	0.732*** (0.189)	2816	0.2412
Rated	0.682*** (0.214)	2175	0.2252	-0.784 (0.906)	293	0.5261	0.689*** (0.211)	2468	0.2457
Deposit insurance	0.757*** (0.206)	2497	0.2201	-0.518 (1.220)	319	0.4481	0.774*** (0.203)	2816	0.2419

<i>Panel B. Propensity score matching</i>									
	Conventional banks			Islamic banks			Entire sample		
	Treated	Control	Diff. (T stat)	Treated	Control	Diff. (T stat)	Treated	Control	Diff. (T stat)
K-Nearest neighbors n = 5	17.07	15.984	1.093 (2.04)***	18.386	16.713	0.674 (0.63)	17.258	16.202	1.057 (2.07)***
n = 7	17.07	16.009	1.068 (2.23)***	18.386	18.121	0.261 (0.26)	17.258	15.958	1.30 (2.86)***
n = 10	17.07	16.027	1.05 (2.43)***	18.386	18.242	0.144 (0.14)	17.258	15.971	1.287 (3.17)***
Kernel	17.126	16.174	0.952 (0.756)	18.386	17.797	0.589 (0.55)	17.258	16.636	0.623 (1.03)
Radius	17.076	16.02	1.057 (8.44)***	18.386	15.157	3.229 (7.34)***	17.258	15.892	1.366 (10.97)***

<i>Panel C. IV approach</i>									
	Conventional banks			Islamic banks			Entire sample		
	CAR + 2SLS (1)	CAR + GMM (2)	CAR + LIML (3)	CAR + 2SLS (4)	CAR + GMM (5)	CAR + LIML (6)	CAR + 2SLS (7)	CAR + GMM (8)	CAR + LIML (9)
Creditor rights	2.83*** (0.195)	2.841*** (0.195)	2.832*** (0.196)	11.694*** (2.536)	11.644*** (2.524)	11.706*** (2.541)	3.338*** (0.211)	3.341*** (0.210)	3.338*** (0.211)
N	2,742	2,742	2,742	405	405	405	3,174	3,174	3,147
Bank	Year	Year	Year	Year	Year	Year	Year	Year	Year
Country	No	No	No	No	No	No	No	No	No
Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
F-test	36.69***	36.92***	36.68***	3.47***	3.48***	3.46***	40.1***	40.09***	40.09***
IV1	***	***	***	Insig.	Insig.	Insig.	***	***	***
IV2	***	***	***	Insig.	Insig.	Insig.	***	***	***
Hansen J test	0.4382	0.4382	0.4383	0.8428	0.8428	0.843	0.8281	0.8281	0.8281

In all Panels, the dependent variable is capital adequacy ratio (CAR). Standard errors are clustered at the bank level and are reported in parentheses below their coefficient estimates.

* Statistical significance at the 10% level.

** Statistical significance at the 5% level.

*** Statistical significance at the 1% level.