Legal rules, information transparency and Islamic bank capital decisions

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Abstract.

To which extent formal institutional environment influence Islamic bank capital decisions? We answer this question by assessing the effect of legal rules index on a sample of 100 Islamic banks in 28 countries from 1999 to 2013. Our econometric analyses show that legal rules index positively and significantly influences capital ratios. The results can be explained by the idea that effective legal rules incentivize Islamic banks to hold higher capital ratios to signal better monitoring to depositors and regulators. In addition, we find that this positive association can be enhanced through strong information transparency channels, democratic and stable political institutions. These results provide insight into how formal institutional environment can shape Islamic bank capital ratios. It further suggests that formal institutional environment serves as a constraint on policymakers, as any given capital guideline may function very differently depending on the complexity of the formal institutional environment.

***JEL* classification: G29, G32, K22**

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1. Introduction

An extensive body of research have been dedicated to identify the determinants of conventional banks' capital structure (Anginer et al., 2016; Schepens, 2016; De Jonghe and Öztekin, 2015). Recent studies have also shown interest in studying the stability, the efficiency and the governance of Islamic banks (Ergeç and Arslan, 2013; Mobarek and Kalonov, 2014; Smaoui et al., 2020). Nevertheless, research on the determinants of Islamic banks' capital decisions is still largely unexplored. Two major observations can emerge from the examination of recent Islamic banking studies. First, from the business orientation and the stability point of views, Islamic and conventional banks are very similar (Abedifar et al., 2013; Beck et al., 2013). However, in terms of profitability and efficiency, Islamic banks tend to perform better than their conventional counterparts, especially during the subprime crisis (Bitar et al., 2017). Second, bank risk exposure and institutional environment are important drivers of Islamic banks' capital ratios. For instance, recent work has shown that is that Islamic banks' capital ratios may depend on bank specific Displaced Commercial Risk (Baldwin et al., 2019) and creditor protection (Bitar and Tarazi, 2019).

In this paper, we extend previous literature by examining the impact of formal institutional environment on Islamic banks' capital decisions. In particular, we ask whether legal rules and information transparency can influence Islamic bank managers' decisions to increase their capital ratios, and if so, how? On the one hand, we argue that legal rules could directly influence Islamic bank managers' decisions towards holding more equity capital. Indeed, effective legal rules could encourage Islamic banks to hold higher capital ratios to signal better monitoring to depositors and regulators. While increased core capital protects Islamic banks' depositors and preserve their confidence, it also increases Islamic banks compliance with international regulatory standards. On the other hand, traditional pecking order theory suggests that raising equity capital is considered as a last resort since the issuance of equity can be underpriced in a context of information asymmetry. Thus, we expect Islamic banks to raise more equity capital in countries with better legal rules mainly through the information transparency channel.

In theory, the Shari'ah rules under which Islamic banks operate are different than those of conventional banks. Specifically, Shari'ah-compliant finance imposes constraints on charging

interest payments; it does not allow for speculation, and prohibits financing of specific illicit conventional banking activities (Beck et al. 2013). In practice, however, Islamic banks' operations are similar to those of conventional banks (Beck et al. 2013; Abedifar et al. 2013; Bitar and Tarazi, 2019). One would expect that under Shari'ah law, profit loss sharing (PLS) instruments – as a core of Islamic banking and finance – dominate Islamic banks' liability and asset side. In addition, Islamic banks' depositors are considered more like investment account holders (IAHs) than depositors. These depositors are expected to accept risks and to share profits and bear losses with bank shareholders (Bitar and Tarazi, 2019) and forms of legal protection for depositors are prohibited because they contradict the PLS principle. Accordingly, we should not expect an effect of legal rules on Islamic banks' capital decisions.

However, the above is based on a simple and idealized conceptualisation of the Islamic banking sector. In practice, studies show that non-PLS mode of finance such as Murabaha and Ijara, at the asset side, predominates (Khan, 2010; Abedifar, 2013). In addition, Islamic banks' deposits are not interest free and closely pegged to conventional deposits (Khan, 2010; Beck et al. 2013). Furthermore, regulatory authorities such as the Islamic Financial Services Board (IFSB) and the Accounting and the Auditing Organization for Islamic Financial Institutions (AAOIFI) might put pressure on Islamic banks to support IAHs and treat their accounts as Shari'ah-compliant substitutes for conventional banks' deposits (IFSB, 2011, Bitar and Tarazi, 2019). As a result, stronger legal rules might put pressure on Islamic banks to hold higher regulatory capital ratio, as a signalling mechanism to protect IAHs and preserve regulatory authorities' confidence.

To test our conjecture, we use a sample of Islamic banks located in 28 countries for the 1999–2013 period. Controlling for bank- and country-specific determinants as well as year effects, we find that legal rules have a significantly positive effect on the use of equity financing: On average, a one percent increase in the legal rules index is associated with an increase in bank core capital of approximately three quarter of a percentage point, depending on the used model. Our results remain unchanged when we examine the components of the legal rules index, when we use several subsamples, and when we address endogeneity and correct for a potential sample selection bias.

In three sets of additional analyses, we further consider the possibility that legal rules indirectly affect Islamic banks' capital decisions through several alternative channels. First, we hypothesize that information transparency can influence the association between legal rules and bank capital decisions. If information transparency complements legal environment as an effective regulatory mechanism, the interaction between legal rules index and information transparency should reinforce the positive relation between legal rules and capital ratios. Under this view, the marginal effect of information transparency is expected to be significantly positive. Our findings tend to support our conjecture, suggesting that information transparency combined with effective legal rules incites Islamic banks managers to increase their equity financing.

Second, we also expect that political institutions such as democracy and political stability can provide an additional incentive for bank managers to increase their capital ratios. If political institutions are soundly based, the interaction between political institutions and legal rules index should strengthen the positive association between legal rules and capital ratios as well. By contrast, if political institutions do not reflect the implemented legal rules, a negative marginal effect or insignificant marginal effect should be expected on capital ratios. Once again, the results from our econometric analyses support our expectations, indicating that democratic and stable political institutions combined with effective legal rules increases Islamic banks' capitalization.

In a final set of analysis, we explore whether legal origins influence the association between legal rules and Islamic banks' capital decisions. Prior literature has shown for instance that legal origins are important drivers of private credit supply (e.g. Djankov et al., 2007). In this regard, we hypothesize that an English legal system should positively moderate the relationship between legal rules and capital ratios. The results concur with our expectations.

Our research work contributes to the relatively narrow literature showing that formal institutional environment affects Islamic banks' capital decisions. We illustrate that legal rules index impacts bank capital decisions, leading to vastly different bank capitalization positions across countries. We also show that information transparency and political institutions amplify the legal rules influence on Islamic banks' capital ratios. Our findings are important from a regulatory perspective because they show that standardised capital guidelines for Islamic banks will function very differently depending on the existing formal institutional environment.

2. Data and sample selection

2.1. Sample construction

We use Bankscope as a primary source of data for this study. For each bank in the sample, we retrieve annual data from 1999 to 2013.[1] Our initial sample includes 149 Islamic banks from 33 countries. Macroeconomic data such as inflation and GDP growth rates are obtained from the World Bank's World Development Indicators, whereas legal rules, information transparency, political institution, and legal origin variables are obtained from various sources, including the Heritage Foundation, The Fraser Institute, the Freedom House, Djankov et al. (2007), the Committee to Protect Journalists' website, the Polity IV Project, and the CIA's World Fact Book. We exclude countries such as Brunei, Cayman Islands, Gambia, Palestine, and Philippines because they have no available data on the legal rules index. We also exclude Islamic banks with negative capital ratios. Our final sample consists of 100 Islamic banks operating in 28 countries. All variables are winsorized at the 1% and 99% levels to mitigate the effect of outliers.

2.2. Capital decision variables

Following Anginer et al. (2016) and Bitar and Tarazi (2019), we simultaneously use two measures of capital ratios, *CAP*. The first measure is bank common equity divided by total assets, *common equity/ta*. Common equity includes common shares, retained earnings, reserves for general banking risks and statutory reserves. The second measure is tier1 capital divided by risk-weighted assets, *tier1 capital/rwa*. Tier 1 capital is the sum of shareholders' funds and perpetual, noncumulative preference shares, and retained earnings. This ratio must be at least 6% under the Basel III rules. In this study, we alternate between risk-weighted assets and total assets to avoid any untruthful assessment related to the calculation of risk-weighted assets (Cathcart et al. 2015; Bitar and Tarazi, 2019). Furthermore, we use book equity rather market equity because

[1] We do not go beyond 2013 because we find it important to investigate how banks manage their regulatory capital ratios by focusing on a homogeneous regulatory time span. However, since our sample includes 2013, i.e. the official date to start implementing Basel III capital guidelines, we have created a dummy variable, Basel III, which is equal to one if the country has drafted (defined), published or put into force the Basel III capital adequacy guidelines, and zero otherwise. The dummy variable takes the value of one the year of implementation and the subsequent years. The findings remain highly significant even after controlling for Basel III capital requirements. These findings are available from the authors upon request.

regulatory authorities such as the Basel Committee on Banking Supervision (BCBS) are more concerned about book equity capital rather than market equity capital as they are easily adjustable during distress periods. For robustness, we repeat the analysis using tangible equity divided by tangible, *tangible equity/tana*, and capital adequacy ratio, *tier1 capital + tier2 capital/rwa*.

2.3. Legal environment

Prior research focus on the traditional bank characteristics as main determinants of capital decisions in international studies (Schepens, 2016; De Jonghe and Öztekin, 2015; Anginer et al., 2016). There are also several studies showing interest in the effect of formal institutional environment, in particular creditor rights, on firm capital decisions (Daher, 2017; Öztekin, 2021) and bank capital decisions (Houston et al. 2010; Bitar and Tarazi, 2019).[2] In this work, we focus on the country's *legal rules index* as a determinant of Islamic banks' capital ratios. We use a legal rules index, *legal*, which is a proxy of the effectiveness of legal rules in each country of our sample. Legal rules index is the average of four sub-measures. The *rule of law*, which reflects the capacity of a country's government and legal system to recognize and ensure the protection of property rights and freedom from corruption. *Governmental intervention* which proxies for a country's fiscal freedom and government spending. It reflects the opportunity costs that arise from resource allocation by governments instead of handling the same resources by firms or banks from the private sector. *Regulatory efficiency* which includes three measures of business freedom, labor freedom, and monetary, thus reflecting the country's level of facilities related to the creation of new businesses and the freedom to sign contracts without government and union interventions. *Market openness* which represents the freedom of trade, the freedom of investments, and the financial freedom. It reflects the free movement of capital, efficient allocation of resources, and the accessibility and efficiency of the financial system.

The data on the *legal rules index* is collected from the Heritage Foundation and takes values between 0 and 100 where higher values indicate more effective legal environment. These

[2] In our unreported results, we acknowledge the important role of creditor protection as an important component of effective rule of law, a component to some extent missing from our legal rules index. Thus, we follow the literature on creditor rights (Cho et al., 2014; Bitar and Tarazi, 2019) and replace legal rule index with the creditor rights' index of Djankov et al. (2007). The findings show that creditor protection put more pressure on Islamic banks to hold higher capital ratios, thus concurring with our findings on the legal rules index.

values are derived by averaging the four sub-measures, with an equal weight being given to each sub-measure.

2.4. Information transparency

While formal institutional environment, i.e. legal rules, may exhibit a strong impact on Islamic banks' capital decisions, other factors may be also equally important. In particular, we expect that information transparency can influence bank managers' decisions to increase their capital ratios. We proxy for information transparency using variables related to press, media measures, and information sharing.

2.4.1. Press and media measures

We use four measures of media and press. First, we use the freedom of the press, *freedom press*, which reflects the extent to which law and regulation, and political and economic pressures influence the media content. We also use state share in the media, *state media*, and private sector share in the media, *private media*, which represent the percentage of state-owned and private-owned newspapers out of the five largest daily newspapers. Finally, the number of journalists jailed, *jailed journalists*, for doing their job in covering news or commenting on public affairs in various media types, including printed, photographs, radio, television, and online. Data on these variables are collected from the Freedom House, Djankov et al. (2007), and Committee to Protect Journalists' website, respectively, with higher values indicating more information transparency.

2.4.2. Information sharing measures

In addition to general press and media measures, we include two specific financial measures of information disclosure. We use public credit registries, *public regist*ries, which contain information about borrowers in the financial system. Public registries are databases collected by government agencies and are available to actual and potential lenders. We also use private credit registries, *private registries*, which facilitate financial information exchange between banks and other financial institutions. Private registries can be a private company or a non-profit organization; they collect information from non-bank lenders, and they provide a broader range of information to their lenders, compared to public registries. Data on these two

measures are collected from Djankov et al. (2007) and for each measure, we use a dummy variable that equals one if a credit registry bureau (public or private) operates in the country and zero otherwise.

2.5. Additional factors: Democracy, political stability and legal origins

We rely on five proxies of political institutions to capture the impact of democracy and political stability in a country. *Polity index* measures the competitiveness of political participation, and democracy and transparency in the choice of political leaders. The polity index ranges from -10 and 10, with higher values indicate strong democracy. *Checks* captures potential obstacles to policy changes. It ranges from 1 and 7 with higher values indicate sounder political conditions. We also use three measures of political stability, *Durability*, *Arab Spring*, and *Major protests*. *Durability* represents the number of years since the most recent political regime change. *Arab Spring* is a dummy variable that equals one if a country had a radical political change during the 2011–2013 period of Arab revolution and zero otherwise. *Major protests* is a dummy variable that equals one if a country had witnessed an increased political tension due to major protests and zero otherwise. Data on these variables are collected from the Political Regime Characteristics and Transitions of Polity IV project, the World Bank's Database of Political Institutions, and Bitar et al. (2016).

2.6. Other controls

The goal of this study is to isolate the impact of legal environment on Islamic banks' capital decisions, and hence we attempt to control for bank- and country-level variables that are commonly known to affect bank capital decisions. Thus, in addition to legal environment and information transparency interaction variables, we use two sets of traditional controls in the regressions: Bank control characteristics variables, macroeconomic and natural resources control variables.

Bank control characteristics, *Bank_level*, is a vector of bank determinants of capital decisions that are commonly used in the banking and the corporate finance literature (Cho et al., 2014; Schepens, 2016; Bitar and Tarazi, 2019). This vector includes *bank size* defined as the natural logarithm of total assets, *profitability* proxied using the bank net income divided by total assets, *liquidity* proxied by the ratio of liquid assets divided by deposits and short term funding,

tangibility defined as the ratio of fixed assets divided by total assets, and *credit risk* measured by the ratio of net loans divided by total assets.

Macroeconomic and natural resources variables, *Macro_level*, is a vector that controls for country-level characteristics. It includes *GDP growth rate*, *inflation rates*, and natural resources, i.e. *oil rent to GDP*, *gas rent to GDP*, and *mineral rent to GDP*. These variables control for differences in economic and natural resources conditions, especially because in our sample some countries are considered oil and gas rich countries while other are tourism-based economies.

Our regressions also control for the year fixed effects, *YFE*. Independent variables are lagged by one year because legal rules index, information transparency, and political institutions measures might take more than one year to show their pronounced effect.

3. The impact of legal rules on Islamic banks' capital decisions

3.1. Summary statistics

Prior to examining the impact of legal rules' index on Islamic bank capital ratios, we illustrate graphically that the index is unconditionally associated with capital ratios. In Figs. 1 and 2, we present two scatter plots visually indicating the relationship between legal rules index and two proxies of bank capital, common equity/ta and tier1 capital/rwa.

[Insert Figs. 1 and 2 around here]

As shown, risk- and non-risk-based capital ratios positively relate with the index of legal rules. Consistent with our expectations, Islamic banks in countries with better legal rules tend to increase their reliance on equity financing instead of debt-like financing. The results remain unchanged when we use tangible equity/tana ratio and capital adequacy ratio.[3]

Before turning to the main analysis, Table 1 reports summary statistics. There are 28 countries included in this analysis; however, the sample size changes depending on the available data on various capital ratios. The sample contains countries with various legal conditions. For instance, the legal rules index ranges from 16.8% in Iraq to 87.59% in Singapore. The average

[3] Scatter plots using tangible equity/tana ratio and capital adequacy ratio are available from the authors upon request.

Legal rules index is 59.85% with a standard deviation of 11.76%. The countries with the most efficient legal rules also include Bahrain and the United Kingdom. Those with the least efficient legal rules also include Iran and Sudan.

As for capital ratios, common equity ratio has a mean of 20.94%, a standard deviation of 17.3, and ranges from 6.27% to 51%. Singapore, Bahrain, and the United Kingdom rank in the top three, suggesting that Islamic banks in these countries are highly capitalized and place a priority on equity financing. Egypt, Bangladesh, and South Africa score the lowest, implying that it might be difficult for banks in these countries to raise capital due to other factors such as weak legal rules, weak information transparency, and discouraging political institutions.

[Insert Table 1 around here]

3.2. Econometric model and baseline results

The main empirical design of this paper follows multivariate regressions with year fixed effects. We use the following baseline regressions model:

$$\mathrm{CAP_{ijt}} = \alpha + \beta_1 \times \mathrm{Legal_{jt-1}} + \beta_2 \times \mathrm{Bank\_level_{ijt-1}} + \beta_3 \times \mathrm{Macro\_level_{jt}} + \sum_{T=1}^{T} \beta_4 \times \mathrm{YFE_t} + \varepsilon_{it} \quad (1)$$

As reported in previous section, *CAP* includes bank *common equity/ta* ratio and *tier1 capital/rwa* ratio. *Legal* is measured using the legal rule index, *Bank_level* is a vector of bank level control variables, *Macro_level* is a vector of macroeconomic and natural resources control variables, *YFE* is year fixed effects, and ε_{it} is a white-noise error term.

First, we seek to study the impact of legal rules index on Islamic banks' capital decisions in the broadest possible manner, allowing for both bank- and country-level control variables. Our baseline results are reported in Table 2 Panel A Model 1 for common equity/ta ratio and Model 5 for tier1 capital/rwa ratio. These results suggest that Islamic banks in countries with better legal rules tend to increase their reliance on equity financing by 0.4% for common equity/ta ratio and by 0.7% for Tier1 capital/rwa ratio. Strong formal institutional environment such as effective legal rules can be an important in incentivising Islamic banks to increase their reliance on equity financing. Effective legal rules put pressure on Islamic banks to hold higher capital ratios to

signal better monitoring to depositors and regulators. While increased core capital protects Islamic banks' depositors and preserve their confidence, it also increases Islamic banks compliance with capital guidelines, thus satisfying international regulatory standards.

We next test whether the impact of legal rules index on Islamic banks' capital ratios is driven by bank size. Regulatory authorities are more flexible in term of capitalization with large and well-known banks (Fiordelisi et al., 2011). Thus, we expect large banks to be less subject to the influence of legal rules. Except in models 1 and 5, Panel A interacts legal rules index with two dummy variables: *i) Small banks* – equals 1 if a bank total asset ≤ median and 0 otherwise – and *ii) large banks* – equals 1 if a bank total asset > median and 0 otherwise – Islamic banks. As we split the sample between small and large Islamic banks, we no longer control for bank size in the regression model. In panel B, we replace bank size dummy variables with bank experience using three dummy variables. Banks which have been operating for a period less than or equal to ten years old are categorized as *young banks*, and those which have been operating for a period ranging between ten and twenty years are considered as *middle-aged banks*. Finally, banks which have been operating for more than twenty years are considered as *matured banks*. In models 3 and 7, we replace net loans to assets with loan loss reserves as an alternative risk measure. In models 4 and 8, we include macroeconomic and natural resources control variables to further check the robustness of our results. We use Eq. (2) to develop our regression model.

$$\mathrm{CAP\_Islamic}_{ijt} = \alpha + \beta_1 \times \mathrm{Legal}_{jt-1} \times (\mathrm{size/experience}) + \beta_2 \times \mathrm{Bank\_level}_{ijt} + \beta_3 \times \mathrm{Macro\_level}_{jt} + \sum_{T=1}^{T} \beta_4 \times \mathrm{YFE}_t + \varepsilon_{it} \quad (2)$$

The results in both panels and models 2 to 8 are consistently showing a positive and significant impact (at the 5% level or better) of legal rules index on Islamic banks' capital ratios, regardless the bank size or experience. Yet, we notice that legal rules index is albeit more effective on the capital ratios of small and less experienced Islamic banks, compared to large banks. With regards to control variables, we find that banks that are more profitable and more liquid with more tangible assets tend to hold higher capital ratios. As for the natural resources, the findings suggest that Islamic banks are more capitalized in countries that are rich in natural resources.

[Insert Table 2 around here]

Formal institutional environment can often cluster by regional location. Consequently, we explore the association between legal rules index and Islamic banks' capital ratios in five regions. These regions are: *i)* Middle East and North Africa (MENA); *ii)* the Gulf Cooperation Council (GCC); *iii)* the European Union (EU); *iv)* the South East Asia and Pacific (SEA); and *iv)* the Sub-Saharan Africa. Furthermore, we address concerns regarding the potential effect of the 2007/2009 subprime crisis on economic growth. We consider different periods of the economic cycle and include three periods: *i)* before (1999–2006), *ii)* during (2007–2009), and *iii)* after (2010–2013) the subprime crisis. We use Eq. (3) and interact the legal rules index with five dummy variables representing each of the above regions. We also interact the legal rules index with three dummy variables representing the three periods of the economic cycle.

$$\text{CAP\_Islamic}_{ijt} = \alpha + \beta_1 \times \text{Legal}_{jt-1} \times (\text{regions/crisis}) + \beta_2 \times \text{Bank\_level}_{ijt} + \beta_3 \times \text{Macro\_level}_{jt} + \sum_{T=1}^{T} \beta_4 \times \text{YFE}_t + \varepsilon_{it} \quad (3)$$

The results are reported in Table 3 and continue to indicate a positive association between the legal rules index and Islamic banks' capital ratios across different regions and economic periods, especially when using the tier1 capital/rwa ratio.

[Insert Table 3 around here]

4. The indirect effect of information transparency and political institutions

So far, our results consistently suggest that legal rules index is positively and significantly associated with capital ratios of Islamic banks. We now seek more conclusive evidence by introducing additional formal institutional factors that may indirectly influence the association between legal rules index and Islamic banks' capital decisions.

4.1. Indirect effects: the impact of information transparency

Few studies have examined information transparency in a financial context. For instance, Djankov et al. (2003) assert that the availability of information is important in decision making. Studying the media ownership in 97 countries, they find that private ownership of media

improves market efficiency and enhances political and economic freedom. In line with this, Djankov et al. (2007) explain that banks make more private credits in poor countries with public registries while the same banks make more private credits in countries with better information sharing and private registries. Based on these two studies, we expect that legal rules might produce different effect on bank capital decisions depending on a country's information transparency. We account for information transparency by collecting information on each country's freedom of press, media ownership, journalist jailed, and information provided by financial registries.

Table 4 replicates Table 2 but adds freedom of press, state media, private media, and journalist jailed[4] and their interactions with legal rules index as estimates of the marginal effect in the response of legal rules on managers' decisions regarding bank capital. We expect that legal rules to be more effective on Islamic banks' capital positions in countries stronger information transparency. We use Eq. (4) and interact the legal rules index with four variables representing freedom of press, state media, private media, and journalist jailed. Table 4 regressions include bank- and country-level control variables and year fixed effects but only reports information transparency's marginal effects. Panel A of the table reports the marginal effect of interaction terms, i.e. $legal\ rules\ index \times information\ transparency$, on the Heritage Foundation's legal rules index.

$$\text{CAP\_Islamic}_{ijt} = \alpha + \beta_1 \times \text{Legal}_{jt-1} + \beta_2 \times \text{Legal}_{jt-1} \times \text{Information\_transparency}_{jt} + \beta_3 \times \text{Bank\_level}_{ijt} + \beta_4 \times \text{Macro\_level}_{jt} + \sum_{T=1}^{T} \beta_5 \times \text{YFE}_t + \varepsilon_{it} \quad (4)$$

Models 1 to 4 include tangible equity/tana and tier1+tier2/rwa ratios in addition to our baseline capital ratios to further check the robustness of our findings. Seven of the eight coefficients report significantly positive marginal effects on the capital/freedom of press and capital/private media interaction terms while seven of the eight coefficients report significantly negative marginal effects on the capital/state media and capital/journalist jailed interaction terms.

[4] While this study considers jailed journalist as a proxy for information transparency, a channel through which the rule of law may indirectly influence Islamic banks' decisions to hold higher regulatory capital, we also acknowledge the direct role of whistleblowing law and protection in effectively upholding the rule law.

The findings in Panel B are also robust to the inclusion of the Fraser Institute's Legal rules index as an alternative to the Heritage Foundation's legal rules index.

[Insert Table 4 around here]

Next, we use information generated by financial registries to further examine the robustness of our results. Similar to Table 4, in Table 5 we add public registries and private registries, and their interactions with legal rules index as estimates of the marginal effect in the response of legal rules on capital ratios. We use Eq. (4) as well to develop our model. Panel A shows that while private registries reinforce legal rules positive influence on capital, public registries weaken the association between legal rules and bank capital ratios. Panel B further confirms the results when using the Fraser Institute's Legal rules index.

[Insert Table 5 around here]

Overall, the results in Tables 4 and 5 lend support to our prediction that legal rules might produce different outcome on bank capital decisions depending on a country's information transparency. Particularly, freedom of press, private media ownership, and private registries appear to complement legal rules. Providing more accurate, independent, and less biased credit registries information, raising equity may no longer be underpriced by the market. Along with effective legal rules, Islamic banks in countries with strong information transparency channels may increase even more their reliance on equity financing, leading a better compliance with regulatory standards. Yet, we notice degenerative effect when public media is involved or when journalist are oppressed. This is because public media in developing countries – which dominates our sample – often serves and praises the governing regimes and compliment their own agenda rather than addressing real public interests. In line with this, Djankov et al. (2007) assert that distorting and manipulating information can ultimately undermine democracy and the economic outcomes of countries. Thus, we next turn to political institutions as an additional confounding factor.

4.2.Indirect effects: the impact of political institutions

We investigate whether political institutions can affect the association between legal rules index and Islamic banks' capital ratios. If political institutions such as democracy and political

stability provide a mechanism that can complement legal rules, it is plausible that political institutions may amplify legal rules influence on capital ratios. Under this scenario, interactions between political institutions and legal rules index will be positive and significant. To test this hypothesis, we create interaction terms between legal rules index and five proxies of political institutions, including polity, checks, durability, Arab Spring, and major protests.

We use Eq. (5) and Table 6 Panel A to presents the marginal effect of interaction terms, i.e. $legal\ rules\ index \times political\ institutions$, on the Heritage Foundation's legal rules index. As reported in section 4.1, we use four capital ratios and include bank- and country-level control variables and year fixed effects but only reports political institution's marginal effects. Models 1 to 4 show that all coefficients report significantly positive marginal effects on the risk-based capital ratios/polity and the risk-based capital ratios/Checks while all coefficients report significantly negative marginal effects on the risk-based capital ratios/Arab Spring and the risk-based capital ratios/Major protests. The results in Panel B further confirms our findings when the Fraser Institute's Legal rules index is included.

$$\mathrm{CAP\_Islamic_{ijt}} = \alpha + \beta_1 \times \mathrm{Legal_{jt-1}} + \beta_2 \times \mathrm{Legal_{jt-1}} \times \mathrm{Political\_institutions_{jt}} + \beta_3 \times \mathrm{Bank\_level_{ijt}} + \beta_4 \times \mathrm{Macro\_level_{jt}} + \sum_{T=1}^{T} \beta_5 \times \mathrm{YFE_t} + \varepsilon_{it} \quad (5)$$

The results imply that legal rules impact is strengthen in democratic and stable political institutions; nevertheless, the results appear to be less robust when using non-risk-based capital ratios. Overall, we lend support to our hypothesis and confirm that democratic and stable political institutions increase the effectiveness of legal rules. These findings influence Islamic banks' managers to increase their reliance on equity financing while at the same providing regulators with an additional tool to implement capital regulatory guidelines in a successful way.

[Insert Table 6 around here]

4.3. Indirect effects: the impact of legal origins

Our previous results indicate that measures of formal institutional environment such as information transparency and political institutions can indirectly influence the association between legal rules index and Islamic banks' capital ratios. Djankov et al. (2007) find that

French and German legal origin countries are more likely to have public registries compared to common law countries. Since our results suggest a negative marginal effect of legal rules/public registries on the capital ratios of Islamic banks, we expect that the interaction terms between French and German legal systems and legal rules to be negative or insignificant while the opposite should occur for the effect of the interaction term between English legal system and legal rules on capital ratios. As predicted, the results in Table 7 Panels A and B show that the impact of legal rules index is amplified in common law countries and weakened in civil law countries.

[Insert Table 7 around here]

In summary, formal institutional environment proxied by legal rules is observed to have a positive effect on Islamic bank financing policy that is translated through an estimated increased of 0.7% on average in core capital ratio. This effect is driven by small less experienced Islamic banks located mainly in the MENA region. We also find that in countries with stronger information transparency, democratic and stable political institutions, and common law legal origins, the positive effect of legal rules is increased by close to 1.5% on average. These findings are consistent with the traditional pecking order theory, whereby effective legal rules play a disciplinary role and further enhanced when combined with information transparency and democratic political institutions; such a combination between formal institutional factors can interfere in the Islamic bank manager's decision-making process and ultimately influence its financing policy. In short, effective legal rules can increase Islamic bank compliance with capital guidelines and this association can be enhanced when information can be easily accessed in democratic and stable political institutions.

5. Robustness checks

5.1. Quantile regressions

The results observed in Table 2 show that effective legal rules index is positively associated with Islamic banks' capital ratios. We now ask whether our results are sensitive to the heterogeneity of Islamic banks' capitalization levels across countries. We use quantile regressions to estimate the relationship between legal rules and capital ratios. This approach allows for heterogeneous solutions to legal rules index by conditioning on bank capital (less

capitalized vs. highly capitalized). We expect that positive effect of legal rules on bank capital to be more pronounced on highly capitalized Islamic banks. The rational is that highly capitalized banks tend to be smaller and less experienced comparted to larger counterparts. They are more subject to legal rules and tend to hold higher capital buffers to protect against potential losses and regulatory pressure.

Table 8 Panel A reports the results for three capital quantiles from 0.25 to 0.75 using common equity/ta ratio and tier1 capital/rwa ratio. The estimated coefficients on the legal rules index are positive at all reported quantiles. More importantly, these coefficients become more pronounced as we move towards the upper quantile, thus confirming our expectation. We also notice that the Wald test suggests that the difference between lower and upper quantiles is statistically significant at the 1% level, lending support to the use of quantile regressions.

In Panel B, we replicate Panel A but we present the components of legal rules index across capital quantiles. This includes the rule of law, the government size, the regulatory efficiency, and the open markets. We only report the results for the coefficient estimates on the quantiles of capital ratios. Our results show that all components are positively associated with capital ratios of Islamic banks, except the component on government intervention in the economy. The results continue to suggest that these components are highly positively significant on the upper quantile of capital ratios, especially for the component on regulatory efficiency.

Finally, Panel C perform interquartile regressions and show that our results are consistent across interquartile. In short, quantile and interquartile regressions confirm that the effect of legal rules index is positive and significant on Islamic banks' capital ratios. These findings are more pronounced on highly capitalized Islamic banks.

[Insert Table 8 around here]

5.2. IV approach and other estimation techniques

As discussed in this work, legal rules index is associated with capital ratios of Islamic banks. However, it is also possible that higher capital ratios influence the effectiveness of legal rules. Another concern is that richer countries may have more resources to apply legal rules more efficiently. To mitigate endogeneity concerns, we include creditor rights index, a dummy

variable to represent highly income countries, and all house, which measures whether executives control all relevant houses in the government, in IV regressions.[5]

We use these measures because they capture institutional factors that play a key role in shaping legal rules index. Moreover, we argue that it is less likely that the three measures would have a direct effect on the Islamic banks' capital ratios today. Instead, they might affect bank capital through their impact on legal rules index. Following Bitar and Tarazi (2019) and Bitar and Peillex (2019), we conduct an F-test of the excluded exogenous variables in the first-stage regressions. The null hypothesis of the test is that our instruments do not explain cross-sectional differences in legal rules index. We reject the null hypothesis at the 1% level in all models. We use two estimation techniques: *1)* two squares least squares regression (2SLS) and *2)* limited information maximum likelihood (LIML).

The results of the first-stage regressions are reported in Table 9 Panel A models 1 and 4. The results of the first stage regressions mainly shows that Islamic banks in high income countries with strong creditor rights and sound effective legislative systems are more capitalized. The results of the second-stage regressions are reported in Table 9 Panel A models 2, 3, 5, and 6. Both the Sargan and Basmann tests of over identifying restrictions are statistically insignificant, suggesting that the instruments are valid in both estimations. The second stage regressions continue to suggest that legal rules index is positively associated with capital ratios of Islamic banks; however, the coefficients are even stronger after addressing endogeneity. Islamic banks in countries with effective legal rules index tend to increase their equity financing by approximately 1% for common equity/ta ratio and by 1.5% for tier1/rwa ratio.

[Insert Table 9 around here]

Second, we employ a propensity score matching (PSM) technique proposed by Rosenbaum and Rubin (1983) to reduce any potential bias due to confounding variables. PSM consists of matching observations of banks between countries with higher and lower legal rules index. We follow Bitar and Tarazi (2019) and use three different matching methods: *K*-nearest

[5] Creditor rights index is the sum of four legal measures, i.e. no automatic stay, secured creditor paid first, restrictions on reorganization, and no management stay, with a value of one if a country's regulations provide that specific type of protection, and zero otherwise. Allhouse takes the value of one when the party of the chief executive controls the government legislation, and zero otherwise.

neighbors with the nearest neighbor with *n=2* and *n=5*, the Gaussian Kernel matching, and the radius matching. In Table 9 Panel B, we find that matched Islamic banks in countries with more effective legal rules index (treated group) tend to hold higher capital ratios compared to Islamic banks in countries with less effective legal rules index (control group). We report the *T* statistics for the differences between the treated and the control groups for each of the methods. For legal rules index, the difference between the treated group and the control group varies slightly between 7.5% and 7.9% for the common equity/ta and between 6.7% and 7.4% for the tier1 capital/rwa. These differences are statistically significant at the 1% level, in all models and across various estimation methods.

Finally, we examine the robustness of our results using four alternative econometric specifications and standards errors. Table 9 Panel C reports the results from regressing legal rules index on capital ratios. In models 1 and 5, we use truncated regressions to address any bias related to the 10^{th} and the 90^{th} percentiles of capital ratios. We also correct for the heteroscedasticity of the standard errors using a White procedure. In models 2 and 6, we use a Newey–West test to correct autocorrelation among the residuals. In models 3 and 7, we employ a random effect, GLS regressions and use the bootstrapping techniques with a random resample of Islamic banks. In models 4 and 8, we use Fama and MacBeth (1973) estimation technique to check for cross sectional dependence. Importantly, the estimated coefficients on legal rules index load significantly positively on capital ratios in all estimations and models, suggesting that our results are unaffected by the use of different estimation techniques.

6. Concluding remarks

In this work, we study whether formal institutional environment is associated with Islamic banks' capital ratios, and, if so, the mechanism through which they influence more effectively bank financing decisions. Specifically, we investigate the role of legal rules in affecting Islamic banks' capital ratios. Our findings suggest that effective legal rules increase Islamic banks reliance on capital ratios. These findings can be explained by the idea that strong formal institutional environment incites Islamic banks to hold higher capital ratios to signal better monitoring to their depositors and regulators.

We further investigate how formal institutional environment related to capital ratios by hypothesizing that legal rules index can indirectly influence Islamic banks' capitalization decisions through its impact on information transparency and political institutions. Controlling for these factors, we find that legal rules index marginal effect on capital ratios is stronger when interacted with measures reflecting better information transparency, democracy, and stable political institutions. Collectively, these findings indicate that formal institutional environment is an important factor in driving Islamic banks' capital decisions.

This research disregards the simplicity of regulatory schemes that often focus on a standardised guideline to implement their capital requirements. By focusing on the complexity of formal institutional environment, we provide compelling evidence that effective legal rules combined with different institutional factors such as information transparency and political institutions can differently affect Islamic banks' decisions to increase their capital ratios.

Broadly speaking, the results may have implications for the Islamic banking and finance policymakers. Regulators should proceed with caution when standardising their capital guidelines as *one size fit all* rules may function very differently depending on the complexity of the formal institutional environment. As a result, pyramidal top-down capital guidelines may be met with limited success if formal institutions are not taken into account.

In closing, we acknowledge that our study is not without inherent limitations. For example, our results depend largely on the validity of our legal rules index, information transparency, and political institutions measures used to proxy for formal institutional environment. We attempt to compensate potential limitations related to measurement errors using various proxies and econometric techniques. In addition, we do not compare Islamic with conventional banks since the former compute their capital ratios using specific risk factors that are irrelevant to the latter. Furthermore, while we focus on the legal rule index, we believe that future research on formal institutional environment can explore the extent to which the adherence of a particular jurisdiction to the rule of law is independent and whether alternative dispute resolution is available to banks across countries. Finally, it worth investigating whether the link between formal institutional environment and Islamic banks' capital decisions is affected by exogenous shocks such as the COVID-19 pandemic.

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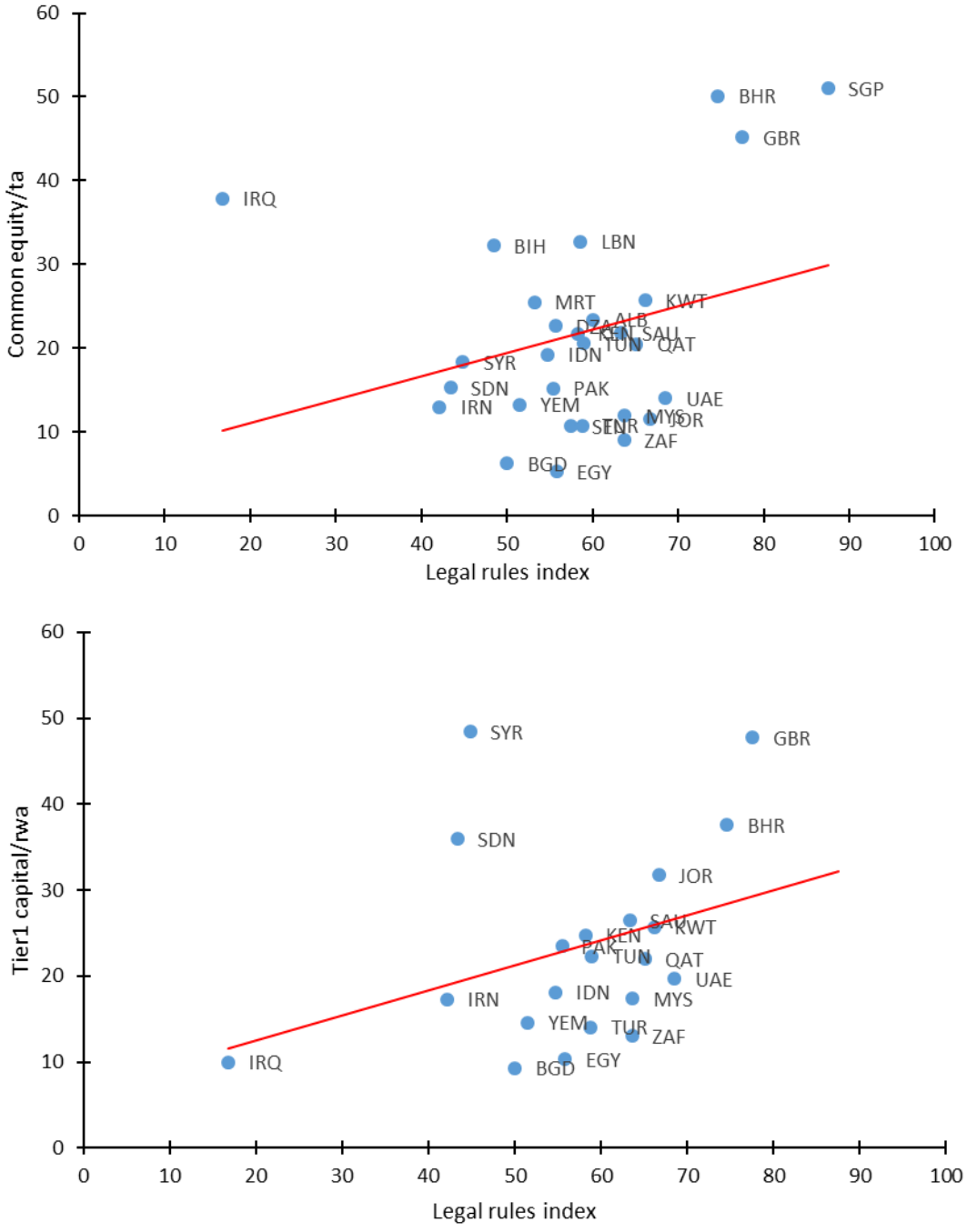
Figures



Figs. 1 & 2. The impact of legal rules index on bank capital decisions. The figures report the mean values for legal rules index on formal institutional environment. The index scaled between 0 and 100, where a higher value indicates more effective institutional environment. The figures also report the mean values for common equity/ta (Fig. 1) and tier1 capital/rwa (Fig. 2). In this study, we alternate between risk- and non-risk-based capital ratios to avoid any untruthful assessment related to the calculation of risk-weighted assets.

Tables

Table 1
Summary statistics for regression variables

	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Panel A.1. Capital ratios								
Common equity/ta	1,326	20.94	17.3	3.78	7.47	12.31	24.65	51
Tier1 capital/rwa	739	24.17	19.06	7.7	12.16	16.45	27	48.43
Tangible equity/tana	1,327	21.34	21.79	3.77	7.6	12.6	25.4	45.19
Capital adequacy ratio	838	26.02	20.1	9.43	13.59	17.89	28	51
Panel A.2. Bank-level determinants								
Size	1,327	13.77	1.76	10.76	12.33	13.83	15.15	16.93
Net income/ta	1,324	0.99	4.22	-20.1	0.37	1.03	2.08	14.58
Loans/ta	1,280	47.92	24.88	0.03	28.49	52.45	66.95	98.86
Liquidity	1,237	57.55	80.71	1.46	20.56	35.01	59.88	546.19
Tangibility	1,292	2.79	3.2	0	0.67	1.79	3.64	17.23
Credit risk	925	6.26	7.28	0.52	1.91	3.45	7.17	28.97
Panel B. Formal institutional environment								
	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Panel B.1. Legal rules								
Legal rules index I	420	59.85	11.76	15.6	53.2	60.4	67.4	88.9
Legal rules index II	420	6.83	0.77	4.68	6.25	6.84	7.54	8.86
Panel B.2. Information transparency								
Freedom of press	420	31.52	14.49	0	21	31	39	82
State press	420	0.25	0.4	0	0	0	0.51	1
Private press	420	0.66	0.38	0	0.49	0.85	1	1
Jailed journalists	420	1.94	6.92	0	0	0	1	49
Public registries	420	0.82	0.39	0	1	1	1	1
Private registries	420	0.35	0.48	0	0	0	1	1
Panel B.3. Political institutions								
Polity index	420	-1.61	6.35	-10	-7	-4	5	10
Checks	420	1.9	1.21	1	1	1	3	6
Durability	420	20.15	25.21	0	2	10	32	133
Arab Spring	420	0.06	0.238	0	0	0	1	1
Major protests	420	0.07	0.256	0	0	0	1	1
Panel B.4. Legal origins								
English legal system	420	0.64	0.48	0	0	1	1	1
French legal system	420	0.35	0.47	0	0	0	1	1
German legal system	420	0.01	0	0	0	0	0	1
Panel C. Macroeconomic and natural resources								
	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
GDP growth rate	420	4.65	4.95	-33.1	3	4.92	6.43	54.16
Inflation rate	420	9.4	10.22	-24.22	3.37	7.8	14.09	54.18
Oil rent	420	15.38	14.96	0	2.72	13.07	22.51	68.84
Gas rent	420	4.26	4.38	0	0.26	3.21	6.22	23.91
Mineral rent	420	0.46	2.37	0	0	0.01	0.2	44.64

Notes: The sample covers 100 Islamic banks in 28 countries for the 1999 – 2013 period.

Table 2
The impact of legal rules index on Islamic banks' capital ratios

Panel A: Size of Islamic banks

	Common equity/ta				Tier 1 capital/rwa			
Model #	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Legal rules index	0.443***				0.669***			
	(0.135)				(0.238)			
Size	-1.88***				-3.479***			
	(0.478)				(0.897)			
Legal rules index		0.565***	0.512***	0.6***		0.717***	0.787***	0.826***
× Small Islamic banks (β_1)		(0.149)	(0.167)	(0.152)		(0.243)	(0.181)	(0.233)
Legal rules index		0.427***	0.379***	0.441***		0.558**	0.597***	0.67***
× Large Islamic banks (β_2)		(0.125)	(0.136)	(0.130)		(0.220)	(0.159)	(0.202)
Earning to assets	0.655**	0.731***	0.736***	0.528**	0.869***	0.813***	0.948***	0.602***
	(0.260)	(0.239)	(0.239)	(0.231)	(0.271)	(0.239)	(0.275)	(0.195)
Net loans to assets	-0.001	0.001		0.004	-0.029	-0.042		-0.003
	(0.041)	(0.042)		(0.045)	(0.079)	(0.077)		(0.064)
Liquid assets to deposits and	0.092***	0.091***	0.089***	0.092***	0.056**	0.061**	0.059***	0.061**
short term funding	(0.015)	(0.016)	(0.016)	(0.016)	(0.022)	(0.023)	(0.019)	(0.024)
Fixed assets to assets	0.66**	0.686**	0.52	0.484	1.451**	1.347**	1.404**	0.847
	(0.325)	(0.301)	(0.357)	(0.318)	(0.642)	(0.636)	(0.605)	(0.547)
Loan loss reserves to gross loans			0.242*				-0.112	
			(0.143)				(0.150)	
GDP growth				-0.144				0.078
				(0.138)				(0.162)
Inflation rate				0.127**				-0.029
				(0.062)				(0.042)
Oil rent to GDP				0.082*				0.11**
				(0.043)				(0.047)
Mineral rent to GDP				0.17**				0.069
				(0.072)				(0.663)
Gas rent to GDP				0.45*				-0.205
				(0.236)				(0.186)
Constant	9.837	-18.76**	-20.93**	-23.59**	18.94	-23.06	-26.21**	-31.35**
	(8.939)	(9.232)	(9.247)	(9.096)	(18.17)	(17.21)	(10.64)	(15.40)
N	862	862	638	851	472	472	413	463
Year dummy	Yes	Yes	Yes	No	Yes	Yes	Yes	No
F–Stat. (Wald): H0: $(\beta_1) = (\beta_2)$	--	13.96***	9.54***	17.06***	--	10.61***	17.74***	12.59***
R2	0.429	0.45	0.469	0.481	0.461	0.467	0.469	0.515

Panel B: Age of Islamic banks

	Common equity/ta				Tier 1 capital/rwa			
Model #	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Legal rules index		0.464***	0.395***	0.485***		0.698***	0.692***	0.799***
× Young Islamic banks (β_1)		(0.136)	(0.139)	(0.138)		(0.219)	(0.187)	(0.216)
Legal rules index		0.4***	0.316**	0.412***		0.602***	0.627***	0.71***
× Middle aged Islamic banks (β_2)		(0.133)	(0.133)	(0.130)		(0.215)	(0.182)	(0.205)
Legal rules index		0.397***	0.343***	0.404***		0.618***	0.645***	0.727***
× Matured Islamic banks (β_3)		(0.126)	(0.129)	(0.125)		(0.209)	(0.181)	(0.207)
Constant		10.23	9.713	16.38		21.55	22.88*	21.44*
		(8.337)	(8.309)	(9.947)		(18.52)	(13.06)	(11.65)
N		855	633	844		468	409	459
Year dummy		Yes	Yes	No		Yes	Yes	No
Bank control		Yes	Yes	No		Yes	Yes	No
Country control		No	No	Yes		No	No	Yes
F–Stat. (Wald): H0: $(\beta_1) = (\beta_3)$		2.08	1.43	3.24*		3.48*	1.94	4.48**
R2		0.458	0.493	0.499		0.506	0.848	0.559

Notes: Panel A models 1 and 5 examines the impact of legal rules index on Islamic banks' capital ratios. The rest of the models investigate whether legal rules index has the same effect on capital ratios for small and large banks. Panel B examines whether the legal rules index has the same effect on capital ratios for young, middle-aged and matured Islamic banks. 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 legal rules index on Islamic banks' capital ratios: Comparison across regions and economic cycles

Panel A: Comparison across regions

	Common equity/ta			Tier 1 capital/rwa		
Model #	[1]	[2]	[3]	[1]	[2]	[3]
Legal rules index	0.273	0.249	0.362	0.723**	0.718***	0.899***
× MENA (β_1)	(0.235)	(0.224)	(0.245)	(0.329)	(0.252)	(0.292)
Legal rules index	0.344*	0.313*	0.399**	0.684**	0.701***	0.834***
× GCC (β_2)	(0.187)	(0.185)	(0.191)	(0.292)	(0.236)	(0.257)
Legal rules index	0.317	0.290	0.449**	0.674**	0.696***	0.924***
× EU (β_3)	(0.204)	(0.208)	(0.216)	(0.297)	(0.240)	(0.261)
Legal rules index	0.208	0.228	0.322	0.651*	0.661**	0.892***
× SEA (β_4)	(0.243)	(0.234)	(0.256)	(0.338)	(0.274)	(0.297)
Legal rules index	0.179	0.136	0.249	0.503*	0.502**	0.708***
× SUB (β_5)	(0.252)	(0.235)	(0.268)	(0.261)	(0.227)	(0.234)
Constant	30.92*	24.69*	23.91	21.33	28.29	12.60
	(17.35)	(14.74)	(16.67)	(23.75)	(18.95)	(15.28)
N	862	638	851	472	413	463
Year dummy	Yes	Yes	No	Yes	Yes	No
Bank control	Yes	Yes	No	Yes	Yes	No
Country control	No	No	Yes	No	No	Yes
F–Stat. (Wald): H0: $(\beta_1) = (\beta_5)$	1.55	4.19**	2.71	4.69**	11.27***	7.29***
R2	0.461	0.466	0.483	0.472	0.456	0.528

Panel B: Comparison across time

	Common equity/ta			Tier 1 capital/rwa		
Model #	[1]	[2]	[3]	[1]	[2]	[3]
Legal rules index	0.434***	0.375***	0.429***	0.631***	0.687***	0.781***
× before crisis(β_1)	(0.131)	(0.133)	(0.141)	(0.239)	(0.189)	(0.246)
Legal rules index	0.468***	0.418***	0.473***	0.680***	0.725***	0.831***
× during crisis (β_2)	(0.136)	(0.142)	(0.150)	(0.238)	(0.193)	(0.256)
Legal rules index	0.444***	0.406***	0.465***	0.675***	0.732***	0.798***
× after crisis (β_3)	(0.132)	(0.143)	(0.139)	(0.224)	(0.185)	(0.229)
Constant	9.636	10.44	17.69	21.42	21.43*	17.70
	(8.572)	(8.214)	(10.84)	(18.22)	(12.21)	(14.72)
N	862	638	851	472	413	463
Year dummy	No	No	No	No	No	No
Bank control	Yes	Yes	No	Yes	Yes	No
Country control	No	No	Yes	No	No	Yes
F–Stat. (Wald): H0: $(\beta_1) = (\beta_3)$	0.23	1.88	3.24	1.52	2.09	0.32
R2	0.426	0.436	0.471	0.446	0.426	0.525

Notes: Panel A investigates whether the legal rules index has the same effect on capital ratios of Islamic banks across five regions: Middle East and North Africa, MENA; Gulf Cooperation Council, GCC; European Union, EU; Southeast Asia, SEA; and Sub-Saharan Africa, SUB. Panel B examines whether the legal rules index has the same effect on capital ratios of Islamic banks in the period before (1999-2006), during (2007-2009) and after (2010-2013) the financial crisis. 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
Indirect effect: the impact of press and media measures

Model #	Predicted effects	Common equity/ta [1]			Tangible equity/tana [2]			Tier1 capital/rwa [3]			Tier1 + Tier2/rwa [4]		
		Coef.	N	R2	Coef.	N	R2	Coef.	N	R2	Coef.	N	R2
Panel A. Using legal rules index I (Heritage Foundation)													
Legal rules index	+	0.012*	862	0.449	0.012*	862	0.448	0.026***	472	0.487	0.016**	529	0.459
× Freedom press		(0.006)			(0.007)			(0.009)			(0.008)		
Legal rules index	+/-	-1.554***	596	0.558	-1.397**	596	0.501	-1.58***	326	0.555	-0.625	363	0.483
× State media		(0.327)			(0.607)			(0.327)			(0.484)		
Legal rules index	+/-	1.667***	596	0.575	1.71***	596	0.488	1.575**	326	0.574	0.813	363	0.476
× Private media		(0.328)			(0.329)			(0.661)			(0.506)		
Legal rules index	-	-0.019***	862	0.445	-0.019***	862	0.445	-0.042*	472	0.45	-0.019*	529	0.447
× Journalists jailed		(0.005)			(0.005)			(0.022)			(0.010)		
Panel B. Using legal rules index II (Fraser institute)													
Legal rules index	+	0.235**	764	0.483	0.221*	764	0.478	0.46***	427	0.497	0.268*	481	0.468
× Freedom press		(0.116)			(0.119)			(0.162)			(0.141)		
Legal rules index	+/-	-25.07***	573	0.565	-21.07***	304	0.521	-25.5***	573	0.558	-13.08*	342	0.494
× State media		(4.912)			(7.505)			(4.921)			(7.259)		
Legal rules index	+/-	26.68***	573	0.573	22.3***	304	0.513	27.19***	573	0.568	14.91*	342	0.492
× Private media		(5.008)			(8.071)			(5.036)			(7.540)		
Legal rules index	-	-0.179**	764	0.463	-0.181**	764	0.461	-0.717**	427	0.458	-0.255*	481	0.456
× Journalists jailed		(0.0780)			(0.0780)			(0.315)			(0.146)		

Notes: This table reports the marginal effect of press and media ownership on the association between legal rules index and Islamic banks' capital ratios. Panel A reports the results using the Heritage Foundation's legal rules index while Panel B reports the results using the Fraser Institute's legal rules index. In both panels, we use Eq. (4) and only report the marginal effects for the interaction terms between legal rules index and information transparency measures. 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
Indirect effect: the impact of information sharing institutions

Model #	Predicted effects	Common equity/ta [1]			Tangible equity/tana [2]			Tier1 capital/rwa [3]			Tier1 + Tier2/rwa [4]		
		Coef.	N	R2	Coef.	N	R2	Coef.	N	R2	Coef.	N	R2
Panel A. Using legal rules index I (Heritage Foundation)													
Legal rules index	+/-	-0.941**	742	0.424	0.104	390	0.505	-0.961**	742	0.429	-0.134	445	0.485
× Public registries		(0.424)			(0.678)			(0.412)			(0.656)		
Legal rules index	+/-	1.061**	742	0.409	1.067**	390	0.466	1.051**	742	0.409	1.003**	445	0.487
× Private registries		(0.471)			(0.493)			(0.462)			(0.448)		
Panel B. Using legal rules index II (Fraser institute)													

Model #	Predicted effects	Common equity/ta [1]			Tangible equity/tana [2]			Tier1 capital/rwa [3]			Tier1 + Tier2/rwa [4]		
		Coef.	N	R2	Coef.	N	R2	Coef.	N	R2	Coef.	N	R2
Legal rules index	+/-	-9.273**	675	0.396	-0.364	358	0.52	-9.618**	675	0.402	-2.031	412	0.494
× Public registries		(4.417)			(8.875)			(4.274)			(9.135)		
Legal rules index	+/-	13.50**	675	0.394	15.26**	358	0.486	13.43**	675	0.394	12.97**	412	0.494
× Private registries		(5.610)			(5.884)			(5.497)			(5.852)		

Notes: This table reports the marginal effect of information sharing institutions on the association between legal rules index and Islamic banks' capital ratios. Panel A reports the results using the Heritage Foundation's legal rules index while Panel B reports the results using the Fraser Institute's legal rules index. In both panels, we use Eq. (4) and only report the marginal effects for the interaction terms between legal rules index and information transparency measure. 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
Indirect effect: the impact of political institutions

Model #	Predicted effects	Common equity/ta [1]			Tangible equity/tana [2]			Tier1 capital/rwa [3]			Tier1 + Tier2/rwa [4]		
		Coef.	N	R2	Coef.	N	R2	Coef.	N	R2	Coef.	N	R2
Panel A. Using legal rules index I (Heritage Foundation)													
Legal rules index	+/-	0.001	843	0.431	-0.002	843	0.434	0.054***	470	0.497	0.041**	521	0.467
× Polity index		(0.014)			(0.014)			(0.019)			(0.018)		
Legal rules index	+/-	0.175	855	0.465	0.154	855	0.466	0.305**	472	0.487	0.214**	527	0.462
× Checks		(0.108)			(0.109)			(0.128)			(0.103)		
Legal rules index	+/-	0.242*	862	0.449	0.236*	862	0.447	-0.115	472	0.486	-0.019	529	0.461
× Durability		(0.139)			(0.140)			(0.163)			(0.157)		
Legal rules index	-	0.144	862	0.424	0.214	862	0.424	-1.197***	472	0.478	-0.869***	529	0.457
× Arab Spring		(0.254)			(0.283)			(0.297)			(0.322)		
Legal rules index	-	0.117	862	0.424	0.189	862	0.424	-0.970***	472	0.468	-0.768**	529	0.454
× Major protests		(0.262)			(0.290)			(0.307)			(0.308)		

Panel B. Using legal rules index II (Fraser institute)

Model #	Predicted effects	Common equity/ta [1]			Tangible equity/tana [2]			Tier1 capital/rwa [3]			Tier1 + Tier2/rwa [4]		
		Coef.	N	R2	Coef.	N	R2	Coef.	N	R2	Coef.	N	R2
Legal rules index	+/-	0.391	750	0.466	0.352	750	0.464	0.964***	425	0.497	0.775**	474	0.479
× Polity index		(0.243)			(0.247)			(0.328)			(0.299)		
Legal rules index	+/-	2.959*	758	0.485	2.696	758	0.483	5.930**	427	0.492	4.871**	479	0.479
× Checks		(1.751)			(1.752)			(2.298)			(1.914)		
Legal rules index	+/-	2.761	764	0.449	2.599	764	0.446	-1.658	427	0.47	-0.711	481	0.463
× Durability		(2.176)			(2.175)			(2.340)			(2.346)		
Legal rules index	-	2.150	764	0.439	2.996	764	0.437	-13.21***	427	0.472	-8.641*	481	0.457
× Arab Spring		(3.207)			(3.491)			(4.187)			(4.846)		
Legal rules index	-	-0.190	764	0.438	0.625	764	0.437	-8.406*	427	0.459	-6.764	481	0.454
× Major protests		(3.528)			(3.733)			(4.474)			(4.403)		

Notes: This table reports the marginal effect of political institutions on the association between legal rules index and Islamic banks' capital ratios. Panel A reports the results using the Heritage Foundation's legal rules index while Panel B reports the results using the Fraser Institute's legal rules index. In both panels, we use Eq. (4) and only report the marginal effects for the interaction terms between legal rules index and political institution measures. 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
Indirect effect: the impact of legal origins

Model #	Predicted effects	Common equity/ta			Tangible equity/tana			Tier1 capital/rwa			Tier1 + Tier2/rwa		
		[1]			[2]			[3]			[4]		
		Coef.	N	R2	Coef.	N	R2	Coef.	N	R2	Coef.	N	R2
Panel A. Using legal rules index I (Heritage Foundation)													
Legal rules index	+/-	0.339	862	0.434	0.328	862	0.434	0.644	472	0.468	0.793*	529	0.475
× English legal origin		(0.227)			(0.223)			(0.470)			(0.448)		
Legal rules index	+/-	-0.243	862	0.433	-0.240	862	0.434	-0.644	472	0.468	-0.821*	529	0.478
× French legal origin		(0.231)			(0.226)			(0.470)			(0.456)		
Legal rules index	+/-	-0.893***	862	0.426	-0.858***	862	0.426	(dropped)	472	0.439	-1.296***	529	0.439
× German legal origin		(0.300)			(0.315)						(0.236)		
Panel B. Using legal rules index II (Fraser institute)													
Legal rules index	+/-	6.372**	764	0.4616	6.424**	764	0.4601	7.843	427	0.4755	9.755**	481	0.4891
× English legal origin		(2.623)			(2.613)			(5.330)			(4.247)		
Legal rules index	+/-	-6.284**	764	0.4613	-6.346**	764	0.4597	-7.843	427	0.4755	-9.993**	481	0.492
× French legal origin		(2.610)			(2.601)			(5.330)			(4.286)		
Legal rules index	+/-	-27.75***	764	0.4388	-28.12***	764	0.4375	(dropped)	427	0.4435	-10.32**	481	0.4486
× German legal origin		(3.187)			(3.185)						(4.823)		

Notes: This table reports the marginal effect of legal origins on the association between legal rules index and Islamic banks' capital ratios. Panel A reports the results using the Heritage Foundation's legal rules index while Panel B reports the results using the Fraser Institute's legal rules index. In both panels, we use Eq. (4) and only report the marginal effects for the interaction terms between legal rules index and legal origins measures. 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

Robustness checks: IV approach and other estimation techniques

Panel A: Instrumental variables to address endogeneity concerns

	Common equity/ta			Tier 1 capital/rwa		
	First stage	Second stage		First stage	Second stage	
		2SLS	LIML		2SLS	LIML
Model #	[1]	[2]	[3]	[4]	[5]	[6]
Legal rules index		0.919***	0.922***		1.523***	1.553***
		(0.128)	(0.129)		(0.247)	(0.256)
Creditor rights	1.778***			1.597***		
	(0.327)			(0.451)		
High income	13.859***			8.949***		
	(0.793)			(1.203)		
Allhouse	3.073***			1.996**		
	(0.673)			(0.781)		
Size	-1.297***	-2.251***	-2.252***		-6.316***	-6.394***
	(0.265)	(0.371)	(0.371)		(1.061)	(1.084)
Profitability	-0.329***	0.994**	0.997**		1.741***	1.775***
	(0.121)	(0.432)	(0.432)		(0.490)	(0.495)
Risk	-0.029**	0.0327	0.0328		-0.0540	-0.0517
	(0.0147)	(0.0295)	(0.0296)		(0.0532)	(0.0533)
Liquidity	-0.005	0.0669***	0.0669***		0.00410	0.00373
	(0.004)	(0.0188)	(0.0188)		(0.0209)	(0.0210)
Tangibility	-0.995***	1.517***	1.521***		3.146***	3.188***
	(0.152)	(0.301)	(0.301)		(0.680)	(0.687)
Constant	75.584***	-19.51**	-19.71**		11.98	11.06
	(3.340)	(8.115)	(8.146)		(11.30)	(11.41)
N	497	497	497	272	272	272
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Wald chi2		0.00***	0.00***		0.00***	0.00***
R2/R2 Adj.	0.553	0.233	0.232	0.507	0.359	0.35
F-test		128.42***	128.42***		21.971***	21.971***
Sargan		1.244	n.a.		3.694	n.a.
Basmann		1.194	0.596		3.456	1.716

Panel B: Propensity score matching

Variables	Common equity/ta				Tier1 capital/rwa			
Methods	Treated	Controls	Difference	*T* stat	Treated	Controls	Difference	*T* stat
K-Nearest neighbors								
Nearest neighbors ($n = 2$)	17.228	9.311	7.917	5.38***	21.184	13.866	7.318	3.32***
Nearest neighbors ($n = 5$)	17.228	9.288	7.94	5.86***	21.184	13.818	7.366	3.77***
Kernel	17.228	9.322	7.906	5.66***	21.184	13.9	7.245	3.66***
Radius	17.228	9.688	7.54	8.66***	21.184	14.368	6.748	8.66***

Panel C: Alternative estimation techniques and standard errors

Variables	Common equity/ta				Tier1 capital/rwa			
	Truncated	Newey-West	GLS + Bootstrap	Fama-MacBeth	Truncated	Newey-West	GLS + Bootstrap	Fama-MacBeth
Model #	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Legal rules index	1.696***	0.443***	0.293***	0.316***	1.118***	0.669***	0.542***	0.573***
	(0.463)	(0.056)	(0.075)	(0.056)	(0.260)	(0.126)	(0.109)	(0.093)
Size	-12.50***	-1.883***	-2.334***	-1.639***	-8.478***	-3.479***	-3.148***	-2.434***
	(2.375)	(0.244)	(0.592)	(0.295)	(2.568)	(0.542)	(0.724)	(0.512)
Profitability	5.819***	0.655***	0.352**	1.597***	2.418***	0.869***	0.454***	0.856***
	(1.040)	(0.252)	(0.141)	(0.495)	(0.845)	(0.248)	(0.164)	(0.262)
Risk	-0.065	-0.001	-0.008	0.031	-0.158	-0.029	-0.034	0.089
	(0.132)	(0.024)	(0.026)	(0.024)	(0.101)	(0.046)	(0.041)	(0.078)
Liquidity	0.187***	0.092***	0.04***	0.109***	0.018	0.056***	0.036*	0.169*
	(0.071)	(0.012)	(0.013)	(0.023)	(0.020)	(0.017)	(0.019)	(0.084)
Tangibility	4.238***	0.66***	0.263	0.893***	4.402***	1.451***	0.528	1.689***
	(0.956)	(0.186)	(0.268)	(0.233)	(1.532)	(0.461)	(0.634)	(0.399)
Constant	1.666	9.837**	29.73***	8.793	54.07*	18.94**	30.17**	2.823
	(28.50)	(4.753)	(10.01)	(5.629)	(29.60)	(9.234)	(12.58)	(10.08)
N	726	862	862	862	395	472	472	472
Year dummy	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Chi2	0.00***	n.a.	0.00***	n.a.	0.00***	n.a.	0.00***	n.a.
R2	n.a.	0.429	0.388	0.587	n.a.	0.461	0.436	0.71

Notes: This table examines the effect of legal rules index on Islamic banks' capital ratios. Panel A uses an instrumental variables approach to address endogeneity concerns. The F-test report the *F* statistics on whether the instruments are valid and explain cross-sectional differences in legal rules index. The Sargan and Basmann tests of overidentifying restrictions examine whether the instruments are valid in the two squares least squares regression (2SLS) and the limited information maximum likelihood (LIML) estimations. Panel B reports the differences in capital measures between countries with more and less effective legal rules index, estimated using a propensity score matching with three different matching methods. Panel C employs truncated regressions with robust standard errors, a new-west estimation technique, random effect generalised least squares regressions with bootstrapped standard errors, and Fama-MacBeth regressions. Standard errors 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
Robustness checks: Extreme cases

Panel A: Quantile regressions

	Common equity/ta			Tier1 capital/rwa		
	25th	50th	75th	25th	50th	75th
Model #	[1]	[2]	[3]	[4]	[5]	[6]
Economic development	0.204***	0.297***	0.406***	0.403***	0.533***	0.7***
	(0.045)	(0.076)	(0.101)	(0.078)	(0.110)	(0.097)
Size	-0.57***	-1.008***	-1.99***	-1.211**	-2.056***	-3.182***
	(0.212)	(0.294)	(0.443)	(0.557)	(0.543)	(0.657)
Profitability	1.198***	1.084***	1.157***	0.871*	1.062***	1.002*
	(0.371)	(0.410)	(0.343)	(0.462)	(0.195)	(0.566)
Risk	0.018	0.025	-0.042	-0.034	-0.037	-0.019
	(0.036)	(0.028)	(0.056)	(0.026)	(0.03)	(0.05)
Liquidity	0.058	0.12***	0.127***	0.027***	0.053***	0.124***
	(0.048)	(0.014)	(0.009)	(0.009)	(0.016)	(0.014)
Tangibility	0.637**	0.960**	1.388***	0.780*	1.848**	2.316**
	(0.261)	(0.481)	(0.398)	(0.437)	(0.802)	(1.077)
Constant	-2.980	-2.625	14.44	5.207	6.557	8.042
	(6.205)	(6.266)	(13.76)	(6.331)	(6.817)	(11.38)
N	862	862	862	472	472	472
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Wald tests (p-value): (1) = (3)		18.98***			14.69***	
R2	0.3045	0.3881	0.4055	0.3921	0.4303	0.4277

Panel B: Economic and Financial development factors

Variables	Common equity/ta			Tier1 capital/rwa		
	25th	50th	75th	25th	50th	75th
Model #	[1]	[2]	[3]	[4]	[5]	[6]
1. Rule of Law	0.107***	0.153***	0.232***	0.202***	0.249***	0.404***
	(0.020)	(0.032)	(0.056)	(0.036)	(0.048)	(0.078)
2. Government intervention	-0.061	0.033	0.14	0.001	-0.034	0.133
	(0.051)	(0.099)	(0.123)	(0.068)	(0.066)	(0.141)
3. Regulatory efficiency	0.16***	0.241**	0.482***	0.238***	0.298***	0.528***
	(0.057)	(0.094)	(0.144)	(0.086)	(0.092)	(0.164)
4. Market openness	0.12***	0.17***	0.232***	0.171***	0.158***	0.266***
	(0.029)	(0.037)	(0.069)	(0.043)	(0.051)	(0.076)

Panel C: Interquartile regressions

Variables	Common equity/ta			Tier1 capital/rwa		
	25– 5th	50–25th	75–50th	25– 5th	50–25th	75–50th
Model #	[1]	[2]	[3]	[4]	[5]	[6]
Economic development index	0.06**	0.093***	0.109**	0.165***	0.13**	0.167**
	(0.026)	(0.029)	(0.044)	(0.059)	(0.057)	(0.082)
N	862	862	862	472	472	472
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table examines the effect of legal rules index on Islamic banks' capital ratios. Panels A and B use quantile regressions approach. We present the 25th, 50th, and 75th quantile of the capital ratios. The Wald test reports the difference between the coefficients on legal rules index at the upper quantile (Models 3 and 6) and the lower quantile (Models 1 and 4). Panel B breakdown the legal rules index into its four components: the rule of law, limited government, regulatory efficiency, and open markets. Panel C performs interquantile regressions between 25th – 5th quartiles, 50th–25th quartiles, and 75th–50th quartiles, respectively. 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.