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INSTITUTIONAL ENVIRONMENT
AND BANK CAPITAL RATIOS

Tammuz H. Alraheb, Christina Nicolas
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Send correspondence to:
Christina Nicolas
Université de Limoges, LAPE
christina.nicolas@etu.unilim.fr

Abstract

We investigate the influence of the institutional environment on bank capital levels. Using a sample of 183 banks operating in the MENA region for the period 2004 to 2014, we find that low corruption levels, high political stability, as well as high economic and financial freedom are associated with higher capital adequacy levels. The effect of institutional factors on bank capital ratios is also more pronounced for conventional versus Islamic banks, for listed banks and for non-government owned banks.

JEL Classification: G21, G28, G32

Keywords: Bank Capital Structure, Institutions, MENA Region

ملخص

نقوم في هذه الورقة بالتحقيق في تأثير البيئة المؤسسية على مستويات رأس المال المصرفي. وباستخدام عينة من 183 بنكا تعمل في منطقة الشرق الأوسط وشمال أفريقيا للفترة من 2004 إلى 2014، نجد أن انخفاض مستويات الفساد، والاستقرار السياسي المرتفع، والحرية الاقتصادية والمالية المرتفعة ترتبط بزيادة مستويات كفاية رأس المال. كما أن تأثير العوامل المؤسسية على نسب رأس المال المصرفي هو أكثر وضوحا بالنسبة للبنوك التقليدية مقابل البنوك الإسلامية والبنوك المدرجة والبنوك غير الحكومية.

1. Introduction

Research on bank capital structure has mostly focused on bank specific factors and market related fundamentals (Diamond & Rajan 2000; Berger et al. 2008; Gropp & Heider 2010; Harding et al. 2013). Another strand of the literature pioneered by (Demirgüç-Kunt & Maksimovic 1999) has stressed the importance of considering the legal and institutional framework affecting firms' capital structure decisions. In their paper, (Demirgüç-Kunt & Maksimovic 1999) posit that a significant part of long term debt variation can be explained by institutional foundations. Nevertheless, the existing literature on the role played by institutions in explaining capital structure variation mainly includes studies of non-financial firms rather than financial ones (Booth et al. 2001; de Jong et al. 2008; Cho et al. 2014; Belkhir et al. 2016). In this paper, we combine the two strands of literature by analyzing whether institutional factors affect bank capital holdings in a world region whose underdeveloped institutions can be considered as a major obstacle to its economic and financial development: the MENA region[1]. To our knowledge, our paper is the first attempt to specifically focus on the influence of institutional foundations on bank capital ratios.

The MENA region is a fast-growing area which remains understudied when it comes to the capital structure of its financial institutions. This world region suffers from ongoing political instability and lags behind the rest of the world in many dimensions. Particularly, institutions in the MENA region exhibit many deficiencies: widespread corruption, weak governance, limited creditors' rights, and a skeletal rule of law (World Bank MENA Knowledge and Learning Issue 114, January 2014). The financial system is highly bank-based with banks assets attaining on average 130% of GDP (Saadaoui 2015). The region is characterized by underdeveloped financial markets (if existing) in most countries. There is no suitable alternative to bank finance. The banking sector is highly concentrated in most countries of the region (with the three largest banks holding more than 65% of total banking assets on average) and barriers to entry are still high (Turk-Ariss 2009; Anzoategui et al. 2010). Thus, MENA banking sector is far from being adequately developed, with the exception of Lebanon, Jordan, and the GCC[2] countries (Creane et al. 2004). At the same time, most MENA banks showed resiliency during the global financial crisis of 2007-2008. In fact, this region was less affected by the financial turmoil compared to other parts of the world. Some researchers attributed this partial resiliency to a number of factors including the presence of a stable funding basis, prudent lending, and sound bank capitalization. Banks in the MENA region hold total regulatory capital ratios and tier 1 capital ratios significantly above international standards and the Basel requirements[3]. This should, in principle, make them safer and more resilient to economic shocks. However, this might also make them too cautious in their intermediation role and their contribution to economic growth and development.

Throughout the last decade, the MENA region has experienced profound changes. What is prevalent however, is the fact that it still has underdeveloped institutions. A fragile rule of law and government ineffectiveness still prevail coupled with a weak and under-developed civil society. According to the Enterprise Survey of the World Bank (2016), the most important obstacles to development in the MENA region are the ongoing political instability and the high levels of corruption. In the World Bank Report (MENA Knowledge and Learning Issue 114, January 2014), improving the rule of law, fighting corruption, improving accountability, stimulating government

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[1] The MENA region refers to the Middle East and North Africa and consists of the following countries: Algeria, Bahrain, Djibouti, Egypt, Iraq, Iran, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates (UAE) and Yemen

[2] Gulf Cooperation Council - Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates.

[3] MENA Total capital adequacy ratio and Tier 1 capital ratio fluctuated on average between 18.5% and 21.7% and 15% and 18.2%, respectively, during the period 2004 to 2014. (Source: BankScope - Bureau van Dijk database)

transparency and filling the gap between regulation and implementation are essential reforms that need to be implemented to improve the quality of institutions in the region.

The aim of this paper is to investigate the role played by institutional factors in determining capital buffers set by regulators and banks themselves. We contribute to the literature in several ways. First, we provide new insights on the financial benefits of developing the quality of existing institutions by examining the effect of different aspects of institutional development on bank capital ratios. We focus on capital levels of banking institutions whose capital decisions might substantially differ from non-financial firms. Up to our knowledge, no other study explicitly studies the link between institutions and bank capital ratios. Second, we perform our study on a region, which unlike other Western regions, remains understudied when it comes to bank capital ratios. Developing and emerging countries are subject to different kinds of constraints and challenges which implies that what applies to developed countries might not apply to them. Third, we consider both weighted, regulated total capital ratio and unweighted capital ratio in order to test whether institutions affect internal based capital decision and/or external decisions subject to regulations.

We consider a sample of 183 banks from 14 MENA region countries covering the 2004–2014 period. Our findings indicate that institutional variables are significant in explaining risk-based capital adequacy ratios imposed by regulators but not non-weighted equity-to-asset ratios internally set by banks. We provide evidence that higher corruption and political instability levels are associated with lower capital adequacy ratios. Creditor rights, however, negatively influence capital adequacy ratios. As for economic freedom and financial openness measures, the effect is positive. We also find that the effect of institutional variables is more pronounced for listed, conventional, and non-government owned banks compared to non-listed, Islamic, and privately-owned banks, respectively.

The paper unfolds as follows. Section 2 presents an overview of the existing literature. Description of the sample, the used variables and the empirical model are presented in section 3. Section 4 discusses the regression results and presents robustness tests. Finally, section 5 concludes.

2. Related Literature

There is a substantive literature dedicated to the determinants of bank capital ratios. Brewer et al. (2008) argue that bank capital is significantly dependent on capital regulations. Moreover, the existence of deposit insurance creates moral hazard incentives which lead banks to choose high levels of leverage, thus maintaining low capital ratios while complying with regulation (Keeley 1990). However, this justification of bank capital levels does not explain the prevalence of bank capital buffers, i.e. higher levels than those required by regulations. In fact, many researchers emphasize that capital regulations are not binding and might not be significant determinants of bank capital levels (Flannery, 1994, and Diamond & Rajan, 2000).

One major explanation of high capital buffers is the fear of shocks which might lead to falling below capital requirements and incur regulatory costs of adjusting back to the minimum threshold, regulatory interference and eventually loss of reputation (Milne & Whalley, 2001). Moreover, according to Brewer et al. (2008) and Harding et al. (2013), bank capital ratios seem high in countries where regulators have prompt sanction powers in dissolving financial institutions that fall below regulatory minimum. The latter authors also point out the importance of the franchise value in the choice of the optimal capital structure. From another perspective, Berger et al (1995) argue that banks' capital buffers are used to meet unexpected investment opportunities. Fonseca & Gonzales (2007) analyze the determinants of bank capital buffers across a selection of world

countries. They conclude that market discipline and market power positively influence and to a large extent the level of capital held by banks. Thus, according to this strand of the literature banks accumulate regulatory capital buffers mainly because of fear of adverse shocks, authority intervention, and market discipline.

Recently, a growing body of literature has focused on the role that institutions might play in determining capital structures. However, the findings regarding the influence of legal and institutional frameworks in explaining firms' funding choices are mixed. On the one hand, many studies find that firms operating in a better institutional environment have easier access to external funding associated with more favorable conditions (La Porta et al. 1997; Demirgüç-Kunt & Maksimovic 1999; Booth et al. 2001; Giannetti 2003; Djankov et al. 2007; Qian & Strahan 2007; González & González 2008; Fan et al. 2012). A strong legal framework can help mitigate agency problems by reducing information asymmetries and when information is more readily available to investors, firms might start relying more on external rather internal funding. Hence, firms might hold less capital and more debt in countries with more developed institutions when considering the investors' or the supply point of view. On the other hand, supporters of the demand side view argue that lower debt prevails in markets with higher creditor rights. Cho et al. (2014) explain this finding using a large sample of 48 countries. They argue that managers in countries with high creditor protection prefer to limit debt usage to avoid losing control should financial distress prevail. This result is also supported Rajan & Zingales (1995) who explain that whenever manager rights during bankruptcy are limited and creditor rights are stronger, managers tend to prefer equity over debt. Thus, a consensus has not been reached in the literature regarding the effect of institutional quality on capital funding choices of non-financial firms[4]. In their paper, Flannery & Oztekin (2012) go further by studying the role that institutions might play in capital structure adjustment speeds. They find that firms operating in countries with better institutions benefit from lower transaction costs which makes them adjust faster to their target capital structure.

Studies linking the institutional framework to capital holdings of financial firms and banks more specifically are scarcer. Fonseca & González (2010) analyze the determinants of bank capital buffers and the role of institutions across a selection of world countries. The authors study how institutions might alter the effect of market power and market discipline on capital holdings. For this purpose, they use the simple average of six institutional indictors as per Kaufman et al. (2001): control of corruption, government effectiveness, voice and accountability, regulatory quality, political stability, and the rule of law. They find that on the one hand, institutions improve market discipline and therefore increase bank capital ratios. On the other hand, good institutional quality reduces bank market power thus reducing bank incentives to hold high capital buffers. The overall effect on capital buffer is negative. Klomp & Haan (2013) find that capital regulations are more binding in countries with strong institutional establishments. Using data from 70 developing countries, the authors confirm the existence of a significant negative relationship between bank activity restrictions and risk-taking but only in countries endowed with high quality of institutions (also using Kaufman et al (2001) institutional indicators). Chen et al. (2015) study 35 emerging economies to examine the link between corruption and bank risk taking. Their findings suggest that high levels of corruption are associated with higher bank risk taking.

In the MENA region, studies on bank capital have focused on bank-specific factors rather on the way in which banks interact with their macroeconomic and institutional environment. In their studies of bank capital and risk in the MENA region, Farazi et al. (2011); Srairi (2010); Al-tamimi

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[4] For further studies covering corporate capital decisions, please see: Deesomsak et al. (2004); Bancel & Mittoo (2004); Gungoraydinoglu & Öztekin (2011); de Jong et al. (2008); An et al. (2016).

& Jellali (2013) focus on the role played by ownership structure. Their findings show that state-owned banks take higher risk and have lower performance levels. Murinde & Yaseen (2006) investigate the dynamic capital-risk adjustment structure among MENA banks. They conclude that capital regulations are significant determinants of capital ratios. However, the authors point out that they do not affect capital levels, but they increase risk taking behaviors. Bougatef & Mgadmi (2016) examine the role of prudential regulation on bank risk taking and capital holding in a selection of MENA banks. They find that regulatory pressure does not significantly affect neither risk nor capital ratios of MENA banks. The authors link this finding to weaknesses in the institutions of those countries. This finding contradicts many studies on developing economies and more specifically the conclusion of Klomp & Haan (2013) that stricter supervision reduces bank risk taking among banks in emerging countries. Saadaoui (2015) studies the cyclical behavior of MENA bank capital buffers and confirms the existence of a positive relationship between the business cycle and bank capital ratios indicating that the implementation of Basel counter-cyclical capital regulations is not necessary in the case of MENA banks.

Very few studies assess the influence of institutional factors on bank sector characteristics in the MENA region countries. Naceur & Omran (2011) study the determinants of the performance of MENA banks. They conclude that institutional variables including corruption and rule of law play an important role in bank performance. Maraghni & Bouheni (2015) show that institutional conditions are significant in determining the insolvency risk of Tunisian banks. Sassi (2013) points out the benefits of operating in a good institutional environment in terms of bank efficiency. Likewise, Nabi & Suliman (2008) and Gazdar & Cherif (2015) show that banking development contributes much more to economic growth in countries exhibiting higher levels of institutional development.

Belkhir et al. (2016) study the role of institutions in determining corporate structure decisions of firms in the MENA region. Using data on 444 firms operating in the MENA region, they conclude that countries endowed with a better institutional framework (regulatory effectiveness and rule of law) rely relatively more on debt than equity. Corruption, on the contrary, has the opposite effect. Arwatani et al (2016) perform a study on corporate debt maturity of MENA banks. Their findings confirm a positive relationship between the use of long term debt and the quality of institutions in each country. Since Gropp & Heider (2010) have shown that the drivers of banks' capital structure are close to those of non-financial firms, institutional factors could also play an important role in explaining bank capital ratios in the MENA region. Hence, bank regulations might be playing a less important role in determining bank capital ratios (Flannery 1994; Diamond & Rajan 2000; Allen et al. 2011) and institutional factors need to be taken into consideration.

3. Data, Variables, and Econometric Specification

In this section, before presenting our econometric approach and our variables, we describe our sample.

3.1 Sample

Our sample period ranges from 2004 to 2014. We eliminate outliers at 1% and 99% of all variables. After filtering, the sample includes 1499 bank-year observations, representing 183 banks (145 conventional and 38 Islamic banks) from 14 MENA region countries. These countries are Algeria, Bahrain, Egypt, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Tunisia, United Arab Emirates and Yemen. The sample includes state-owned and privately-owned banks and both listed and unlisted banks. Yearly bank level data are extracted from the BankScope - Bureau van Dijk database. We use consolidated data but also unconsolidated data when the former is not

available. Macroeconomic data are gathered from the Global Financial Development Database and the World Development Indicators of the World Bank. As for institutional data, we use different databases; the World Governance Indicators, the Doing Business Creditor Rights (World Bank), the Transparency International Organization and the World Heritage Foundation.

3.2 Definition of variables

3.2.1 Dependent variables

The MENA region has underdeveloped capital markets in some countries, and even no capital markets in others. For this reason, we focus in this study on book capital ratios. Our main dependent variable is the total regulatory capital ratio (TCR). This total capital adequacy ratio as per Basel rules is the ratio of Tier 1 and Tier 2 capital (hybrid capital, subordinated debt, reserves for loan losses, and valuation reserves) to total risk weighted assets (and off-balance sheet weighted risks). For further insights, we consider the equity to total assets ratio (EQTA) which is non-risk weighted and therefore reflects internal bank capital holding decisions. We also consider the Tier 1 ratio, which is considered as the core capital.

3.2.2 Independent variables

Main variables

First, we use an indicator of political stability (PS) from the World Governance Indicators of the World Bank. Political instability is one of the major obstacles facing countries in the MENA region. This indicator is scaled from -2.5 to +2.5 with higher values indicating higher political stability. On the one hand, we expect banks in politically unstable regions to boost their capital ratios as a mean of gaining trust of investors which might be hesitant in such politically unstable environments. Hence, attracting depositors might be a major explanation of high capital holdings by banks in fragile political environments. On the other hand, banks operating in fragile environments might be reluctant to raise equity and might prefer to maintain low capital ratios to prevent any potential loss of control should the country's political situation get worse. Hence, the impact of political stability on capital holdings is uncertain.

We use two indicators of creditors' rights form the Doing Business database, namely resolving insolvency and getting credit. The Resolving Insolvency (RI) variable includes the time, costs, outcome of insolvency, liquidation, and reorganization proceedings. The Getting Credit (GC) indicator measures the ease of obtaining credit as well as the ease of accessing credit information (existence of credit bureaus and credit registries for example). These two indicators are scaled from 0 to 100 with higher scores indicating higher levels of creditors' rights. Results concerning the effect of creditors' rights on capital ratios have been conflicting. As mentioned previously, high creditor rights might lead managers to limit debt usage to avoid losing control should financial distress prevail. At the same time, higher creditors' rights imply less information asymmetry, easier access to external funding an thus credit available at more favorable conditions. Hence, firms in this case might prefer holding more debt than equity.

We also use two of the Economic Freedom (EF) sub-indexes from the World Heritage Foundation, namely investment freedom and financial freedom. We build an indicator that we call Financial Openness (FO) to focus closer on the potential role that can be attributed to trade and financial freedom. Trade freedom measures the ease of importing and exporting goods and services. Financial freedom captures the independence of the financial sector from government control as well as bank efficiency. This indicator is also scaled from 0 (lowest freedom) to 100 (highest freedom). We expect a positive effect of EF and FO indexes on bank capital ratios. Broader exposure to international markets as well as more freedom and thus higher competition pushes

banks to hold higher capital levels possibly to signal stronger financial conditions aiming at attracting more funds.

We include the corruption perception index (CPI) which represents the perceived level of corruption in a country's public sector. CPI is calculated on a scale of 0 (severely corrupt) to 100 (no corruption). Corruption is a widespread phenomenon which is more prevalent in underdeveloped and developing economies. It's effect on economic growth has been widely studied. Many studies confirm the detrimental role of corruption on growth. Other studies, however, such as Shleifer & Vishny (1993); Mo (2001); Wei (2000), find that it can have a beneficial effect on economic growth by promoting a better allocation of resources. One way is committing bribery to evade inefficient rules for example (Huntington 1970; Acemoglu & Verdier 2000). In the MENA region, a very large part of bank capital is held by government officials and political parties. Hence, corruption might lead banks to abide less by capital regulations as political power and bribery can be used to circumvent such regulations.

Control variables

We include several bank specific variables widely used in most capital determinants studies. We introduce the logarithm of bank total assets (SIZE) as a proxy of bank size. SIZE is expected to negatively influence capital levels as larger banks tend to hold less capital consistent with the "too big to fail hypothesis" (Brewer et al. 2008; Kleff & Weber 2008; Fonseca & González 2010). Such banks might also benefit from economies of scale, broader asset diversification, and an ease of obtaining equity on a short notice which makes them subject to lower financial distress costs (Rime 2001; Berger et al. 2008).

To account for risk, we include the ratio of nonperforming loans to total loans (NPL). This risk measure has been widely used in the banking capital literature (Aggarwal & Jacques 2001; Fiordelisi et al. 2011; Shim 2013; Distinguin et al. 2013). The effect of risk on capital holdings is mixed. Many studies find a positive effect of risk on capital since regulatory capital serves as a cushion for possible losses and banks tend to hold more capital when they have a higher risk exposure (Shrieves & Dahl 1992; Nier & Baumann 2006; Gropp & Heider 2010; Berger et al. 2008). However, from another perspective, the relationship between capital and risk might be negative since banks who have a high appetite for risk might also tend to hold lower capital ratios (Fonseca & González 2010).

The Return on Assets (ROA) is used to proxy bank profitability. It is calculated as the ratio of a bank's net income to its average assets. Profitability is expected to boost capital ratios as more profitable banks tend to have a larger capital to assets ratio by injecting their retained earnings into capital consistent with the pecking order theory (Gropp and Heider 2010, Brewer et al 2008). This view is especially expected to hold in a region with underdeveloped financial markets such as the MENA region.

To account for a country's regulatory framework, we include an indicator of regulatory capital stringency (REG). This indicator is manually calculated based on the Barth et al World Bank Regulation and Supervisory Database[5] (Barth et al. 2004, Barth et al 2008, and Barth et al. 2013). It consists of a score from 0 to 3 with one point given to every risk type covered by the country's regulatory jurisdiction (credit risk, market risk, and operational risk). The higher the indicator, the

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[5] We use the three versions available of this database (2003, 2007, and 2012). We consider the variables constant between the 3 versions. In other words, years 2004 to 2006 take the values of the 2003 survey, years 2008 to 2011 take the values of the 2007 survey, and years 2013 and 2014 takes the values of the 2012 most recent survey.

stricter the capital regulations are. The sign of this variable is expected to be positive since banks will be more constrained to hold higher capital ratios in countries where regulations on capital are tighter and cover more aspects of banking risk.

We follow (González & González 2008) in using bank concentration (CONC) as a determinant of capital levels. This variable is calculated based on the sum of the assets of the three largest banks to the aggregate assets of the entire banking sector in a country. In countries with high bank concentration, banks with higher market power tend to hold more capital to preserve their charter value. At the same time, a higher franchise value might be considered as an extra source of income, which reduces the need to hold higher capital levels to hedge against unexpected losses (Fonseca & Gonzales 2010).

We consider GDP Growth (GDP) to examine the possible impact of the business cycle on capital ratios. Many studies document a negative relationship between regulatory capital ratios and the business cycle (Ayuso et al. 2004; Shim 2013). As per these authors, banks tend to decrease (increase) their capital holding during economic upturns (downturns). At the same time, banks might prefer to increase capital ratios during economic booms to benefit from potential investment opportunities (Berger 1995).

Finally, we include three dummy variables to capture whether a bank is conventional or Islamic, Government owned or privately owned, and listed or unlisted. We aim to test how a bank's internal and external capital ratios can be influenced by those different characteristics.

3.3 Econometric specification

We adopt the following econometric model:

$$CR_{ijt}= \beta_0+ \sum_{k=1}^{6} \beta 1 \; INST \; jt + \sum_{k=1}^{3} \beta 2 \; BANK \; ijt + \sum_{k=1}^{3} \beta 3 \; OTHER \; jt \sum_{k=1}^{3} \beta 4 SPECS \; ijt \; +c_j+ c_t + \varepsilon_{ijt} \tag{1}$$

where CR_{ijt} stands for the capital ratio which represents either the total capital adequacy ratio (TCR), the equity to total assets ratio (EQTA), or the TIER1 ratio of bank i in country j at time t. $INST_{jt}$ is a set of variables accounting for country institutional framework. $BANK_{ijt}$ represents a vector of variables used to control for bank specific characteristics. $OTHER_{ijt}$ is a vector of variables containing country level variables, other than institutional ones. $SPECS_{ijt}$ includes a set of dummy variables specifying whether a bank is conventional or Islamic, Government owned or privately owned, and listed or unlisted. C_j and c_t control for country and time specific effects respectively to account for country level unobserved heterogeneity or some other global trend in banking behavior.

To deal with possible endogeneity issues with capital ratios, we use the first lag of all bank level independent variables. Thus, size, return on assets, and risk measures are included in the regression at their lagged values.

As for the econometric specification we employ to estimate our model, we consider the following: The fixed effects within estimator resolves the issue of correlation between the unobserved individual random effects and the explanatory variables. However, by subtracting individuals means from variables, all time-invariant variables are dropped. To deal with this issue, Hausman Taylor (1981) proposed an instrumental variable estimator approach by which some of the regressors are allowed to correlate with the individual effects. This alternative to the "nothing" or "everything" assumptions of the between and within estimators is dubbed the Hausman Taylor Estimator (HT). We adopt the HT methodology in this paper for several reasons. First, our main variables; institutional variables are almost time-invariant, hence using fixed effects is inappropriate. Second,

HT deals with possible endogeneity induced by individual bank specific effects. HT models use the means of strictly exogenous dependent variables as instruments for time invariant dependent variables which are correlated with individual bank specific effects. Third, the fixed effects estimator doesn't account for within country variations, HT estimator allows us to control for cross country variations while at the same time allowing for the incorporation of time-invariant variables. Fourth, HT methodology doesn't require using any external instruments to the model.

We use the Hausman test to verify that using the HT model is the most appropriate in the case of our data. The Hausman test fails to reject the null that the HT estimators are equivalent to the fixed effects estimators. Fixed effects estimators are thus consistent but less efficient, suggesting the use of HT as consistent and more efficient estimators.

4. Results

4.1 Descriptive statistics

Table (1) presents the descriptive statistics of the variables used in this study. Mean TCR, EQTA, and TIER1 are respectively at 18.4%, 13.8%, and 18%. EQTA exhibits large cross-country variations, ranging between 3% and 77%. The highest average profitability in the region (ROA) is recorded in Algeria with 2.8% while the remaining countries range around 1%. On average, Bahrain and Egypt have the largest banks in our sample. Banking concentration averages at 69% for the whole sample with the most concentrated banking sectors being in Qatar and Bahrain.

Table (2) shows the distribution of banks in our sample between Islamic and conventional, listed and unlisted, and governmentally owned banks and privately-owned banks. Five countries in our sample do not have Islamic banks, while Algeria and Yemen do not have any listed banks, compared to Kuwait where all banks are listed. Egypt, Lebanon and UAE have the highest total number of banks.

Table (3) shows the evolution of TCR and EQTA averages by country and through time. It also shows high heterogeneity between countries. Table (4) presents the distribution of our institutional variables by country.

Institutional quality also varies greatly between countries in our sample. On a scale of -2.5 to +2.5, PS ranges between -2.5 and 1.39 and averages as low as -0.44. The mean for the region is at -0.44 which shows the high political instability in the region taken as a whole. FO and EF indicators both average at 64/100 approximately. Corruption levels have high disparity between countries, attaining as low as 15/100 to as high as 77/100 with a total sample average of 45/100.

Table (5) displays the correlation matrix between all variables employed. No major correlation issues exist between our variables except for correlation coefficients between institutional variables. Due to high correlations between these variables, we include one institutional variable at a time when running our regressions.

4.2 Regressions results

4.2.1 Main regression results

Table 6 reports the benchmark regression. Each institutional variable is separately introduced in the regressions due to high correlation among these variables. Panel A (columns 1 to 6) report the results for TCR, Panel B (columns 7 to 12) represent results for EQTA while Panel C reports results of TIER1. All institutional variables reported are significant in explaining total capital ratio (TCR). TCR is positively affected by political stability. Banks in politically stable countries tend to hold higher risk weighted capital ratios. Consistent with (González & González 2008) who show

that stronger creditor rights cause firms to be more leveraged, creditor rights have a negative significant effect on TCR. When a client defaults on his debt, the easier the bank can guarantee the retrieval of the amount of the loan, the less the bank will hold capital as a cushion to hedge against risky loan loss. Hence, banks hold less capital in countries where resolving insolvency is easier. Moreover, creditor rights also measure the ease of liquidation and reorganization proceedings. A bank might prefer holding lower capital ratios when stricter liquidation rules apply. La Porta et al., (1997) argue that firms are likely to be more leveraged in the presence of more favorable credit rights because in such a context credit would be available in more favorable conditions. Higher economic and financial freedom indexes are significantly associated with higher values of TCR. Broader exposure to international markets and thus higher competition to attract funds pushes banks to hold higher capital levels possibly to signal stronger financial conditions. CPI is positively significant at the 1% level. Less corruption leads banks to hold more capital a result which is consistent with the findings of Belkhir et al., (2016) regarding MENA non-financial firms whose leverage levels are found to be positively linked with corruption.

Among control variables, we find that risk, concentration, and size are highly significant. Large banks tend to hold less capital as which is consistent with the view that they can raise capital more quickly should an adverse situation occur. This is also in line with Berger et al. (2008), Fonseca and Gonzales (2010) and Demirgüç-Kunt, Kane, & Laeven, (2014) who posit that large banks benefit from government bailouts and other guarantees, have higher economies of scale and better risk management and therefore can hold less capital than smaller banks. Consistent with previous studies, riskier banks exhibit higher capital ratios in order to mitigate any potential unexpected loss induced by their higher risk exposure (Berger et al. 2008; Awdeh et al. 2011). The coefficient of CONC is significant and positive indicating that banks operating in a more concentrated environment tend to hold higher capital ratios. GDP however has an insignificant coefficient meaning that there seems to be no cyclical or counter cyclical behavior of capital ratios for banks in the MENA region. Capital adequacy ratio coverage (REG), which measures the stringency of capital regulations is also insignificant. Banks do not seem to be affected by the country's regulatory framework when choosing their capital holdings. This is in line with (Bougatef & Mgadmi 2016; Awdeh et al. 2011) who show that regulations do not affect capital holdings of banks operating in the MENA region.

Furthermore, the dummy variables we included provide evidence that government owned banks as well as listed banks hold higher TCR than privately owned banks and unlisted banks, respectively. Listed banks are indeed expected to hold more capital because of easier access but also because they are subject to market discipline and hence "pushed" by the market to hold higher TCR. Concerning, EQTA, it is also higher among government owned banks.

Unlike TCR, EQTA levels are not affected by institutional variables except for corruption which both has a positive and significant coefficient. Institutional factors hence appear to affect the regulatory constraint related to capital without playing a major role in determining the capital targets that banks set internally regardless of regulation. TIER1 capital also behaves as EQTA, whereby only corruption is significant in explaining this ratio.

4.2.2 Further investigations

For deeper insight, we split our sample into several sub samples. Tables 7 and 8 show results for subsamples of small and large banks. We consider a bank as large if its total assets are above one billion USD and/or if it belongs to the top 5 banks in each of our countries. Results show no different effects of institutional variables on large and small banks' regulatory capital ratios (TCR). However, proxies for creditor rights (GC and RI) positively impact TCR for small banks only. GC

and CPI positively impact EQTA, for large banks. Economic freedom is the only institutional variable that affects EQTA for small banks, higher EF leads to higher internally set capital.

Tables 9 and 10 display the results for governmentally owned banks versus their private counterparts. As one would expect, all the institutional variables affect TCR for privately owned banks while for governmentally owned banks except for the economic freedom indexes, institutional variables are not significant.

In tables 11 and 12, we split the sample by type of bank: conventional and Islamic. We find that conventional banks' TCR is influenced by almost all the institutional variables while Islamic banks' capital ratios are not affected by most of them. Our results hence suggest that improving the institutional environment in the MENA region is less likely to affect the solvency of Islamic banks possibly because using capital to hedge against risk is less relevant for such banks.

Finally, we test whether the behavior of listed and unlisted banks differ in this scope (tables 13 and 14). Our findings show that listed banks hold higher TCR in more corrupt economies while unlisted banks are not affected by corruption. Political stability is negatively significant in explaining TCR of unlisted banks while it is positively significant in the case of listed banks.

4.3 Robustness tests

To check for the robustness of our results, we conduct the following. We estimate our model using the random effects estimator, the results remain significant. We use another indicator for corruption: the control of corruption indicator which we obtain from the World Governance Indicators of the World Bank. Results remain unchanged. We also exclude the GCC countries, Malta and Israel from the regressions as these countries are endowed with better institutional foundations compared to others in the sample, results remained unaltered.

5. Summary and Concluding Remarks

This paper studies the influence of institutional factors on bank capital structure using panel data on 183 banks operating in the MENA region for the period 2004 to 2014. We therefore contribute to the increasing number of studies pioneered by Demirguc-Kunt and Maksimovic (1999) on the importance of accounting for country level institutional characteristics when studying different aspects of the financial sector.

For this purpose, we use two measures of bank capital structure; the regulatory capital ratio which accounts for the level of risk in banks' asset portfolios and a measure of leverage which is a non-risk weighted simple equity-to-asset ratio. The results of our panel data Hausman-Taylor estimations indicate that banks in countries with higher political stability, more pronounced economic and financial freedom, as well as lower levels of corruption hold more regulatory capital but creditor rights, on the contrary, have the opposite effect. Except for corruption, such results only hold for regulatory capital and not for leverage which doesn't seem to be affected by the institutional foundations of a given country. We also find that the effect of institutional factors on regulatory capital ratios is more pronounced for conventional, listed, and non-government owned banks as opposed to Islamic, non-listed and government owned banks.

Our results have several policy implications. Institutional quality must not be disregarded when studying capital structures of banks operating in the MENA region. The region suffers from several institutional deficiencies which seem to have implications on many sectors including the financial and banking sector. According to our results banks operating in countries with better institutional environments hold higher bank capital ratios and are therefore expected to be safer than banks in countries with less developed institutions. Hence, promoting institutional development can be

considered of vital importance not only to a country's economic and social development but also to ensure financial stability and resilience to local or global shocks. Finally, our results indicate that complying with more stringent international regulatory standards is possibly easier to achieve in countries with a better institutional environment. Also, in weaker institutional environments, regulators and supervisors need to monitor banks more closely and make more efforts in that direction.

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Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TCR	1256	18.37	7.04	5.77	49.66
EQTA	1594	13.72	9.53	2.81	76.94
TIER1	1236	18.01	10.53	4.75	75.41
ROA	1651	1.44	1.53	-5.76	8.99
NPL	1651	6.50	6.41	0.12	37.30
CONC	1651	68.93	16.85	40.22	99.87
GDP	1651	4.73	3.94	-15.09	26.17
SIZE	1651	15.08	1.51	9.31	18.68
REG	1651	1.31	1.37	0	3
ISLAMIC	1651	0.18	0.38	0	1
GOV	1651	0.19	0	0	1
LISTED	1651	0.65	0.48	0	1
CPI	1651	45.18	14.77	15.00	77.00
PS	1651	-0.44	1.02	-2.47	1.39
GC	1457	38.96	19.76	6.25	87.50
RI	1536	35.02	11.27	17.13	65.24
EF	1582	63.36	6.24	48.30	77.70
FO	1582	64.48673	10.29179	30.1	85.4

Notes: TCR is the total capital adequacy ratio calculated as the sum of Tier 1 and Tier 2 capital to total risk weighted assets. EQTA is the equity to total unweighted assets ratio. ROA is the return on average assets. NPL is a a measure of risk which is calculated as the ratio of non-performing loans to total loans. CONC is a measure of bank concentration, it is equal to the share of assets held by the three largest banks in a country. GDP measures the annual GDP Growth rate. REG is a score which measures the stringency of a country's capital regulatory jurisdiction. SIZE is calculated by the log of the total assets held by a bank. Islamic is a dummy variable which takes the value of 1 if the bank is Islamic and zero it is conventional. Gov is a dummy variable which takes the value of 1 if the government owns 75% or more of a banks's capital and zero otherwise. Listed is also another dummy variable which takes the value of 1 if the bank is listed on a stock exchange market and zero otherwise. PS is the measure of political stability. GC is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country.

Table 2: MENA Bank Distribution by Type

	Number of banks	Conventional	Islamic	Listed	Unlisted	Private	Governmental
ALGERIA	5	5	0	0	5	5	0
BAHRAIN	18	10	8	10	8	14	4
EGYPT	24	21	3	19	5	21	3
ISRAEL	7	7	0	6	1	7	0
JORDAN	15	12	3	12	3	14	1
KUWAIT	11	5	6	11	0	8	3
LEBANON	29	29	0	5	24	26	3
MALTA	7	7	0	3	4	7	0
MOROCCO	9	9	0	6	3	9	0
OMAN	10	8	2	7	3	7	3
QATAR	9	6	3	6	3	7	2
TUNISIA	9	8	1	6	3	8	1
UNITED ARAB EMIRATES	24	15	9	18	6	15	9
YEMEN	6	3	3	0	6	4	2
Grand Total	**183**	**145**	**38**	**109**	**74**	**152**	**31**

Table 3: Average Values of Capital Ratios by Country over the Sample Period 2004-2014

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Algeria	TCR	21.1	16.8	17.1	19.7	18.6	20.0	18.4	20.0		49.0	36.0
	EQTA	14.7	13.9	16.5	17.1	15.7	23.6	23.6	23.8	23.5	21.9	20.9
Bahrain	TCR	23.0	23.2	21.7	25.2	23.0	21.7	25.2	22.5	22.1	23.1	23.8
	EQTA	24.6	21.3	19.5	27.9	23.5	21.6	21.8	23.5	23.2	26.0	29.6
Egypt	TCR	12.7	15.7	14.0	12.8	12.6	20.1	19.0	18.2	16.3	16.4	16.7
	EQTA	8.2	9.6	9.3	8.6	9.2	10.5	10.0	10.9	11.1	11.4	11.6
Israel	TCR	11.8	11.9	12.1	11.5	12.5	14.4	14.4	14.3	15.3	15.1	14.9
	EQTA	5.8	5.5	6.0	5.8	5.7	6.3	6.1	5.8	6.1	5.9	5.9
Jordan	TCR	17.5	18.1	20.4	18.9	20.3	19.1	19.6	18.0	20.4	19.8	20.1
	EQTA	14.1	14.8	15.9	15.8	14.8	13.5	15.1	14.7	14.7	14.2	14.0
Kuwait	TCR	16.5	19.3	18.7	18.9	17.1	16.1	20.4	19.7	19.7	22.1	19.1
	EQTA	14.8	18.2	21.4	24.4	23.9	15.1	16.3	18.3	22.0	15.3	20.4
Lebanon	TCR	22.2	24.6	24.9	22.9	22.1	16.6	15.1	12.1	13.3	14.4	15.1
	EQTA	7.0	7.8	8.4	10.4	10.0	11.5	10.9	10.7	10.8	10.7	10.6
Malta	TCR	16.1	16.7	14.2	14.2	23.4	19.6	19.4	20.7	13.2	17.9	14.0
	EQTA	18.5	18.3	16.3	16.7	16.2	18.4	17.4	19.1	19.3	17.0	10.5
Morocco	TCR	8.5	12.6	10.8	8.9	11.2	11.2	12.2	11.9	13.1	13.6	13.6
	EQTA	8.7	8.5	7.7	7.5	8.8	9.3	9.6	9.7	9.7	9.5	9.9
Oman	TCR	18.1	23.3	19.3	18.7	15.3	15.1	15.6	15.1	15.6	15.7	18.9
	EQTA	16.4	17.7	16.9	17.6	19.3	18.7	18.6	17.1	16.9	22.6	25.5
Qatar	TCR	28.2	21.8	18.0	20.0	18.4	18.1	20.9	21.2	17.6	17.0	17.0
	EQTA	18.1	19.7	17.2	19.5	19.0	20.7	19.1	22.8	16.5	20.6	17.6
Tunisia	TCR	24.0	27.2	24.9	28.6	28.7			26.5	22.2	31.5	
	EQTA	11.7	12.6	14.0	13.7	13.1	13.5	12.8	11.7	11.2	10.2	11.4
United Arab Emirates	TCR	22.5	27.1	19.7	18.1	16.4	21.2	21.7	22.2	22.1	20.5	18.9
	EQTA	21.7	21.5	19.2	15.4	14.8	15.9	15.9	16.9	19.4	17.9	18.5
Yemen	TCR	46.0	11.6	29.3	26.5	16.3	17.3	17.7	21.0	27.9	26.8	27.7
	EQTA	10.0	10.4	11.0	13.8	15.0	14.0	11.4	13.5	11.4	8.5	7.9

Notes: TCR is the total capital adequacy ratio calculated as the sum of Tier 1 and Tier 2 capital to total risk weighted assets. EQTA is the equity to total unweighted assets ratio.

Table 4: Average Values of Institutional Variables by Country Over the Sample Period 2004-2014

	PS	GC	RI	EF	FO	CPI
Algeria	-1.37	21.25	54.72	55.34	48.73	30.50
Bahrain	-0.36	38.39	42.91	74.94	77.94	53.08
Egypt	-0.80	37.50	20.92	54.89	49.36	31.50
Israel	-1.27	86.25	55.92	65.51	69.73	61.50
Jordan	-0.35	13.75	29.21	66.18	66.22	49.25
Kuwait	0.28	47.50	32.80	65.89	64.29	44.92
Lebanon	-1.29	37.50	32.28	59.20	66.38	28.67
Malta	1.27	18.75	42.16			58.73
Morocco	-0.37	34.38	34.42	59.38	52.40	34.42
Oman	0.78	40.00	37.88	66.42	63.16	53.17
Qatar	1.00	27.68	57.72	65.52	61.28	64.67
Tunisia	-0.08	37.50	55.89	59.82	44.27	43.67
United Arab Emirates	0.86	43.75	29.98	69.19	62.19	63.00
Yemen	-1.82	13.75	25.07	51.10	48.03	22.92

Notes: PS is the measure of political stability. GC is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country.

Table 5: Correlation Matrix

	ROA	NPL	CONC	GDP	REG	SIZE	PS	GC	RI	EF	FO	CPI
ROA	1.00											
NPL	-0.15	1.00										
CONC	-0.01	-0.05	1.00									
GDP	0.21	-0.03	0.05	1.00								
REG	-0.06	-0.14	0.00	-0.15	1.00							
SIZE	-0.01	-0.31	-0.18	-0.02	0.15	1.00						
PS	0.12	-0.26	0.10	-0.01	0.03	0.24	1.00					
GC	-0.10	-0.19	-0.27	-0.20	0.23	0.41	0.14	1.00				
RI	0.03	-0.23	0.30	0.08	0.09	-0.03	0.10	0.09	1.00			
EF	0.11	-0.23	0.07	0.15	0.07	0.02	0.43	0.17	0.30	1.00		
FO	0.01	-0.19	-0.04	0.10	0.01	-0.01	-0.00	0.25	0.14	0.81	1.00	
CPI	0.10	-0.31	0.07	0.04	0.14	0.22	0.80	0.30	0.35	0.73	0.45	1.00

Table 6: The Impact of Institutional Variables on Bank Capital - Main Regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Panel A: TCR						Panel B: EQTA					
ROA	-0.203	-0.0693	-0.109	-0.142	-0.140	-0.149	0.606***	0.554***	0.733***	0.678***	0.673***	0.612***
	(-1.50)	(-0.50)	(-0.78)	(-1.05)	(-1.06)	(-1.11)	(8.26)	(7.48)	(9.88)	(9.23)	(9.16)	(8.34)
NPL	0.178***	0.141***	0.158***	0.152***	0.155***	0.183***	0.0323*	0.00928	0.0165	0.0247	0.0278	0.0321*
	(5.34)	(4.01)	(4.51)	(4.48)	(4.74)	(5.53)	(1.79)	(0.50)	(0.92)	(1.41)	(1.60)	(1.78)
CONC	0.0813***	0.141***	0.103***	0.0741**	0.0652**	0.0433	-0.0181	-0.0242	-0.0187	-0.0262	-0.0203	-0.0295
	(2.86)	(4.47)	(3.42)	(2.47)	(2.23)	(1.47)	(-0.99)	(-1.23)	(-1.02)	(-1.43)	(-1.11)	(-1.55)
GDP	-0.0466	-0.0538	-0.0401	-0.0482	-0.0519	-0.0554	-0.0307	-0.0192	0.0218	0.00721	0.00670	-0.0309
	(-1.21)	(-1.32)	(-0.97)	(-1.23)	(-1.36)	(-1.44)	(-1.23)	(-0.77)	(0.84)	(0.29)	(0.27)	(-1.24)
REG	-0.0786	-0.183	-0.299	0.0242	0.0700	-0.135	-0.0290	-0.0526	0.0184	0.000996	-0.0254	-0.0336
	(-0.44)	(-1.00)	(-1.51)	(0.13)	(0.40)	(-0.76)	(-0.26)	(-0.48)	(0.16)	(0.01)	(-0.23)	(-0.31)
SIZE	-5.057***	-4.635***	-4.159***	-4.931***	-4.603***	-5.288***	-5.987***	-7.073***	-6.216***	-5.884***	-5.856***	-6.158***
	(-10.13)	(-8.01)	(-7.70)	(-9.97)	(-9.64)	(-10.58)	(-18.31)	(-18.18)	(-18.19)	(-18.75)	(-18.68)	(-18.91)
Islamic	-1.797	-1.742	-1.582	-1.764	-1.589	-1.788	0.411	-0.0417	0.324	0.590	0.577	0.346
	(-0.94)	(-0.95)	(-0.90)	(-0.95)	(-0.90)	(-0.91)	(0.22)	(-0.02)	(0.17)	(0.34)	(0.33)	(0.18)
Gov	4.701**	4.505**	4.157**	4.620**	4.406**	4.936***	5.088***	5.693***	5.555***	5.538***	5.514***	5.317***
	(2.52)	(2.51)	(2.41)	(2.55)	(2.56)	(2.59)	(2.70)	(2.76)	(2.90)	(3.17)	(3.16)	(2.80)
Listed	5.380***	5.417***	5.047***	5.564***	5.055***	5.565***	1.636	2.463	1.805	2.165	2.012	1.899
	(2.93)	(3.05)	(2.96)	(3.06)	(2.93)	(2.97)	(0.96)	(1.31)	(1.04)	(1.33)	(1.24)	(1.10)
PS	1.037**						0.0531					
	(2.04)						(0.18)					
GC		-0.0837***							0.0159*			
		(-5.29)							(1.67)			
RI			-0.138**							0.000157		
			(-2.38)							(0.00)		
EF				0.303***							0.0667	
				(4.54)							(1.63)	
FO					0.362***							-0.0158
					(8.77)							(-0.69)
CPI						0.142***						0.0514**
						(4.01)						(2.17)
constant	84.67***	78.05***	72.27***	64.36***	57.10***	84.23***	101.1***	116.6***	103.8***	95.16***	99.19***	102.1***
	(10.59)	(8.70)	(8.36)	(7.69)	(7.20)	(10.82)	(18.48)	(18.47)	(18.16)	(17.24)	(18.67)	(19.08)
Observations	1191	1057	1109	1154	1154	1191	1499	1322	1398	1440	1440	1499
Groups	170	168	168	164	164	170	210	209	204	197	197	210
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table reports the main regression results of bank capital determinants and the effect of institutional variables using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). The independent variables are the following: ROA is the return on average assets. NPL is a a measure of risk which is calculated as the ratio of non-performing loans to total loans. CONC is a measure of bank concentration, it is equal to the share of assets held by the three largest banks in a country. GDP measures the annual GDP Growth rate. REG is a score which measures the stringency of a country's capital regulatory jurisdiction. SIZE is calculated by the log of the total assets held by a bank. Islamic is a dummy variable which takes the value of 1 if the bank is Islamic and zero it is conventional. Gov is a dummy variable which takes the value of 1 if the government owns 75% or more of a bank's capital and zero otherwise. Listed is also another dummy variable which takes the value of 1 if the bank is listed on a stock exchange market and zero otherwise. PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 6: The Impact of Institutional Variables on Bank Capital - Main Regression (Continued)

	(13)	(14)	(15)	(16)	(17)	(18)
			Panel C: TIER1			
ROA	0.00419	0.0835	0.0653	-0.00406	-0.00553	-0.0015
	-0.02	-0.38	-0.3	(-0.02)	(-0.03)	(-0.01)
NPL	0.224***	0.201***	0.191***	0.225***	0.227***	0.227***
	-3.75	-3.02	-2.95	-3.73	-3.79	-3.84
CONC	0.0202	0.0424	0.0334	0.0171	0.0151	-0.0223
	-0.45	-0.83	-0.7	-0.37	-0.33	(-0.48)
GDP	-0.0238	0.00057	0.00359	-0.0185	-0.0222	-0.0517
	(-0.37)	-0.01	-0.05	(-0.28)	(-0.34)	(-0.79)
REG	-0.332	-0.385	-0.433	-0.302	-0.315	-0.432
	(-1.14)	(-1.20)	(-1.31)	(-1.01)	(-1.07)	(-1.50)
SIZE	-7.387***	-7.714***	-7.516***	-7.515***	-7.467***	-8.063***
	(-8.56)	(-7.05)	(-7.40)	(-8.61)	(-8.62)	(-9.14)
Islamic	-0.369	-0.878	-0.802	-0.681	-0.595	-0.767
	(-0.12)	(-0.28)	(-0.26)	(-0.23)	(-0.20)	(-0.25)
Gov	7.910***	8.050**	8.083***	7.811***	7.858***	8.594***
	-2.64	-2.57	-2.61	-2.6	-2.62	-2.76
Listed	3.222	3.348	3.298	3.36	3.186	3.793
	-1.13	-1.1	-1.1	-1.15	-1.09	-1.27
PS	0.0157					
	-0.02					
GC		-0.0303				
		(-1.09)				
RI			-0.0632			
			(-0.58)			
EF				0.0361		
				-0.3		
FO					0.022	
					-0.31	
CPI						0.155***
						-2.7
constant	122.5***	127.6***	125.3***	122.1***	122.6***	130.5***
	-8.83	-7.42	-7.69	-7.99	-8.5	-9.38
Observations	914	814	848	897	897	914
Groups	146	144	144	142	142	146
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: The Impact of Institutional Variables on Bank Capital - Large Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			Panel A: TCR						Panel B: EQTA			
PS	1.022						0.228					
	-1.33						-0.69					
GC		-0.0424*						0.0255**				
		(-1.74)						-2.41				
RI			-0.0361						-0.0215			
			(-0.39)						(-0.53)			
EF				0.258**						0.0161		
				-2.34						-0.32		
FO					0.385***						0.0313	
					-6.5						-1.23	
CPI						0.130**						0.0725***
						-2.35						-2.8
Constant	71.72***	37.00**	23.58	44.99***	45.32***	71.92***	49.50***	63.11***	45.87***	49.32***	48.92***	51.19***
	-5.12	-2.32	-1.59	-3.04	-3.35	-5.41	-7.16	-7.21	-5.97	-6.66	-7.05	-7.72
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	429	362	383	409	409	429	484	406	436	464	464	484
Nbr. of groups	48	48	48	46	46	48	50	50	50	48	48	50

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of large banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 8: The Impact of Institutional Variables on Bank Capital - Small Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			Panel A: TCR						Panel B: EQTA			
PS	1.096						-0.122					
	-1.53						(-0.29)					
GC		-0.106***						0.00685				
		(-5.05)						-0.52				
RI			-0.210***						-0.0116			
			(-2.80)						(-0.26)			
EF				0.352***						0.112**		
				-4.1						-2.03		
FO					0.335***						-0.0482	
					-5.77						(-1.50)	
CPI						0.148***						0.0297
						-3.13						-0.9
Constant	97.02***	101.1***	104.0***	79.02***	71.61***	96.20***	126.0***	141.0***	129.2***	117.2***	125.0***	127.9***
	-8.76	-8.24	-8.57	-7.03	-6.44	-8.92	-17.17	-17.34	-17.4	-16.21	-17.69	-17.74
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	762	695	726	745	745	762	1015	916	962	976	976	1015
Nbr. of groups	122	120	120	118	118	122	160	159	154	149	149	160

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of small banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 9: The Impact of Institutional Variables on Bank Capital - Government Owned Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			Panel A: TCR						Panel B: EQTA			
PS	-1.733						0.161					
	(-1.41)						-0.19					
GC		0.00323						-0.0082				
		-0.08						(-0.33)				
RI			0.276						0.0808			
			-1.41						-0.72			
EF				0.330**						0.0436		
				-2.14						-0.41		
FO					0.227**						0.0501	
					-2.17						-0.77	
CPI						0.148*						0.0745
						-1.93						-1.38
Constant	54.09***	67.74***	35.84**	51.22***	58.83***	77.58***	134.4***	149.8***	147.2***	133.8***	133.8***	136.1***
	-3.34	-3.36	-2.02	-2.95	-3.61	-4.55	-10.29	-9.56	-10.06	-10.41	-11.08	-11.14
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	264	230	240	264	264	264	283	243	255	279	279	283
Nbr. of groups	34	34	34	34	34	34	38	38	37	37	37	38

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of government-owned banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 10: The impact of institutional variables on bank capital - Non-government owned Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			Panel A: TCR						Panel B: EQTA			
PS	1.659***						0.108					
	-2.95						-0.33					
GC		-0.103***						0.0184*				
		(-6.00)						-1.75				
RI			-0.153**						-0.00859			
			(-2.47)						(-0.24)			
EF				0.269***						0.0779*		
				-3.53						-1.7		
FO					0.385***						-0.0312	
					-8.46						(-1.27)	
CPI						0.124***						0.043
						-3.04						-1.59
Constant	86.65***	76.02***	77.50***	65.63***	55.45***	83.85***	89.40***	105.3***	90.59***	80.97***	86.03***	90.55***
	-9.56	-7.58	-7.92	-6.73	-6.04	-9.38	-14.92	-15.31	-14.72	-13.27	-14.67	-15.31
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	927	827	869	890	890	927	1216	1079	1143	1161	1161	1216
Nbr. of groups	136	134	134	130	130	136	172	171	167	160	160	172

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of non-government-owned banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 11: The Impact of Institutional Variables on Bank Capital - Islamic Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			Panel A: TCR						Panel B: EQTA			
PS	2.832*						1.47					
	-1.65						-1.16					
GC		0.123**						0.03				
		-2.38						-0.66				
RI			-0.0284						0.0514			
			(-0.17)						-0.35			
EF				0.193						0.305**		
				-1.34						-2.17		
FO					0.449***						0.0634	
					-3						-0.56	
CPI						0.0546						0.302***
						-0.57						-3.15
Constant	76.97***	70.12***	65.96***	67.77***	55.73***	75.62***	143.8***	168.6***	143.6***	120.5***	131.8***	142.7***
	-3.92	-3.54	-3.11	-3.37	-2.79	-3.79	-8.53	-9.33	-8.73	-7.1	-7.98	-8.73
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	172	162	164	172	172	172	257	234	244	254	254	257
Nbr. of groups	32	32	32	32	32	32	42	42	41	41	41	42

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of Islamic banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 12: The Impact of Institutional Variables on Bank Capital - Conventional Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Panel A: TCR						Panel B: EQTA					
PS	0.52						-0.394					
	-0.97						(-1.46)					
GC		-0.0914***						0.00164				
		(-5.46)						-0.19				
RI			-0.148**						-0.0267			
			(-2.36)						(-0.90)			
EF				0.335***						0.0307		
				-4.5						-0.82		
FO					0.398***						-0.0309	
					-9.22						(-1.59)	
CPI						0.121***						0.00602
						-3.15						-0.28
Constant	75.67***	70.34***	63.51***	55.68***	47.57***	76.72***	80.86***	98.75***	81.34***	77.54***	81.27***	83.28***
	-8.79	-7.26	-6.91	-6.11	-5.65	-9.19	-15.4	-16.27	-15.14	-14.86	-16.35	-16.27
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	1003	881	931	968	968	1003	1208	1060	1123	1156	1156	1208
Nbr. of groups	134	133	133	129	129	134	160	160	156	150	150	160

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of conventional banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 13: The Impact of Institutional Variables on Bank Capital - Unlisted Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Panel A: TCR						Panel B: EQTA					
PS	-3.690***						-0.162					
	(-3.60)						(-0.34)					
GC		-0.161***						0.00954				
		(-4.48)						-0.66				
RI			0.0603						0.155**			
			-0.41						-2.43			
EF				0.296*						-0.0589		
				-1.7						(-0.76)		
FO					0.272***						-0.0587	
					-3.25						(-1.46)	
CPI						0.118						0.0493
						-1.38						-1.16
Constant	91.18***	86.85***	75.38***	83.65***	71.49***	107.3***	108.5***	99.00***	105.0***	108.4***	111.7***	109.0***
	-5.66	-4.82	-4.11	-4.59	-4.08	-6.49	-11.18	-9.47	-10.08	-11	-11.25	-11.35
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	384	339	356	367	367	384	522	464	491	499	499	522
Nbr. of groups	67	65	65	63	63	67	90	89	88	84	84	90

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of unlisted banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 14: The Impact of Institutional Variables on Bank Capital – Listed Banks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			Panel A: TCR						Panel B: EQTA			
PS	2.364***						0.323					
	-4.03						-0.8					
GC		-0.0276						0.0158				
		(-1.58)						-1.3				
RI			-0.149**						-0.0702*			
			(-2.55)						(-1.74)			
EF				0.219***						0.0826*		
				-3.19						-1.71		
FO					0.314***						0.0177	
					-6.39						-0.6	
CPI						0.100***						0.0843***
						-2.61						-2.88
Constant	84.77***	88.88***	78.27***	66.48***	62.97***	80.37***	93.38***	118.8***	95.09***	85.94***	88.76***	95.60***
	-9.46	-8.2	-8.19	-7.08	-6.97	-9.02	-14.08	-14.99	-13.98	-12.81	-13.75	-14.63
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nbr. of obs.	807	718	753	787	787	807	977	858	907	941	941	977
Nbr. of groups	103	103	103	101	101	103	120	120	116	113	113	120

Notes: This table reports the regression results of bank capital determinants and the effect of institutional variables for a sample of listed banks using the Hausman-Taylor model. The dependent variables are TCR; the total capital ratio (column 1 to 6) and EQTA; equity to total assets ratio (column 7 to 12). PS is the measure of political stability. GCREDIT is the first component of creditor's rights and measures the ease of getting credit. RI is the other component of the creditor's rights index and it accounts for the ease of resolving insolvency, as well as liquidation. EF is the economic freedom index. FO is a measure of financial openness and includes financial and trade freedom. CPI is a corruption perception index accounting for the level of perceived corruption in each country. Controls include all the control variables used in the main regression. Reported beneath each coefficient estimate is the t-statistic adjusted for clustering at the bank level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.