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Do political connections matter for bank efficiency in times of crisis?

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Abstract

Do political connections affect bank efficiency during crises? This study addresses this question by adopting a two-stage approach that performs a quantile regression analysis on a unique dataset of listed banks in a region that has witnessed both financial and political crises, namely the Middle East and North Africa. Our results show that political connections are a driving force behind bank inefficiency. We find that the least efficient banks have the most significant association with political connections, thus supporting bailout theory. We also find that political connections influenced the efficiency of banks during the financial crisis, but not during the regional political crisis. Our results provide new evidence on the applicability of established political connection theories during political turmoil.

KEYWORDS

banks, crisis, data envelopment analysis, efficiency, political connections, quantile regression

1 | INTRODUCTION

Academic research has recognized the advantages of political connections for several years. When politicians take seats on company boards, investors are assured of the firms' better profitability prospects and easier access to finance (Braggion & Moore, 2013; Ding et al., 2014). This is supported by empirical evidence, such as Faccio et al. (2006), who concluded that the probability of firms being bailed out is higher when the companies are connected to the government. Bertrand et al. (2018) found that connected firms benefit from preferential access to government resources, such as subsidies or tax exemptions. However, prior research has also shown that connected firms can be less profitable and experience a drop in productivity when a connected CEO comes to power. This was also confirmed by Bussolo et al. (2022), who found that politically connected firms borrow more because of easier access to credit, but these firms tend to be less productive than their unconnected counterparts.

Furthermore, the literature finds that politically connected firms are less conservative (Ball et al., 2003), commit more fraud (Yu & Yu, 2011), and demonstrate lower accounting quality (Chaney et al., 2011). Political

connections were blamed for the Asian financial crisis because of the explicit and implicit guarantees provided by the governments during times when assets were overvalued (Krugman, 1996). Although the relationship between efficiency and political connections is well-known, there is not much research concerning the contrivances through which political connections lead to practical economic results, especially in times of economic or political turmoil. In addition, even though it is established that connections of a political nature allow businesses to access vital resources from the government, the visibility and type of connections are crucial for determining the potential effect on the efficiency of the business.

In developing countries, governments are usually in control over a broad array of regulatory and financial resources (McMillan, 1997). This is why banks in such countries take advantage of political connections, not just to avert various forms of government control but also to gain access to the available government resources.[1] How far the firms can take advantage of their political connections is likely to be linked to the strength of the legal framework in the country as well as the effectiveness of the regulatory bodies in enforcing the law in that country. For instance, studies show that firms operating in countries where legal protection is weak (Acemoglu & Johnson, 2005) or enforcement is lacking (Bartels & Brady, 2003) tend to have numerous motivations to have political connections.[2] As a result, these firms see the benefit of having politically connected individuals on their boards to gain a competitive advantage linked to a good relationship with the government. It is worth noting that political connections are not unique to developing countries. For example, the global financial crisis illustrated instances where governments in developed economies made financial support available to banks deemed too big to fail (Ballester et al., 2019).

Our study focuses on banks because of their crucial importance to the economy. In addition, banks play an essential role in providing funding resources for businesses in the Middle East and North Africa (MENA) region because their stock markets are still developing. Therefore, banks not only play a significant role by being a major source of finance, but they also help to stabilize the financial systems in these countries. The weak legal enforcement systems allow the political regimes in selected MENA countries to adopt discretionary practices in allocating economic resources. The banks in this region are highly connected politically and have ties with the state.

The MENA region has witnessed significant political turmoil[3] since 2011. This provides a unique opportunity to test the applicability of both the resource dependency and bailout theories during a period of political crisis. In addition, the distinct political, institutional, and cultural setting of the region motivates a study of the impact on the efficiency of listed banks. Due to data restrictions, there is little empirical evidence of the political connections of banks in the MENA region. We use a distinct database that comprises different facets of political connections (direct, indirect, and extended)[4] of both the board of directors and the management of MENA-listed banks. The dataset also contains comprehensive bank ownership (e.g., foreign, state, corporate and public), bank type (e.g., Islamic banks[5] and conventional banks), and domicile (e.g., GCC[6] and non-GCC; political turmoil countries and non-political turmoil countries) information. The dataset contains 851 bank-year observations over the period from 2007 to 2013. The unique institutional and political environment of the region, where banks are considered political institutions, motivated the following two research questions: Do political connections affect bank efficiency in the MENA region? Does this impact persist during periods of crises? Therefore, this study aims to link political connections with efficiency measures to capture the interaction with political connections during the study period.

The global financial crisis has given rise to the largest wave of banking crises since the Great Depression (Laeven & Valencia, 2013). Our study complements the literature by testing not only the impact of political connections on MENA banks' efficiency but also extending the analysis to assess whether this impact persists during crises. In addition, due to the unique institutional and environmental characteristics of the region, we incorporate an 'extended'[7] type of political connection that is less visible and goes beyond the direct and indirect connections that the research frequently covers. Moreover, we examine the impact of each type of political connection separately, facilitating further insight into the applicability of the relevant theories.

By using the bias-corrected data envelopment analysis (DEA) estimator of Kneip et al. (2008) in combination with the quantile regression of Koenker (2001), we find that political connections are a relevant driving force behind bank inefficiency in the MENA region. The results also indicate that the effect of political connections on bank efficiency in the MENA region varies depending on the conditional distribution of the inefficiency. In particular, the effect is stronger and more significant for those banks with poorer efficiency. The results reveal that the least efficient banks have the most significant association with political connections, thus providing strong support for the bailout argument. In addition, the results show that political connections are a powerful instrument that influenced bank efficiency

during the global financial crisis. However, during the 2011 political turmoil, the efficiency of politically connected banks was not significantly different from that of their non-connected peers. This, therefore, suggests a possible loss of power or advantages from their political connections due to regime change. We also show that government banks consistently perform poorly and that they only survive due to strong government support, even though some banks can be mislabelled as inefficient if the definition of bank output do not accurately reflect on the activities these banks (Tortosa-Ausina, 2002b; Werner, 2005) It is particularly important to consider that some specific types of banks may offer different products and services that are tailored to the needs of their customers. If these specific product mixes are not accurately measured, some banks could be wrongly labelled as inefficient (Tortosa-Ausina, 2002a; Werner, 2005). This is very much the case for the local banking (e.g., the Spanish savings banks or *cajas*; see Bernad et al., 2008), whose commitment with the local SMEs is strong and critical to ensuring access to credit (Mkhaiber & Werner, 2021).

This study makes several contributions: First, it extends the extant literature on political connections (e.g., Boubakri et al., 2012; Faccio, 2006; Fisman, 2001; Goldman et al., 2009) to banks in the MENA region. This is of particular importance in a region that is characterized by a high concentration of politically connected banks and different types of political regimes with varying levels of law enforcement. Our study confirms the findings of Hymer (1976), La Porta et al. (2002), Lensink et al. (2008), and Mian (2006) that the institutional environment and the laws and politics of a country largely influence banks' efficiency. It also fuels the ongoing debate on political connections in banks (Blau et al., 2013; Dinç, 2005).

Second, our study extends the research on the resource-dependence role of board members and key executives, especially in regulated industries such as banks. Pfeffer (1972) affirms that board members and key executives enable firms to minimize the uncertainty of, and their dependence on, the external environment and gain vital resources through managing their relative power in the market (Hillman et al., 2009; Ulrich & Barney, 1984). Pfeffer (1972) also concludes that the board's composition is not a random choice but is rather a rational organizational response to the conditions in the external environment (Hillman et al., 2009).

Third, this study complements the broader literature on religiously adherent banking[8] performance as the MENA region has a high concentration of religiously adherent banks (e.g., Abedifar et al., 2013; Beck et al., 2013; Johnes et al., 2014; Mollah & Zaman, 2015). Religiously adherent banks apply a constrained model of finance to the operation of banks that restricts their investment activities. These constraints are expected to reduce their efficiency. The results for the effect of bank type confirm the results of Johnes et al. (2014), who found that religiously adherent banks are typically equal to their conventional peers in terms of overall efficiency. However, our quantile regression results provide further insights into their findings on net efficiency.

Finally, this study contributes to the methodology in the bank efficiency literature. By using a two-stage testing procedure, we have been able to overcome some of the problems highlighted in previous research, such as Simar and Wilson (2007), Simar and Wilson, (2011) and Bădin et al. (2014). We follow the suggestions of Badunenko et al. (2012), who propose a comparison of the performance of the nonparametric kernel stochastic frontier (KSF) analysis estimator (Fan et al., 1996) with that of the nonparametric bias-corrected DEA estimator of Kneip et al. (2008) (KSW). These two estimators of technical efficiency provide remarkable advantages over previously used methods in a cross-sectional case.

The implications of our article are relevant to the global banking industry and international investors, as well as to bank efficiency researchers. The uniquely designed 'extended' type of political connections applies to other regions and should be carefully considered by future research and market participants. In addition, we recommend considering our robust combination of estimators for use in future efficiency research.

The rest of the article is organized as follows: Section 2 presents the related literature and hypotheses development; Section 3 presents the econometric method; we describe the data in Section 4; Section 5 reports the empirical results; and the concluding remarks are contained in Section 6.

2 | INSTITUTIONAL BACKGROUND

When it comes to developing countries, where formal institutions are not consistently enforced, managers tend to resort to a broad network of government-business connections to access essential resources and services. In addition, firms that have a close connection with the government obtain a better ability to fight the subjective implementation of business regulations and weak property rights (Li et al., 2008). Furthermore, firms in developing countries must deal with the added costs of policymaking uncertainty and weak institutional characteristics (Williamson, 1996). These conditions encourage businesses to establish informal institutions, including business relations with the government, to boost the role

of formal institutions and have an impact on the direction of policies so that they favour them. Bushman et al. (2004) point out that for politically connected firms, the extent to which the market is informed about the connections and their implications for firm value is one of the critical dimensions of their corporate transparency. Faccio (2006) concludes that the advantages resulting from political connections are particularly apparent in countries where legal systems tend to be weak.

The unique political culture of the MENA region leads to the legitimacy of the politicians in the region taking advantage of the positive externalities connected to associations with those in political power. This situation maintained economic growth and promoted the escalation of economic opportunities, which facilitated unity among regime insiders (Menaldo, 2012) and nurtured legitimacy and trust among the public in a manner that guaranteed rapid access to bailouts from the government and market resources during times of financial distress.

With regard to socio-economic development and economic structures, the countries in the MENA region are a diversified group. For instance, the oil-rich GCC countries have comparatively low levels of economic diversity and high per-capita income, with a lot of financial resources for providing social services. In the other countries, which have most of the region's population, the per capita income ranges from the lower-middle to the upper-middle, and the economies are more diversified (Karshenas et al., 2014). In many MENA countries, the primary feature of the financial infrastructure is a dearth of diversification across resource production and the establishment of governance and legal mechanisms for businesses. For this reason, credit expansions from banks and economic contractions are found on the supply side, as opposed to serving as a contrivance for contracting and stimulating demand.

For MENA countries, the prominence of banks in allocating capital is a consequence of the lack of equity financing and weak internal stock markets. In some of the states in the region, the sovereign attempts to control the allocation of capital and the establishment of new ventures through the banking industry. In certain states, the current political and economic challenges are not favourable for an equity-financing framework because it may not be practical to put contracts and monitoring in place. Also, there is usually weak enforcement of legal structures, which makes investors less willing to use equity capital to finance new ventures. Consequently, MENA banks make available a channel through which to pour funds into the economy—in a manner that is contagious. In this regard, it is also important to note that the essential role played by banks—in terms of creating credit and the money supply (Werner, 2014)—cannot be easily substituted by corporate finance (see also Werner, 1997, 2012).

3 | RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

Previous literature on why banks have increasingly politically connected boards offers two alternative theories, namely resource dependency and moral hazard. From a resource dependency perspective, politically connected banks try to extract the benefits that these connections generate, such as lighter taxation, higher access to loans at a lower cost, preferential treatment in competition for government contracts, and relaxed regulatory oversight (Disli et al., 2013; Pfeffer & Salancik, 1978). Thus, connected banks can extract resources at a lower cost through their political connections. This will, in turn, help them to be more efficient than their non-connected peers. On the other hand, from a moral hazard perspective, politically connected banks have fewer incentives to be efficient because they expect their political connections to be used to collect deposits under two different deposit insurance regimes (blanket guarantee and limited guarantee) or for them to be bailed out due to their political connections in the event of difficulty (e.g., Nys et al., 2015). These banks might attempt to maximize the value extracted from the financial safety net and shift risk onto the financial system through their connections. Politicians might use connected banks, especially state-owned banks, to further their own political goals. These banks tend to exploit moral hazards, which might eventually cause them to be inefficient.

Despite the growing interest in the role of political connections on a firm's performance, the banking literature does not thoroughly address its impact (Blau et al., 2013; Dinç, 2005; Faccio, 2006) on banks' efficiency. Among the studies, Kane (1996), Brown and Dinc (2005) and Kroszner and Strahan (1999) postulate that political processes drive the design and implementation of banking regulations and, as such, are expected to impact banks' efficiency. Further, Carretta et al. (2012) suggest that politicians serving on the board of directors negatively influence banking activities. Fernández-Méndez et al. (2018) consider the effect of domestic political connections on foreign direct investment and provide evidence that domestic political knowledge also shapes foreign expansion. Ferris et al. (2016) provide evidence that bidders with political connections are more likely to acquire targets and avoid regulatory delay or denial. Shin and Ji-Young Ahn (2021) use Data Envelopment Analysis (DEA) and find that CEOs with political connections are positively related to organization efficiency. Tee and Kasipillai (2021) reveal that the monitoring effectiveness of female directors is attenuated by political connections. Wahyono (2022) investigates the value of both political connections and Sharia compliance during COVID-19, showing that the positive reactions of the market to the

COVID-19 pandemic were more pronounced in the case of Sharia-compliant firms (both those with and without political connections).

The number of politically connected firms is sizable in emerging markets. Faccio et al. (2006) report that politically connected firms represent 8% of the world market capitalization. However, this ratio is much higher in emerging markets; for example, Russian politically connected firms represent 86.75% of the country's market capitalization. Similarly, MENA politically connected banks represent 54% of the total number of listed banks in the region.

Although political connections constitute a common phenomenon in many countries, their impact is more profound in countries with weaker institutions, less stringent regulations, and poor legal protection, such as in emerging markets (Faccio, 2006; Li et al., 2008) like the MENA region.

Regardless of a government's structure, political connections play a vital role in the MENA region, and their country governance indicators and the political and business infrastructure vary widely, offering a natural experiment for our analysis.[9] The socio-political setting and the ownership structure of the banks in the region allow politicians to be involved in the banks' management and board of directors.

While the banking literature covering the MENA region has broadly captured performance, efficiency, and risk-taking (e.g., Ben Khediri & Ben-Khedhiri, 2009; Ben Naceur & Goaied, 2008; Farazi et al., 2011; Isik et al., 2004; Kobeissi & Sun, 2010; Olson & Zoubi, 2011; Omran, 2007; Srairi, 2010, 2013; Sufian et al., 2008; Turk Ariss, 2008), to the best of our knowledge, it has not attempted to examine the impact of political connections on bank efficiency in the region.

3.1 | Political connections and bank efficiency

The argument on the relationship between political connections and bank efficiency is that connected banks make use of their political ties to gain cheaper access to key resources. This access gives these banks a competitive advantage over their non-politically connected peers through higher efficiency (You & Du, 2012). The research shows that connections are a profitable tool for corporations generally and banks specifically, especially during times of financial crisis (Agrawal & Knoeber, 2001; Blau et al., 2013; Faccio et al., 2006). Political connections lead to higher corporate value and better performance for the stock prices of connected firms (e.g., Shleifer & Vishny, 1994). The other argument is that politically connected banks have the expectation of being bailed out by the government during periods of financial distress. These banks are, therefore, under relatively less pressure to be efficient in comparison to their non-connected counterparts (De Soto, 1990; Faccio et al., 2006; Shleifer & Vishny, 1994). Faccio (2006) demonstrated that politically connected firms are more likely to be bailed out than their non-connected peers during financial distress periods. Some studies also report that among bailed-out firms, those that are politically connected exhibit significantly worse financial performance than their non-connected peers at the time of, and following, the bailout (see Chen et al., 2018; De Soto, 1990; Faccio et al., 2006; Shleifer & Vishny, 1994). In the same vein, La Porta et al. (2002) also found that politicians use state-owned banks to further their own political goals, which in turn makes these banks inefficient. Based on the above discussion, we propose the following hypothesis:

> **Hypothesis H1.** There is an association between political connections and bank efficiency in the MENA region.

3.2 | Political connections and bank efficiency during crises periods

The 2008 global financial crisis significantly impacted both the banking system and the economy of many developed countries. This crisis also impacted the MENA region, but at a lower magnitude compared to developed countries (Moriyama, 2010). This lower impact might be due to the low level of integration between MENA banks and the global banking market. It might also be a result of the high concentration of religiously adherent banks that prohibit many of the conventionally structured financial products that led to the crisis. The effect of the global slowdown of 2008 on the economic activity of the MENA region had different implications for different countries. Broadly, the financial impact was distinct between oil-exporting and non-oil-exporting countries. The impact of the global financial crisis was profoundly negative on the non-oil-exporting MENA countries, especially in the tourism sector and foreign remittance (Drine, 2009; Habibi, 2009). However, despite the devastating shortage of capital in some of the Gulf regional banking sectors, the strong economic growth in oil-producing GCC countries before the crisis afforded them a cushion against the subsequent contraction during the global financial crisis.[10]

In addition to the global financial crisis, the MENA region witnessed regional political turmoil from 2011 to 2013, shifting the MENA countries from stability to chaos (Fisman, 2001 and Sun et al., 2010). This political turmoil generated political instability and regime changes in

countries such as Egypt, Tunisia, and Syria. It also brought the economic, financial, and social issues of the MENA countries to the forefront. The deeply rooted national challenges that promulgated the political struggle catalysed synergies across the region towards a new era. From the perspective of the financial sector, domestic banking balance sheets deteriorated, thus reflecting the adverse impact of the downturn on the quality of loan portfolios and the regional stock market.

The impact of political connections on bank efficiency may vary in two ways depending on the type of political change. First, firms with political connections suffer when their patrons experience a setback (Leuz & Oberholzer-Gee, 2006; Siegel, 2007). Fisman (2001) stresses that regime changes are particularly damaging to politically connected firms because of the loss of access (Getz & Oetzel, 2009). Second, if the regime survives a popular revolt or if the regime change is superficial (top of the regime only), then the political connection, which is deeply rooted in the institutions of the country, will continue to have an impact. Thus, we propose the following hypothesis about political connections and bank efficiency during political crises:

> **Hypothesis H2.** The political connections of MENA banks had an impact on their efficiency during the political turmoil of 2011–2013.

The crisis literature is partly related to the context on which we focus. In this regard, it is worth mentioning the work of Laeven and Valencia, who have made several contributions in the field. For instance, their results have informed on the differences between the various crises in terms of the scale and scope of interventions (Laeven & Valencia, 2010); they have also found that blanket guarantees do help to reduce liquidity pressures on banks, but only partially since they do not prevent withdrawals from nonresidents (Laeven & Valencia, 2012). Finally, they have also assessed the importance of supply-side credit market frictions by studying the impact of bank recapitalization on firm growth, finding that the growth of financially dependent firms is disproportionately positively affected by bank recapitalization (Laeven & Valencia, 2013).

4 | METHOD

4.1 | Measuring bank efficiency in the MENA region

The literature[11] on the measurement of bank efficiency and productivity faces several questions. First, what do banks produce? Second, what technique should be used to measure efficiency? Several possibilities confront the research that has traditionally classified this technique into parametric and nonparametric methods (although the possibilities today are broader). Among the latter, the most popular choice has been stochastic frontier analysis (SFA) (Aigner et al., 1977; Meeusen & Van den Broeck, 1977), whereas among the former, data envelopment analysis (DEA) (Charnes et al., 1978) has dominated.

The issue of comparing efficiency measurement techniques in banking received a great deal of attention from the end of the 1980s to the beginning of the 2000s (see, e.g., Ferrier & Lovell, 1990; Bauer et al., 1998; Weill, 2004; Drake & Weyman-Jones, 1996; Resti, 1997; Eisenbeis et al., 1999; Cummins & Zi, 1998).[12] However, Berger and Humphrey (1997) suggest that when inquiring whether a 'best' frontier method exists, 'the lack of agreement among researchers regarding a preferred frontier model at present boils down to a difference of opinion regarding the lesser of evils'. On the one hand, the parametric approaches become 'sinners' when imposing a particular functional form that presupposes the shape of the frontier—hence, if the functional form is misspecified, then the measured efficiency can become mixed up with the specification errors. On the other hand, nonparametric methods impose less structure on the frontier but become 'sinners' because of a lack of allowance for random error (such as those that occur due to luck or measurement errors).

Today, although SFA and DEA are still the most popular choices, several other proposals have arisen in both the parametric and nonparametric fields. In one of the most recent comparisons, Badunenko et al. (2012) assessed two flexible estimators of technical efficiency in a cross-sectional setting, namely the bias-corrected DEA estimator of Kneip et al. (2008) (KSW) and the nonparametric kernel SFA estimator of Fan et al. (1996) (FLW), to uncover which measure performs best in a given situation. This study uses the DEA estimator because the FLW estimator is more problematic in the case of multi-input, multi-output firms, which is our case.

4.2 | Bias-corrected estimation in the nonparametric frontier model

One of the problems of the DEA estimator (as well as its nonconvex variant, free disposal hull) is that it produces a biased estimate of the frontier. To overcome this problem, Kneip et al. (2008) propose using bootstrap procedures. Specifically, the bootstraps enable the estimation of the bias and confidence intervals for the individual (bank) estimated efficiencies because the known distribution of the difference between the estimated and the bootstrapped scores mimics the unknown distribution of

the differences between the true and estimated efficiencies.

Under the DEA, there is no specification of the production process. Rather, we observe that, for a given technology T, a given set of p inputs, x enters the production process to produce q outputs, y, such that $T = \{(x, y)|x$ can produce $y\}$. This process enables the measurement of technical efficiency θ_i for a given input–output combination (x_i, y_i) to obtain a DEA estimator by linear programming techniques such that (Charnes et al., 1978; Farrell, 1957):

$$F_j^0(x_i y_i) = sup\{\theta_i | (x_i y_i/\theta_i) \in \mathrm{T}\}, \tag{1}$$

for the output-oriented case (the exposition for the input-oriented case is equivalent).

Kneip et al. (2008), who consider that both T and $F_j^0(x_i y_i)$ are in practice unknown, derive the asymptotic distribution of the DEA estimator by proposing a bootstrap method to perform the statistical inference for the estimator in Equation (1). Specifically, for a consistent bootstrap estimator $\left(\widehat{F^{0*}}\right)$, if the estimator $\left(\widehat{F^0}\right)$ comes from a known data-generating process $\widehat{P}(x,y)$ and the true score F_j^0 comes from an unknown data-generating process (P), then the following holds:

$$\left(\widehat{F}^{0*}/\widehat{F}^0 - 1\right) | \widehat{P}(x,y) \underset{\sim}{}^{\text{approximately}} \left(\widehat{F^0}/F^0 - 1\right) | P. \tag{2}$$

Further, Kneip et al. (2008) provide a consistent bootstrap (subsample) procedure that is implemented in two steps that ultimately yields the bias-corrected DEA efficiency score:

$$\widehat{\widehat{F^0}} = \widehat{F^0} - \widehat{bias}_B, \tag{3}$$

where the bias is adjusted by using an m subsample:

$$\widehat{\text{bias}}_B = \frac{m^{2/(p+q+1)}}{n}\left[\frac{1}{B}\sum_{b=1}^{B}\widehat{F}^{0*}/\widehat{F}^0\right] \tag{4}$$

where B is the number of repetitions.

4.3 | Analysing the determinants of bank efficiency using regression quantiles

As indicated in the introduction, a two-stage method where the efficiency scores obtained in the first stage enter the analysis as the dependent variables in the second stage can be problematic. Specifically, the combination of nonparametric methods, such as DEA, in the first stage with parametric methods in the second stage, such as an OLS or a Tobit regression, is troublesome because, by construction, the efficiency scores obtained from using linear programming techniques in the first stage are dependent in the statistical sense. Simar and Wilson (2007) and Balaguer-Coll et al. (2007) raised this point almost simultaneously and, later on, so did Banker and Natarajan (2008), McDonald (2009), Ramalho et al. (2010), Daraio and Simar (2005), and Daraio and Simar, (2006). However, despite the severity of the issue, several studies have continued combining OLS or Tobit methods when searching for the determinants of efficiency with scores obtained using DEA.

Under these specific circumstances, we use a quantile regression (Koenker, 2001, 2005) because it offers a better alternative for a variety of reasons. First, this regression is more robust to the violation of some assumptions (for instance, departures from normality) than either the OLS or Tobit models, and social phenomena and data are often non-normal or heteroskedastic.[13]

Second, compared to the conditional-mean framework of the OLS, the quantile regression offers a more comprehensive view because it factors into the analysis the effect of the explanatory variables on the location, scale, and shape of the distribution of the response variable—in our case efficiency scores. Ultimately, this advantage means that instead of focusing the analysis on the average effect of political connections on bank efficiency, this regression can ascertain whether the impact is the same over the entire conditional distribution of efficiency or, in contrast, if the impact varies for the upper and lower tails of the efficiency distribution (i.e., for the least inefficient and most inefficient banks).

Actually, the analysis does not focus on the upper or lower tails of the conditional distribution of efficiency, but it can consider any particular quantile of the distribution. Therefore, the regression quantiles specify the τth quantile of the conditional distribution of the KSW efficiency scores, which we call θ_i but actually corresponds to $\widehat{\widehat{F^0}}$, which is the variable containing the performance of the bank given $\boldsymbol{z}$ as a linear function of the covariates. Following Koenker and Bassett (1978), we carry out the estimation by minimizing the following equation:

$$\min_{\beta \epsilon R^k} \sum_{i \epsilon \left\{ i:\widehat{\theta_i} \geq z'\beta \right\}} \tau \left| \widehat{\theta_i} - z'\beta \right| + \sum_{i \epsilon \left\{ i:\widehat{\theta_i} < z'\beta \right\}} (1-\tau) \left| \widehat{\theta_i} - z'\beta \right|, \tag{5}$$

where k is the number of explanatory variables, τ represents the vector containing each quantile (and the vector of coefficients to be estimated), and $\boldsymbol{\beta}$ differs depending on the particular quantile.

Some other relatively recent contributions to this particular issue are from Bădin et al. (2010, 2012), Bădin and Daraio (2011) and, more particularly, Bădin et al. (2014). In this last study, the authors offer a state-of-the-art review of the literature evaluating how external or environmental factors which are not under the control of the decision-making units (in our case, banking firms) affect their performance. From an operations research point of view, this is the most updated survey of this literature, although some contributions have been published even more recently if we do not constrain the analysis to the specific case of the impact of environmental factors on efficiency and productivity. See, for instance, the study by Simar and Wilson (2015), in which the authors provide a 'guided tour' on the development of various nonparametric approaches to measure efficiency.

However, none of the studies considered in the above and preceding paragraphs has considered the *joint* use of a relatively new and scarcely utilized estimator of efficiency such as the one considered here and described in Section 3.2 (Kneip et al., 2008), together with quantile regression in the second stage of the analysis, as suggested in this section.[14]

5 | DATA AND VARIABLES

5.1 | Data sources

The constituents of our dataset were drawn from the complete list of all the banks (158 banks) domiciled in MENA countries. Data availability resulted in the sample of banks being drawn from Bahrain, Egypt, Jordon, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, and the United Arab Emirates (see Table 1). This list of banks was drawn from the BankFocus, Bureau Van Dijk, and Financial Times Banker databases, as well as Thomson Reuters Zawya (now Refinitiv). 128 of the banks on this list have at least 2 years of complete financial records for the 2007 to 2013 period for our unbalanced panel. Overall, we analysed 851 bank-year observations. While some banks were not listed and had no financial reports from which to draw information, our sample encompasses over 80% of banks in the region.

To identify political connections, we followed Faccio (2006), Boubakri et al. (2008), Bertrand et al. (2007) and Ferguson and Voth (2008). We extended the definition of political connectedness to individuals of political standing who are directly or indirectly connected to banks. As such, directly politically connected individuals included (i) members of royal families (having the HH/Prince title on their names); (ii) former/current (prime) ministers and members of the country's cabinet in general; (iii) ambassadors; and (iv) members of the parliament of the country. For indirectly connected individuals, we included (i) members of the Shura Council; (ii) relatives of individuals falling under all aforementioned categories; and (iii) described by Forbes or Fortune as influential individuals in the country and/or having connections with a head of state, government minister or member of parliament. Due to the unique environment in the MENA region, we extended the definition of political connections to include individuals who hold/held substantial positions in politically sensitive governmental organizations or ministries, such as the former/current

TABLE 1 Sample distribution.

Country	# of banks	Total bank-year observations	# of politically connected obs.	# of non-politically connected obs.
Bahrain	11	70	61	9
Egypt	13	85	29	56
Jordan	15	98	66	32
Kuwait	9	62	54	8
Lebanon	6	42	34	8
Morocco	6	42	12	30
Oman	7	45	44	1
Qatar	8	54	54	0
Saudi Arabia	11	77	37	40
Syria	12	69	34	35
Tunisia	11	75	19	56
UAE	19	132	122	10
Total	128	851	566	285

secretary of the (prime) minister and head of the King's office. This extended category was tested separately in our analysis to provide more insight into the unique institutional environment in the MENA region.

The political connections of the board were hand-collected by obtaining the biographies of the board members from several sources, including annual reports, corporate websites, Bureau Van Dijk 'ORBIS', and Thomson Reuters 'Zawya'. Consolidated bank balance sheet and income statement data were obtained from the Bureau Van Dijk 'Bankscope' and Financial Times 'Banker' databases. Country-level variables and macroeconomic data were collected from the World Bank database. We trimmed the data at the 1st and 99th percentiles within each country and each test variable to eliminate outliers or extreme values.

The political connections of the boards of directors of banks in the MENA region are well documented. Indeed, our hand-collected dataset of political connections for the set of banks domiciled in the MENA region indicates that 70 of the 128 banks have had political connections at some stage in our sample (we found that 16 also suffered disconnections at some point during the 2007 to 2013 period). Our number of political connections compares well to a total of 450 firms in the dataset constructed by Faccio et al. (2006) out of the thousands of candidates available from all the listed firms for 35 countries worldwide. Political connections in the MENA region often arise institutionally from the specific governance structure of these countries, which are commonly unitary constitutional monarchies (e.g., Bahrain, Jordon, UAE, Oman, and Kuwait), unitary republics (e.g., Syria) or early-stage development parliamentary republics (e.g., Tunisia and Egypt). State-owned banks inevitably play an important role in capital allocation under such governance types, and indeed a substantial proportion of our sample (15%) is institutions with government ownership above 50%.

5.2 | Definition of inputs and outputs

Apart from the chosen methodology, the other source of disagreement when evaluating bank efficiency is the choice of inputs and outputs. According to the seminal contributions by Fixler and Zieschang (1992) and Berger and Humphrey (1992), bank activities can be modelled by considering either the production or the intermediation approach. Because of data constraints, most studies have considered the latter since the former usually requires not only data on the volume of loans and deposits but actual information on the number. However, even after choosing the intermediation approach, there are further problems relating to the definition of bank outputs.

In this sense, as indicated by Tortosa-Ausina (2002), the researcher is confronted with three approaches to defining banks' output, that is, the asset, the value-added, and the user cost. The choice, again, is generally constrained by the available statistical information, which is scarce in most cases. This has implied that most studies have ultimately disregarded the user cost approach and, in most cases, the value-added approach, for similar reasons. For instance, statistical agencies (which usually have information that cannot be accessed by other researchers or focus on aggregate data for the entire sector) consider the user cost approach, according to which banks bundle the payment for services with the interest rates charged on loans and paid for deposits instead of charging explicit fees for many of the services they provide.[15]

Since our database has the same limitations as other typical databases (such as BankFocus) in terms of the level of detail of the available data, we considered the asset approach. This also facilitates comparisons with previous literature. However, we also considered some contributions that highlight the importance of non-traditional output and non-traditional activities and, following Tortosa-Ausina (2003), we could refer to our model as an extended variant of the asset approach (see also Lozano-Vivas & Pasiouras, 2010). A more recent contribution in this field is Humphrey (2020).

Under this theoretical framework, and in order to grant an additional degree of robustness to our results, we consider two alternative definitions of outputs. The restricted version, which we will refer to as 'output definition 1', would be in line with several contributions more closely related to the asset approach, and it would include three outputs, namely (i) loans (y_1); (ii) securities (y_2); and (iii) other earning assets (y_3). The extended version, which we will refer to as 'output definition 2', would extend the definition to include non-traditional output (y_4). With regard to the choice of inputs, under the intermediation approach, this issue is less prone to controversy, and the different contributions in the literature are more coincidental. In our case, we considered the following as relevant inputs: (i) labor (x_1); (ii) funding (x_2); and (iii) physical capital (x_3). The corresponding definitions are provided in Table 2.

5.3 | Control variables

Because the economic impact of political connections on bank efficiency could vary between countries in the region according to their economic and political stability, we differentiated between GCC and non-GCC countries[16]

TABLE 2 Definition of bank inputs and outputs.

Variable	Variable name	Definition	Output definition 1 (SP_1)	Output definition 2 (SP_2)
Inputs				
x_1	Labor	Total number of employees of the bank	X	X
x_2	Funding	Total Customer Deposits + Deposits from banks + Repos and Cash Collateral + Other deposits and short-term borrowings	X	X
x_3	Physical capital	Fixed assets (property, plant, equipment, computers, land, buildings, fixtures, fittings)	X	X
Outputs				
y_1	Loans	Net loans (gross loans—reserves for impaired loans (non-performing loans))	X	X
y_2	Securities	Total securities and investment	X	X
y_3	Other earning assets	Other earning assets than loans and securities[a]	X	X
y_4	Non-traditional output	Total non-interest operating income[b]	X	

[a]Reverse repos and cash collateral, trading securities and FV through income, derivatives, and securities available for sale, securities held to maturity, at-equity investments in associates, other securities, investments in property, e insurable assets, other assets.
[b]Includes net gains (losses) on trading and derivatives + net gains (losses) on other securities + net gains (losses) on assets and FV through income statement + net insurance income + net fees and commissions + other operating income.

and politically stable and relatively unstable countries. Heterogeneous bank efficiency across different ownership types has received a great deal of attention in the banking literature (e.g., Altunbas & Chakravarty, 1998; Bonin et al., 2005; Fukuyama et al., 1999; García-Cestona & Surroca, 2008; Kumbhakar & Sarkar, 2003). In particular, Claessens et al. (2001) indicate that the entry of foreign banks can make national banking markets more competitive and efficient. In addition, Goldberg et al. (2000) found that diversity in ownership contributes to greater stability in credit during a crisis. Ashcraft (2008), on the other hand, argues that banks affiliated with a bank holding company (BHC) are safer than standalone banks in times of crisis. In addition, regimes can use state-owned banks to support their agenda. As a result, these banks could become subject to the expropriation of their assets during political unrest to support the survival of the regime, and hence dedicate their lending and other banking activities to achieving political objectives. La Porta et al. (2002) found that politicians use state-owned banks to further their own political goals. These banks tend to exploit moral hazard, which eventually causes inefficiency. Micco et al. (2007) argue that politics drives the difference in performance between state-owned and non-state-owned banks. Mian (2006) supports a comparable hypothesis that state-owned banks perform uniformly poorly and that they only survive due to strong government support. Braham et al. (2020) found no evidence that politically connected banks take more risks than their non-politically connected counterparts, which is inconsistent with the moral hazard hypothesis, although a nonlinear analysis revealed an indirect effect of political connection. However, Sapienza (2004) asserts that electoral results affect state-owned Italian banks due to party affiliations. Likewise, Khwaja and Mian (2005) demonstrated that state-owned banks tend to favour firms with politically connected directors by lending them more and allowing for higher default rates. Dinç (2005) and Micco et al. (2007) also found that during election years, state-owned banks in emerging markets significantly increase lending, which leads to a drop in their profitability and efficiency.

Following the aforementioned discussion, we incorporated in our analysis a set of control variables associated with bank efficiency. More specifically, we used an indicator variable signalling that the bank's headquarters are located in GCC countries, and zero otherwise. Additionally, we used a dummy variable to capture religiously adherent banks (i.e., Islamic banks), due to their difference from their conventional counterparts. We further incorporate in the model the percentage of shares owned by the government or governmental institutions. We conclude our model though adding two additional binary variables respectively signalling that the bank is a domestically owned subsidiary and that the bank is affiliated with a bank holding company.

In addition to these controls, we consider that the literature on the determinants of bank efficiency is relatively dense and includes many other relevant contributions, such as Girardone et al. (2004), Sufian (2009) or Tecles and Tabak (2010), to name a few. However, although there is no formal agreement as to what exactly determines bank efficiency, we consider it important to include those controls on which there is a certain consensus that might impact bank performance.

Therefore, in order to take this relevant literature into account, we have included two sets of controls, in which the second one would include not only the dummies referred to in the paragraphs above and which are more related to the aims of our study, but also: (i) total assets (in logs); (ii) margin (defined as interest margin as the share of total assets); (iii) branches (in logs); (iv) retail (customer loans and customer deposits as shares of total assets); (v) non-performing loans (as a share of total loans); (vi) performance (net income as a share of equity); and (vii) capital (equity as a share of total assets). The different ways in which these variables might impact bank efficiency have been discussed in, for instance, Girardone et al. (2004). We refer to the first one as the restricted model and the second one as the unrestricted model.

6 | RESULTS

6.1 | Bank efficiency in MENA countries: 2007–2013

Tables 3–5 show the results for bank efficiency. Each table is divided horizontally into three panels: Panel A is the full sample period, Panel B is the global crisis period, and Panel C is the political turmoil period. The tables are also divided vertically, with efficiencies corresponding to output definition 1 in the first three columns and those for output definition 2 in the last three (reporting mean, median, and standard deviation). Table 3 presents the variables for GCC and non-GCC countries, political turmoil and non-political turmoil, and religiously adherent banks and conventional banks. The results in this table show considerable differences between the banks based in GCC and non-GCC countries and between banks in countries that experienced political turmoil versus no turmoil. The differences found are quite robust to the output definition considered. For bank types (conventional versus religiously adherent banks), the differences are modest. Our results confirm previous studies (e.g., Johnes et al., 2014) that find that religiously adherent banks are typically on par with their conventional peers as far as gross efficiency is concerned.

Concerning ownership, Table 4 contains five different classifications (high and low state ownership, domestic, BHC, and foreign). The first two of these classifications are dummies that represent the percentage of shares held by the state (>25% and >50%). The other three variables are dummies that represent bank holding companies versus subsidiaries, which are then classified into local and foreign-owned categories. The classifications are domestically owned subsidiaries, BHC, and foreign-owned subsidiaries.[17] The results show that, on average, banks with higher percentages of state ownership are less efficient than those with lower state ownership. The results are consistent for the whole period (Panel A) and the sub-periods (Panels B and C), and are robust to the output specification considered. Therefore, our results confirm previous research that concluded that state ownership is frequently related to low levels of financial development (Barth et al., 1999), low levels of economic growth (La Porta et al., 2002), inefficiency (Shleifer & Vishny, 1994), and a higher probability of banking crises (Caprio & Peria, 2002).

The gap is considerably larger when evaluating efficiency; this is dependent on whether the subsidiaries are domestically owned or not. The non-domestically owned subsidiaries notably outperform their domestically owned counterparts. This gap is not only consistent over time but also widens during the political turmoil (2011–2013). The primary explanation could be that regimes use domestically owned banks in the MENA region for financial backing during political crises. Hence, political motives might have driven the banks' investment activities, such as the survival of the regimes against popular revolt, and subsequently, the banks underperformed. Our results confirm the argument that politicians might use state-owned banks to further their own political goals. These banks tend to exploit moral hazard, which can eventually cause them to become inefficient. In addition, our results show that non-BHCs outperform BHCs, which is consistent with the literature claiming that diversification is, on average, associated with lower production efficiency in BHCs (Elyasiani & Wang, 2012). The directors of BHCs are likely to demonstrate inferior efficiency as a result of being entrenched in pursuing costly empire-building strategies (Hughes et al., 2003).

Table 5 reports the descriptive statistics for the relationship between political connections and bank efficiency. The results indicate that politically connected banks underperformed compared to their non-politically connected counterparts. The results are consistent across proxies of the political connection variables, across periods, and across output specifications. These results provide further evidence for the prevalence of the bailout perspective in MENA-connected banks. This result is consistent with the findings of Hung et al. (2017) that politically connected banks in China have better access to lending to politically connected firms, which are high-yield assets and more likely to be bailed out when in distress. However, comparing Panels B

TABLE 3 Descriptive statistics for bank efficiency, environmental and institutional variables, KSW estimator.

Panel A: 2007–2013						
	Output definition 1			**Output definition 2**		
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
GCC	1.3469	1.2906	0.2515	1.3537	1.2982	0.2607
Non-GCC	1.3387	1.2869	0.2504	1.3600	1.3017	0.2710
Islamic	1.3421	1.2903	0.2462	1.3567	1.3022	0.2639
Conventional	1.3473	1.2844	0.2688	1.3564	1.2895	0.2717
Arab Spring	1.3206	1.2882	0.2193	1.3529	1.2992	0.2560
Non-Arab Spring	1.3500	1.2900	0.2594	1.3577	1.3018	0.2683
Total	1.3432	1.2896	0.2508	1.3566	1.3005	0.2653
Panel B: 2007–2009						
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
GCC	1.3374	1.3015	0.2200	1.3358	1.3029	0.2255
Non-GCC	1.3513	1.2980	0.2640	1.3868	1.3159	0.3116
Islamic	1.3428	1.3005	0.2466	1.3645	1.3131	0.2815
Conventional	1.3483	1.2954	0.2163	1.3362	1.2962	0.2079
Arab Spring	1.3323	1.2898	0.2445	1.3924	1.3095	0.3240
Non-Arab Spring	1.3474	1.3017	0.2403	1.3490	1.3090	0.2499
Total	1.3438	1.3000	0.2410	1.3593	1.3095	0.2694
Panel C: 2011–2013						
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
GCC	1.3236	1.2625	0.2288	1.3391	1.2792	0.2501
Non-GCC	1.3346	1.2810	0.2214	1.3473	1.2992	0.2222
Islamic	1.3303	1.2708	0.2234	1.3405	1.2839	0.2346
Conventional	1.3226	1.2755	0.2328	1.3508	1.3117	0.2491
Arab Spring	1.3293	1.3003	0.2037	1.3399	1.3051	0.1964
Non-Arab Spring	1.3283	1.2665	0.2314	1.3437	1.271	0.2486
Total	1.3286	1.2709	0.2252	1.3428	1.2860	0.2376

Note: This table reports descriptive statistics corresponding to the efficiency scores of the banks in our sample. The results have been presented following different classifications. The three panels in the table (panels A, B, and C) report the efficiency scores for three selected periods (full period, global crisis or political crisis period). Then each of these panels also reports results for banks with different characteristics depending on whether their home country is GCC or non-GCC (environmental variable, that is, beyond each bank-s control), whether they are religiously adhered banks or conventional banks (type of institution, or institutional, variable), or whether they are in a country which underwent a political turmoil or not (environmental variable). The efficiencies were estimated using the Kneip et al. (2008) estimator, which have been obtained adopting an output orientation and, therefore, their values are above 1. The higher the values in the table, the higher the inefficiency, and a value equal to 1 should be interpreted as efficient!

and C, we find that, on average, the performance gap shrinks due to an improvement in the efficiency of the politically connected banks during the political turmoil. This finding indicates that politically connected banks improve their efficiency during political turmoil. Our interpretation is that changes in political regimes during the turmoil led connected banks to realize that political connections might not work as they had previously. Therefore, these banks become more cautious, which is reflected in their improved efficiency. This finding provides empirical evidence that the bailout perspective might not prevail during political crises, particularly after regime changes.

6.2 | Analysing the determinants of bank inefficiency for MENA countries

The results in the previous subsection are based on a descriptive analysis of efficiencies. These results provide the reasoning behind the role of the institutional and

TABLE 4 Descriptive statistics for bank efficiency, ownership variables, KSW estimator.

Panel A: 2007–2013						
	Output definition 1			Output definition 2		
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
Shares held by government>25%	1.3555	1.2960	0.2629	1.3718	1.3095	0.2825
Shares held by government<25%	1.3365	1.2872	0.2441	1.3485	1.2988	0.2555
Shares held by government>50%	1.3499	1.2966	0.2586	1.3567	1.3022	0.2639
Shares held by government<50%	1.3418	1.2888	0.2494	1.3564	1.2895	0.2717
Domestically owned subsidiary	1.5612	1.4708	0.3278	1.5538	1.4615	0.3458
Not domestically owned subsidiary	1.3501	1.2954	0.2601	1.3571	1.2986	0.2673
Bank holding company	1.3473	1.2871	0.2671	1.3543	1.2950	0.2766
Not bank holding company	1.3834	1.3226	0.2384	1.3888	1.3206	0.2336
Foreign owned subsidiary	1.3648	1.3164	0.2213	1.3716	1.3184	0.2140
Not foreign owned subsidiary	1.3515	1.2902	0.2697	1.3582	1.2977	0.2791
Panel B: 2007–2009						
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
Shares held by government>25%	1.3425	1.3211	0.2361	1.3595	1.3204	0.2647
Shares held by government<25%	1.3446	1.2956	0.2444	1.3592	1.3046	0.2728
Shares held by government>50%	1.3337	1.3156	0.2315	1.3727	1.3257	0.2861
Shares held by government<50%	1.3464	1.2997	0.2437	1.3559	1.3046	0.2656
Domestically owned subsidiary	1.5802	1.4708	0.4066	1.5697	1.4599	0.4365
Not domestically owned subsidiary	1.3515	1.3055	0.2445	1.3572	1.3103	0.2571
Bank holding company	1.3394	1.3007	0.2415	1.3460	1.3072	0.2560
Not bank holding company	1.4486	1.4034	0.2821	1.4476	1.3897	0.2902
Foreign owned subsidiary	1.4239	1.3655	0.2537	1.4247	1.3614	0.2576
Not foreign owned subsidiary	1.3467	1.3028	0.2500	1.3528	1.3082	0.2643
Panel C: 2011–2013						
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
Shares held by government>25%	1.3489	1.2626	0.2446	1.3668	1.2824	0.2698
Shares held by government<25%	1.3185	1.2717	0.2149	1.3310	1.2915	0.2196
Shares held by government>50%	1.3443	1.2525	0.2278	1.3667	1.2797	0.2535
Shares held by government<50%	1.3260	1.2714	0.2251	1.3390	1.2867	0.2352
Domestically owned subsidiary	1.7576	1.7576	NA	1.7371	1.7371	NA
Not domestically owned subsidiary	1.3336	1.2712	0.2322	1.3426	1.2840	0.2434
Bank holding company	1.3262	1.2647	0.2383	1.3351	1.2585	0.2529
Not bank holding company	1.3792	1.3356	0.203	1.3882	1.3613	0.1916
Foreign owned subsidiary	1.3706	1.3329	0.1969	1.3803	1.3426	0.1862
Not foreign owned subsidiary	1.3282	1.2647	0.2395	1.3369	1.2628	0.2538

Note: This table reports descriptive statistics corresponding to the efficiency scores of the banks in our sample. The results have been presented following different classifications. The three panels in the table (panels A, B and C) report the efficiency scores for three selected periods (full period, global crisis or political crisis period). Then each of these panels also reports results for banks with different characteristics based on ownership, considering five different classifications: (i) banks whose shares held by the government>25% of their total shares versus banks whose shares held by the government<25% of their total shares; (ii) banks whose shares held by the government>25% of their total shares versus banks whose shares held by the government<25% of their total shares; (iii) banks which are domestically owned subsidiaries versus banks which are not domestically owned subsidiaries; (iv) banks which are bank holding companies versus banks which are not bank holding companies; (v) banks which are foreign-owned subsidiaries vs. banks which are not foreign owned subsidiaries. The efficiencies were estimated using the Kneip et al. (2008) estimator, which have been obtained adopting an output orientation and, therefore, their values are above 1. The higher the values in the table, the higher the inefficiency, and a value = 1 should be interpreted as efficient.!

TABLE 5 Descriptive statistics for bank efficiency, political connections' variables, KSW estimator.

Panel A: 2007–2013						
	Output definition 1			Output definition 2		
Classification	Mean	Median	Std.dev.	Mean	Median	Std.dev.
$PC_1 = 1$	1.1831	1.1189	0.2239	1.3717	1.3105	0.2811
$PC_1 = 0$	1.1557	1.0917	0.2037	1.3412	1.2939	0.2474
$PC_2 = 1$	1.2118	1.1581	0.2477	1.3841	1.3334	0.2820
$PC_2 = 0$	1.1626	1.0993	0.2079	1.3521	1.2956	0.2624
$PC_3 = 1$	1.1828	1.1210	0.2228	1.3705	1.3110	0.2805
$PC_3 = 0$	1.1555	1.0906	0.2046	1.3419	1.2924	0.2477
$PC_4 = 1$	1.1988	1.1222	0.2554	1.3968	1.3171	0.3142
$PC_4 = 0$	1.1575	1.0973	0.1942	1.3401	1.2950	0.2408
Panel B: 2007–2010						
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
$PC_1 = 1$	1.1985	1.1455	0.2321	1.3768	1.3257	0.2790
$PC_1 = 0$	1.1559	1.0789	0.2276	1.3397	1.2888	0.2579
$PC_2 = 1$	1.2371	1.1947	0.2714	1.4111	1.3518	0.2928
$PC_2 = 0$	1.1672	1.1005	0.2213	1.3496	1.2990	0.2643
$PC_3 = 1$	1.1976	1.1498	0.2300	1.3761	1.3300	0.2768
$PC_3 = 0$	1.1556	1.0725	0.2299	1.3392	1.2798	0.2598
$PC_4 = 1$	1.2161	1.1111	0.2964	1.3953	1.3300	0.3079
$PC_4 = 0$	1.1630	1.1045	0.1978	1.3450	1.2995	0.2519
Panel C: 2011–2013						
Classification	**Mean**	**Median**	**Std.dev.**	**Mean**	**Median**	**Std.dev.**
$PC_1 = 1$	1.1634	1.0833	0.2121	1.3526	1.2673	0.2707
$PC_1 = 0$	1.1554	1.1047	0.1722	1.3332	1.2958	0.2002
$PC_2 = 1$	1.1747	1.1210	0.2055	1.3534	1.2876	0.2329
$PC_2 = 0$	1.1572	1.0982	0.1911	1.3413	1.2855	0.2386
$PC_3 = 1$	1.1634	1.0833	0.2121	1.3526	1.2673	0.2707
$PC_3 = 0$	1.1554	1.1047	0.1722	1.3332	1.2958	0.2002
$PC_4 = 1$	1.1794	1.1301	0.1990	1.3669	1.3137	0.2528
$PC_4 = 0$	1.1507	1.0823	0.1898	1.3323	1.2845	0.2304

Note: This table reports descriptive statistics corresponding to the efficiency scores of the banks in our sample. The results have been presented following different classifications. The three panels in the table (panels A, B and C) report the efficiency scores for three selected periods (full period, global crisis or political crisis period). Then each of these panels also reports results for banks with different characteristics based on political connections, considering four different classifications: (i) banks whose board of directors (BoD) or chairman has either direct or indirect political connection (PC1 = 1) versus Banks whose board of directors (BoD) or chairman has no direct or indirect political connection (PC1 = 0); (ii) banks whose management or CEO/MD/GM/president has either direct or indirect political connection (PC2 = 1) versus banks whose management or CEO/MD/GM/president has no direct or indirect political connection (PC2 = 0); (iii) banks whose BoD, chairman, management or CEO/MD/GM/president has either direct or indirect political connection (PC3 = 1) versus banks whose BoD, chairman, management or CEO/MD/GM/president has either direct or indirect political connection (PC3 = 0); and (iv) banks whose BoD, chairman, management or CEO/MD/GM/president has extended political connection (PC4 = 1) versus banks whose BoD, chairman, management or CEO/MD/GM/president has no extended political connection (PC4 = 0). The efficiencies were estimated using the Kneip et al. (2008) estimator, which have been obtained adopting an output orientation and, therefore, their values are above 1. The higher the values in the table, the higher the inefficiency, and a value = 1 should be interpreted as efficient.

Abbreviations: PC_1, Dummy encoded with 1 if board of directors (BoD) or chairman has either direct or indirect political connection. PC_2, Dummy encoded with 1 if management or CEO/MD/GM/president has either direct or indirect political connection. PC_3, Dummy encoded with 1 if BoD or chairman or management or CEO/MD/GM/president has either direct or indirect political connection. PC_4, Dummy encoded with 1 if BoD or chairman or management or CEO/MD/GM/president has extended political connection.

TABLE 6 Board of directors (BoD) or chairman with either direct or indirect political connection (PC_1), KSW estimator, regression quantiles.

		Quantile (τ)				
Model	**Covariates**	**0.10 (least inefficient)**	**0.25**	**0.50**	**0.75**	**0.90 (most inefficient)**
Model 1[a]	PC_1 (s.e.)	0.015 (0.011)	0.014 (0.015)	0.027 (0.018)	0.055 (0.027)	0.107 (0.039)
Model 2[b]	PC_1 (s.e.)	0.017 (0.016)	0.002 (0.014)	0.011 (0.017)	0.051 (0.035)	0.122 (0.040)
Model 3[c]	PC_1 (s.e.)	0.013 (0.012)	0.001 (0.014)	0.030 (0.019)	0.080 (0.029)	0.094 (0.046)
Model 4[d]	PC_1 (s.e.)	0.012 (0.016)	−0.004 (0.015)	0.013 (0.022)	0.045 (0.030)	0.145 (0.063)

Note: This table reports regression results corresponding to Equation (5), where a quantile regression is considered to disentangle the effects of selected covariates on efficiency. The results in this table correspond to the model in which only the political connection variable corresponding to whether the board of directors or chairman has either direct or indirect political connection (PC_1) is included, along with the rest of control variables. The columns on the left correspond to the effects of these variables on the least inefficient banks, whereas the columns on the right correspond to the effects on the most inefficient banks. The central column corresponds to the median effect ($\tau = 0.50$). We report both regression coefficients as well as the standard errors. The $t-$statistics are obtained by dividing each coefficient by its corresponding standard error, which indicates that for the political connection variable (PC_1) the link is particularly strong, both in terms of magnitude of the coefficient and significance, for the upper quantiles (corresponding to the most inefficient banks).

[a]Output definition 1, restricted set of controls.

[b]Output definition 1, unrestricted set of controls.

[c]Output definition 2, restricted set of controls.

[d]Output definition 2, unrestricted set of controls.

ownership variables. However, we are unable to establish from the preceding analysis whether either of these sets of covariates exerts a *statistically significant* effect.

We provide results for the determinants of banks' *inefficiency* in Tables 6 through 9. Because there might be interactions among the four proxies that measure political connections, we run separate regressions for each proxy, and the results are split into the four tables. We include time effects in all of these regression models. Each of these tables reports regression results corresponding to four models, representing combinations of output specifications 1 and 2, and two sets of controls. The first set of controls is limited, and includes only those dummies in Tables 3 and 4, that is: (i) GCC; (ii) religiously adherent banks; (iii) political turmoil; (iv) government ownership; (v) domestically owned subsidiary; and (vi) Bank Holding Companies. We construct a more extended set of controls, which includes some variables generally considered by the literature, as described in Section 5.3. We refer to these sets of controls as restricted (limited number of controls) and unrestricted (extended controls). The combination of output definitions and sets of controls yields a total of four regression models, which we consider particularly useful as robustness tests.

As for the columns, the first one reports the effect of the covariates for the least inefficient (most efficient) banks, and the last columns reflect the impact on the most inefficient banks. The standard errors are reported in parentheses. The results for all the political connection proxies, and for all models considered, show consistency in terms of the magnitude of the coefficient and level of significance. We find that the magnitude of the effect of political connections on inefficiency is larger for the highest quantiles (most inefficient banks), which corroborates that politically connected banks are particularly inefficient.

In the case of the highest quantile ($\tau = 0.90$), the effect exists for all four political connections' proxies, ($PC1$, $PC2$, $PC3$, and $PC4$ in the last row of Tables 6–9, respectively) of direct, indirect, extended, and total political connections, respectively, and the results are relatively robust to the model considered. In particular, the coefficients for $PC2$ and $PC4$ are relatively higher than those for $PC1$ and $PC3$ in most models. The only exception is Model 4, for which the coefficients corresponding to all political connections' variables are particularly high. However, the coefficients corresponding to $PC1$, $PC3$, and $PC4$ are significant at a higher level (5%) than $PC2$ (slightly lower than 10%).

These coefficients indicate a consistent impact of all types of political connections on the most inefficient banks in the MENA region, after controlling not only for the banks' domicile, type, and ownership structure, but also when considering an unrestricted set of controls, as well as different output specifications. Furthermore, at the other extreme (lowest quantile, $\tau = 0.10$) representing the least inefficient banks, the effect of political connections vanishes almost entirely, both in terms of magnitude and significance. This result is also robust across the four models considered, and regardless of the type of political connection (Tables 6–9). However, for the rest of

TABLE 7 Management or CEO/MD/GM/president with either direct or indirect political connections (PC_2), KSW estimator, regression quantiles.

		Quantile (τ)				
Model	**Covariates**	**0.10 (least inefficient)**	**0.25**	**0.50**	**0.75**	**0.90 (most inefficient)**
Model 1[a]	PC_2	−0.003	−0.016	0.019	0.082	0.120
	(s.e.)	(0.022)	(0.024)	(0.029)	(0.052)	(0.083)
Model 2[b]	PC_2	0.000	−0.020	0.016	0.066	0.152
	(s.e.)	(0.026)	(0.020)	(0.025)	(0.056)	(0.081)
Model 3[c]	PC_2	0.013	0.011	0.034	0.082	0.118
	(s.e.)	(0.023)	(0.026)	(0.032)	(0.047)	(0.072)
Model 4[d]	PC_2	0.016	0.016	0.041	0.033	0.118
	(s.e.)	(0.029)	(0.025)	(0.030)	(0.057)	(0.083)

Note: This table reports regression results corresponding to Equation (5), where a quantile regression is considered to disentangle the effects of selected covariates on efficiency. The results in this table correspond to the model in which only the political connection variable corresponding to whether the management or CEO/MD/GM/president has either direct or indirect political connection (PC_2) is included, along with the rest of control variables. The columns on the left correspond to the effects of these variables on the least inefficient banks, whereas the columns on the right correspond to the effects on the most inefficient banks. The central column corresponds to the median effect ($\tau = 0.50$). We report both regression coefficients as well as the standard errors. The $t-$statistics are obtained by dividing each coefficient by its corresponding standard error, which indicates that for the political connection variable (PC_2) the link is particularly strong, both in terms of magnitude of the coefficient and significance, for the upper quantiles (corresponding to the most inefficient banks).

[a]Output definition 1, restricted set of controls.

[b]Output definition 1, unrestricted set of controls.

[c]Output definition 2, restricted set of controls.

[d]Output definition 2, unrestricted set of controls.

TABLE 8 BoD or chairman or management or CEO/MD/GM/president with either direct or indirect political connections (PC_3), KSW estimator, regression quantiles.

		Quantile (τ)				
Model	**Covariates**	**0.10 (least inefficient)**	**0.25**	**0.50**	**0.75**	**0.90 (most inefficient)**
Model 1[a]	PC_3	0.010	0.011	0.026	0.064	0.102
	(s.e.)	(0.011)	(0.015)	(0.018)	(0.027)	(0.042)
Model 2[b]	PC_3	0.011	−0.001	0.017	0.051	0.116
	(s.e.)	(0.018)	(0.012)	(0.017)	(0.036)	(0.045)
Model 3[c]	PC_3	0.008	0.000	0.030	0.092	0.093
	(s.e.)	(0.012)	(0.012)	(0.019)	(0.027)	(0.046)
Model 4[d]	PC_3	0.008	−0.005	0.013	0.041	0.145
	(s.e.)	(0.020)	(0.016)	(0.022)	(0.031)	(0.064)

Note: This table reports regression results corresponding to Equation (5), where a quantile regression is considered to disentangle the effects of selected covariates on efficiency. The results in this table correspond to the model in which only the political connection variable corresponding to whether the BoD, management or CEO/MD/GM/president has either direct or indirect political connections (PC_3) is included, along with the rest of control variables. The columns on the left correspond to the effects of these variables on the least inefficient banks, whereas the columns on the right correspond to the effects on the most inefficient banks. The central column corresponds to the median effect ($\tau = 0.50$). We report both regression coefficients as well as the standard errors. The $t-$statistics are obtained by dividing each coefficient by its corresponding standard error, which indicates that for the political connection variable (PC_3) the link is particularly strong, both in terms of magnitude of the coefficient and significance, for the upper quantiles (corresponding to the most inefficient banks).

[a]Output definition 1, restricted set of controls.

[b]Output definition 1, unrestricted set of controls.

[c]Output definition 2, restricted set of controls.

[d]Output definition 2, unrestricted set of controls.

the quantiles ($\tau = 0.25$, $\tau = 0.50$, and $\tau = 0.75$), the effect varies across variables and quantiles.

Our results nonetheless show that there is a pattern because for all four political connection proxies, the magnitude of the coefficient increases monotonically—with the exceptions, in some cases, of the lowest quantiles, which show more unstable patterns. This finding, which is robust across all four model specifications, shows that both the effect (coefficient) and the significance levels are higher for the highest quantiles (most inefficient banks). The results show that the most inefficient banks are the ones with the most significant association with political

TABLE 9 BoD or chairman or management or CEO/MD/GM/president with extended political connection (PC_4), KSW estimator, regression quantiles.

		Quantile (τ)				
Model	**Covariates**	**0.10 (least inefficient)**	**0.25**	**0.50**	**0.75**	**0.90 (most inefficient)**
Model 1[a]	PC_4 (s.e.)	0.007 (0.013)	0.028 (0.017)	0.037 (0.020)	0.050 (0.046)	0.128 (0.051)
Model 2[b]	PC_4 (s.e.)	0.032 (0.014)	0.036 (0.016)	0.032 (0.021)	0.076 (0.046)	0.131 (0.042)
Model 3[c]	PC_4 (s.e.)	0.005 (0.009)	0.003 (0.017)	0.029 (0.023)	0.081 (0.044)	0.114 (0.081)
Model 4[d]	PC_4 (s.e.)	0.019 (0.016)	0.014 (0.018)	0.026 (0.024)	0.098 (0.038)	0.154 (0.077)

Note: This table reports regression results corresponding to Equation (5), where a quantile regression is considered to disentangle the effects of selected covariates on efficiency. The results in this table correspond to the model in which only the political connection variable corresponding to whether the BoD, chairman, management or CEO/MD/GM/president has either extended political connections (PC_4) is included, along with the rest of control variables. The columns on the left correspond to the effects of these variables on the least inefficient banks, whereas the columns on the right correspond to the effects on the most inefficient banks. The central column corresponds to the median effect ($\tau = 0.50$). We report both regression coefficients as well as the standard errors. The $t-$statistics are obtained by dividing each coefficient by its corresponding standard error, which indicates that for the political connection variable (PC_4) the link is particularly strong, both in terms of magnitude of the coefficient and significance, for the upper quantiles (corresponding to the most inefficient banks).

[a]Output definition 1, restricted set of controls.

[b]Output definition 1, unrestricted set of controls.

[c]Output definition 2, restricted set of controls.

[d]Output definition 2, unrestricted set of controls.

connections. This consistent finding provides strong support for the bailout perspective for politically connected banks and confirms the results of Faccio et al. (2006).

These results also reinforce statistically the descriptive analysis (Subsection 5.1), which shows a strong relationship between political connection and bank inefficiency in the MENA region. This corroboration provides empirical support for Hypothesis H1. The results indicate that the effect of political connections on bank efficiency in the MENA region varies depending on the conditional distribution of the inefficiency. Specifically, the effect is stronger and more significant for those banks with poorer performance, provides no support for the resource dependency perspective, and indicates a strong association between political connections and bank inefficiency, due to their bailout expectation (Blau et al., 2013).

Regarding the results for the control variables, we do not report them given that they are not the main attempt of the article, although we provided a short sketch of the findings.[18] Regarding the type of ownership categories for Model 1, we only find significance in some of the quantiles. For the government ownership variable (*GOV*), the effect is generally negative and significant for the lowest quantiles ($\tau = 0.10$ and $\tau = 0.25$). These quantiles correspond to the most inefficient banks, which corroborates Mian's (2006) finding that government banks uniformly perform poorly and only survive due to strong government support. For the domestically owned subsidiary (*DOS*) variable, we find that the effect is generally positive throughout, that is, a negative association exists between a domestically owned subsidiary and bank efficiency. The effect is stronger for the most inefficient banks and weaker for the least inefficient banks, which contradicts Farazi et al. (2011), who state that domestically owned banks perform better in the MENA region. Furthermore, the results for the BHCs show that even though there is a positive impact on inefficiency, the coefficients are not significant. This lack of significance supports Ashcraft (2008) in the sense that banks affiliated with a BHC are safer than a standalone bank in times of distress.

7 | CONCLUSIONS

In this study, we examined the impact of political connections on the efficiency of banks in the MENA region. For this purpose, we used a two-stage approach in which we measured efficiency in the first stage of the analysis and assessed the impact of political connections in the second one. Specifically, by implementing a nonparametric estimator of bank efficiency in the first stage, and considering two output specifications, we find that politically connected banks are less efficient than their non-politically connected counterparts. We find evidence that government banks consistently perform poorly and they rely on government support for their survival. Of course, some banks can be mislabelled as inefficient if the

definition of bank output do not accurately reflect on the activities these banks. We also find differences in banks' efficiency according to their ownership structure and political instability. Regarding the impact of banks' ownership and efficiency, our results show that both nongovernment and foreign-owned banks are more efficient than government-owned and domestically owned bank holding companies.

In the second stage of the analysis, we conducted a quantile regression analysis that is not only more robust to the violation of some statistical assumptions but also discloses whether the effects vary for different tails of the inefficiency distribution. Our findings, which are robust to a variety of model specifications, have multiple interpretations. First, the four political connections proxies show a notable degree of consistency in terms of both the magnitude of the coefficients and their levels of significance, which corroborates some of the results obtained in the first stage of the analysis. Specifically, the magnitude of the estimated coefficients increases almost monotonically with the quantile (i.e., with inefficiency), and the results are usually significant for the highest quantiles (most inefficient banks). Because these quantiles are associated with the highest levels of inefficiency, they should indicate a strong link between inefficiency and the banks' political connections. However, the association does not hold for the lowest quantiles (most efficient banks). In contrast, the results for the other control variables offer some degree of richness, although the results are not as clear-cut as those for political connections. For instance, for the government ownership variable, the effect is both negative and significant for the lowest quantiles. As these quantiles correspond to the least inefficient banks, this finding indicates a negative association between government ownership and bank efficiency.

This research has several implications globally, and for the MENA region in particular. First, the politician-bank networks for financial institutions in emerging economies should come under scrutiny to prevent politically connected banks from engaging further in inefficient activities, with the expectation of being bailed out. Particularly, the scrutiny should be even stronger for government-owned banks and BHCs because they have a better ability to shift risk onto the financial system. Second, regulators should monitor the efficiency of government-owned banks and ensure that national banking markets are more competitive and efficient, thus enhancing bank efficiency in general. Third, our results indicating the effect of political connections on inefficiency highlight the methodological advantage of using quantile regression. The analysis suggests that the strong association between the least inefficient banks and political connections supports the moral hazard and bailout expectations (Blau et al., 2013; Braham et al., 2020). Fourth, the decline in the inefficiency of banks during the political turmoil suggests that resource dependence theory might not be applicable during political crisis periods. The results for the effect of bank type confirm the findings of Johnes et al. (2014) that religiously adherent banks are typically equal to their conventional peers in terms of overall efficiency. However, our quantile regression results provide further insights into their findings on net efficiency.

There is a limitation to the efficiency measure we apply in this study. As the banking industry is evolving, new players are entering the field (e.g., FinTech). Hence, although our measures of bank activities are in line with prior studies, the inputs and outputs considered are confined to the use of the asset-based approach and to the data available through data providers (e.g., BankFocus). For this reason, it would be convenient to make efforts to construct new measures of bank activities that take into account how financial institutions are reacting to the new competitive scenario by offering new product lines, which could be incorporated into modern measures of efficiency.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from Durham University (UK). Restrictions apply to the availability of these data. Data are available from the authors with the permission of Durham University.

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ENDNOTES

[1] These types of advantages include having easy access to lines of credit from state-owned banks, advantageous tax treatment, flexibility in budget constraints, relaxation of regulations linked to

entering the market, and a better chance of receiving a bailout from the government (Claessens et al., 2008; Faccio, 2010; Francis et al., 2009; Oliver & Rui, 2006).

[2] This is especially vital for businesses operating in economies that have poor regulation, where companies may have to invest more resources and time in lobbying and influencing regulators, officials, and public opinion.

[3] The political disturbances that began with a revolt in Tunisia and encouraged citizens in other countries to do the same. Several countries in the region are currently going through political changes (e.g., Egypt and Tunisia), accompanied by political instability in other parts of the region (e.g., Iraq, Yemen, Syria and Libya). These geopolitical events have not affected the oil-rich monarchies in the GCC (Menaldo, 2012).

[4] See Section 5.1 for full definition.

[5] The MENA region contains the highest concentration of religiously adherent banks in the world (Thomson Reuters Eikon and Bureau van Dijk Bankscope databases).

[6] Oil-exporting Gulf Cooperation Council (GCC) countries. These include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE.

[7] Full definitions of the various types of political connection are provided in Section 5.1.

[8] Based on 10 years (2003–2012) of data collected from the Bureau VAN DIJK Bankscope database, the MENA region's religiously adherent banks represent 50% (US$2,766,510) of the total assets of these banks ($5,533,020) in the 22 countries that have a dual banking system (conventional and religiously adherent banks).

[9] Transparency International's Corruption Perceptions Index (CPI) consistently ranks below the world median in MENA countries (Source: Transparency International).

[10] Although the World Development Report (2010) indicates that global financial crisis heavily impacted the Gulf real estate market, especially in Dubai, Abu Dhabi, and Qatar, the economic implications of the crisis were not considerable for oil-producing GCC countries.

[11] There are three survey articles on the topic (Berger et al., 1993; Berger & Humphrey, 1997; Fethi & Pasiouras, 2010, among others), several monographs (Harker & Zenios, 2000; Molyneux et al., 1996; Pasiouras, 2013), and several contributions to relevant books (Goddard et al., 2001; Hughes & Mester, 2009).

[12] In the case where we do not constrain the scope of the analysis to works focusing solely on financial institutions, we find additional relevant contributions comparing both types of techniques, such as Banker et al. (1986), De Borger and Kerstens (1996), Hjalmarsson et al. (1996), and Resti (2000).

[13] For instance, financial or management data (such as the dispersion of the annual compensation of chief executive officers) usually increases with firm size—an indicator of heteroskedasticity—and data on per capita income are seldom normal; rather, they are bi-modal, as shown by Quah (1996). More relevant examples include innovation and growth in high-tech sectors (Coad & Rao, 2008), changes in wage distribution (Machado & Mata, 2005; Melly, 2005), location patterns of bank branches (Alamá & Tortosa-Ausina, 2012), or educational attainment and wage distribution (Lemieux, 2006). Fitzenberger et al. (2002) provides a compendium of interesting applications in the field.

[14] An exception would be the study by Abdelsalam et al. (2014), although this was based on the case of the mutual fund industry and the efficiency estimator considered was not the one proposed by Kneip et al. (2008).

[15] This approach has been revived due to recent work by Colangelo and Inklaar (2012), Basu et al. (2011) and Diewert et al. (2012), since the recent international financial crisis suggests there could be some mismeasurements in the banking sector.

[16] We consider banks from Bahrain, Qatar, Kuwait, Oman, UAE, and Saudi Arabia as GCC and those from the remaining MENA countries as non-GCC.

[17] Provided by the Financial Times' Banker database.

[18] In a previous version of the article, which included only one regression model, the results for the controls were also reported. However, this represented a disproportionate space consumption considering they are not the focus of the article. These results are available from the authors upon request.

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