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# Do political connections affect banks' leverage? Evidence from some Middle Eastern and North African countries

*Rihem Braham*\*+, *Lotfi Belkacem*\* and *Christian de Peretti*+

\* *Laboratory Research for Economy, Management and Quantitative Finance, Institute of High Commercial Studies, University of Sousse, Tunisia*

+ *Université de Lyon, Université Claude Bernard Lyon 1, Laboratoire de Sciences Actuarielle et Financière (EA2429), F-69007, LYON, France*

## **Abstract**

This study examines the association between political patronage and banks' financing decision in a sample of 34 commercial banks operating in Middle East and North Africa region for the period 2003-2014. Linear and nonlinear Panel Data analysis is used to investigate this relationship. The results reveal that politically backed banks tend to be more leveraged. Additionally, the indirect effect of political patronage on leverage is found to be not so large but significant through interaction with profitability, that is, politically backed banks with higher profitability are positively associated with leverage. Our findings imply that the privileges resulting from political ties in terms of market power and easier access to financing sources make banks more profitable and this also leads to higher leverage. In line with the related literature, a strong political presence in the board of banks can be considered as an important intangible asset enabling banks to draw more direct rents from the government which would not otherwise be available; also, as one of the factors driving bank financing decisions.

**Key words:** political patronage, leverage, indirect effect, panel data, commercial banks.

**JEL classification:** G32

# **Do political connections affect banks' leverage? Evidence from some Middle Eastern and North African countries**

## **1. Introduction**

Relationship capitalism is basically where a lot more is done through contacts and personal relationships rather than through contracts. These arrangements are particularly common in developing countries with high level of corruption and where the legal system is unreliable and the law doesn't require the information disclosure on which competitive finance depends. For example, Gomez and Jomo (1997) have discussed the case of Malaysia which is representative of economies characterized by a significant influence of political patronage in business, corruption, and abuse of power by politicians and report close links between business and politics. According to Fisman (2001), Political patronage is an important institutional feature of the East Asian economies as well as other emerging countries where it is widespread and accepted as a “fact of life”. Particularly, connections between firms and politicians have been the focus of a number of studies in recent years.

A stream of finance research has examined the economic benefits of political connections for firms and provides evidence that political engagement might be used as a form of insurance against financial crises. For example, politically connected firms are more likely to receive support from the government in times of economic distress. Ebrahim *et al.* (2014) suggest that, during the financial crisis, firms with political patronage are believed to recover better from crisis. Regarding the various works done by researchers, political patronage not only affects firm value but also has a significant impact on leverage (Lim *et al.*, 2012; Bliss & Gul, 2012). Prior studies have estimated the value of political ties in the context of the Malaysian firms. Although most of the results favor the statement that close ties with government or

politicians is considered as a helping hand, some existing studies come to the opposite conclusion. On the one hand, there are several benefits of political connections including easier access to financial resources such as bank loans and others funds at more convenient conditions (Fraser *et al.*, 2006; Khwaja & Mian, 2005); improved performance (Johnson & Mitton, 2003); a higher probability of bail-out (Faccio, 2006) and lower cost equity capital (Boubakri *et al.*, 2012). On the other hand, some studies find that political patronage negatively impacts firms by decreasing accounting information quality (Chaney *et al.*, 2011); decreasing efficiency (Boubakri *et al.*, 2012); Leuz, 2006); decreasing long-term performance (Claessens *et al.*, 2008; Fan *et al.*, 2007). However, few studies paid attention on its role in firms' financing decisions. For example, Faccio (2006), Fraser *et al.* (2006), Johnson & Mitton (2003), Lim *et al.* (2012) and Bliss & Gul (2012) have focused on the linkage between political patronage and capital structure and support the evidence that firms with political patronage tend to carry more debt. This evidence may concern non-financial firms as well as financial institutions in general and banks. Thus, we raise an important question in this study: Does political patronage drives the financing decisions of commercial banks?

As banks play a critical role on the entire economy, it is worthwhile to investigate whether the relationship between political connections and firm's leverage is still effective for banks. Moreover, previous researches are mostly related to bank activity and performance (Braun and Raddatz, 2010; Carretta *et al.*, 2012 and Nys *et al.*, 2015). We extend the limited literature by examining the impact of this connectedness on banks' financing choices which is yet an explored topic. Secondly, we explore more channels of political patronage rather than linking ownership structure and banks' behavior directly. There is a necessity to study government ownership from the perspective of boards instead of just ownership structure.

To address these issues, we select commercial banks from Middle East and North Africa (MENA) region. This environment offers a suitable setting for our study to examine the role

of political connections that are highly relevant in emerging economies. Using a sample of 34 commercial banks operating in MENA region over the period 2003 to 2014 and Panel Data analysis, the results reveal that the direct link between leverage and political connections is positive.

we find that politically connected banks are more leveraged than non-connected banks and this is consistent with the results of Johnson and Mitton (2003), Fraser *et al.* (2006) and Dong *et al.* (2010). The main argument behind this evidence is that political connections could be a valuable resource for banks enabling them to more easily access to debt financing as they are considered as implicit guarantee that the government would rescue them in case of distress. Another interesting finding is that politically backed banks with higher profitability appears to be more leveraged. Furthermore, our study contributes to the literature of bank leverage. It is important to consider political patronage as one of the factors driving bank financing decisions which makes the persistence of high leverage in banks an interesting issue.

The rest of the paper proceeds as follows. The next section briefly reviews the literature. It contains sub-sections on capital structure and the role of political patronage in banking. The third section describes data, sample selection and research design. The results of our estimation are reported in the fourth section while the final section concludes the study.

## **2. Research background**

### **2.1. Capital structure in financial institutions**

In the wake of financial crises experienced by the banking industry, capital structure has drawn much attention from regulators, practitioners and academics. Banks have been resettling their capital structure, and academics have been reflecting about the level and composition of capital that banks should hold. Besides, policy makers have been called to adjust regulation of financial institutions and force banks to hold more equity.

There is no clear definition of capital structure also known as leverage in the academic literature, but determinants of capital structure are well documented (Gropp & Heider, 2010; Frank & Goyal, 2009). Capital Structure is the combination of debts and equity amounts used by different firms or Banks. However, recent empirical evidence suggests that banks have a far richer liability structure than a simple mix of equity and deposits. Gropp & Heider (2010) examine the composition of banks' liabilities and find that non-deposit liabilities constituted about 30% in total book assets of European banks in 2004. Consequently, determinants of capital structure from pecking order or trade-off theories (Myers, 1984) explain some variation in banks' capital structure but both theories ignore important characteristics of banking industries (deposits, deposits insurance and government guarantees).

A key departure of our work pertains to the evidence that banks and other financial institutions are highly leveraged and this is related to the main activity of banks. By providing loans and receiving deposits, banks are allowed to finance their activity with high level of debt and low level of equity. However, there is disagreement about what drives the financing decisions of banks. Going back to Gropp & Heider (2010) debt might be preferable for banks for some of the theoretical reasons related to the standard corporate finance theories: (i) the tax benefits for banks are larger than for non-financial firms, (ii) bankruptcy costs for banks are smaller, (iii) agency problems in banks push them into the direction of more leverage, or (iv) asymmetric information is more important for banks raising the cost of issuing equity.

Furthermore, a number of recent researches have studied the reason for high leverage of banks, for example, Thakor (2014) proposes some of the theoretical reasons for banks preference for high leverage and discuss how capital structures of banks respond to changes in taxes. In line Modigliani & Miller (1963), he supports the evidence that banks like other firms enjoy tax advantage on debt interest payments relative to dividends on equity and this makes high leverage attractive. Moreover, since banks use much higher leverage than non-financial

firms do, the corporate tax benefits of debt are particularly important for bank liability structure. According to Juks (2010), debt provides tax shield to banks so it might be preferable to equity because interest rate expenses can be deducted from the taxable income while dividends are not tax deductible. DeAngelo & Stulz (2015) provide evidence that banks may choose to be highly levered because of market frictions that lead banks to play a central role in the production of liquidity, which is highly socially valuable and thus earns a market premium. Gornall & Strebulaev (2013) assuming that the relative mix of deposits and debt are exogenously given and that banks pay no premium on deposit insurance, report that high leverage arises from low volatility of bank assets due to diversification. Allen *et al.* (2015) justify high leverage of banks that hold only deposits and equity by providing a theoretical foundation for why bank equity capital is costly relative to deposits and for how its cost varies with the optimal capital structure. Another reason why banks may prefer high leverage is based on bailouts and deposit insurance. Bailouts create moral hazard for banks and can lead banks to choose more levered capital structures. Gornall & Strebulaev (2013) discuss how these forms of government rents can change bank capital structure and show that high levels of deposit insurance or high bailout probabilities lead banks into dramatic risk incentives.

## **2.2. Political patronage**

Political patronage refers to political leaders or government using their power to grant economic favors such as support, encouragement, privilege, or financial aid to connected firms in order to achieve the nation's economic goals. According to Faccio (2006) politics remarkably influences business particularly in countries with high level of corruption, weak legal systems, and poor governance. Notably, many countries across the MENA region have specific characteristics (political, social and economic). But the region generally performs lower than other states in terms of transparency, accountability and control of corruption.

Particularly, political patronage is widespread in these countries and widely accepted as a “fact of life” (Chêne, 2008). A politically connected firm could be a group of large shareholders, such as the CEO, president, vice president, chairman or secretary, who control at least 10 percent of voting share, and are connected with a politician, party, minister, or Parliament member (Faccio, 2006). Faccio (2010) find that the financial characteristics of connected firms differ more from those of their non-connected peers and that the influence of political connections occurred more often in emerging countries characterized by high levels of corruption and less developed financial system.

Furthermore, there is evidence that political linkages may also affect firms’ financing decision. One of the first studies investigating the relation between political patronage and capital structure belongs to Fraser *et al.* (2006) who focuses on developing economies and uses three measures as proxies of political patronage to find a positive and significant link between leverage and political ties. He also suggests that larger and profitable firms with political patronage tend to carry more debt than mere firms with political patronage. Dong *et al.* (2010) also hypothesize that Chinese firms with stronger political connection should carry more debt. Empirical results support this hypothesis: long term debt ratios are positively related to firm size and asset tangibility but negatively related to profitability and growth opportunities, and tend to be higher for those politically connected firms. Additionally, Lim *et al.* (2012) examine the effect of political patronage on capital structure of listed companies on the Shanghai Stock Exchange. He hypothesized that Chinese firms with stronger political connections should carry more debts. Beside determinants such as firm size, growth opportunities, profitability and asset tangibility, state ownership and large number of non-tradable shares can influence the choice of capital structure. Bliss & Gul (2012) extend the work of Fraser *et al.* (2006) and find that Malaysian politically connected firms have negative equity, market-to-book ratio is positively associated with leverage, and borrowing politically



connected firms have significantly lower profitability compared to non-connected firms. In fact, politically connected firms are perceived by lenders as being of higher risk and are charged higher interest rates. A more recent study, Ebrahim *et al.* (2014) determine the optimal capital structure of Malaysian firms on the basis of a set of “core factors”; namely, size, profitability, tangibility, investment opportunities, an industry benchmark for target leverage, and business risk and gauge the effect of political patronage on firms' financing decisions. The results are as follows: During the crisis, firms amend capital structure and politically patronized firms de-lever quicker. In recovery period, patronized firms are highly leveraged but results are insignificant and there is no difference concerning the core factors of capital structures of patronized and non-connected firms.

This evidence may concern non-financial firms as well as financial institutions in general and banks specifically. In fact, banks invest in political connections because the benefits these connections would provide are higher than the cost banks would bear. A handful of recent literature recognizes the value of political presence on the board of banks and its impact on performance (Braun & Raddatz, 2010; Micco *et al.*, 2007), lending and risk taking behavior as well as bank's activity (Carretta *et al.*, 2012; Nys *et al.*, 2015). However, little attention has been addressed to the relationship between political patronage and banks' capital structure.

### **3. Research design**

#### **3.1. Data and sample Selection**

Financial data for banks are taken from the Bankscope database. In order to have homogeneous sample, we included only commercial banks. We used a sample of unbalanced panel of 34 banks <sup>(1)</sup> operating in 6 MENA countries: Tunisia, Egypt, Lebanon, Iran, Yemen and Jordan that corresponds to 408 banks-year observations distributed in the 2003-2014 period.

### 3.2. variables definition

The literature documents firms' characteristic having a significant positive or negative relationship in determining a company's leverage based on the traditional capital structure theories. In addition, to proxy for political patronage, we follow the most commonly used measure of political connections as in Nys *et al.* (2015) which is government officials and politicians on the board of directors. We consider two kinds of politically connected banks: the first ones are state-owned banks and the second ones are private banks which have at least one of their owners or directors who is a politician or former/current government official as well as cases of informal ties to a politician, minister or government official. We take several steps to classify politically connected private banks. First, we gather the names of bank directors and shareholders from banks' websites and financial statements. Second, we manually collect detailed information on their political backgrounds from individuals' biographies and curriculum vitae from various websites.

We present in Table 1 the variables that will be used in the equation.

**Table1.** Definition of variables

<u>variables</u>	<u>measure</u>	<u>definition</u>
Dependent variable <b>Leverage (lev)</b>	leverage ratio	=1- equity/total assets
Independent variables <b>Profitability (prof)</b>	Return on Average Asset	=net income/total average assets
<b>Risk</b>	net loans to total asset	=net loans/ total assets
<b>Size</b>	logarithm of total asset	=log (total assets)
<b>Asset Growth (growth)</b>	change in the % of asset	= $\text{Asset}_t - \text{Asset}_{t-1} / \text{Asset}_t$
<b>Tangibility (tang)</b>	fixed asset to total asset	=fixed assets/total assets
<b>Political Connection (pol)</b>	dummy	=1 if bank is politically connected; =0 otherwise

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<sup>(1)</sup> List of banks used in our sample is presented in appendix A.

### 3.3. Econometric model

In order to examine whether politically backed banks in MENA region are associated with high level of debt, we estimate the relationship between leverage as a proxy of capital structure and its key determinants by reference to existing literature on the determinants of capital structure. In addition, we add the variable that is proxy for political connections as a dummy variable. For this purpose, we apply panel data analysis available in STATA software. The static methods neglect the effect of lagged values of the dependent variable. Therefore, we specify a dynamic panel data model and we use the GMM initially proposed by Arellano & Bond (1991) and later developed by Arellano & Bover (1995) and Blundell and Bond (1998) by adding a lagged dependent variable as follows:

$$lev_{it} = c + \delta lev_{it-1} + \alpha_1 prof_{it} + \alpha_2 risk_{it} + \alpha_3 tang_{it} + \alpha_4 size_{it} + \alpha_5 growth_{it} + \alpha_6 pol_{it} + v_i + \varepsilon_{it} \quad (1)$$

Where  $i=1$  to 34 and  $t=1$  to 12 represent the bank dimension and year respectively;  $c$  is the constant coefficient;  $\delta$  the coefficient of the lagged dependent variable is the estimated persistent coefficient of leverage banks;  $\alpha_1$  to  $\alpha_6$  are the regression coefficients of independent variables;  $v_i$  and  $\varepsilon_{it}$  are the unobserved bank-specific effect, and the error term.

We assume that  $v_i$  and  $\varepsilon_{it}$  are independently distributed across  $i$  and  $E(v_i) = 0$ ,  $E(\varepsilon_{it}) = 0$ ,  $E(v_i \varepsilon_{it}) = 0$  for  $i=1, \dots, N$  and  $t=1, \dots, T$  and  $E(\varepsilon_{it} \varepsilon_{is}) = 0$  for  $i=1, \dots, N$  and  $t \neq s$ .

The extended method is known as the system GMM (sys-GMM). It includes a regression equation in both differences and levels, each one with its set of instrumental variables. The rationale for the use of this specification is to provide instrumentation for endogenous regressors and improve precision. However, the failure of the model is that in practice, when including the lagged dependent variable as explanatory variable, the dynamics of the dependent variable is almost entirely captured by its lag. Therefore, we lose the link with the other explanatory variables, which nevertheless can explain both the dependent variable and

the lagged dependent variable. But as they explain the lagged dependent variable, and the latter explains the dependent variable, the model no longer needs the other variables implicitly included in the lagged variable. Hence, there is no need to specify dynamic panel model. We adopt cross-sectional time-series regression models when the disturbance term is first-order autoregressive following Baltagi & Wu (1999). Two panel estimation methods are performed using a within estimator with AR (1) errors (Within-FE) and a generalized least square random effect with AR (1) errors (GLS-RE). Our regression equation is as follows:

$$Y_{it} = c + prof_{it} + a_2 risk_{it} + a_3 tang_{it} + a_4 size_{it} + a_5 growth_{it} + a_6 pol_{it} + v_i + \varepsilon_{it} \quad (2)$$

where  $\varepsilon_{it} = \rho\varepsilon_{i,t-1} + \eta_{it}$

Where  $|\rho| < 1$  and  $\eta_{it}$  is independent and identically distributed (i.i.d) with mean 0 and variance  $\sigma_\eta^2$ . If  $v_i$  is assumed to be fixed parameters, the model is a fixed effects model. If  $v_i$  is assumed to be realizations of i.i.d process with mean 0 and variance  $\sigma_v^2$ , it is a random-effects model.

In order to choose between the FE and the RE we apply the Hausman (1978) test for specification. It tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effect estimator. If the null hypothesis is rejected then we use fixed effect model because random effect model is inconsistent. An additional test should be conducted to test the presence of autocorrelation in our specification, the Baltagi-Wu locally best invariant (LBI) statistic for serial autocorrelation, which is a suitable diagnostic for unbalanced panels (Baltagi & Wu, 1999). The values of the statistic are between 0 and 4, a value of 2 indicates no autocorrelation, if it is less than 2 then it would indicate positive serial correlation.

Finally, in order to obtain more concluding results, it is important to test for possible nonlinear effects of the explanatory variables on leverage. Therefore, we will extend the model (2) to take into account the squared variables in the regression equation as well as the

crossed variables. The starting point to choose the best specification is to estimate the equation including all variables. The general specification is as follows:

$$Y_{it} = c + \sum_{j=1}^6 \alpha_j X_{j,it} + \sum_{j=1}^6 \beta_j X_{j,it}^2 + \sum_{j=1}^6 \sum_{k=1}^6 \theta_{jk} X_{j,it} * X_{k,it} + v_i + \varepsilon_{it} \quad (3)$$

Where Y is the dependent variable; X<sub>j</sub> and X<sub>k</sub> are two different explanatory variables; c is the constant coefficient; α, β and θ are the regression coefficients of independent variables; v<sub>i</sub> and ε<sub>it</sub> are the unobserved bank-specific effect and the error term.

## 4. Research findings

In this section, we present and interpret our results in detail with the aim of drawing the conclusions of our sample of MENA banks. Within the framework, we present descriptive statistics and correlation analyses of the variables used during the estimation of the model.

### 4.1. Summary statistics

Table 2 summarizes all the descriptive statistics (average, standard deviation, maximal value and minimal value) relative to variables used in the present study.

**Table 2.** Descriptive statistics of the variables

Variables	Obs	Mean	Standard deviation	Minimum	Maximum
<b>lev</b>	374	89.60481 (0.332054)	6.370637	51.383	103.942
<b>prof</b>	374	1.123791 (0.0758622)	1.423259	-9.92	12.988
<b>risk</b>	374	48.14241 (1.080944)	20.68997	4.432	90.498
<b>tang</b>	372	1.884208 (0.081413)	1.531093	.1829424	15.26072
<b>growth</b>	363	14.85796 (0.7809317)	14.90129	-21.85	94.87
<b>size</b>	374	3.244871 (0.049288)	0.9222934	-0.016884	4.805403
<b>pol</b>	384	0.6223958 (0.0256804)	0.4854203	0	1

*Note: standard errors are in parentheses.*

Along with the descriptive statistics, a correlation matrix between the variables used is also presented. Table 3 summarizes the results relative to the correlation. Leverage is negatively correlated with all variables except for size and political patronage. Also, the results show that the coefficients of correlation do not exceed the value of 0.5, so that does not cause problems during the estimation.

**Table 3.** Correlation matrix of the variables

	<b>lev</b>	<b>prof</b>	<b>risk</b>	<b>tang</b>	<b>growth</b>	<b>size</b>	<b>pol</b>
<b>lev</b>	1.0000						
<b>prof</b>	-0.4094* (0.0000)	1.0000					
<b>risk</b>	-0.1152* (0.0259)	-0.1445* (0.0051)	1.0000				
<b>tang</b>	-0.1114* (0.0317)	0.0180 (0.7289)	0.2259* (0.0000)	1.0000			
<b>growth</b>	-0.1379* (0.0085)	0.2534* (0.0000)	-0.0570 (0.2789)	0.2309* (0.0000)	1.0000		
<b>size</b>	0.3431* (0.0000)	-0.1390* (0.0071)	-0.1500* 0.0036	-0.5074* (0.0000)	-0.4087* 0.0000	1.0000	
<b>pol</b>	0.0869 (0.0933)	0.0219 (0.6733)	0.0915 (0.0773)	-0.0182 (0.7257)	-0.1709* (0.0011)	0.3323* (0.0000)	1.0000

*Note: the significance level of each correlation coefficient are in parentheses. \*denote the statistical significant at the 5% level or better.*

In addition, a test of multicollinearity is performed, the Variance Inflation Factor (VIF). Table 4 provide the results of collinearity diagnostics of the variables. The problem of multicollinearity is detected if VIF has a value of 5 or 10 and above and / or the average of VIF is greater than or equal to 2. In this case, the VIF values vary between (1.14) and (1.96) and the average equals to (1.40). This implies the absence of the problem of multicollinearity.

**Table 4.** Collinearity diagnostics of the variables

<b>variable</b>	<b>VIF</b>
<b>lev</b>	1.39
<b>prof</b>	1.33
<b>risk</b>	1.14
<b>tang</b>	1.45
<b>growth</b>	1.30
<b>size</b>	1.96
<b>pol</b>	1.20
<b>Mean VIF</b>	1.40

## **4.2. Estimation results**

In our work, we proceed to different estimations obtained using Dynamic Panel System by System Generalized Method of Moments (sys-GMM) for both one-step and two-step methods, GLS random effects estimator with AR (1) errors (GLS-RE) and Within estimator fixed effects (Within-FE). To pursue our analysis, we present the results of the regressions on panel data while specifying the various statistical tests made during this study.

Table 5 presents the estimation results of model (1). The Dynamic Panel Data model is estimated by System GMM estimator in two stages. Our results of system GMM are robust for the following reasons. First, the instruments used in our regressions are valid, because the Sargan test does not reject the hypothesis of validity of the instruments. In addition, we note that there is no second-order autocorrelation of the errors AR (2), because the second-order autocorrelation test of Arellano and Bond does not reject the hypothesis of absence of second-order autocorrelation. We can observe that the lagged dependent variable enters positively and statistically significant in the GMM system equation, and the magnitude of the coefficient is high (from 0.75 to 0.77). This result indicates that debt is associated to more debt and the lagged value of leverage is an important determinant of present values. On the other hand, the explanatory variables are not statistically significant both in one step and two step estimation. Only tangibility and profitability coefficients keep the same sign and are significant at 1%.

**Table 5.** Dynamic Panel Data estimation

<i>variables</i>	<i>one-step system GMM</i>			<i>two-step system GMM</i>		
	coefficients	standard errors	t-statistics	coefficients	standard errors	t-statistics
<i>Lev<sub>t-1</sub></i>	0.754863***	.0492238	15.34	0.774192***	.0352113	21.99
<i>prof</i>	-0.667546***	.1616133	-4.13	-0.612103***	.0671246	-9.12
<i>risk</i>	-0.0248254	.0221679	-1.12	-0.0200224*	.0091995	-2.18
<i>tang</i>	-1.00732***	.1815065	-5.55	-1.05986***	.0586196	-18.08
<i>growth</i>	-0.0011117	.0162149	-0.07	0.0027738	.0047822	0.58
<i>size</i>	0.3599736	.6376371	0.56	0.0780202	.2457904	0.32
<i>pol</i>	-2.002145	1.740597	-1.15	-2.320133	1.260156	-1.84
<i>c</i>	25.7777***	4.379724	5.89	24.8999***	2.81133	8.86
<b>Wald chi2(7) Prob&gt;chi2</b>		499.55518*** 0.000			16680.536*** 0.000	
<b>Sargan test Chi2(64) Prob&gt;chi2</b>		147.35043*** 0.000			25.190552 1.000	
<b>AR (1) p-value</b>		-			-1.8751558 0.0608	
<b>AR (2) p-value</b>		-			-1.3046008 0.1920	

Note: dependent variable=*lev*; \*, \*\*, and \*\*\* denote the statistical significance at the 10, 5 and 1 per cent test levels, respectively.

As we have argued previously, when including the lagged dependent variable as explanatory variable, the dynamics of the dependent variable is almost entirely captured by its lag. Therefore, two panel estimation methods are performed using a within estimator with AR (1) errors (Within-FE) and a generalized least square random effect with AR (1) errors (GLS-RE) as presented in Table 6. Statistically, the general accepted way of choosing between fixed and random effects is running Hausman test, based on test result, the estimation of the random effects model is inconsistent and we must retain the estimation of the fixed effects model in which the variable of political connection is significant. Besides, we obtain the modified Bhargava et al. (1982) Durbin-Watson (DW) statistic and Baltagi-Wu (LBI) statistic. Based on these statistics, both tests reject the null hypothesis of no first order serial correlation and



the models were estimated taking this into account. The results from the Fixed effects model show that tangibility and profitability are significant and negatively related to leverage, while political connection and size have a positive relationship with leverage. We notice that banks with higher political connection tend to have higher leverage in their corporate financing structure. But, the variable of political connection is significant at only 10% level.

**Table 6.** Estimation of Panel Data model with AR (1) disturbance

Variables	<i>fixed effects with AR (1) errors</i>			<i>random effects with AR (1) errors</i>		
	coefficients	Standard errors	t-statistics	coefficients	Standard errors	t-statistics
<i>prof</i>	-0.34147*	0.139345	-2.45	-0.5848***	0.117565	-4.97
<i>risk</i>	0.02707	0.027120	1.00	-0.01431	0.019429	-0.74
<i>tang</i>	-0.7267***	0.173856	-4.18	-0.9078***	0.141949	-6.40
<i>growth</i>	-0.02495	0.013151	-1.90	0.00485	0.010102	0.48
<i>size</i>	20.6816***	1.340789	15.43	0.28154	0.749162	0.38
<i>pol</i>	5.7214*	2.754286	2.08	1.1918	1.37549	0.87
<i>c</i>	18.0523***	1.46072	12.36	91.1851***	2.738649	33.30
<i>Within R<sup>2</sup></i>		0.558			0.1306	
<i>Between R<sup>2</sup></i>		0.1456			0.0956	
<i>Overall R<sup>2</sup></i>		0.1183			0.1135	
<i>DW statistic</i>		0.804176			0.804176	
<i>LBI statistic</i>		1.187850			1.1878506	
<i>AIC<sup>(1)</sup></i>		1.578.5582			-	
<i>BIC<sup>(2)</sup></i>		1605.0879			-	
<i>Hausman Chi2</i>			773.19			
<i>p-value</i>			0.000			

Note: dependent variable=*lev*; \*, \*\*, and \*\*\* denote the statistical significance at the 10, 5 and 1 per cent test levels, respectively. <sup>(1)</sup>Akaike Information Criteria. <sup>(2)</sup>Bayesian Information Criteria.

The estimation of model (3) was used to test the statistical significance of explanatory variables (original, quadratic and crossed). Then, through an iterative elimination of statistically insignificant coefficient, we restart the regression with one less insignificant variable. We repeat the procedure of estimation until we end with 10 significant variables as shown in equation (4):

$$lev_{it} = c + \alpha_1 prof_{it} + \alpha_2 growth_{it} + \alpha_3 size_{it} + \beta_1 risk^2 + \beta_2 size^2 + \theta_1 prof * size + \theta_2 prof * growth_{it} + \theta_2 prof * pol_{it} + \theta_3 risk * size_{it} + \theta_4 tang * growth_{it} + v_i + \varepsilon_{it} \quad (4)$$

By observing the table 7 which summarizes the estimation results relative to model (4) that includes the quadratic and interactive terms of the explanatory variables, we notice that there are 10 significant variables. In addition, an estimation of model (4) with standardized variables is added to the results of table 7 to remove the effect of the unit of measure. The estimated coefficients are relative to the contribution of corresponding variables on the model.

**Table 7.** Estimation of fixed effects model with AR (1) disturbance (nonlinear model restricted to the significant variables)

<i>variables</i>	Model with raw variables			Model with standardized variables		
	coefficients	Standard errors	t-statistics	coefficients	Standard errors	t-statistics
<i>prof</i>	2.404596***	.3296212	7.30	0.415416***	0.080199	5.18
<i>growth</i>	0.061694***	.0144305	4.28	0.175297***	0.034237	5.12
<i>size</i>	45.17926***	3.138123	14.40	3.107970**	1.061148	2.93
<i>Prof*size</i>	-1.055038***	0.117756	-8.96	-0.553295***	0.078449	-7.05
<i>Prof*growth</i>	-0.013467**	0.004410	-3.05	-0.106118**	0.036618	-2.90
<i>Prof*pol</i>	0.706390**	0.247567	2.85	0.108872**	0.040160	2.71
<i>Risk*size</i>	-0.052156**	0.016029	-3.25	-0.454187*	0.193258	-2.35
<i>Tang*growth</i>	-0.019406***	0.00343	-5.66	-0.208979***	0.033291	-6.28
<i>Risk<sup>2</sup></i>	0.001852***	0.000496	3.73	0.418845*	0.162387	2.58
<i>Size<sup>2</sup></i>	-5.482681***	0.736171	-7.45	-2.007541*	0.862467	-2.33
<i>c</i>	8.186444***	1.225873	6.68	-0.053870*	0.023917	-2.25
<i>Within R<sup>2</sup></i>		0.6984			0.3418	
<i>Between R<sup>2</sup></i>		0.1590			0.1535	
<i>Overall R<sup>2</sup></i>		0.1491			0.1619	
<i>DW statistic</i>		0.836441			0.8364	
<i>LBI statistic</i>		1.147743			1.147743	
<i>AIC<sup>(1)</sup></i>		1447.1774			224.1561	
<i>BIC<sup>(2)</sup></i>		1488.867			265.8457	

Note: dependent variable=*lev*; \*, \*\*, and \*\*\* denote the statistical significance at the 10, 5 and 1 per cent test levels, respectively. <sup>(1)</sup>Akaike Information Criteria. <sup>(2)</sup>Bayesian Information Criterion.

There are a number of difference in the results obtained in this estimation compared to those reported in the previous estimation reported in table 6. First, coefficients of profitability, tangibility and size are significant at 1% and positive indicating a direct and positive link between these variables and leverage. But, the direct effect of political connection on the dependent variable is no longer visible. Second, the coefficients of the squared variables

relative to risk and size are significant indicating the presence nonlinear effect of risk and size on leverage. The quadratic specification results in a significance of the coefficient of risk which is not the case in the linear model. This is consistent with the possibility that the relationship between leverage and risk may not be monotonic. As far as the coefficient of size is positive in the linear specification. The inclusion of the size-squared variable however, results in a significant reversal in the sign of the coefficient, indicating that the effect of bank size on leverage is non-linear. Accounting for the non-linear effect, the positive coefficient on the linear size variable is an indication that leverage increases with size. The negative coefficient on the quadratic term suggests that debt financing decreases with size. Finally, the coefficients of the interactive variables between profitability, size and growth are statistically significant. An interesting result is that while there is no direct effect of political on leverage, the variable of interaction between profitability and political connection appears to be significant at 1% and positive. Hence, there is an indirect effect of political patronage on leverage through profitability.

## **5. Conclusion**

Various researches have shown that political patronage can be either beneficial or detrimental to firms. Our research supports the hypothesis that these connections may affect financing decisions of bank. Our main finding that political patronage has positive relationship with bank leverage is in accordance with the benefits of being politically backed in banking sector such as easier access to loan by firms willing to seek further debt financing than their non-connected peers (Faccio, 2006). Besides, connections enable firms to enjoy preferential treatment by governments to acquire more capital (Khwaja & Mian, 2005). Furthermore, political ties could be a valuable resource for banks enabling them to more easily obtain resources in the form of deposits. Depositors might perceive these banks as less risky as they would be rescued by government in case of distress. Otherwise, we analyzed not only the

linear effect of political connections on leverage, but also the nonlinear effect by estimating a model that takes into account quadratic and interaction terms as explanatory variables in the regression equation. The indirect effect of political patronage on leverage is found to be not so large but significant through interactions with other determinants such as profitability. In other words, profitable banks with political patronage tend to have more debt. It could be argued that one of the benefits of being politically backed is to have higher market power enabling banks to charge higher interest rate on loans than non-connected banks, as well as, easier access to funding with enjoying lower cost of funds (Braun & Raddatz, 2010; Nys *et al.*, 2015), which subsequently leads to higher interest margins and then improves profitability. It means that the privileges resulted from political connections make banks more profitable which have positive impact on leverage due to larger and easier access to financing sources.

As a conclusion, this research provides insight in the costs and benefits of political connections, also, an insight to investors and government in their decision-making process for investments or policy making. Due to the importance of banking sector in the economy, it is strongly influenced by some political aspects. During crisis, the government have to inject capital to banks to avoid the collapse of banking industry. However, politically connected banks, having the privilege of being bailed out in case of distress may engage in riskier and inefficient activities. The monitoring of these banks by the government should be stronger than non-connected banks in terms of risk and efficiency. Moreover, the research gives insight to investors when evaluating the risk profile of banks with political patronage. In fact, politically patronized banks have lower default risk which might be driven from the governmental support rather than lower operating risk or better economic and financial conditions, then risk-averse investors should be able to identify companies with such characteristics as riskier and have incentives to require higher returns.

## Appendix A. List of Banks by country

country	banks
<b>Tunisia</b>	ARAB TUNISIAN BANK BANQUE DE TUNISIE UNION INTERNATIONALE DE BANQUES UNION BANCAIRE POUR LE COMMERCE ET L'INDUSTRIE BANQUE INTERNATIONALE ARABE DE TUNISIE BANQUE NATIONALE AGRICOLE SOCIETE TUNISIENNE DE BANQUE AMEN BANK BANQUE DE L'HABITAT ATTIJARI BANK
<b>Lebanon</b>	BANK AUDI BANK OF BEIRUT BYBLOS BANK
<b>Egypt</b>	BANQUE MISR NATIONAL BANK OF EGYPT BANK OF ALEXANDRIA MISR DEVELOPMENT BANK COMMERCIAL INTERNATIONAL BANK HSBC BANK EGYPT SUEZ BANK BANQUE DU CAIRE
<b>Yemen</b>	NATIONAL BANK OF YEMEN SABA ISLAMIC BANK SHAMIL BANK
<b>Jordan</b>	JORDAN ISLAMIC BANK HOUSING BANK OF TRADE AND FINANCE CAIRO AMMAN BANK JORDAN AHLI BANK BANK AL ETIHAD
<b>Iran</b>	BANK TEJARAT BANK SADERAT IRAN BANK SEPAH BANK REFAH BANK OF INDUSTRY AND MINE

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