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## Article

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# Impact of Corruption on Banking Sector Stability: Evidence from Middle East and North African Countries

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## Abstract

This paper focuses on the effect of corruption on the stability of conventional interest and Islamic free interest banks in MENA states using post crisis age (2008-2016). Adopting system Generalized Method of Moments (GMM) condition to estimate the model. The analysis reveals that a higher control of corruption has a positive impact on the stability of the Islamic banking sector and is related to less bank credit loss. It further highlights that conventional banks benefited from corruption practices to attain their level of stability. Implementing rigorous.

## Key words

Banking stability, MENA, corruption, Islamic bank, conventional banks

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## 1. Introduction

Over the decade corruption is a global endemic with complex political, social and economic dimensions. Corruption weakens governmental legitimacy, financial stability, and social wellbeing. The practice of corruption can manifest on both public and private organization alike, affecting the lives of all the humanity more specifically the poor's. International societies such as World Bank (2018), International Monetary Fund-IMF (2018), Arab Human Development Report-AHDR (2016), Organization for Economic Cooperation and Development-OECD (2014) called for the consideration on the growing adverse effect of corruption on the financial sector: the increase in the cost of capital, discouraging foreign investment, the decrease in national income which leads to the deterioration in the equitable distribution of wealth and increases in poverty rate. Previous literature has extensively established the negative consequences of corruption to economic development; it is practically documented that corruption cause inefficiency in governance and negate long term economic success and sustainable growth. The importance of institutional quality on the financial sector development and stability has been upholding by economic theories. Prior literature stresses the significance of institutions for securing sound financial development (Beck and Levine, 2004). Similarly, a higher quality institution reduces the cost associated with financial fragility (Demirgüç-Kunt and Detragiache, 1998; Essid *et al.*, 2014).

Banking sector plays the intermediation link between the surplus sector and deficit sector of the economy. The theoretical explanation and practical evidence have shown a direct relationship between economic progress and capital resources allocation (Beck and Levine, 2002; Durnev *et al.*, 2004; Wurgler, 2000). Toader *et al.* (2018) point out that corruption is one of the critical obstacles to banking intermediation process, bank performance, and financial stability; this has drawn the attention of policies makers and scholars. Meanwhile, corruption is observed as the abuse of trust vested on public or private office holder for illegitimate personal gain (Bhargava, 2006; Hlatshwayo *et al.* 2018). It entails collecting or given bribes or disguise gifts, tax evasion, money laundering, unauthorized borrowing, misappropriation of funds, rent-seeking activities and many more. The act of corruption apart from been against business ethics, it also a forbidden character under Islamic Teaching. Consequently, this act portrays a serious problem that involves undesirable costs, more especially in the developing economies (Chen *et al.*, 2015; Park, 2012). Majority of emerging countries in the Middle East are usually characterized by immature stock markets and access to financial resources depend solely on the banking sector. Hence, investigating how corruption upset the activities of the banking market and identifying the course agent will guide policymakers to combat the menace and expand on the intermediation process and economic development.

The main target of this work to explore the effect of corruption on the stability of Islamic and Conventional banks. Firstly, by proving the answer to the proposition that corruption is one of the elements that course banking instability, as corruption

degrades intermediation function of banks which leads to weaker outreach, and exposed the state closer to the fiscal crisis. Secondly, portrays a new paradigm in which poor control of corruption lowers the speed of economic growth. This can be seen through reduction to private investment by distracting chain of capital. Furthermore, unlike previous contributors, this study will adopt various measures of corruption developed by the reportable organization such as World Bank, Transparency International and European Research Center.

## 2. Literature review

### 2.1. Corruption in the Middle East and North African States

In the Middle East, the majority of states are harassed with lingering corruption issues. Their vulnerability to corrupt practices varies based on the nature of the political structure, social and economic factors. However, widespread cases of corruption in the Middle East is often seen systemic and endemic in contrast to Americas and Asian Pacific countries in which 19 out of 21 scores below the global median corruption index (Transparency International, 2018). Corruption in the MENA region has polluted the public and private sectors of the economy. Previous studies have shown that the public sector is most hart by corruption than others, as public funds are diverted for self-interest at the expense of the common man, lack of transparent leadership and poor access to public expenditure data. Likewise, the private organizations are debilitated by bribe-taking and bribe gave to secure a competitive advantage over their rivals in the market (Haykal, 2017).

In the Global effort to crack down corruption MENA countries sign in to law anti-corruption reforms, some are legalistic reforms while others are institutional form. Such as Program on governance in the Arab region (POGAR), Middle East Partnership Initiative (MEPI), and Good Governance for Development (GfD). One of the most recent approaches to crack down corruption is the UNCAC framework in the MENA sub-region. As the recent global tool, UNCAC offers important anti-corruption reforms together with donor package good governance in the region. Presently, UNCAC receives endorsements from some of the member countries; many were involved in various anti-corruption programs that are pointing to the roots and effects of corruption. The strategies adopted by those countries are greed toward transparency, equality, integrity, accountability on public affairs and sound commercial atmosphere.

### 2.2. Theoretical basis

#### 2.2.1. Law and financial theory

The law of financial theory accredited La Porta *et al.* (1997) highlights the implication of law in the development of financial environment. The authors split the theory into two parts. First segment focus on the legal system in the country, in a situation where the countries legal system places more emphasis in enforcing commercial laws, such as creditors and lenders right, effective contractual implementation generates a better financial environment (Beck *et al.*, 2001; Grassa and Gazdar, 2014; Levine, 1998). On the Second part, theory recognizes legal origins/foundation as one of the reasons for the cross-national dichotomy in financial development. The theory believed that countries that derived their legal system from the common laws seem to be financially developed than a set of countries that generate their legal origin following civil laws. In essence, law finance theory portrays that states with common law origin provide stronger legislation to protect investors than countries with civil law foundation (La Porta *et al.*, 1998). Contrary to the prediction of the theory, MENA countries derived their legal system from Islamic principles which prohibit corruption. Still, the states are ranked below the median in terms of corruption control (Haykal, 2017). Moreover, several empirical studies uphold the law and finance hypotheses indicating legal beginning explains as the reason for banking devolvement as in (Cooray, 2012; Djankov *et al.*, 2007). However, Fowowe (2014) produced contrary, practical evidence that legal foundation does not influence financial sector development, more especially banking. This work put forward that quality legal system improves banking quality in the Arab World.

#### 2.2.2. Agency Theory

The agency framework traces its economic origin from the work of Eisenhardt 1989. The micro centered principal agent hypothesis describes corruption as a product of an agency conflict, typically a bureaucrat that abuses his public position and thereby betrays the interest of his principals, for his private gain. The most significant assumption behind this theory is the presence of information asymmetry which averts the principal to efficiently monitor and regulate the action and inactions of his agents. The principal-agent hypothesis becomes a comprehensive approach to clarify corruption and its costs (Mungiu-Pippidi and Dadašov, 2016). Subsequently, the vast majority of policies to track corruption in the emerging economy trailed the principal agent premises (Persson *et al.*, 2013). Similarly, the principal-agent framework denotes that any anti-corruption policies should concentrate on institutional adjustment not the existence of non-corrupt principal (Rothstein, 2011).

### 2.3. Control of corruption and Banking stability

The theory has identified the consequence of institutional excellence on banking development. The institutional quality which comprises of corruption control has been widely considered as one among the determinants of financial stability. Recent empirical works proved that the improvement of institutional quality encourages banking development (Cherif and Dreger, 2016). On a similar note, several pieces of literature found corruption as one of the determinants of banking sector stability in an advanced economy (Toader *et al.*, 2018). The result of literature on the impact of corruption proxies by corruption control index is ambiguous on banking activities. Using the banking stability measure of Z-score, Toader *et al.* (2017) found lower corruption index responsible for banking stability development and reduction in credit loss of European countries, the findings received support of the empirical work that lesser control of corruption deteriorates banking stability (Chen *et al.*, 2015; Fhima, 2018; Weill, 2011). In his attempt to used multiple indices of corruption from Transparency International and that of Information for Democratic Foundation. Weill (2011) result revealed that both indices captured corruption to reduce the level of banking intermediation of the Russian banking sector. On a similar note, Park (2012) using cross-sectional macroeconomic data demonstrated that corruption exacerbates bank bad loan problem. Bougatef (2015) provide practical evidence that a high level of corruption intensifies impaired financing of sharia compliance banks in GCC states from 2008 to 2010 financial years.

## 3. Methodology of research

### 3.1. Data of the study

In an attempt to analyse the connection between the control of corruption and banking sector stability, the paper explores where the influence of corruption control differs between conventional interest and Islamic interest-free banking models in the MENA region. The study consists of 171 banks, 120 conventional and 51 Islamic banks from 10 MENA countries from 2008 to 2016 bank financial year. Any bank with less than three-year active financial data is omitted from the study as in (Beck *et al.*, 2013).

Table 1. Sample of MENA Banks

Countries	Conventional Banks	Islamic Banks	Total
Algeria	14	1	15
Bahrain	8	12	20
Egypt	20	3	23
Jordan	11	3	14
Kuwait	5	8	13
Lebanon	20	2	22
Qatar	6	5	11
Saudi	8	7	15
Tunisia	13	2	15
UAE	15	8	23
Total	120	51	171

**Source:** Bank scope (2015)

Selecting Islamic banks to be part of this sample primarily come from the fact that the region is operating dual banking system concurrently and the Islamic legal system form part of the religion and cultural practice by the majority in the MENA region. The study hoped that comparing the stability the dual banks about corruption control will provide a more detail understanding as to the what extent corruption touches the stability of each kind of the bank, at that juncture the study will find quality rudiments to advance stability. To avoid inconsistency across the bank samples, commercial Islamic and conventional banks are only restricted to form this investigation. The 2008 base year is used to show how countries respond to the global crisis by designing a new regulatory framework to prevent future occurrence and ensure a stable banking environment. While the corruption control data from World Bank are going to be put in to use in this study as in (Weill, 2011). These corruption indices have the prediction powers to capture the extent and how public positions are abuse for private benefit, and can also detect the state of corruption by the bests and individual interests (Kaufmann *et al.*, 2009).

### 3.2. Specification of the Regression model

The model of this paper is built on the framework of law and finance hypothesis, and financial intermediation theory. The stability of the banking sector is measured using Z-score, an import measure which is directly link to the probability of

banking insolvency, which emphasis when the value of bank debt overweight the value of its assets (Beck *et al.*, 2013). The bank Z-score can be calculated as follows:

$$Z_{score} = Eqcap_{Ta} + Roa_i / \delta_{Roa} \quad (1)$$

Where:

$Z_{score}$  stand for stability of bank,  $Eqcap_{Ta}$  is the Equity capital to total asset,  $Roa_i$  is the return on asset, and  $\delta_{Roa}$  is the standard division of return on asset.

To achieve the said objective of the study, the following model is specified:

$$Z_{score_{jit}} = \beta_0 + \beta_1 Z_{score_{jit-1}} + \beta_2 Corr_{jit} + \beta_3 BS_{jit} + \beta_4 Mf_{jit} + \beta_5 D_{jit} + \vartheta + \varepsilon_{jit} \quad (2)$$

Where:

$Z_{score_{jit}}$  is the banking stability index,  $Corr_{jit}$  represent corruption control index,  $BS_{jit}$  is the bank baseline control factors; Bank size, bank efficiency and income diversification,  $Mf_{jit}$  stand for country cyclical factors, GDP and inflation,  $\vartheta$  represent the unobserved bank specific outcome, and  $\varepsilon$  stand for the error term. While the subscripts  $j$ ,  $i$  and  $t$  specify bank, country and period of time correspondingly.

Table 2. Variable section

Variables	Definition	Sign	Source
Dependent Variable: Z-score	EA+ROA/SD(ROA).	Bank scope	Beck et al., 2013
Control of Corruption	Index from World Bank, the scale from 10-100	World Bank	Chen et al., 2015
Bank specific variable: Bank size	Natural Logarithm of total asset	Bank scope	Bustamam et al., 2017
Efficiency	Total expenses/operation income	Bank scope	Beck et al., 2013
Diversification	Noninterest income/total operating income	Bank scope	Kabir and Worthington, 2017
Macroeconomic Variable: GDP growth	Growth rate of nominal GDP	World Bank	Hoque et al., 2015
Inflation	CPI	World Bank	Cihak & Hesse, 2010
Dummy of Islamic bank	1=Islamic, 0=conventional bank		Beck et al., 2013

### 3.3. Estimation technique

This paper operated a panel dataset that adventures the combination of time series and cross-sectional dimensions of the dataset. Missing values are replaced by interpolated data (Goosen and Kusel, 1993). To estimate the panel model, dynamic Generalized Method of Moment (GMM) estimator is put in to use. The estimator is most appropriate when the elements in the cross sections are higher than the period of the study. The GMM estimator uses lag of dependent variable to solve indigeneity problem in the series, and also applies variables which are orthogonal to error term to serve as an instrumental variable in the series.

## 4. Descriptive results

### 4.1. Descriptive statistics

Table 3 displays the descriptive statistics for the entire series (bank specific, corruption index and the cyclical variables) of the banks operating from the period 2008 to 2016 in the MENA region. The variables in the series portray a normal distribution curve. The average banking stability measure by Z-score is 3.2%, it appears that the stability of the MENA banks improves compared to 2.95% reported by other studies (González *et al.*, 2017). Similarly, the Z-score in the restricted samples is expressively greater in conventional banks than the Islamic counterpart, indicating that the interest-free Islamic banks are facing insolvency risk.

Table 3. Descriptive analysis

VARIABLE	Obs	Mean	Std. Dev.	Min	Max
Full Sample					
ZSCORE	1,503	3.245	1.127	-8.27	5.64
CPI	1,503	0.446	0.141	0.25	0.77
CCI	1,503	0.523	0.222	0.14	0.91
GDP	1,503	25.382	1.085	23.813	27.352

VARIABLE	Obs	Mean	Std. Dev.	Min	Max
INF	1,503	0.044	0.042	-0.05	0.18
LNTA	1,503	15.290	1.556	10.009	19.102
NI	1,503	10.116	3.456	0	15.97
CIR	1,503	3.838	0.478	2.04	6.88
Conventional Banks					
ZSCORE	1,062	3.458	1.085	-8.27	5.64
CPI	1,062	0.424	0.143	0.25	0.77
CCI	1,062	0.480	0.231	0.139	0.91
GDP	1,062	25.364	1.055	23.813	27.352
INF	1,062	0.047	0.044	-0.05	0.18
LNTA	1,062	15.493	1.521	10.009	19.102
NI	1,062	10.759	2.661	0	15.03
CIR	1,062	3.765	0.361	2.76	6.09
Islamic Banks					
ZSCORE	441	2.733	1.061	-2.64	5.51
CPI	441	0.500	0.119	0.25	0.77
CCI	441	0.627	0.157	0.139	0.91
GDP	441	25.424	1.154	23.813	27.352
INF	441	0.038	0.035	-0.05	0.18
LNTA	441	14.799	1.532	11.129	18.274
NI	441	8.568	4.505	0	15.97
CIR	441	4.012	0.650	2.04	6.88

#### 4.3. Correlation background

Table 4 portrays the pairwise correlation matrix between the dependent variable and predictor variables, the table presents a weak and negative correlation between Z-score and corruption control indexes and macroeconomic variables. Similarly, the matrix indicated a positive correlation between banking stability Z-score and banking variables.

Table 4. Correlation matrix

Variable	Zscore	CPI2	CCI1	GDP	INF1	lnTA	NI	CIR
Zscore	1.000							
CPI2	-0.066	1.000						
CCI1	-0.115	0.945	1.000					
GDP	-0.044	0.316	0.223	1.000				
INF1	-0.124	-0.283	-0.258	0.274	1.000			
lnTA	0.157	0.318	0.265	0.424	-0.014	1.000		
NI	0.447	0.173	0.112	0.313	0.030	0.645	1.000	
CIR	-0.268	-0.274	-0.233	-0.280	-0.022	-0.441	-0.574	1.000

#### 5. Regression Results

The equation (2) is estimated to evaluate the effect of corruption on banking stability between conventional and interest-free Islamic banks in MENA region in full sample, a sample with dummy, conventional and Islamic bank samples; the outcomes are stated in Table 5. The lag of the dependent variables Z-score is statistically and positively significant in the entire sub-samples. Explicitly, a 1% increase in banking stability last year will lead to a corresponding increase in the stability of banking sector by 62%, 58%, 38% and 82% this year for sub-sample models. As an institutional determinant of Z-score in the MENA region, a decline in the coefficient of corruption control leads to the lower stability of the banking sector. The estimated result in Table 5 of the dynamic GMM indicates that a 1% change in control of corruption creates a 0.54% decrease in banking stability of the full sample, 0.38% decrease in sample with Islamic dummy, and 0.57% decrease in conventional interest banks. The outcome displayed a consistent relationship with the finding of (Korbi and Bougatef, 2017). Though, a 5%-point increase in corruption control leads to statistically and significant increase in banking stability by 0.32% of Islamic banks, indicating Islamic banks are not benefiting from corrupt practices to attain stability, this finding is in line with theoretical prediction as well as previous works, e.g. (Chen *et al.*, 2015; Toader *et al.*, 2017). On the part of macroeconomic determinants to banking Z-score, a 1% increase in GDP growth leads to a significant decrease in banking stability by 0.05% and 0.12% in the full sample and conventional banks sub-groups respectively while a 5% increase in the GDP generates a 0.04% decrease in bank Z-score sample with Islamic dummy whereas a 1% increase in GDP growth resulted in a significant increase in banking stability by 0.07% in Islamic banks group. However, a 1% increase in the

coefficient of inflation variable shows a significant responding decrease in banking stability by 2.5%, 2.9% and 3.4% in the full sample, a sample with dummy and conventional bank sub-groups respectively while the Islamic interest-free banking sub-group displayed an insignificant relationship. Considering the relationship between bank-specific determinants and bank Z-score, a 1% increase in bank size leads to a significant increase in banking stability by 0.04% in conventional banks and 0.17% decrease in Islamic banks sub-group. Similarly, a 1% increase in banking efficiency resulted in a significant decline in banking stability by 0.014% and 0.03% in conventional and Islamic sub-groups. Likewise, a 1% increase in bank income diversification leads to a substantial rise in banking stability by 0.09% and 0.03% in conventional interest banks and Islamic free interest banks respectively.

Table 5. System GMM estimation for banking stability

Coefficient and (Probability)				
VARIABLES	Full Sample	Full Sample with Bank Dummy	Conventional Banks	Islamic Banks
ZSCORE				
L1.	0.617*	0.586*	0.377*	0.815*
	(0.000)	(0.000)	(0.000)	(0.000)
CCI	-0.540*	-0.377*	-0.569*	0.318**
	(0.000)	(0.000)	(0.000)	(0.008)
GDP	-0.052*	-0.037**	-0.121*	0.072*
	(0.000)	(0.001)	(0.000)	(0.000)
INF	-2.486*	-2.866*	-3.388*	-0.788
	(0.000)	(0.000)	(0.000)	(0.065)
lnTA	0.029*	0.016	0.036*	-0.172*
	(0.000)	(0.075)	(0.000)	(0.000)
CIR	-0.057*	-0.033*	-0.014	-0.031
	(0.000)	(0.000)	(0.235)	(0.350)
NI	0.056*	0.052*	0.090*	0.031*
	(0.000)	(0.000)	(0.000)	(0.000)
BANK DUMMY		-0.27*		
		(0.000)		
_cons	2.164*	1.997*	4.183*	0.919
	(0.000)	(0.001)	(0.000)	(0.078)
Statistics	Coefficient and (Probability)			
Wald Chi2 (14)	30195.31	48822.43	98996.13	16548.57
	(0.000)	(0.000)	(0.000)	(0.000)
Ar2	0.415	0.415	0.342	0.062
Hansen J	0.084	0.064	0.209	0.590
Year Dummy	Yes	Yes	Yes	Yes
Obs.	1336	1336	944	392
Groups	167	167	118	49
Instruments	141	141	111	43

## 6. Conclusions

While the implication of corruption on MENA economies are significant and well investigated, its repercussions on MENA banking sectors have received little consideration from the scholar. This piece of work aimed to understand the effect of low control of corruption on MENA banks books of financial affairs and examine any undesirable feedback effect between the banking sector stability and control of corruption. The outcome of the study shows the relationship between level of corruption control, bank-specific and macroeconomic characteristic as the determinants of bank stability Z-score across the MENA region. The analysis divulges that high control of corruption has a positive effect on banking sector stability. The study also discovered that poor corruption control significantly deteriorates the ability of banks to hold enough solvencies and performed their intermediation function. Secondly, the paper investigates the stability difference across banks between conventional interest and Islamic free interest banks on the impact of corruption control. Our evidence suggests that banks that derived their legal system from customary law in the MENA region are less affected by corruption. And banks under the roof of conventional interest are hopped to benefit from the lower control of corruption to attain their stability. The result of this analysis regarding the detrimental effect of corruption on banking stability justifies the importance the proffer anti-corruption policies and timely implementation in the Arabian Peninsula, more especially with current oil price fluctuations.

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