How corporate governance and ownership affect banks' risk-taking in the MENA countries?

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Abstract

Purpose – The purpose of this paper is to explore the relationship between corporate governance and risk-taking behaviour of banks operating in the Middle East and North African (MENA) countries.
Design/methodology/approach – In doing so, the authors use a data set covering 165 banks located in 13 MENA countries over the period 2005–2012 and apply dynamic panel data methodology.
Findings – The results show that good governance acting in the interests of shareholders could lead to excessive risk taking; in this sense, a conflict of interest between the stakeholders, interested in the solvency of the financial system, and shareholders, trying to maximise their benefit, may occur. The greater risk can be reinforced by the governance of the country and a strong macro governance framework can incentivise a higher risk exposure in banks, showing the influence of bank regulation and law enforcement on the risks taken by banks.
Originality/value – To the best of the authors' knowledge, this is the first paper showing that corporate governance is relevant for explaining risk taking at the country and bank levels in MENA countries.
Keywords Banks, Corporate governance, Ownership, Risk taking, Property rights
Paper type Research paper

1. Introduction

Current governance practices are based on the principle that corporate governance mechanisms are designed to protect shareholders' interests through the control of managers' decisions (Becht *et al.*, 2011; Mehran *et al.*, 2011; Srivastav and Hagendorff, 2016). Under shareholder-oriented governance (SOG), it is expected that banks take on a higher level of risk with the aim of maximising their profits and in turn the returns for shareholders, thereby increasing their probability of financial distress. Moreover, such gambles have historically been linked to long-term economic growth (Barro, 1991; De Long and Summers, 1991). Nevertheless, in the case of the banking sector, the recent financial crisis showed the need to control bank dealings such as these more effectively by improving corporate governance mechanisms (Basel Committee on Banking Supervision, 2014; Federal Reserve System *et al.*, 2010). At the same time, Garriga (2017) shows that in countries which delay applying prudential regulations, banks are less cautious. Thus, it seems necessary to design new governance control mechanisms which take the interests of other stakeholders into consideration so as to lower the chances of failure more effectively (Srivastav and Hagendorff, 2016). At the same time, it is necessary to consider country-level governance and regulation because a macro governance framework can act as a substitute for

corporate governance at the firm level (Berglof, 2011; Safiullah and Shamsuddin, 2018). Recently, Haque (2019) investigates how ownership structure and bank regulations influence risk taking in the Middle East and North African (MENA) region. However, little is known about the interaction between either firm- or country-level dimensions.

In this paper, we analyse the effect of governance at the country and firm level, and ownership on banks' exposure in the MENA countries. The special interest arises from the fact that in this area there are banks operating in some countries under risky environments and, in general, with varying standards of governance, investor protection and ownership (Otero *et al.*, 2017; González *et al.*, 2017). Another curious feature is the presence of Islamic banks (Daher *et al.*, 2015), these being different from conventional ones in terms of sources and uses of funds. For example, Islamic banks constitute 17 per cent of the market share in the United Arab Emirates, 53 per cent in Saudi Arabia and 24 per cent in Qatar (World Islamic Banking Competitiveness Report, 2013–2014).

In this regard, there is a gap in the literature regarding the effect of the "macro" governance system and their "micro" mechanisms on banks´ risk taking in countries with risky environments and different economic and financial conditions, like in the MENA region.

This paper contributes to the existing literature in several important ways. As far as we know, this is one of the few papers that have shown that corporate governance is relevant, explaining exposure at the country and bank levels in MENA countries. More specifically, we consider an index at the firm level, proposed by Lel (2012), to be a measure of SOG. In addition to the firm-level features of banks, we have also considered country governance, in line with Aggarwal *et al.* (2011) and Berglof (2011), who explained the importance of considering the interdependence between the "macro" system and its "micro" level. Property rights and the presence of multiple large shareholders like families, institutional investors and institutions are also considered, in line with Boubaker *et al.* (2016). The focus on MENA countries is another contribution of the paper. As we mentioned, research on the effect of corporate governance on banks' risk taking has traditionally paid little attention to emerging countries, except some contributions like Srairi (2013) and Haque (2019), which are more focussed on ownership and regulation. Moreover, our results could be a guide for bank regulators and supervisors.

Our results support the necessity of taking the country-level governance into account because a global framework can act as a substitute for corporate governance at the firm level. Additionally, a policy acting in the interests of shareholders could lead to looser investment rules. In terms of ownership, we found that banks with high state ownership or institutional investors´ stakes take more risks. Finally, Islamic banks are greater risk takers than their conventional counterparts.

The structure of this paper is organised as follows: after this introduction, Section 2 discusses the pertinent theoretical and empirical reviews, as well as the conceptual framework while developing corresponding hypotheses; Section 3 presents the data source and describes the methodologies used in the paper; and Section 4 explains the descriptive and empirical analysis. Finally, the main conclusions are presented.

2. Related literature and hypotheses development
Corporate governance at the bank level
Banks have a set of mechanisms to control management in order to protect their interests. Under the agency theory (Jensen and Meckling, 1976), managers are expected to be less willing to take risks because they may care more about their reputation and job security (Angkinand and Wihlborg, 2010). Banks usually adopt a SOG. This implies that shareholders' objectives have a heavy influence on managers' incentives and their structures try to protect the shareholders' interests (Srivastav and Hagendorff, 2016; Orozco *et al.*, 2018). As a result, if bank governance is shareholder-oriented, it is expected for the company to accept a higher level of risk to maximise the profits and returns. But the alignment of interests between

managers and shareholders can result in higher risk taking at the expense of creditors and taxpayers (the risk-shifting problem), as John *et al.* (2001) recognise. Bolton *et al.* (2015) show that shareholders do not have incentives to control risk taking in order to take advantage of government guarantees. We propose the following hypothesis based on the above explanation:

H1. Shareholder-oriented corporate governance has a positive effect on banks' risk taking.

The nature of ownership influences bank performance and risk taking. According to traditional corporate governance literature, the largest blockholders make the most of their power to obtain the private benefits available to them (Kumar and Zattoni, 2017). Previous research establishes a relationship between the way the bank is organised and its risk-taking behaviour (Cordell *et al.*, 1993; García-Marco and Robles-Fernández, 2008). Iannotta *et al.* (2007) shows that government-owned or controlled banks usually pursue industrial policies and provide loans that may not be profitable enough for the private sector. According to Berger *et al.* (2005), Cornett *et al.* (2010) and Iannotta *et al.* (2007), state-owned banks have poorer loan quality and higher default risk than privately-owned banks. This is consistent with the view that government-owned banks are run by political bureaucrats and their decisions are dictated by political interests (Iannotta *et al.*, 2007). Eichler and Sobański (2012) argue that state ownership increases the moral hazard incentives of banks:

H2. State ownership has a positive effect on banks' risk taking.

Family firms may avoid risk taking because their main objective is to transfer the control of a firm to their next of kin. As Gomez-Mejia *et al.* (2007) explain, family owners take into account not only financial interests but also non-economic goals like identity, reputation (Berrone *et al.*, 2012), employment for family members (Kellermanns *et al.*, 2008) and a long-term view that involves the transmission of the business to future generations and the perpetuation of the family dynasty (Wilson *et al.*, 2013). Consequently, they put more interest in firm survival rather than in wealth maximisation. As a result, family firms only make risky investments when it is important to sustain the firm in the future (Miralles-Marcelo *et al.*, 2014) and, in general, they present a lower level of long-term investment compared to non-family firms (Anderson *et al.*, 2012; Miller *et al.*, 2011). The results of Srairi (2013) reveal that family-owned banks appear to assume lower-level risks. The results suggest that Islamic family banks have a lower level of credit risk compared to conventional or commercial banks. Additionally, it shows that conventional family banks tend to have relatively higher levels of credit risk compared to Islamic family banks. However, other studies (Laeven, 1999; Nguyen, 2011; Villalonga and Amit, 2006) found that family-controlled banks are associated with significantly higher risk:

H3. Family ownership has a negative effect on banks' risk taking.

Institutional investors tend to be active participants in a corporation's governance; they can monitor a firm's strategies to ensure responsiveness and exercise significant voting power, and they can exert a significant positive influence over risk taking. The presence of institutional investors and venture capital firms were found to exert pressure on family managers to take on more risk to enhance performance (George *et al.*, 2005). In contrast, Setiyono and Tarazi (2014) argue that the presence of institutional investors as a second stage block holder tends to reduce risk taking and improve performance. Stemming from previous arguments, we propose the following hypothesis:

H4. Institutional ownership has a positive effect on banks' risk taking.

Corporate governance at the country level
Country-level governance reflects the quality of each environment, which affects its standard at the firm level. A strong macro governance framework can act as a substitute for

corporate governance at said level (Berglof, 2011). Ben Naceur and Omran (2011) pointed out that law enforcement significantly affects a bank's performance and risk. The protection of shareholders by the legal system should not be overlooked and shareholders' rights are a measure of their legal protection in any country (Srairi, 2013). The banking theory suggests that effective legal shareholder protection serves as a substitute for the existence of a large shareholder monitoring management (Magalhaes *et al.*, 2010) and affects owners' ability to adjust bank risk (Laeven and Levine, 2009). However, the relationship between investor protection and risk taking is still controversial. Even though a positive association has been found by many authors (Paligorova, 2010; Roe, 2003; Stulz, 2005; Tirole, 2001), there is also evidence of a negative one between investor protection and risk taking (Burkart *et al.*, 2003; John *et al.*, 2008; Morck and Steier, 2005; Shleifer and Vishny, 1986; Stulz, 2005); consequently, based on previous literature, we propose the following hypotheses:

H5. Country-level governance has a positive effect on MENA banks' risk taking.

Deposit insurance
Deposit insurance can stimulate moral hazards, and bank managers may be encouraged to take more risks in the hope of gaining higher profits, since they know that in the case of a default, a large part of the bank's debts will be covered by it. In addition, it may exacerbate agency problems, since it increases the shareholders' incentive to engage in excessive risk taking (Macey and O'Hara, 2003; Prowse, 1997). Such behaviour implies a wealth transfer from creditors to shareholders (Angkinand and Wihlborg, 2010). Based on the above discussion, our hypothesis is as follows:

H6. Deposit insurance has a positive effect on banks' risk taking.

Islamic vs conventional banks
The distinct nature of the relationship with clients and the different kinds of financing and investing activities on offer entails unique risks for Islamic banks which arise from the specific features of Islamic contracts: *Shariah* non-compliance risk, rate-of-return risk, displaced-commercial risk, equity-investment risk and inventory risk (Helmy, 2012). According to the agency theory, an Islamic bank acts as an agent in that it invests depositors' funds, while the latter are the principals. The moral hazard problem arising from this relationship will give the bank an incentive to increase exposure (Bashir, 1999). Safiullah and Shamsuddin (2018) indicate that Islamic banks operate under a set of prohibitions, and internal governance mechanisms (*Shariah* supervisory board), which can lead to differences in behaviour between Islamic and conventional banks. At the moment, the findings are mixed. In this sense, Srairi (2013) found that state-owned Islamic banks tend to be more stable than state-owned conventional banks. Islamic banks have less exposure to credit risk than conventional banks. Abedifar *et al.* (2013) and Mollah *et al.* (2017) found that Islamic default risk is not different from that of conventional banks. Čihák and Hesse (2010) and Beck *et al.* (2013) found that large conventional banks tend to be more stable than large Islamic banks.
   These arguments lead us to propose the following hypothesis:

H7. Being an Islamic bank has a positive effect on banks' risk-taking.

Table I summarises the hypotheses considered in this paper.

3. Data and methodology
The sample
Data were collected at the bank level from BankScope International Bank Database for the period of 2005–2012, and hand-collected from the annual reports of banks from their public websites. At the country level, we obtained data from different sources: the Access Database

Argument	Hypothesis
Corporate governance bank level	
H1	Shareholder-oriented corporate governance has a positive effect on banks' risk taking
H2	State ownership has a positive effect on banks' risk taking
H3	Family ownership has a negative effect on banks' risk taking
H4	Institutional ownership has a positive effect on banks' risk taking
Governance country level	
H5	Corporate governance at the bank level has a positive effect on banks' risk taking
The moral hazard	
H6	Deposit insurance has a positive effect on banks' risk taking
Islamic vs conventional banks	
H7	Being an Islamic bank has a positive effect on banks' risk-taking

of the World Bank, Heritage Foundation's Index of Economic Freedom, World Governance Indicators (WGIs) compiled by the World Bank, the worldwide database on deposit insurance (Demirgüç-Kunt *et al.*, 2005), the IFC Doing Business Database and the International Financial Statistics provided online by the IMF. The data sample comprised 165 banks gathered from MENA countries classified as pure conventional banks (106), pure Islamic banks (48) and mixed-banks (11), which present both conventional and Islamic banking services. The final sample contains about 1,320 bank-year observations from 13 countries, and it is a balanced panel set of 165 banks.

Variables
Our primary measure of bank risk taking (the dependent variable) is Z-score. The Z-score has become a popular measure of bank soundness (see e.g. Boyd and Graham, 1986; Boyd and Runkle, 1993; Čihák and Hesse, 2010; Worrell *et al.*, 2007; Otero *et al.*, 2016). A higher Z-score indicates that the bank is less risky. This measure is calculated as:

$$Z \equiv (\mu + k)/\sigma,$$

where μ is the return on average assets (ROAA), k is the balance of capital relative to the total assets of the entity (equity/total assets) and σ is the standard deviation (volatility) of the ROAA.

As proxies for country-level governance, we used the indicators obtained from the WGIs like in the studies of Beltratti and Stulz (2009), Čihák and Hesse (2010), Erkens *et al.* (2012) and Kaufmann *et al.* (2009). The WGI measures the quality of governance provided by a large number of enterprises, citizens and experts. We follow Kaufmann *et al.* (1999) and consider the mean of the six variables for each country[1].

For the firm-level governance, or corporate governance firm level (CGFL), we follow Lel (2012) in measuring the firm-level internal governance index. This index is comprised of seven widely-used governance measures hand-collected from the banks´ annual reports[2].

Following Chang (1998), we define a block holder or large shareholders as a beneficial owner of 5 per cent or more of the outstanding shares. This index ranges from 0 to 7. Consistent with the literature, it is expected that the extent of managerial monitoring increases the values of this index. For measuring the property rights (ProRigIndex), we follow Hassan *et al.* (2011), who used these from the Heritage Economic Freedom Index to measure country-level investor protection and construct the variable with this name. To measure the ownership structure (owners' nature and identity), we constructed a set of variables by hand-collecting data from annual reports. Blockholders are shareholders that own at least 5 per cent of a company's total outstanding shares. We also considered the presence of large blockholders

(Largeblock) when there were at least two important owners. For measuring the Islamic Banks (Islbank), we used a dummy variable, which has a value of 1 when a bank is Islamic and 0 if it provides conventional banking services. Another variable is the ratio of the deposit insurance coverage limit per capita GDP (DIClim) expressed as a percentage and based on the statutory coverage limit (Demirgüç-Kunt *et al.*, 2014; Barth *et al.*, 2006). Concerning control (macroeconomic) variables, we included GDP growth (GDPgrowth). Regarding firm level control variables, we controlled for various traditional bank characteristics that can affect their levels of risk taking, such as firm size (Logtotass), growth gross loans (GrowGroLoans), net loans (NetLoanTotA), efficiency (CosToInc) and capital (EquAss) (Table II).

Descriptive analysis
Table III provides the descriptive statistics for the main variables used in the regressions. We have obtained around 1,320 bank-year observations using the natural logarithm of *Z*-score in the regressions because its distribution is highly skewed. An average bank in the sample

Variable	Prediction *Z*-score	Definition	Source
Dependent variables			
Total Risk of default [*Z*-score]	Dependent variable	Ratio of the sum of equity capital to total assets and ROAA regarding the standard deviation of ROAA (sdROAA)	Bankscope, authors' calculation
Explanatory variables			
Islamic bank [Islbank]	+/−	Dummy takes the value 1 if the bank is Islamic	Bankscope, authors' calculation
Corporate governance at firm level [CGFL]	−	Sum seven widely-used governance measures	Authors' calculation from Annual Reports
Governance country level [WGI]	−	Quality of governance at the country level	World Bank
Property Rights Index [ProRigIndex]	−	Property rights protection	Heritage economic freedom index
Family ownership [BanImpFamSt]	+	Dummy takes the value 1 if the bank has an important family stake	Authors' calculation from Annual Reports
Government ownership [BanImpGovSt]	−	Dummy takes the value 1 if the bank has an important government stake	Authors' calculation from Annual Reports
Institutional ownership [BankImpInsInvSt]	−	Dummy takes the value 1 if the bank has an important institutional stake	Authors' calculation from Annual Reports
Large blockholders [Largeblock]	−	Dummy takes the value 1 if the bank has at least two important owners	Authors' calculation from Annual Reports
Deposit insurance [DIClim/ GDPperCapita]	−	Statutory coverage limit expressed as a percentage	Authors' calculation from IMF
Control variables			
Equity ratio [EquAss]	+	Equity/total assets ratio	Bankscope
Growth of loans [GrowGroLoans]	−	Annual loan growth rate	Bankscope
Bank size [Logtotass]	−	Logarithm of total assets; controls for bank's size	Bankscope
Extent of bank's lending [NetLoanTotA]	−	Net loans/total assets; control for extent of bank's involvement in lending activity	Bankscope
Eficiency ratio [CosToInc]	−	Cost/Income	Bankscope
GDP growth as macroeconomics variable [GDPgrowth]	−	Annual GDP growth rate	International Monetary Fund (IMF) database
Years [Year]		Year dummies	

Table II.
Summary of variables and predictions

Variable	Obs.	Mean	SD	Min.	Max.
Bank level					
Z-score	1,203	24.39	25.26	−7.76	238.36
LogZscore	1,196	2.82	0.91	−2.08	5.47
CGFL	1,319	5.80	0.75	4	7
BanImpFamSt	1,320	0.34	0.47	0	1
BanImpGovSt	1,320	0.22	0.41	0	1
BanImpInsInvSt	1,320	0.86	0.35	0	1
IslBank	1,224	0.32	0.47	0	1
TotAss (mil)	1,203	8,355.31	13,894.40	28.35	100,784.00
NetLoaTotA (%)	1,137	44.30	21.51	0	98.19
CosToInc (%)	1,111	46.02	18.36	15.69	120
GrowGroLoa (%)	1,037	17.98	25.55	−39.31	126.88
EquAss (%)	1,203	0.22	0.21	0.1	0.99
Country level					
WGI	1,320	−0.19	0.62	−1.62	0.79
ProRigIndex	1,064	46.94	12.79	10	70
DIClim/GDP per capita (time)	640	3.67	5.23	0.32	36.24
GDPgro (%)	1,306	5.54	7.93	−62.08	104.48
GDPperCap ($)	1,306	22,280.17	22,376.16	751.42	99,731.10
Infl (%)	1,306	6.13	5.59	−4.87	35.55

Source: Authors' calculations based on BankScope data, annual reports, WGIs, Property Rights from Heritage Economic Freedom Index and IMF publications

Table III.
Descriptive statistics of main regression variables

has a logZscore of 2.82, similar to Anginer *et al.* (2014). CGFL shows that the banks in our sample have a high score and on average are shareholder-oriented. WGI is a variable obtained from the Worldwide Governance Indicators as a country-level governance measure. Its average value is −0.19, with a standard deviation of 0.62, which shows that there are many differences between countries. The same happens with the Property Rights Index (PRI), with values ranging between 10 and 70. This reflects the differences across countries in the main pillars included in the index, like the rule of law, regulatory efficiency and open markets. Important differences can be seen in deposit insurance coverage levels. In addition, in 34 per cent of the sample, the presence of family or state ownership is of note, since, in 22 per cent of the sample, public participation is significant. Moreover, institutional investors have a strong presence (86 per cent). What is more, the presence of Islamic banks in the whole sample is worthy of mention (32 per cent), although with sharp differences among countries. This situation arises because, in some countries, all the banks are Islamic (such as Iran and Sudan), whereas in other cases, like in Saudi Arabia, they are both conventional and Islamic. Finally, there are some nation states without any Islamic banks, like in Lebanon and Libya.

Cross-country comparisons of fundamental variables are listed in Table IV. Concerning the governance at the country level, most of the Arab Spring countries have a negative WGI (Egypt, Libya and Syria), whereas most of the Arab Gulf countries have a positive index value (Bahrain, Kuwait, Oman, Qatar and Emirates), Saudi Arabia being an exception. Regarding the CGFL, Saudi Arabia has the highest score, with 6.5, and Libya has the lowest, with 5, while the values of the remaining countries fell between these two parameters. The different scores for Saudi Arabia between GCL and CGFL are consistent with the Berg and Di Benedetta (2009) report on the corporate governance country assessment for Saudi Arabia (2009), where many of the laws and regulations are still comparatively new and untested. In addition, the PRI (ProRigIndex) shows that Bahrain has the highest score with 62 and Libya and Iran are in the joint last position. Finally, seven countries do not have a deposit insurance system. There are a high percentage of banks with important family

Country	WGI	CGFL	Property rights	Deposit insurance	Family	Government	Institutional
Bahrain	0.090	5.745	62.143	1.841	0.35	0.15	0.81
Egypt	−0.393	5.605	42.143	–	0.21	0.21	0.89
Iran	−1.074	5.688	10	–	–	0.50	0.50
Jordan	−0.020	6.008	52.857	7.045	0.44	–	0.94
Kuwait	0.181	6.078	50.714	–	0.13	0.13	1.00
Lebanon	−0.664	5.250	29.286	0.431	0.75	0.08	0.75
Libya	−1.038	5	10	20.928	0.00	1.00	0.25
Oman	0.228	6.111	50	2.946	0.44	0.11	0.89
Qatar	0.589	5.800	55	–	0.10	0.30	0.90
Saudi Arabia	−0.353	6.505	46.429	–	0.17	0.00	0.92
Sudan	−1.564	5.538	–	1.373	0.31	0.54	0.85
Syria	−1.040	6	30	–	0.57	0.14	1.00
Emirates	0.494	5.737	46.429	–	0.53	0.42	0.84

Source: Authors' calculations based on BankScope data, annual reports, the Worldwide Governance Indicators (WGI), Property Rights from Heritage Economic Freedom Index, IMF publications

Table IV.
Corporate governance shareholder rights and deposit insurance by country

stakes in countries like Lebanon, Syria, Emirates, Qatar and Jordan, while none of the Iranian and Libyan banks in the sample have any important family stakes. In turn, all Libyan banks have a noteworthy government share, while Jordanian ones reflect the opposite case. In addition, about half of the banks in the Emirates and Sudan have a considerable government ownership share. Finally, in Kuwait and Syria, all banks have an institutional investor, which is also common in most of the other countries.

Methodology
The Generalised Method of Moments (GMM) estimation was formalised by Hansen (1982) and became one of the most widely-used techniques in testing empirical economic and financial models. The GMM estimators developed by Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998) and Holtz-Eakin *et al.* (1988) are designed for samples with "small T, large N" panels such as ours. In addition, dynamic models are useful when the dependent variable depends on its past values as is the case with liquidity transformation. System GMM is designed for dynamic models and is well suited to tackling the endogeneity problem. GMM estimates are dealt with well in the presence of autocorrelation and heteroscedasticity, both of which one would expect to find in this type of data. Then we applied system GMM estimations using Stata 14 package software. In examining the impact of corporate governance on risk taking, we estimate the first model as follows:

$$[logZscore]_{it} = \alpha + \beta 1[logZscore]_{it-1} + \beta 1[Islbank]_{it} + \beta 2[CGFL]_{it} + \beta 3[WGI]_{it}$$
$$+ \beta 4[DIClim]_{it} + \gamma 1[Logtotass]_{it} + \gamma 2[EquAss]_{it}$$
$$+ \gamma 3[NetLoanTotA]_{it} + \gamma 4[GrowGroLoans]_{it} + \gamma 5[CosToInc]_{it}$$
$$+ \delta 1[GDPgrowth]_{it} + \sum_{t=1}^{8} Year_t + \varepsilon_{it}, \tag{1}$$

where LogZscore is the logarithm of the Z-score of bank *i* in period *t*; Islbank is a dichotomic variable for Islamic banks; CGFL is a corporate governance "bank" firm-level measure; the WGI index is a corporate governance country level measure "CGCL"; Logtotass is the natural log of total assets as a measure of bank size; EquAss is the equity-to-assets ratio; NetLoanTotA is the net loans/total assets ratio; GrowGroLoans refers to the growth of gross loans; CosToInc is the cost-to-income ratio; and GDPgrowth is a macroeconomic variable.

4. Results

Table V presents the regression results of different estimated models using the GMM. Our results show that CGFL has a significant and negative impact on the risk taking measured by Z-score. This result is consistent with *H1*, supporting that under-SOG banks accept a higher level of risk to maximise the profits and returns for shareholders. This implies that shareholders' objectives have clout in managers' incentives and the governance structures try to protect the formers' interests (Srivastav and Hagendorff, 2016). This finding is in accordance with Hassan and Mollah (2018), who found that corporate governance is the main driving force for risk taking in Islamic banks. The results suggest that good governance acting in the interests of shareholders could lead to excessive risk taking. The results also show that both banks with considerable government stakes and those with similarly institutional investor stakes are significant, supporting *H2* and *H4*. This result is consistent with the fact that, in these kinds of banks, managers' decisions are influenced by political interests, have a greater moral hazard and a poorer loan quality, thus increasing the level of risk taking. These findings agree with previous empirical research, which found a higher level of risk taking in government-owned banks (La Porta *et al.*, 2002; Iannotta *et al.*, 2007; Eichler and Sobański, 2012; Srairi, 2013; Zheng *et al.*, 2017). At the same time, from Model 2, we observed that institutional investors have a positive influence on risk taking, in line with George *et al.* (2005). Finally, family ownership has not been significant, despite the sign being in line with *H3*.

The same happens with WGI, which is significant in all the models with a negative impact on Z-score and, thus, a positive effect on risk taking, supporting *H5*. In this sense, the strong macro governance framework can act as a substitute for corporate governance at the firm level and shows the influence of bank regulation and law enforcement on

	Model 1	Model 2	Model 3	Model 4
logZscore ($t-1$)	0.6482***	0.5825***	0.6653***	0.6388***
IslBank	−0.3153***	−0.4172***	−0.6286***	−0.3356***
CGFL_	−0.1750*	−	−	−0.1495*
WGI_	−0.1460**	−0.2409***	−	−0.1634**
DIClim_	0.0070	0.0025	0.0083	0.0059
–ProRigIndex_	−	−	−0.0046	−
BanImpFamSt	−	0.1251	0.1334	−
BanImpGovSt	−	−0.0800*	−0.4294*	−
BanImpInsInvSt	−	−0.5083**	−0.2738	−
Largeblock	−	−	−	−0.1056
Logtotass	0.0803*	0.1149*	0.0899*	0.0888*
EquAss_	0.4593*	0.6474**	0.4299	0.4559*
NetLoamTotA_	0.0020	0.0041	0.0046*	0.0018
GrowGroLoa~_	−0.0006***	−0.0008**	−0.0013***	−0.0006**
CosToInc_	−0.0015***	−0.0019***	−0.0008*	−0.0015***
GDPgro_	0.0015	0.0012	0.0007	0.0013
_cons	1.3561**	0.5971	0.6869	1.2227**
n	802	802	644	802
Hansen (*p*-value)	0.978	0.907	0.382	0.994
AR 2 (*p*-value)	0.972	0.911	0.254	0.959

Notes: This table reports the panel data estimates for the System GMM where the dependent variable is the log of Z-score [logZ] and GMM style lag limits (1, 3) and estimates are robust. Year dummies are included. Hansen is a test for over-identifying restrictions, asymptotically distributed. The models avoid combining related variables. Thus, in Model 2, CGFL is excluded and the property dummies are considered instead. In Model 3, WGI is deleted and the Property Rights Index (PorRigInde) is incorporated instead. Finally, Model 4 includes the large block variable instead of property dummies. *,**,***Significant at 1, 5 and 10 per cent levels, respectively

the level of risk taken by banks. The protection of shareholders by the legal system is also notable and shareholders' rights are a measure of their legal protection in a country (Srairi, 2013). Concerning the PRI, the sign in the model is negative but not of great importance.

Islamic banks have a significant and negative impact on *Z*-score, increasing the level of risk taking, a finding that is consistent with Čihák and Hesse's (2010) study. They found that large Islamic banks are less stable (and therefore riskier) than conventional banks. This finding supports *H7*, which establishes a positive relationship between Islamic banks and risk taking. According to this result, we think that risk in Islamic banks could increase due to many factors: lower capital stability (Zheng *et al.*, 2017), the complexity of the Islamic business model (Srairi, 2013), the limited default penalties, the moral hazard incentives caused by profit-and-loss share contracts, or the operational limitations on investment and risk management activities. All these factors could make them less stable than conventional banks (Abedifar *et al.*, 2015).

Finally, concerning the deposit insurance coverage level, we found that it is neither significant for the *Z*-score nor therefore for risk taking either. Other significant variables were size and equity, with a positive sign, while the growth of loans and the level of inefficiency increase the risks taken by MENA banks.

Table VI summarises the results of the tested hypotheses. There is a significant and positive impact of both bank- and country-level governance on risk taking. The same happens with government-owned banks and those with an important presence of institutional investors. Finally, Islamic banks are greater risk takers in general.

5. Robustness

In order to check the robustness of our findings, we included Table VII to cover the global financial crisis period. This has had a significant impact on the banking industry's worldwide levels of risk taking and has perhaps affected the significance of the explanatory variables. We can see that the models are almost exactly the same and the variables remain significant, showing the importance of these factors to explain risk taking, regardless of the period considered.

We find that WGI has a significant and positive effect on risk taking, reducing the value of *Z*-score. This result confirms that the WGI is essential all the time, which implies that good governance at the country level will affect risk taking in all the contexts and has a significant and positive effect on risk taking. It also occurs with the CGFL Index when the

Hypothesis		All countries
H1	Sign	(+)
Corporate governance bank level	Significant	Yes
H2	Sign	(+)
State ownership	Significant	Yes
H3	Sign	(−)
Family ownership	Significant	No
H4	Sign	(+)
Institutional ownership	Significant	Yes
H5	Sign	(+)
Corporate governance country level	Significant	Yes
H6	Sign	(+)
Deposit insurance	Significant	No
H7	Sign	(+)
Islamic	Significant	Yes

Table VI.
Summary results of
testing hypotheses

	Model 1	Model 2	Model 3	Model 4
logZscore (t−1)	0.6244***	0.6013***	0.6408***	0.6242***
IslBank	−0.3097**	−0.3770**	−0.6413*	−0.3333**
CGFL_	−0.2918**	–	–	−0.2809*
WGI_	−0.1285**	−0.2064**	–	−0.1229*
DIClim_	0.0067	0.0032	0.0188	0.0065
ProRigIndex_	–	–	−0.0059	–
BanImpFamSt	–	0.3122	0.5225	–
BanImpGovSt	–	0.0841	−0.8038*	–
BanImpInsI~t	–	−0.5341*	−0.4559	–
Largeblock	–	–	–	−0.0129
Logtotass	0.0895	0.0928	0.1682	0.0884
EquAss_	0.7212**	0.8673*	1.5918*	0.6751*
NetLoamTotA_	0.0026	0.0060	0.0067	0.0025
GrowGroLoa~_	−0.0006**	−0.0008***	−0.0014***	−0.0006**
CosToInc_	0.0022	0.0020	0.0038	0.0022
GDPgro_	−0.0018***	−0.0021***	−0.0015	−0.0018***
_cons	1.9462**	0.5058	−0.0419	1.9126**
n	584	584	436	584
Hansen (p-value)	0.688	0.709	0.289	0.805
AR 2 (p-value)	0.158	0.221	0.774	0.155

Notes: See Table V. *,**,***Significant at 1, 5 and 10 per cent levels, respectively

Table VII.
Regression model results for the crisis period (2008–2012)

crisis period is considered. The results show that good governance acting in the interests of shareholders could lead to excessive risk taking even during crisis periods. This is possibly owing to banks adopting more aggressive policies in times of expansion that could increase their risk profile and generate the least favourable results in crisis periods.

We also estimate the models only bearing conventional banks in mind. The different nature of the relationship with clients and the contrast in products could entail another type of risk taking, therefore affecting the estimations. The new models show that corporate governance is important for explaining risk taking in conventional banks operating in MENA countries even when they are evaluated in isolation. The models estimated also maintain the signs of the relationship observed for the main model.

Finally, we have recalculated the models using OLS estimates (Table VIII). The results are consistent and corporate governance, both at country and bank level, seems to be noticeable for risk taking. Moreover, in general, the variables that are significant in the dynamic model remain thus so in the new estimated ones. In addition, the signs of the latter's coefficients are unchanged from the former's.

6. Conclusions

The main conclusions of this study are of great interest to supervisors, stakeholders and corporate governance researchers wishing to learn about the effect of corporate governance and regulation on the level of risk taken by banks. Overall, our study contributes to the existing literature, combining bank- and country-level corporate governance, shareholder protection and ownership and their effects on financial stability.

One main result achieved in this paper is that under SOG, the intermediaries accept a higher level of risk. Acting in the interests of shareholders could lead to excessive risk taking. In this sense, a conflict of interest between the stakeholders, concerned about the solvency of the financial system, and the shareholders, looking to maximise their profits, may occur. Greater levels of risk can be reinforced by the governance of the country and a strong macro governance framework can give incentive to a bank's higher risk exposure,

Variable	Model 1	Model 2	Model 3	Model 4
logZscore ($t-1$)	0.9027***	0.9017***	0.9166***	0.9030***
IslBank	−0.0856***	−0.0901***	−0.1091***	−0.0860***
CGFL_	−0.0246*	–	–	−0.0248*
WGI_	−0.0784***	−0.0857***	–	−0.0793***
DIClim_	0.0012	0.0011	0.0031	0.0011
ProRigIndex_	–	–	−0.0024***	–
BanImpFamSt	–	0.0058	−0.0089	–
BanImpGovSt	–	−0.0188	−0.0344	–
BanImpInsInvSt	–	−0.0197	−0.0006	–
Largeblock	–	–	–	−0.0166
Logtotass	0.0116*	0.0133*	0.0092	0.0111*
EquAss_	0.1616**	0.1754**	0.0964	0.1558**
NetLoamTotA_	0.0007	0.0006	0.0001	0.0007
GrowGroLoa~_	−0.0021***	−0.0020***	−0.0015***	−0.0021***
GDPgro_	0.0007	0.0007	−0.0011	0.0006
CosToInc_	−0.0006**	−0.0006**	−0.0005**	−0.0006**
_cons	0.3540**	0.2224	0.3442**	0.3646**
n	802	802	644	802

Notes: This table reports OLS panel data estimates where the dependent variable is the log of Z-score [logZ]. Year dummies are included. The models avoid the combination of related variables. Thus, in model 2, CGFL is excluded and the property dummies are considered instead. In Model 3, WGI is deleted and the Property Right Index (PorRigInde) is incorporated instead. Finally, Model 4 includes the large block variable instead of property dummies. *,**,***Significant at 1, 5 and 10 per cent levels, respectively

Table VIII.
OLS Regression estimates for all the period considered (2005–2012)

showing the influence of bank regulation and law enforcement on the level of risk. Thus, our results support the necessity of considering country-level governance because a macro governance framework can act as a substitute for corporate governance at the firm level (Berglof, 2011).

The results also show that both banks with substantial government stakes and those with important institutional investors take more risks, in line with previous research (La Porta et al., 2002; George et al., 2005; Iannotta et al., 2007; Eichler and Sobański, 2012; Srairi, 2013). Moreover, Islamic banks are riskier than conventional banks, in line with Abedifar et al. (2015). This result is explained by the complexity of the Islamic models and contracts of finance (Srairi, 2013), the limited default penalties and moral hazard incentives caused by profit and loss contracts or operational limitations on investment and risk management activities. All these factors could make them less stable than conventional banks. This must lead to the need to establish higher capital requirements in order to guarantee solvency, especially in countries where there is a considerable presence of Islamic banks.

Our conclusions agree with Srivastav and Hagendorff (2016), who put forward the design of new control governance mechanisms that consider the interest of other stakeholders. Such proposals have the aim of controlling the risks more effectively and preventing large blockholders from using their position to act in their own interests (Kumar and Zattoni, 2017). Moreover, the paper also supports the recent regulatory reforms focussed on the control of bank risk, like Basel III and the Federal Reserve, which propose the improvement of corporate governance mechanisms. In doing so, it is important to consider that such modifications (e.g., executive compensation, board independence and the market for corporate control) may not be effective without the consideration of other complementary mechanisms (Lee and Chung, 2016). Finally, central banks should consider the characteristics of corporate governance and ownership and to establish higher capital requirements.

Notes

1. Voice and accountability; political stability and absence of violence/terrorism; government effectiveness; regulatory quality; rule of law; and control of corruption.

2. A firm earns a point when there is a non-duality of CEO and chairman; no stocks are with different voting rights; no wedge is between cash flow and voting rights; there are large shareholders (non-managerial and non-institutional); and there is no high family ownership and no state ownership.

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