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## Article

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## ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

# Corporate risk-taking and national governance quality: Empirical evidence from MENA emerging markets

Hamza Almustafa<sup>1</sup>, Ploypailin Kijkasiwat<sup>2</sup>, Ammar Jreisat<sup>3\*</sup>, Somar Al-Mohamad<sup>4</sup> and Audil Rashid Khaki<sup>4</sup>

**Abstract:** Motivated by agency theory, this study seeks to understand the effect of the country-level national governance system on the extent of corporate risk-taking in the MENA region. The study employs a two-step generalized method of moments (GMM) approach to evaluate the influence of governance indicators on the firms' risk-taking behavior in 459 non-financial firms listed in eight emerging capital markets in the MENA markets (Iraq, Algeria, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates) region from 2010 to 2019. The results suggest that countries with better national governance systems tend to incentivize businesses to undertake risky activities and projects, particularly due to low levels of government predation and efficient resource allocation. The results also imply that the economies with stronger governance policies and systems tend to have relatively stable macroeconomic environments and less uncertainty in the government policies, and therefore, the managers are motivated to undertake projects with higher risk-return metrics with a considerable potential to contribute to the country's economic growth.



Ammar Jreisat

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**Subjects: Corporate Finance; Risk Management; Corporate Governance**

**Keywords: National governance; corporate risk-taking; MENA region; emerging markets**

## 1. Introduction

Corporate risk engagement and exposure have gained much attention among researchers and practitioners in recent years, particularly, due to the uncertain political and economic environment in the last decade (Harris & Roark, 2019; De Vito & Gómez, 2020). Managerial risk choices and risk-taking are fundamental to decision-making and have important implications for the firm's growth, performance, and survival (March & Shapira, 1987). The existing literature on this theme highlights that, apart from the firm-level internal characteristics, the corporate's risk engagement can be influenced by the external macroeconomic environment to a large extent (Gupta & Krishnamurti, 2018; Tran, 2020). The national governance system is considered an important element in shaping the country's macroeconomic environment that eventually shapes corporate policies and behavior. There is growing evidence and support for the notion that the national governance system gets reflected in the quality of the institutions, and vice versa, and subsequently determines the culture of the corporates in the country, which can particularly influence corporate risk-taking activities in many different ways. Strong and healthy institutions discourage government predation and corruption, encourage efficient resource allocation, and generate incentives for firms to take undertake risks and explore opportunities that could lead to greater productivity, generating economic growth, and higher financial performance (JOHN et al., 2008). These factors encompass economic stability, regulatory and governance effectiveness, rule of law, accountability, and so forth. Weak institutions, on the other hand, nourish corrupt practices, inefficient regulatory oversight, and uncertainty, thereby increasing operational costs and government expropriation of private benefits; therefore, corporate managers are discouraged to engage in projects and activities with higher risk-return metrics in their investment decisions (Shleifer & Vishny, 1993). It has been established that poor institutional quality puts strain on the corporates due to weaker governance and regulatory oversight, often leading to inefficient resource allocation, prevalence of crony capitalism, thereby, leading to poor efficiency and profitability (Albaity et al., 2021; Chan et al., 2015).

Though there is a growing interest in the determinants of corporate risk-taking behavior among academicians and practitioners, equally, the existing literature has largely focused on the developed economies or emerging economies within their local contexts. In this study, we, therefore, attempt to examine how the quality of national governance shapes corporate risk-taking activities across eight countries of the MENA emerging markets, homogenous in certain ways but exhibiting some diversity in national governance systems. MENA emerging markets can be considered a good platform to conduct the analyses due to the diversity of national governance systems ranging from well-developed to underdeveloped capital markets and institutions. The region has fairly homogenous social and cultural values and shares a unique geographic, ethnic, and cultural ethos that considerably distinguishes the corporate behavior in the region from the rest of the world. The unique demographic and shared cultural values shape the governance structure and the behavior of the market participants, subsequently shaping its national governance practices and corporate behavior. Moreover, the economies in the MENA region are largely bank-oriented and have weakly developed financial markets with very low foreign investments/engagement in their capital markets. While the countries in the region have scaled up their efforts to modernize their financial markets in recent years and to improve the corporate investment environment, the region still presents a distinct identity, in terms of conservative policies, weak investment climate, lack of dynamism, weak enforcement of minority stakeholders' rights, weak labor laws, and so forth.

This research contributes to our understanding of how firms in MENA emerging markets implement their risk management policy and react to the diverse national governance system. The contextual validation of the determinants of corporate risk engagement may serve as a guide for corporate managers to be cognizant of the local factors that could affect the evaluation of the projects and understanding of risk-return metrics. Moreover, policymakers' understanding of the

positive effect of national governance quality on corporate risk-taking activities may assist them to make substantive adjustments to the governance framework and regulation and thus improve economic efficiency, thereby, encouraging healthy corporate risk-taking that may generate economic growth, financial performance, and sustainability

The remainder of this paper is organized as follows. In addition to the introduction presented earlier, Section 2 analyzes prior literature and develops the research hypotheses. We develop the research models and methods in Section 3. The results and discussion of the effect of the national governance system on corporate risk-taking activities are presented in Section 4. Finally, we conclude, provide implications, and discuss the limitations in Section 5.

## 2. Literature review

In the last few decades, the impact of national governance on corporate risk-taking and investment decision-making strategies has gained much attention among research scholars as well as decision-makers since the increased engagement in risky investments is most likely to lead to a profound impact on the firm's financial stability and their long-term operational sustainability. Although a significant portion of the literature has focused on the effect of corporate size, governance, and ownership on corporate risk-taking, a growing body of literature has assiduously attempted to examine the external and national factors that affect the level of corporate engagement in risky business activities. For instance, Barger et al. (2010), Bloom (2014), and Gulen and Ion (2016), among others affirmed the role of economic policy on corporate risk-taking by influencing the availability of cash and investment capital allocated for risky investments. Similarly, (Wen et al., 2021), found that macroeconomic uncertainty can significantly reduce the tendency of Chinese companies to undertake and apply risky investments. Along the same line, Pastor and Veronesi (2012), Liu and Zhong (2017), and Kim (2019) found that economic policy uncertainty indirectly affects the corporate-risk taking by increasing the cost of external financing and rising the restrictive loan and borrowing covenants. Analogously, a more comprehensive work by Tran (2019), has investigated the nexus between corporate risk-taking and economic policy uncertainty across 18 countries over the period 2005–2016. The outcomes of the study found that economic policy uncertainty is negatively related to corporate risk-taking.

A prominent part of empirical research studies the potential impact of national culture on corporate risk-taking since the differences and distinctions among national cultures often guide cross-country variations in corporate financial practices and investment decisions (Shao et al., 2010). The potential persistence and pensiveness of the national culture can be described as a set of beliefs and values passed on from one generation to another (Grueso & Desarrollo, 2015), For instance, Li et al. (2013), argued that culture influences corporate risk-taking through its effect on managerial decision-making and its effect on a country's formal institutions. Frijns et al. (2022), used a sample of companies from 48 countries between 1998 and 2019 to examine the impact of local culture on corporate risk-taking decisions. The outcomes of the study document a positive relationship between risk-taking and some cultural dimensions such as individualism and managerial overconfidence. Another study by Shen et al. (2022) examined the effect of societal trust on corporate risk-taking; using data from a large sample of more than half a million companies in 50 countries, they found robust evidence on the nexus between the level of societal trust and risky investments. The results, however, documented a negative relationship between national governance and trust and risk-taking decisions in companies that operate in countries characterized by weak institutional structures.

It has been observed by empirical studies that a wide array of institutional practices, such as management's tendency to adopt risky decisions and investments, are influenced by the level of national governance represented by factors such as investment and financial regulations, law enforcement, political stability, and accountability. According to Djankov et al. (2007), the quality of the legal system is a fundamental factor that determines the rights of the main players

involved in the investment decision i.e. investors and borrowers. Moreover, Michelacci and Schivardi (2008), claim that higher levels of financial development and stronger protection of shareholders' rights can reshape the relationship between the national governance system and corporate risk-taking. For instance, Stulz (2005) argues that managers are likely to become more risk-averse under weak institutional settings and vice-versa. Qi et al. (2010) suggest that a firm's cost of debt capital can be higher under weak political-institutional settings, which will eventually lead firms to borrow less and engage in less corporate risk-taking activities. Recently, Su et al. (2020), measured the effect of the national government's decision pertinent to executive compensations on the risk-taking behavior of Chinese state-owned companies. Based dataset from 2005 to 2018, the paper concluded that limiting executive compensations drives managers to engage in more risky investment activities, the study also found a negative relationship between significant government intervention in corporate practices and firms' levels of risk exposure. In more recent attempts, (Cam & Ozer, 2022) examined the impact of country-level governance such as government effectiveness, quality of regulations, control of corruption, and the role of law on corporate investment decisions in 65 countries. The outcomes of the study affirmed that stronger national governance plays an important role in decreasing the level of financial risk of the companies through less dependence on financial leverage. Similarly, (Liu et al., 2021), examined the role of the national legal system in reshaping the investment decisions in 236 energy firms from the period of 2000–2017. The outcomes of the paper claimed that the quality of the national legal and regulatory systems exhibits a direct impact on the trajectory of the investment process and decision in energy sector companies. Collectively, there has been unanimity among research scholars that the level of national governance can immensely affect corporate risk-taking decisions and could also influence the shape of investment decisions in many countries and sectors. Despite the number of studies that have been conducted in this field, there is a dearth of research into the effect of national governance and legal system on the risk-taking decision of companies operating in the MENA region. This study hence aims at filling this research gap by measuring the effect of the country-level national governance system corporate risk-taking in eight MENA countries (Iraq, Algeria, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE).

### 3. Methods

#### 3.1. Sample and data

In this study, we employ data from the World Bank's World Governance Index developed by Kaufmann et al. (2011) to proxy for national governance system quality to investigate whether a country's national governance system can explain corporate risk-taking activities (represented by *cash flow volatility CFV* and the *Z-score*) across non-financial firms listed in eight of the MENA region emerging markets. Our sample consists of 459 firms listed in eight counties of the MENA emerging markets from 2010 to 2019, with a total of 2774 firm-year observations. The sample comprises 8 countries in the MENA region that share similar economic features while representing a fairly diversified pool of economies with different ratings for national governance. MENA is a heterogeneous region with complex economic challenges and the selection of the sample has been exclusively made on the availability of the data, therefore, in this study, we study how the national governance quality influences corporate risk engagement in the countries heavily reliant upon oil exports in the region and include; Iraq, Algeria, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates (World Bank Group, 2021). Although some previous studies examine country-level national governance factors in MENA countries that affect corporate risk-taking (Elamer et al., 2020; Otero et al., 2019), the evidence from the countries relying on oil production and export could provide some more insights as the economic challenges faced by the oil exporting countries are particularly different from those with less reliance on fossil fuels (Ross, 2019). The sample selection has also considered excluding the outlier effect (or bias) due to either the Global Financial Crisis or the COVID-19 crisis, which needs a separate evaluation. The sample also excludes financial firms due to their different reporting structure, firms with missing data, and firms with missing or negative shareholder equity. The data has been

matched using time-stamping and winsorized at the 2% level to exclude the impact of outliers. The firm-level data was obtained from the LSEG Refinitiv Reuters Eikon database (previously Thomson Reuters Eikon). Country-level national governance data was sourced from the World Bank's Worldwide Governance Indicators (WGI) project.<sup>1</sup>

### 3.2. Measuring corporate cash flow volatility

Following Harris et al. (2019), Bates et al. (2009), Harris and Roark (2019), and Ozkan and Ozkan (2004), the corporate risk-taking behavior of the firms was proxied using mainly *cash flow volatility (CFV)*, which is calculated as the standard deviation of cash flow to assets ratio over the sample period. Furthermore, we follow Díez-Esteban et al. (2019) and employ *the Z-score* as an alternative measure of corporate risk-taking, which is calculated as the sum of the return on assets ratio plus the capital asset ratio divided by the standard deviation of the return on assets ratio over the entire sample period.

### 3.3. Measuring national governance variables

The World Governance Index (WGI) has played a significant role in the development of literature on the economic effect induced by national governance quality on firm-level characteristics (Nguyen et al., 2015). The WGI is a value-weighted average of the six components that include voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. The indicators are displayed in standard normal units ranging from approximately  $-2.5$  to  $+2.5$ , with a larger value indicating better national governance quality.

Consistent with prior literature, we find that these indicators are highly correlated with each other (Nguyen et al., 2015), thus making it difficult to include them together in one regression. For this reason, in the regression results reported below, we employ a single component in each regression, separately. Finally, we introduce the overall national governance index into the regression, which is the weighted-average index of the six constituent dimensions.

### 3.4. Control variables

We have also included some control variables in the analysis to control for the missing variable bias that are listed in Table 1 below. These variables include the financial leverage ratio, tangibility, age, market-to-book value, size, constraints(dividends), and profitability. Financial leverage is defined as the total debt scaled by total assets, as is commonly defined in the current literature Guo et al., 2021; Sun & Ding, 2020). Tangibility is defined as the ratio of tangible fixed assets to total assets, firm age is defined as the total number of years since incorporation, the market-to-book value of assets ratio (MB) is defined as the sum of the equity market value plus the debt book value divided by the sum of the book values of equity and debt (Díez-Esteban et al., 2019). Firm size is defined as the natural logarithm of a firm's market capitalization, dividends represent the financial constraints and are represented by including a dummy variable equal to 1 for a dividend-paying company and 0 otherwise for the organizational constraints on undertaking new projects/investments (Khaki & Akin, 2020). Finally, we account for the firm's profitability, defined as the firm's operating income before depreciation (Christopher Harris & Roark, 2019). The summary statistics of all the variables employed in this study are presented in Table 1 below.

### 3.5. Empirical model

We analyze the relationship between corporate cash flow variability risk and country-level national governance using the following regression:

$$\gamma_{i,t} = \beta_0 + \alpha X_{j,t} + \varphi M_{i,t} + \mu_i + \eta_i + \epsilon_{i,t} \quad (1)$$

where  $\gamma_{i,t}$  is represents the cash flow volatility (CFV) of firm  $i$  in year  $t$ ;  $\beta_0$  is the constant;  $\alpha$  and  $\varphi$  are unknown estimated coefficients;  $X_{j,t}$  is a vector of national governance variables for country  $j$  in year  $t$ ;  $M$  is a vector of explanatory control variables, i.e., financial leverage, tangibility, firm age,

**Table 1. Summary statistics and variable definitions**

<b>Panel A. National Governance Indices and Subindices</b>									
Voice and Accountability	5080	-1.00	-0.92	0.56	-1.91	0.30			
Political Stability and Absence of Violence/Terrorism	5080	-0.15	-0.37	0.57	-1.34	1.22			
Government Effectiveness	5080	0.21	0.11	0.41	-0.30	1.51			
Regulatory Quality	5080	0.14	0.06	0.35	-0.51	1.11			
Rule of Law	5080	0.25	0.19	0.27	-0.25	0.96			
Control of Corruption	5080	0.17	0.09	0.41	-0.44	1.41			
Overall index (NGI)	5080	-0.06	-0.17	0.30	-0.48	0.68			
<b>Panel B. Firm-level variables</b>									
Cash Flow Volatility CFV	4360	0.03	0.02	0.04	0.00	1.11			
Z-score	4352	19.12	18.12	27.52	-18.01	323.25			
Leverage	4162	0.24	0.21	0.21	0.00	0.84			
Tangibility	3790	0.70	0.68	0.42	0.00	2.84			
Firm Age	5080	27.33	24.00	15.55	8.00	57.00			
Market-to-book ratio	4562	1.36	1.19	0.56	0.72	2.47			
Size	4596	18.70	18.76	1.95	11.77	28.26			
Dividends	5080	0.61	1.00	0.49	0.00	1.00			
Profitability	4862	0.56	0.59	0.30	-6.11	1.00			
<b>Panel C. Variable Definition</b>									
Voice and Accountability	capturing perceptions of the extent to which a country's citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and free media.								

(Continued)



**Table 1. (Continued)**

Political Stability and Absence of Violence/Terrorism	capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.
Government Effectiveness	capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
Regulatory Quality	capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permits and promotes private sector development.
Rule of Law	capturing perceptions of the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Control of Corruption	capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the capture of the state by elites and private interests.
Overall index (NGI)	The composite score includes the six dimensions of governance presented above which go from approximately -2.5 (weak) to 2.5 (strong) (Kaufmann et al., 2011).
Cash flow volatility CFV	The standard deviation of cash flow to asset ratio over the entire study period Harris et al., 2019; Bates et al., 2009). The cash flow presents earnings before interest and tax (Ruback, 2002).
Z-score	The sum of the return on assets ratio plus the capital asset ratio is divided by the standard deviation of the return on assets ratio over the entire sample period (Diez-Esteban et al., 2019).
Leverage	The total debt is scaled by total assets.
Tangibility	The ratio of tangible fixed assets to total assets.
Firm age	The total number of years in corporations.
Market-to-Book ratio	The sum of the equity market value plus the debt book value is divided by the sum of the book values of equity and debt.
Size	The natural logarithms of the firm's market capitalization.
Dividends	The dummy variable equals 1 for dividends paying company and 0 otherwise. Dividends reflect the organization's constraints to undertake new projects.
Profitability	The firm's operating margin before depreciation (Harris & Roark, 2019).

This table reports descriptive statistics of the entire sample of the MENA region, and definitions of the variables used in the analysis.

market-to-book ratio, firms size, dividends, and firm's profitability;  $\mu_i$  represents unobserved firm fixed-effect;  $\eta_i$  represents time-specific effects that are time-variant and common to all companies, such as the effects of GDP growth, inflation rates, market cycles, or other macroeconomic conditions; and  $\epsilon_{i,t}$  is the independent error term.

We begin our analysis by employing the baseline panel data methodology based on prior related literature. In the above baseline model, we further employ both fixed-effect (FE) and system GMM regressions to investigate the impact of the national governance system on corporate cash flow risk. Since cash flow variability may have a considerable individual element based on the firm characteristics, we employ the FE regression model that controls for individual effects and enables us to capture individual heterogeneity (Guo et al., 2021), based on the Hausman test. Furthermore, to treat the potential endogeneity and to provide contextual validation, we apply the system GMM regression. The two-step system GMM technique involves a system of equations in differences and levels that allow us to treat all the explanatory variables under categories. Hence, we set all the national governance variables as exogenous, and some of the firm-level control variables as endogenous. The categorization of all explanatory variables was based on the results of the endogeneity test.<sup>2</sup>

## 4. Results and discussion

### 4.1. Descriptive statistics

To capture a sense of interaction between the national governance system and the corporate cash flow variability, we begin by examining the correlation among the variables to provide a preliminary idea of the point-estimate relationship among the variables and the possible strength and interaction among the variables. As indicated in Table 2, there appears to be a considerable interaction. More particularly, the national governance variables (subindices and the overall index) appear to demonstrate a considerable and statistically significant positive correlation with the cash flow volatility risk. Furthermore, the correlation coefficients among the independent variables and the variance inflation factors (VIFs) revealed in Table 2 suggest that multicollinearity is not a serious problem in our empirical models. However, there may be collinearity among the governance variables included in our model, therefore, we split our analysis by employing regression analysis (1–7 in Table 3 below) for each governance measure/indicator separately.

### 4.2. Multiple regression analysis

To estimate the relationship between national governance and corporate risk-taking, we employ the system GMM approach, the results of which are presented in Table 3 below. The model is estimated at an aggregate level for eight selected countries in the MENA region and analyses the impact of national governance on corporate risk engagement as per the framework presented in Eq. (1). The validity of the system GMM was empirically evaluated using the Hansen-J test of over-identification. The Hansen-J statistic reported in Table 3 supports the rejection of the null hypothesis across all models and confirms that the instruments (as a group) used in our system GMM model are valid. Moreover, the Wald chi-square statistic reported across all the models suggest the overall fit of the system GMM model for analysis.

The results show that there is a significant positive relationship between national governance (overall index and the component subindices, separately) and corporate risk engagement (cash flow volatility) in MENA emerging markets. Out of 6 components of national governance, 4 are significantly positively related to corporate risk engagement. The results suggest that the firms in the region may be encouraged to engage in high-risk investment opportunities and adopt high-risk high-return business and investment strategies within the governance system which offers higher political stability, government effectiveness, rule of law, control of corruption, and broadly a robust and effective national governance system. As reported in Table 3, the national governance variables—*political stability, government effectiveness, rule of law, control of corruption, and the overall national governance index (NGI)* exhibit a significant positive relationship with the cash flow volatility. The higher engagement of firms with the high-risk projects and activities reported

**Table 2. Correlation matrix and variance inflation factor VIF**

	CFV	VAE	PVE	GEE	RQE	RLE	CCE	Overall index (NGI)	Leverage	Tangibility	Age	MTB	Size	Dividends	Profitability	VIF
CFV	1.00															
VAE	0.06***	1.00														2.44
PVE	0.07***	0.08***	1.00													2.46
GEE	0.01*	0.22***	0.62***	1.00												1.39
RQE	0.04***	0.32***	0.69***	0.83***	1.00											2.66
RLE	0.01*	0.17***	0.70***	0.75***	0.83***	1.00										2.65
CCE	0.03**	0.18***	0.63***	0.94***	0.78***	0.79***	1.00									1.35
Overall index (NGI)	0.07***	0.11***	0.83***	0.86***	0.82***	0.85***	0.87***	1.00								2.50
Leverage	0.09***	-0.01	-0.01	-0.02	-0.05***	-0.01	-0.00	-0.02	1.00							2.82
Tangibility	0.01*	-0.13***	-0.12***	-0.01	-0.01	-0.03**	0.01	-0.09***	0.08***	1.00						1.12
Firm age	-0.03*	0.10***	-0.10***	-0.07***	-0.13***	-0.19***	-0.11***	-0.10***	-0.06***	0.08***	1.00					1.13
MTB	0.13***	-0.15***	-0.14***	-0.12***	-0.15***	-0.18***	-0.12***	-0.21***	-0.08***	0.13***	0.05***	1.00				1.36
Size	-0.16***	-0.46***	0.18***	0.24***	0.18***	0.12***	0.20***	0.07***	-0.03**	0.08***	-0.00	0.38***	1.00			1.76
Dividends	-0.20***	-0.01	0.06***	0.06***	0.07***	0.05***	0.04***	0.06***	-0.20***	0.02	0.17***	0.19***	0.34***	1.00		1.22
Profitability	0.27***	-0.14***	0.03*	0.06***	0.13***	0.13***	0.07***	0.04***	0.78***	0.01	-0.01	-0.01	0.02	0.18***	1.00	2.87

Note: due to space limitations, national governance variables were written in its short labels, voice, and accountability (VAE), political stability (PVE), government effectiveness (GEE), regulatory quality (RQE), rule of law (RLE), and control of corruption (CCE). \*Significant at the 10% level; \*\*significant at the 5% level; \*\*\*significant at the 1% level. See, Table 1 for variable definitions.

above may be due to the conjecture that under a robust and efficient national governance system, corporate insiders tend to be well-protected, government extraction of private benefits appear to decrease, and the corporate managers perceive an incentive to engage in riskier investment strategies Boubakri et al., 2013; JOHN et al., 2008; Stulz, 2005; Tran, 2020).

The results reported above are consistent with the “twin agency model” presented by (Stulz, 2005) suggesting the role of the effective national governance system in guiding the firms’ risk engagement strategies. These results are also consistent with many other previous empirical studies emphasizing the supportive role of the national governance system in corporate risk-taking. For example, Boubakri et al. (2013) analyze the impact of political institutions on corporate risk-taking and report that sound political institutions are positively associated with corporate risk-taking. Similarly, our results are consistent with Tran (2020) and Boubakri et al. (2013), suggesting a negative relationship between the level of corruption and corporate risk engagement.

The results also suggest that firms with higher leverage tend to have higher cash flow volatility. This observation is particularly interesting as one would theoretically expect that the firms with higher leverage would have more influence of creditors on decision-making and therefore, their investment strategies would tend to be conservative (Bartram et al., 2012), as opposed to the findings of this study. However, there is some evidence from the existing literature that supports the finding that cash flow volatility is often reflected/adjusted in the corporate’s capital structure Tran, 2020; Harris & Roark, 2019). Moreover, the results also suggest that the market-to-book ratio is positively related to cash flow volatility, while firms’ profitability, size, and dividends are negatively related to cash flow volatility. These findings are consistent with those of Boubakri et al. (2013) and Tran (2020). This may be due to the proposition that mature firms tend to have limited investment opportunities to explore and may, therefore, be hesitant to undertake new projects, irrespective of the riskiness of the project (Khaki & Akin, 2020). Similarly, firms that are profitable tend to have a relatively lesser incentive to engage in risky activities owing to the agency theory, where managers tend to maintain their key performance indicators. Dividends tend to impose a financial constraint on the firm’s ability to undertake new projects, and therefore, discourage corporate risk engagement (Khaki & Akin, 2020).

#### **4.3. Robustness checks: alternative measure of dependent variables**

To proxy for the “riskiness” of the firm’s activities we mainly use the variation of operating cash flow to total assets ratio in the previous analyses. The literature also strongly suggests that firm cash flow volatility (CFV) may be the main determinant of firm default risk (Sun & Ding, 2020). Hence, we check the robustness of our major results by using the *Z-score*, a measure of firm distress and distance from insolvency. Following Díez-Esteban et al. (2019), we calculate it as the sum of the return on assets ratio plus the capital asset ratio divided by the standard deviation of the return on assets ratio over the entire sample period.

Robustness results are reported in Table 4, which replicates the models (regression 1–7) presented in Table 3, except using the *Z-score* instead of CFV to proxy for the risk-taking strategies, and applying the fixed-effect approach based on the Hausman test. The FE approach is applied in robustness analyses to control for time-invariant unobserved characteristics across firms (Nguyen et al., 2015). As can be observed, the empirical analyses revealed in Table 4 have no substantial changes in the estimates related to those reported earlier in Table 3. We can generally observe that national governance variables (*government effectiveness, rule of law, control of corruption, and the overall national governance index NGI*) still hold the same relations in terms of direction, with some very minor loss of significance. The major difference is the loss of the explicative power of the national governance variables while holding the direction of the relationship. While a positive relationship still holds, the coefficient of the national governance variables becomes less in magnitude. This loss of explicative power might be the consequence of the alternative proxy of risk-taking strategies (*Z-score*), which is focused on the probability of default and solvency, which at the end of the day, are the consequences of corporate cash flow volatilities. On the other hand,

**Table 3. Explaining the relationship between cash flow volatility and national governance quality in the MENA region**

Dependent variable	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	CFV	b	(z)	b	(z)	CFV	b	(z)	CFV	b	(z)	CFV	b	(z)
Voice and accountability	0.019		(1.013)											
Political stability		0.025**		(2.519)										
Government effectiveness					0.029*	(1.786)								
Regulatory quality							0.027	(1.533)						
Rule of law									0.033*	(1.508)				
Control of corruption											0.026*	(1.572)		
Overall index (NGI)													0.029**	(1.654)
Leverage	0.325***	(2.893)		(3.240)	0.295***	(2.971)	0.296***	(3.047)	0.307***	(3.057)	0.309***	(2.985)	0.311***	(3.157)
Tangibility	-0.028	(-0.677)		(-0.071)	-0.003	(-0.074)	-0.003	(-0.074)	-0.004	(-0.110)	-0.006	(-0.131)	-0.003	(-0.067)
Firm age	0.000	(0.921)		(1.112)	0.000	(1.192)	0.000	(1.161)	0.000	(0.989)	0.000	(1.106)	0.000	(1.199)
MTB	0.039	(1.371)		(1.747)	0.046	(1.538)	0.039	(1.538)	0.056**	(2.058)	0.052*	(1.666)	0.049*	(1.765)
Size	-0.027**	(-2.412)		(-3.546)	-0.032***	(-2.941)	-0.029***	(-3.102)	-0.031***	(-3.551)	-0.032***	(-3.016)	-0.030***	(-3.418)
Dividends	-0.040*	(-1.797)		(-2.123)	-0.044**	(-2.063)	-0.047**	(-2.276)	-0.037*	(-1.705)	-0.040*	(-1.837)	-0.040*	(-1.932)
Profitability	-0.266***	(-5.465)		(-6.636)	-0.269***	(-5.646)	-0.257***	(-6.163)	-0.270***	(-6.129)	-0.275***	(-5.528)	-0.272***	(-6.056)
Intercept	-0.161	(-0.849)		(-1.574)	-0.272	(-1.478)	-0.240	(-1.428)	-0.252	(-1.623)	-0.214	(-1.589)	-0.269	(-1.325)
Number of observations	2774			2774	2774		2774		2774		2774		2774	
Wald $\chi^2$ statistic	85.899***			121.224***	86.905***		100.983***		96.099***		152.934***		174.167***	
Number of instruments	32			32	32		32		32		32		32	

(Continued)

**Table 3. (Continued)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Dependent variable	CFV	CFV	CFV	CFV	CFV	CFV	CFV	
	b	(z)	b	(z)	b	(z)	b	(z)
Number of clusters	459	459	459	459	459	459	459	
AR (1) (p-value)	0.006	0.003	0.007	0.005	0.006	0.007	0.005	
AR (2) (p-value)	0.218	0.217	0.208	0.209	0.220	0.210	0.213	
Hansen-J test (p-value)	0.133	0.131	0.125	0.124	0.154	0.132	0.131	

Note: This table reports empirical evidence on the relationship between national governance and corporate risk-taking using the entire sample of the MENA region nonfinancial listed firms. Specifically, it presents the estimation of Eq. (1) using an alternative measure of national governance dimensions. The variables are as defined in Table 1. Following Baum (2013) we apply Durbin-Wu-Hausman (DWH) to test the endogeneity of all regressors, and the test report that we cannot accept a null hypothesis at any conventional level of significance, suggesting that system GMM will be best in alleviating endogeneity issues in our data compared to other estimators. Standard error in parentheses; \*significant at the 10% level; \*\*significant at the 5% level; \*\*\*significant at the 1% level.

**Table 4. National governance and corporate risk-taking: The Z-score FE regression**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Dependent variable</b>	<b>Z-score</b>	<b>Z-score</b>	<b>Z-score</b>	<b>Z-score</b>	<b>Z-score</b>	<b>Z-score</b>	<b>Z-score</b>
	<b>Coef. / (t)</b>	<b>Coef. / (t)</b>	<b>Coef. / (t)</b>	<b>Coef. / (t)</b>	<b>Coef. / (t)</b>	<b>Coef. / (t)</b>	<b>Coef. / (t)</b>
Voice and accountability	0.009 (0.886)						
Political stability		0.004* (1.88)					
Government effectiveness			0.015*** (2.789)				
Regulatory quality				0.002 (0.219)			
Rule of law					0.003* (2.24)		
Control of corruption						0.010** (2.142)	
Overall index (NGI)							0.014* (1.665)
Leverage	0.103*** (2.674)	0.103*** (2.682)	0.103*** (2.688)	0.103*** (2.681)	0.103*** (2.684)	0.103*** (2.682)	0.103*** (2.684)
Tangibility	0.003 (0.893)	0.003 (0.884)	0.003 (0.882)	0.003 (0.899)	0.003 (0.901)	0.003 (0.877)	0.003 (0.897)
Firm age	0.000 (0.722)	0.000 (0.726)	0.000 (0.690)	0.000 (0.697)	0.000 (0.697)	0.000 (0.690)	0.000 (0.691)

(continued)

**Table 4. (Continued)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable	Z-score	Z-score	Z-score	Z-score	Z-score	Z-score	Z-score
	Coef. / (t)	Coef. / (t)	Coef. / (t)	Coef. / (t)	Coef. / (t)	Coef. / (t)	Coef. / (t)
MTB	0.014*** (4.731)	0.014*** (4.705)	0.014*** (4.713)	0.014*** (4.715)	0.014*** (4.683)	0.014*** (4.727)	0.014*** (4.680)
Size	-0.004*** (-4.341)	-0.004*** (-4.447)	-0.004*** (-4.476)	-0.004*** (-4.418)	-0.004*** (-4.454)	-0.004*** (-4.430)	-0.004*** (-4.453)
Dividends	-0.006** (-2.236)	-0.006** (-2.277)	-0.006** (-2.158)	-0.006** (-2.242)	-0.006** (-2.230)	-0.006** (-2.170)	-0.006** (-2.191)
Profitability	-0.109** (-2.406)	-0.109** (-2.413)	-0.109** (-2.420)	-0.109** (-2.413)	-0.109** (-2.415)	-0.109** (-2.418)	-0.109** (-2.416)
Intercept term	0.211*** (5.520)	0.194*** (4.485)	0.195*** (4.517)	0.202*** (4.792)	0.200*** (4.643)	0.200*** (4.547)	0.203*** (4.610)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.3971	0.3971	0.3987	0.3967	0.3967	0.3978	0.3972
# Of. Obs.	2774	2774	2774	2774	2774	2774	2774
# Of firms.	459	459	459	459	459	459	459

Note: This table reports empirical evidence on the relationship between national governance and corporate risk-taking estimating Eq.(1) Using FE regression with adjusted standard error. Column 1-7 estimating the effect on Z-score as an alternative estimate of firm's risk-taking. Variables are as defined in Table 1. Standard error in parentheses; \*significant at the 10% level; \*\*significant at the 5% level; \*\*\*significant at the 1% level



*leverage, market-to-book value, firm size, dividends, and profitability* seem to be impervious to changes in corporate risk-taking strategies. Nevertheless, we believe that the results reported in [Table 4](#) with the Z-score variable are quite consistent, supporting the general robustness of our major findings presented in [Table 3](#).

## 5. Conclusion and implications for practice

### 5.1. Conclusion

This study investigates the role of the country-level national governance system in shaping and affecting firm-level risk-taking strategies in the MENA emerging capital markets. Given the robustness of our empirical evidence to alternative estimation approaches and various corporate risk-taking proxies, we can conclude that a country's national governance system has a significant impact on firm-level corporate risk-taking activities in the MENA region, where national governance system quality varies and ranges from developed to underdeveloped. Using a sample of 2774 firm-year observations from 459 non-financial firms listed in eight emerging capital markets of the MENA countries, we find that in countries with high national governance quality, firms engage in higher risk-taking activities. We argue that a higher national governance system protects shareholders through efficient allocation of resources, prevents systematic risk, and minimizes government predation and extraction of firms' assets, providing fewer career concerns; therefore, corporate managers are incentivized to take the risk.

### 5.2. Implications for practice

Studying the effect of national governance system quality on firm-level risk-taking strategies can offer useful guidelines for corporate managers and policymakers. Our results show that risk-taking activities at the firm level are affected by the national governance factors prevailing in the country. We report a significant positive relationship between the national governance index and subindices and corporate risk-taking strategies, attributed to a decrease in uncertainty about government policies and a safer macroeconomic business environment.

Bartram et al. (2012) argue that idiosyncratic risk (i.e., firms engaging in risky activities) is important for large numbers of imperfectly diversified investors; it is also relevant for the expected returns. Consequently, governments in the MENA emerging markets need to undertake necessary reforms to control corruption, enhance accountability, and enforce laws and contracts better, which, therefore, decrease government predation and extraction to achieve overall growth and innovation, and encourage investment at the firm level. Notably, the region, in general, observes strict controls on corporate activities, has weak enforcement of minority stakeholders' rights, weak proprietary rights, relatively higher risk of expropriation, hydrocarbon-based undiversified economies, and a conservative ownership structure. Corporate risk engagement becomes further complicated due to the weak development of the financial markets in these bank-dominated economies, leading to substantial constraints on the managers to undertake projects with considerable risk and potentially higher profitability. It may, therefore, be concluded, that the firms in the region largely follow the agency theory in their corporate risk engagement, given the rather homogenous macroeconomic environment of the selected economies in the region.

### 5.3. Limitations and directions for future research

The study has been conducted on a limited sample of countries with fairly homogenous economic and cultural characteristics. It would be interesting to evaluate whether or not the relationship holds for a larger sample in the MENA region and also to see how the relationship will respond to different industry and macroeconomic controls in a larger sample of countries in the region.

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### Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### Correction

This article has been corrected with minor changes. These changes do not impact the academic content of the article.

### Disclosure statement

No potential conflict of interest was reported by the author(s).

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### Notes

- <http://info.worldbank.org/governance/wgi/>.
- The results of the endogeneity test of the variables are not reported due to space limitations, but available upon request from the author.

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