Risk and performance of Islamic and conventional banks under COVID-19 pandemic: Evidence from MENA region

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Abstract

Purpose – The aim of this study is to conduct a comparative analysis between Islamic and conventional banks in terms of whether Islamic banks was more or less resilient/risky than conventional counterparts to the pandemic shock. It also examines the role of capital in improving the performance and stability within the two banking systems.

Design/methodology/approach – This study uses 82 banks from MENA (Middle East and North Africa) region for periods across 2011–2020, and employs a dynamic panel data approach to examine the resilience within both banking systems during the Covid-19 pandemic.

Findings – The results show that the Covid-19 pandemic has a negative impact on conventional banks' stability. However, Islamic banks performed better and were less risky than conventional ones. Banks with high-quality capital are more effective at controlling their risks and improving their performance during the pandemic.

Practical implications – The results offer important financial observations and policy implications to many stakeholders engaging with banks. Actually, the findings of this study facilitate to the stakeholders and bankers to have an alluded picture about determinants of risk and performance. The results can be used by bankers' policy decision-makers to improve and enhance their consideration for risk management, taking into consideration the type of banking systems.

Originality/value – Compared to the various studies on the stability of Islamic and conventional banks, researchers have not sufficiently addressed the effect of the Covid-19 pandemic on risk and performance. Moreover, none of these studies has examined if Islamic banks was more or less resilient/risky than conventional counterparts to the pandemic shock. This leads the authors to identify the similarities and differences between two types of banks in the MENA region in a pandemic shock context.

Keywords Bank performance, Bank risk, Conventional banks, Islamic banks, COVID-19

Paper type Research paper

1. Introduction

The Covid-19 pandemic first shook China, then has spread Europe, the United States and the world (Gautam, Setu, Khan, & Khan, 2022; Zhou, Yu, Li, & Qin, 2021). Donthu and Gustafsson

(2020) and Sharma, Leung, Kingshott, Davcik, and Cardinali (2020) reveal that all global capital markets, markets for commodities, financial institutions and banks have been destabilized at the beginning of March 2020. Due to the coronavirus, all economic players were severely affected with this crisis (Carnevale & Hatak, 2020; Donthu & Gustafsson, 2020; Kirk & Rifkin, 2020; Sharma *et al.*, 2020).

Thereby, this crisis has negative consequences on economic growth and the resilience of banks and hence their impacts are quite difficult to quantify, thus it is very urgent to study them. Specifically, this pandemic has affected banking activities in various countries. The crisis triggered precautionary reactions from depositors and counterparties of financial intermediaries. All the same, there is an effect on the preservation of profitable financial operations, performance and meeting capital needs (Sharma *et al.*, 2020). Nevertheless, the banks' services have been working during this crisis. Along with these challenges, banks are not only withstanding the shock, but also becoming an active part of the global economic solution. Barattieri, Eden, and Stevanovic (2020) document that banks remain the main source of liquidity insurance for economies. However, under this pandemic, there is a major worry regarding the resilience of the banking sector with the concern to continue playing its expected intermediation role.

Moreover, IMF (2020) indicates that a substantial global recovery in 2021 is subject to the sufficient renegotiation of loans extended by the banking sector to menages and companies, while preserving a credit risk transparent assessment. Overall, each financial institution should be capable to actively support its economies while conserving the stability and robustness of the financial system. On the other hand, the capital plays an important role in improving the resilience of banks to the crisis. Actually, the Basel III Accords require the banking sector to preserve sufficient capital relative to its risk exposure. Therefore, regulatory capital helps banks to be more resilient.

Identifying which type of banks is stronger in the face of the Covid-19 pandemic is an important issue. In recent years, the issue whether the Islamic banks are more stable/less risky than their conventional ones under this shock attracted significant academic attention. Furthermore, according to Duan, El Ghoul, Guedhami, Li, and Li (2021), the sources of Covid-19 pandemic are different from the global financial crisis and the European debt crisis, hence it is difficult to generalize the earlier result on the bank's risk/stability of the crisis caused by this pandemic. Therefore, the aim of our study is to conduct a comparative analysis between Islamic and conventional banks in terms of performance and risk. First, we focus on the effect of a new external shock, the Covid-19 pandemic on the risk and performance of Islamic and conventional banks. Second, we compare the effects of Covid-19 pandemic on risk and performance of Islamic and conventional banks in the MENA region.

Elliot (2020) suggests that the resilience of Islamic banks under the shock is always pertinent to day, this leads to modify the perspective unexpectedly and require a strong human, economic and financial consequences. Elnahas *et al.* (2021), Delle Foglie and Panetta (2020) and Dunbar (2022) find that the Shariah compliant stock indexes are more stable, others (Aliani, Al-kayed, & Boujlil, 2022; Ashraf, Tabash, & Hassan, 2022; Hasan, Chowdhury, Balli, & Hasan, 2021) argue that their stability is not different from conventional counterparts and some even report their under-stability (Ashraf *et al.*, 2022). In this context, the researchers (Chowdhury, Balli, & De Bruin, 2021; Dharani, Hassan, Rabbani, & Huq, 2022; Hassan, Mahi, Hassan, & Bhuiyan, 2021; Hasan, Mahi, Hassan, & Bhuiyan, 2021) find mixed evidence of performance of Shariah compliant stock indexes and their conventional ones. Indeed, recent studies such as Ben Amar (2019) show that Islamic banks are not necessarily more resilient than conventional counterparts. According to Belaid, Ben Amar, Goutte, and Guesmi (2021) and Ben Amar, Bélaïd, Ben Youssef, and Guesmi (2021), the effects of the Covid-19 pandemic on financial markets continue to attract the attention of economists and politicians. Nevertheless, the above literature has not tested

whether Islamic banks are more or less resilient/risky than their conventional counterparts to this recent crisis. Thus, this study aims to fill this gap and address these questions by comparing and examining if this crisis features weak bank financial performance and high risk-taking within the two banking system in the MENA region.

We chose the MENA region for various reasons. First, The MENA region is characterized by a majority of Islamic banks, which leads to fostering competition with their conventional counterparts, thus Islamic and conventional banks are well developed and competitive there. Second, most countries in the MENA region are commodity exporters, and hence the credit growth rate in this region has been raising rapidly (Bitar, Saad, & Benlemlih, 2016) as it depends on upward and downward movements in prices of commodity. Thus, this is may rise concerns about stability of banking sector. Third, the MENA region links developing and developed countries in Asia, Africa and Europe, which draws bankers and investors from all over the world. This makes the MENA region more sensitive to political instability and, thus, financial and economic vulnerability. Moreover, Ben Ghozzi and Chaibi (2022) show that emerging and developed economies are both affected by unexpected events. Finally, the reason for using this data in this way is to compare and provide a better analysis within both banking systems.

Our current paper contributes to the extant literature in different ways. To our knowledge, no study has examined the impact of the Covid-19 pandemic on the risk and performance in the banking sector. Actually, studying the risk and performance of Islamic and conventional banks in MENA region has attracted important attention. Nonetheless, we contribute to the extent literature by exploring the effect of the Covid-19 pandemic and examining the resilience of Islamic banks vis-à-vis conventional banks during this shock. On the other hand, in order to analyze the resilience of banks, recent studies (Aliani *et al.*, 2022; Ramelli & Wagner, 2020) use stock prices data of Shariah compliant and non-compliant banks. However, we use the accounting-based performance, financial stability and risk measured by interne factors of banks, which builds our second contribution.

The next section presents the literature review. Section 3 describes the data and methodology. Section 4 displays and discusses the results. Section 5 concludes.

2. Literature review and hypothesis development

The effects of Covid-19 pandemic on banks and capital markets have been the subject of particular attention. Furthermore, the decline and lack of improvement in private sector investment and consumption during the pandemic and post-pandemic lead to the magnitude of banks lending could be lower. The primary causes of this crisis are different compared to that global financial crisis. Under this pandemic, the origin of the global financial crisis in the banking sector is not as the case of the Covid-19 pandemic (Duan *et al.*, 2021; Elnahass, Izzeldin, & Steele, 2018). Indeed, according to Elnahass *et al.* (2018), the primary cause of the financial crisis is poor underwriting decisions in the housing sector, impling that the banking industry was over-leveraged, and suffered from procyclicality of lending. While the virus and the drastic social distancing and quarantine measures is the causes of the Covid-19 pandemic, it implies that all governments have been forced to apply these measures, which therefore has a negative influence on the economy.

The Covid-19 pandemic has severely affected the financial system and increased financial risks. The Covid-19 pandemic has also adversely affected the stock market and decreased stock return worldwide, reducing capital flows (Al-Awadhi, Alsaifi, Al-Awadhi, & Alhammadi, 2020; Phan & Narayan, 2020). According to Padhan and Prabheesh (2021), this is due to the uncertainty in the stock market which had hence created obstacles to the liquidity' availability and investment in the global financial system.

The Prospect theory developed by Kahneman and Tversky (1979) argues that investors define and decide the portfolio at risk. This theory concerns risk-averse investors' behavior and anomalies, which explains the negative correlation between risk and return. Existing literature confirms that investors avert risk if they prefer investments with certain risk prospects in terms of expected value. Goodell (2020) confirms that during the Covid-19 pandemic, the investors' delay in investment decisions leads the downturn in the stock market. Consequently, prospect theory may be the explanation for the phenomenon of stock returns and the negative relationship with this pandemic.

Our study draws heavily on two strands of recent literature: the first examines the impact of the Covid-19 pandemic on the performance and risk of Islamic banks compared to their conventional counterparts. The second focus on the differences in terms of performance and stability between Islamic and conventional banks.

The results of the first strand of studies are largely mixed. Some researchers analyze the risk management of both banking systems. For instance, Al Rahahleh, Bhatti, and Misman (2019) examine the developments in risk management in Islamic and conventional banks in Malaysia. They show that Islamic banks are more risk-sensitive than their conventional ones. This is explained by that due to the products nature, structure of contract, costing of legal, practices of governance and infrastructure of liquidity. Abu Hussain and Al-Ajmi (2012) test if the risk management practices are significantly associated with the Islamic or conventional banks in Bahrain. Using a questionnaire, they show that credit, liquidity and operational risks are found to be the most important risks facing in both types of banks. They also show that Islamic and conventional banks are different in terms of understanding risk and risk management. Hassan, Khan, and Paltrinieri (2019) show that Islamic banks are better than conventional banks in managing risks. In a similar vein, Abedifar, Molyneux, and Tarazi (2013) show that small Islamic banks have lower credit risk and insolvency risk compared to conventional ones.

On the other hand, various researchers examine the effect of Covid-19 pandemic on the banking sector during the Covid-19 pandemic. For example, Al-Awadhi *et al.* (2020) and Phan and Narayan (2020) argue that the Covid-19 pandemic increases financial risks in the financial system. Beck and Keil (2022) examine the impacts of Covid-19 pandemic on loans in the U.S banks. They show that the Covid-19 pandemic negatively affects the U.S. banks and lockdown measures increase the non-performing loans (NPLs) [1] ratio. Kryzanowski, Jinjing Liu, and Jie (2022) investigate the resilience of banks in China under the Covid-19 pandemic by studying NPLs ratios. They show that during the Covid-19 crisis, NPLs ratios in domestic banks have more efficiently than foreign banks, and in stateowned banks than non-state-owned banks. Acharya and Steffen (2020) conclude that companies with lower quality of credit increase their cash to credit line ratios during Q4 2019-Q1 2020 period. In a rapidly changing environment, it seems important to examine the impact of this pandemic on stability and bank risk. Çolak and Öztekin (2021) analyze the effect of the pandemic on bank lending. They show that the pandemic shock reduces bank loan growth. Ahmed, El Halaby, and Soliman (2022) investigate the effect of credit risk and Covid-19 pandemic on financial performance in Islamic and conventional banks across 15 countries from the Middle East and the Africa (MEA) region over the period 2018–2021. They show a negative relationship between credit risk and performance within both banking systems. They also show that Covid-19 pandemic is partially mediated the association between NPLs and financial performance in case of the whole sample and separated sample of conventional banks while not in case of Islamic banks. Demirgüç-Kunt, Pedraza, and Ruiz-Ortega (2021) and Elnahass, Trinh, and Li (2021) show that Covid-19 pandemic affect negatively the performance and stability in the worldwide banking sector.

H1. The Covid-19 pandemic decreases financial performance and increases risk-taking in Islamic and conventional banks.

In the second strand, several studies examine the difference in performance and stability between Islamic and conventional banks. (Aliani *et al.*, 2022; Ashraf *et al.*, 2022; Elnahass *et al.*, 2021; Hasan, Chowdhury *et al.*, 2021; Ramelli and Wagner, 2020). Elnahass *et al.* (2021) examine the stability of 1090 banks from 116 countries for quarterly periods during 2019–2020. They show that the Covid-19 outbreak has had detrimental effects on financial performance and financial stability. They also show differential effects of the pandemic on Islamic and conventional banks, which are due to the distinct governance structure, institutional characteristics and extended agency costs related in Islamic banks. While Hasan, Chowdhury *et al.* (2021) document that the pandemic creates identical volatility in Islamic and conventional banking stock markets.

Other studies consider stock price reactions to Covid-19. Ashraf *et al.* (2022) conclude that Islamic banks in GCC (Gulf Cooperation Council) countries have not been outperformed those conventional banks during the Covid-19 pandemic. The authors show that the Covid-19 pandemic negatively affects both types of banks. Ghouse, Ejaz, Bhatti, and Aslam (2023) compare the performance of Islamic and conventional banks before and during Covid-19 in six OIC (Organisation of Islamic Cooperation) countries. They show that during Covid-19, conventional banks did better than their counterpart ones, took less time to recover and had better Calmar ratios. Aliani *et al.* (2022) examine the effect of Covid-19 on the co-movement between Islamic and conventional banks' stock prices during this pandemic in six GCC countries. They show that the recent crisis has a same effect on stock returns of both types of banks, while the Islamic banks' returns fluctuations were lower volatile than their conventional ones. While Ramelli and Wagner (2020), stock price reactions emphasize the importance of financial policies to firm value. Mirzaei, Saad, and Emrouznejad (2022) show that stock returns of Islamic banks are more efficient than their conventional ones under the Covid-19 pandemic. Trad, Trabelsi, and Goux (2017) examine the profitability and stability of both bank types during the global financial crisis of 2007–2008 in the MENA region. They show that Islamic banks showed more stability and profitability during this crisis than their conventional ones. The literature on banking sector implies that the both types of banks operate differently, specifically during the crises and that different ratios explain their respective profitability. However, the unique business orientation of Islamic banks provides favorable characteristic to withstand crisis times. Cihak and Hesse (2010) and Farooq and Zaheer (2015) confirm this view and find that the profit and loss sharing (PLS) mechanisms have added to the stability of Islamic banks and prevented any deterioration of their balance sheets during periods of crises. Given the distinctive banking activities of Islamic banks and a better record of withstanding adverse economic conditions than its conventional ones. The following hypothesis may be formulated.

H2. Compared to the conventional banks, Islamic banks are less affected by the Covid-19 pandemic.

3. Data and methodology
3.1 Data
To analyze the impact of Covid-19 pandemic on the performance and stability within both banking systems, we obtained annual balance sheet data of 58 conventional and 30 Islamic banks operating in the MENA region from the bankscope database for 2011–2020. Annual frequency data is preferred for the following basis: (a) The most important reason is that data is not available for some variables; (b) The Covid-19 period covers only two years (2019–2020). Hence, our frequency is driven by current data availability and this period as

include the Covid-19 pandemic. Country-specific variables such as gross domestic products (GDP) and inflation rate are retrieved from World Bank.

3.2 Methodology

3.2.1 Impact of the Covid-19 crisis on financial performance and risks. In this study, we follow Duan *et al.* (2021), Elnahass *et al.* (2021) and Shabir, Jiang, Wang, and Isik (2023) and build an empirical model to investigate firstly whether the financial performance and risks of a bank are affected by the Covid-19 pandemic using Islamic and conventional bank operating in the MENA region. Thus, the dynamic two-step generalized method of moment (GMM) estimator technique introduced by Blundell and Bond (1998) used in this study is as follows:

$$Perf_{i,t} = c + \alpha PROF_{i,t-1} + \beta_1 covid - 19 + \beta_2 capital_{i,t} + \lambda control_{i,t} + \varepsilon \qquad (1)$$

$$Risk_{i,t} = c + \alpha Risk_{i,t-1} + +\beta_1 covid - 19 + \beta_2 capital_{i,t} + \lambda control_{i,t} + \varepsilon \qquad (2)$$

3.2.2 Role of capital. To investigate the impacts of Covid-19 pandemic on the accounting-based performance, financial stability and risk of banks. After the recent financial crisis, the Basel Committee on Banking Supervision implemented a Basel III to strengthen bank stability. Thus, we investigate whether capital improve the resilience of banks under the Covid-19 pandemic. To study these effects, we use the GMM which developed by Blundell and Bond (1998).

The Covid-19 pandemic affects the resilience of Islamic and conventional banks. Eq. (1) is then modified to account for the interaction impact of the Covid-19 with capital on bank resilience.

$$Perf_{i,t} = c + \alpha PROF_{i,t-1} + \beta_1 covid - 19 + \beta_2 capital_{i,t} + \beta_3 capital_{i,t} * covid - 19$$
$$+ \lambda control_{i,t} + \varepsilon \qquad (3)$$

$$Risk_{i,t} = c + \alpha Risk_{i,t-1} + \beta_1 covid - 19 + \beta_2 capital_{i,t} + \beta_3 capital_{i,t} * covid - 19$$
$$+ \lambda control_{i,t} + \varepsilon \qquad (4)$$

Where:

i represents the banks and *t* represents the time.

$Perf_{i,t}$ represents the return on assets (ROA) and return on equity (ROE) (Mollah and Zaman, 2015; Trinh, Elnahass, Salama, & Izzeldin, 2020). A higher ROA and ROE leads to a profitable bank.

$Risk_{i,t}$ represents (i) *insolvency risk* estimated by the natural logarithm of Z-score (LogZScore); (ii) *credit risk* measured by the NPL to loan (Impaired Loans/Gross Loans); (iii) *liquidity risk* proxied by the 1/liquid assets to total assets ratio. Higher values of LogZScore and of liquidity risk, imply lower risks, while higher values of impaired loans/gross loans reveal higher risks. Thus, these risks represent the banks' stability (Trinh, Elnahass *et al.*, 2020).

Therefore, to assess the banking sector, we take performance and risk as dependent variables. During a crisis period, if bank is stable, outperformed and capable to soak their risks, hence, it is said more resilient than another. Both models (1) and (2) include *Covid-19* representing the dummy variable which takes the value 1 or (0) accross 2019–2020 period (otherwise). Moreover, we also include the control variables to test these effects on performance and stability' banks (Mollah & Zaman, 2015; Mollah, Hassan, Al Farooque, & Mobarek, 2017; Trinh, Elnahass *et al.*, 2020; Elnahass, Omoteso, Salama, & Trinh, 2020; Elnahass, Salama, & Trinh, 2020). We use capital measured by equity to total assets.

The control factors include bank-specific internal indicators are combined, namely bank size (LogTA) computed by the natural logarithm of total assets of a bank, diversity mesured by $1 - \left| \frac{net\ interest - income - other\ operating}{total\ operating\ income} \right|$.

We also include country-specific external indicators, such as GDP growth measured by GDP relative real Growth GDP and inflation rate measured by Consumer Price Index as independent variables. Table 1 describe the definition and measurement of all variables are collected from BankScope Database and World Bank development indicators.

4. Results and interpretations
4.1 Descriptives statics and correlation analysis
Table 2 reports that the ROA) and ROE average are 0.445% and 4.595%, respectively, for conventional banks compared to 1.413% and 8.206% (Std.Dev = 1.646 and 12.079),

Variables	Abbreviations	Definitions
Dependent variables		
Return on asset	ROA	Net income to total assets
Return on equity	ROE	Net income to total equity
Insolvency risk	LogZscore	$\frac{ROA + equity\ to\ assets}{\sigma ROA}$, A higher Zscore implies lower default risk
Credit risk	IL/GL	Impaired Loans/Gross Loans
Liquidity risk	1/LA/TA	1/Liquid assets to total assets ratio
Independent variables		
Capital	E/TA	Equity to total assets
Diversification	1-(NTI/TOI)	$1 - \left\| \frac{net\ interest\ income - other\ operating}{total\ operating\ income} \right\|$
Bank size	LogTA	Natural logarithm of total assets
Islamic bank dummy	Islamic	Islamic = 1 for Islamic banks and Islamic = 0 for conventional banks
Covid-19 dummy	Covid-19	Covid-19: 1 for years 2019–2020 0 if not
GDP growth	GDP relative real growth GDP	GDP relative real growth GDP
Inflation rate	Consumer price index	Consumer price index

Table 1. Variables definition

Variable	Conventional banks Mean	Std.Dev	B islamic banks Mean	Std.Dev
ROA	0.445	1.30	1.413	1.646
ROE	4.595	3.106	8.206	12.079
Z-score	0.006	0.009	0.004	0.011
CR	5.606	8.148	4.825	17.603
LR	0.116	0.107	0.113	0.079
Car	12.744	14.163	42.361	116.052
DIV	3.108	1.480	1.751	6.709
Size	4.162	1.003	4.150	1.164
Covid-19	0.2	0.40	0.2	0.40
GDP	4.697	2.684	4.299	2.930
INF	2.061	0.327	1.989	0.410
Obs	525	525	300	300

Table 2. Descriptive statistics

respectively for Islamic banks. Regarding the Z-score, the value of almost zero argues that the both banking systems was less stability. Similarly, the average ratio of liquidity risk is 0.116% and 0.113%, with a low standard deviation for conventional and Islamic banks, respectively. The average ratio of credit risk is 5.606% and 4.825%, with a high standard deviation for conventional and Islamic banks, respectively. Besides, the average capital is 12.744% (Std.Dev = 14.163) and 42.361% (Std.Dev = 116.052) for conventional and Islamic banks, respectively. The Covid-19 pandemic average is 0.2%.

The correlation matrix presented in Table 3 and Table 4 shows that all coefficients are less than 0.8, which we may affirm the absence of problems multi-collinearity.

4.2 Empirical findings
4.2.1 The impacts of Covid-19 pandemic on bank performance and financial stability. Table 5 presents the GMM estimations examining the effects of the Covid-19 pandemic on financial performance (Panel A) and financial stability (Panel B).

Panel A shows that the Covid-19 pandemic affect negatively the financial performance (ROA and ROE). Moreover, these results show that the conventional banks were affected by the pandemic more than the Islamic ones. We then document that the Islamic banks, based on Shariah principles, have mitigated the negative impacts of this crisis. Consequently, this finding suggests that the different impacts of Covid-19 pandemic within both banking

	CAR	DIV	Size	Covid-19	GDP	INF
CAR	1.0000					
DIV	−0.7329*	1.0000				
	(0.0000)					
Size	−0.0967*	−0.0451	1.0000			
	(0.0275)	(0.3042)				
Covid-19	−0.0041	−0.0049	−0.0149	1.0000		
	(0.9260)	(0.9114)	(0.7346)			
GDP	−0.0479	0.0766	0.1310*	0.0150	1.0000	
	(0.2761)	(0.0811)	(0.0028)	(0.7331)		
INF	−0.1865*	0.5166*	−0.1620*	−0.0272	0.3223*	1.0000
	(0.0000)	(0.0000)	(0.0002)	(0.5356)	(0.0000)	

Note(s): *denotes significance at 5%

Table 3.
Pairwise correlation matrix: conventional banks

	CAR	DIV	Size	Covid-19	GDP	INF
CAR	1.0000					
DIV	0.0726	1.0000				
	(0.2102)					
Size	0.1280*	0.2388*	1.0000			
	(0.0266)	(0.0000)				
Covid-19	0.0006	0.0003	0.0183	1.0000		
	(0.9915)	(0.9955)	(0.7518)			
GDP	0.3016*	0.1509*	0.1826*	0.0193	1.0000	
	(0.0000)	(0.0088)	(0.0015)	(0.7391)		
INF	0.1171*	0.5936*	0.1843*	−0.0042	0.3611*	1.0000
	(0.0427)	(0.0000)	(0.0013)	(0.9422)	(0.0000)	

Note(s): *denotes significance at 5%

Table 4.
Pairwise correlation matrix: Islamic banks

Variables	Panel A: Performance		Panel B: Risk indicators		
	(1) ROA	(2) ROE	(3) Z-score	(4) CR	(5) LR
Panel 1: Conventional banks					
Lag	0.189***	−0.015***	0.397***	0.101***	−0.015***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Covid-19	−0.013***	−0.475***	−0.001***	−0.179***	0.010***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAR	0.086***	0.494***	0.001***	−0.010	−0.006***
	(0.000)	(0.000)	(0.000)	(0.925)	(0.000)
DIV	0.889***	25.529***	0.005***	−8.617***	−0.165***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.120***	2.697**	−0.002***	−0.842***	−0.008
	(0.004)	(0.043)	(0.000)	(0.001)	(0.292)
INF	1.312***	−62.722***	0.001***	22.304***	−0.269***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP	−0.039***	−0.746***	−0.003***	−0.612***	−0.006
	(0.000)	(0.000)	(0.000)	(0.000)	(0.475)
Const	−0.267***	72.303***	0.005***	−8.213***	0.1257***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR(2)	1.26	0.91	1.02	1.37	0.43
	(0.208)	(0.363)	(0.307)	(0.170)	(0.671)
Hansen test	31.48	50.85	43.47	43.60	47.44
	(0.211)	(0.002)	(0.017)	(0.017)	(0.006)
Panel 2: Islamic banks					
Lag	−0.372***	−0.418***	−0.640***	−0.807***	−0.299***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAR	0.002	0.007*	5.006***	−0.018***	−0.004***
	(0.281)	(0.015)	(0.000)	(0.000)	(0.000)
Covid-19	0.018***	0.446***	0.001***	−0.142***	−0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIV	0.009***	0.499***	0.004***	−0.011***	−0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.277***	2.278***	−0.003***	0.079***	0.016***
	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)
INF	0.208*	−10.771***	−0.009***	0.479***	−0.004
	(0.085)	(0.000)	(0.000)	(0.000)	(0.723)
GDP	0.131***	0.447***	2.47	−0.032***	−0.006***
	(0.000)	(0.000)	(0.854)	(0.000)	(0.000)
Const	−1.472**	15.312***	0.020***	−0.204	0.134***
	(0.000)	(0.000)	(0.000)	(0.436)	(0.000)
AR(2)	−1.00	−1.05	−1.21	0.98	−1.58
	(0.318)	(0.293)	(0.228)	(0.328)	(0.113)
Hansen test	28.72	29.91	29.95	29.57	29.48
	(0.324)	(0.271)	(0.270)	(0.286)	(0.290)

Note(s): Hansen-test refers to the over-identification test for the restrictions in GMM estimation. AR (2) test is the test of the second-order autocorrelation in first differences.
() indicate p-value. ***, **, * denote 1%, 5% and 10% significance levels, respectively

Table 5.
The impacts of Covid-19 pandemic on bank performance and financial stability

systems is explained by the prohibition of Riba and Gharar, PLS principle, and asset-backed products in Islamic banks. However, conventional banks are more affected by the Covid-19 pandemic given their reliance on fee income and the reduction in their sources of income, which suggests a decline in bank assets. Also, as the disruption of activities in major economic sectors has slowed the demand for loans and borrowing, interest earned would also decline substantially as a major source of income for conventional banks. On the other hand,

given that Islamic banks are based on profit loss and risk sharing, and thus are immune to major crises and negative spillovers, they are better equipped to bear business and financial risks than conventional banks. These results confirm the prospect theory and in concordance with Abdulla and Ebrahim (2022) and Elnahass et al. (2021).

For the other variables, we find that the bank size has a significant and positive impact on financial performance within both banking systems, consistent with Menicucci and Paolucci (2016) and Abdulla and Ebrahim (2022). These results imply that larger banks reveal better profitability, and can be explained by the high capital and larger operations and services, providing more opportunities for these banks to improve their performance. The capital (CAR) has a positive and significantly impact on performance (ROA/ROE) for both banking systems. In other words, greater capital structure enhances bank performance, confirming the cost hypothesis and the signaling theory. This finding confirms the findings of Jouida and Hellara (2018) and Cao and Chou (2022) for conventional banks and those of Choong, Thim, and Kyzy (2012) for Islamic banks. This result can be explained by the fact that cultural values that favor solidarity, collaboration and team effort between employers and employees can indeed strengthen the effect of capital on performance for both banking systems, and further can create a better environment. Therefore, a higher level of capital makes for a better protection against banking crises and it is a safety cushion and a guarantee of bank performance. The diversification (DIV) has a positive and significantly impact on Islamic and conventional banks' performance (ROA/ROE). This result confirms the agency problems and the findings of Tan (2017) and Le, Ho, Nguyen, and Ngo (2022). This result implies that DIV tends to enhance the performance of the both types of banks. This result implies that Islamic banks should raise their DIV while respecting financing activities Shari'ah-compliant or their non-traditional activities. The positive impact can be explained by that conventional banks enjoy a greater impact of DIV it they use the traditional activities and lending, which let such banks make higher performance. With respect to the country-level variables, GDP shows a significantly positive relationship with both the level of profitability for both types of bank, this implies that the demand for lending increases when the economy grows, and this further leads in the increase the profitability of banks. This result confirms the finding of Sufian and Habibullah (2010) and Ghenimi, Chaibi, and Omri (2021). Whereas the inflation rate shows a positive relationship to bank profitability except when ROE is used. This is consistent with the findings of Wasiuzzaman and Tarmizi (2010) and Ghenimi et al. (2021). The negative relationship implies that currency collapse decreases deposit volumes which leads to an increase of credit, and therefore a lower bank profitability. The inverse result indicates increase in loan rates leads consequently increase in profits.

Regarding the Panel B, our results reveal that in conventional banks, the Covid-19 pandemic has a significant and negative impact on bank risks (i.e. lower LogZ-score = higher default risk), impaired loans/gross loans (IL/GL) (i.e. lower credit risk) and 1/LA/TA (i.e. higher liquidity risk). This indicates that these banks have higher default risk, i.e. these banks are less stable during this crisis. Whereas, Islamic banks are more stable than their conventional ones (i.e. lower insolvency risk) due to low loans. This result can be explained by the fact that Islamic banks cannot negotiate some risky financial instruments which makes its more stable. In contrast, the significantly low credit risk within both banking systems can be justified by the fact that banks had to apply rigorous credit policies (i.e. they have managed to preserve high asset quality) and and keep restrictive regulatory requirements throughout this crisis to preserve the positions of capital and liquidity. These results are consistent with the findings of Trad et al. (2017).

For the control variables, the coefficients of size have a negative and significant impact on CR (credit risk) and LR (liquidity risk). This result leads that larger banks have lower credit and liquidity risks, but higher z-score. However, our results indicate that lower banks' liquidity and credit risks have significantly increased the financial stability. In terms of risk,

the capital has a negative and significant impact on credit and liquidity risks. The result suggests that the capital of Islamic banks decrease risk. These banks are not allowed to loan money from other banks, which due to the principle of interest prohibition. We find that the capital has statistically significant and positive impact on Z-score. Thus, the result means that a sufficient level of capital makes to improve the bank profitability and stability against recent crises. Hence, the bank must have a minimum capital to assure sufficient money against unexpected losses and negative shocks. The DIV positively affects bank stability, but negatively and significantly bank risks (CR and LR). This implies that high DIV can significantly decrease the bank's risk, increasing bank's stability. This result is in concordance with the Markowitz (1952) portfolio theory and suggests that higher DIV of bank income reduces the bank's risk. This also implies that when banks employ Islamic sources of income, they raise their non-interest income, improve their stability, and hence decrease their bankruptcy. The results are consistent the findings of López-Penabad, Iglesias-Casal, and Neto (2021) and Wang and Lin (2021). Finally, The GDP has a negative impact on Z-score, CR and LR. This result indicates that banks are not suffering from default risk, credit and liquidity risks under the economic prosperity period. The INF (inflation rate) is significantly and positively associated with CR and Z-score, but related negatively to LR. Therefore, the banks operating in countries have a better governance appear to hold stronger ability to absorb financial risks (credit and liquidity risks).

Overall, our findings find that the Covid-19 pandemic has a significant impact on financial stability and financial performance of conventional banks. This implies that our findings support our hypothesis H1 just for conventional banks, suggesting that this crisis decrease financial performance and raise risk-taking for conventional banks. Thus, the results confirms our hypothesis H2 just for Islamic banks, implying that compared to the conventional banks, Islamic banks were less affected by Covid-19 pandemic. Hence, our results are consistent the findings of Elnahass et al. (2021).

4.2.2 The role of capital. Table 6 presents the impact of capital and the interaction term between capital and Covid-19 pandemic on the bank's performance/stability.

The results presented in Table 6 show that high capital may help banks to ease the negative effect of Covid-19 pandemic on their risk and performance. According to Cao and Chou (2022), in addition to lending more to the economy during this pandemic, banks with more high-quality capital are also more effective in decreasing their risks, and then improve their performance.

Actually, Berger and Bouwman (2013) and Vazquez and Federico (2015) show that more capital before the crisis increased the survival probabilities and enhanced the bank's performance during the crisis. Moreover, according to Soenen and Vander Vennet (2021), the strict capital requirements announced by Basel III have molded the banking sector more secure.

5. Conclusion

This study offers a novel attempt to investigate the effect of Covid-19 on banking resilience, distinguishing between Islamic and conventional banks, by using several measures of financial performance and risk indicators for 88 banks located in MENA region during the period from 2011 to 2020. Using GMM method, we find that the Covid-19 pandemic has harmed financial performance (i.e. accounting-based performance) and financial stability (i.e. high default risk, high liquidity risk) of conventional banks than Islamic ones. We find differential effects of this crisis on the performance and stability of Islamic banks versus conventional banks. Actually, Islamic ones perform better and are less risky than conventional counterparts. The difference between the two banking systems may reflect the difference in terms of banking activities. Moreover, we show that capital is more effective in controlling their risks and improves their performance during this crisis.

Variables	Panel A: Performance		Panel B: Risk indicators		
	(1) ROA	(2) ROE	(3) Z-score	(4) CR	(5) LR
Panel 1: Conventional banks					
Lag	0.3743***	−0.0241***	0.4043***	0.2746***	0.0323***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAR	0.0802***	1.3625***	8.7406***	−0.0929**	−0.00639***
	(0.000)	(0.000)	(0.000)	(0.027)	(0.000)
Covid-19	−0.0253***	−2.2118***	−2.4506***	0.0971***	0.0009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAR*Covid-	0.0011***	0.2586***	9.1407***	−0.0018***	−0.0001***
19	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIV	0.288***	−22.527***	−0.0004***	−4.863***	0.1060***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	−0.0007	−0.1138	−0.0002***	−0.6315***	−0.0103***
	(0.962)	(0.905)	(0.000)	(0.000)	(0.004)
INF	−1.056***	47.1079***	0.0008***	12.1947***	−0.1387***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP	0.013***	−2.1605***	−0.00003***	−0.2984***	−0.0047***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Const	1.112**	9.8323***	0.0006***	−1.105*	0.05435***
	(0.000)	(0.000)	(0.000)	(0.016)	(0.000)
AR(2)	0.92	0.02	0.99	1.11	1.47
	(0.356)	(0.984)	(0.321)	(0.269)	(0.142)
Hansen test	47.48	40.98	39.58	38.35	38.82
	(0.006)	(0.031)	(0.043)	(0.056)	(0.051)
Panel 2: Islamic banks					
Lag	−0.3726***	−0.4058***	−0.117***	0.8077***	0.639***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAR	0.0018***	0.0145***	1.1607	−0.0185***	−0.00001**
	(0.000)	(0.000)	(0.497)	(0.000)	(0.068)
Covid-19	0.0204***	0.4768***	0.499***	0.2004***	0.00027***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAR*Covid-	0.00006***	0.001***	3.0207***	−0.0013***	−4.6106***
19	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIV	−0.0091***	0.4909***	0.172***	0.01132***	−0.00107***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.2605***	2.3367***	−0.406***	0.0826***	0.0031**
	(0.000)	(0.000)	(0.000)	(0.004)	(0.045)
INF	0.2764***	−10.653***	−1.992***	0.4653***	−0.00514
	(0.002)	(0.000)	(0.000)	(0.000)	(0.179)
GDP	0.1180***	0.5237***	0.045***	−0.0325***	−0.0016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Const	−1.507**	14.697***	0.186*	−0.2062	0.0456***
	(0.000)	(0.000)	(0.060)	(0.423)	(0.000)
AR(2)	−1.00	−1.05	−1.15	0.97	0.93
	(0.320)	(0.293)	(0.250)	(0.332)	(0.351)
Hansen test	27.83	29.19	29.87	29.83	27.33
	(0.367)	(0.302)	(0.273)	(0.275)	(0.392)

Table 6.
The effects of bank
capital ratios on bank
performance and
financial stability

Note(s): Hansen-test refers to the over-identification test for the restrictions in GMM estimation. AR
(2) test is the test of the second-order autocorrelation in first differences.
() indicate p-value. ***, **, * denote 1%, 5% and 10% significance levels, respectively

Our results have several implications for banks, policymakers and regulators. First, our
results supply precious informations to advise the debates raised by the IMF (International

Monetary Fund) across the future of banks after the Covid-19 pandemic. Second, our results also can inform the choices investment for investors and regulators between two types of bank under Covid-19 pandemic. Third, our results help regulators and policymakers place the plans to set up banking unions between regions to mitigate different types of financial risks, which, hence, affect financial stability. Finally, Management risk efficacy is important for making benefit and will take the banks capable to recover this crisis.

A potential limitation of the present study is that control variables such as corporate governance variables and growth prospects are not considered because of the unavailability of the data in the Bankscope database.

In a future study, we could conduct a comparative study on the effect of governance variables on bank performance under Covid-19 crisis. Future research may focus on these relationships during the Covid-19 pandemic by employing other market-based performance measures and other sectors. Moreover, future research could compare the results for various geographical regions, individual countries, bank sizes (large vs. small). Finally, it would be worth expanding the number of samples in other countries.

Note

1. NPLs is the Non-Performing Loans

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