

Effect of COVID-19 on the performance of Islamic and conventional GCC banks

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Abstract

This paper investigates the effects of the COVID-19 crisis on the performance of 49 listed banks in the Gulf Cooperation Council (GCC) countries, during the period from the first quarter of 2017 through the third quarter of 2020. The findings reveal that GCC banks were negatively affected by the pandemic. However, Islamic banks have performed better than conventional banks. The results also show that the banks in Saudi Arabia and UAE were affected more than the banks in other GCC countries. We also show that Islamic banks which are government-linked, those that are large and those with high loan ratios were more affected by the pandemic. Overall, we argue that Islamic banks can play a significant role in the recovery of GCC countries from the consequences of the pandemic.

KEYWORDS

bank performance, conventional banks, COVID-19, GCC, Islamic banks, profitability

1 | INTRODUCTION

The outbreak of the COVID-19 pandemic at the beginning of January 2020 forced more than a third of the world's population into lockdown. Many individuals, small businesses and large corporations were negatively affected by the sudden upsurge of the pandemic. People went panic buying, businesses went bankrupt, and governments issued decisions to delay loan repayments. These actions decreased the overall deposits of the banking sector and increased their nonperforming loans and credit risk. Unlike the financial crisis of 2007–2008, the pandemic was an exogenous shock that has affected the demanders and suppliers of the financial system (Hasan et al., 2020). Many firms have responded to the interrupted revenues due to the pandemic by hoarding cash and seeking loans from banks (Hasan et al., 2020). Gulf Cooperation Council (GCC) countries, similarly to those in the other parts of the world, were affected by the pandemic, with the added effect that it was in parallel to a decline in oil prices. Based on the GCC Statistics Centre, all GCC stock markets had a negative return during the months of February and March 2020, due to the pandemic and the decline in oil prices. On the contrary, the financial and insurance sector in the GCC countries was anticipated to achieve 3.5% growth during 2020 (GCC-STAT, 2020).

In this paper, we investigate the effect of COVID-19 on GCC banks' performance and examine whether it has had a differential effect on Islamic and conventional banks. As far as we are aware, this is considered to be one of the first assessing balance sheet data of Islamic banks after the emerging of the pandemic. The importance of this study lies in gaining a better understanding of how crises affect the banking sector, given the important roles banks play in the economy, especially in GCC countries with their bank-dependent economies (Zeitun, 2012). We chose GCC banks as they account for the largest proportion of the global Islamic financial assets of about 37.6% (Miah & Uddin, 2017), while the banking sector assets of GCC represent 38% of the total Islamic banking assets. Furthermore, Islamic banks have shown a better performance than conventional banks during the global financial crisis. The differences between Islamic and

conventional banks in terms of the profit-and-loss-sharing (PLS) principle, prohibition of Riba and Gharar, asset-backed products, etc., suggest that there could have been a differential effect of COVID-19 on them. Islamic banks are also prohibited from dealing in some risky financial instruments such as derivatives, which makes their profits more stable, especially during the crisis periods (Ben Khediria & Charfeddine, 2015; Trad et al., 2017; Zeitun, 2012).

Our sample includes 49 listed banks from five GCC countries, Saudi Arabia (KSA), Kuwait, Oman, Qatar, and the United Arab Emirates (UAE), from the first quarter of 2017 through the third quarter of 2020. We use data from quarterly financial reports collected from the official websites of the stock exchange markets of the aforementioned countries. Using various panel data models and robustness checks, the findings show that the pandemic has had an adverse effect on the performance of GCC banks. However, the impact is more pronounced on conventional banks. We argue that the Shariah principles followed by Islamic banks have mitigated the negative effects of the pandemic. The results also show that the banks in Saudi Arabia and UAE were affected more than the banks in other GCC countries. Next, we investigate the impact of bank heterogeneity on the effect of the pandemic on their performance. The results indicate that Islamic banks which are government-linked, those that are large, and those with higher loan ratios have suffered more from the pandemic than other Islamic banks. The results of the paper highlight the role which Islamic banks can play in the recovery of the economy from the pandemic. The main principles of Islamic finance, including PLS, Zakat and the fair distribution of income, and its products, such as Waqf, Qard al Hassan, and crowdfunding, could be very useful in the current period to help small and medium enterprises (SMEs) and other affected businesses recover from financial problems caused by COVID-19.

The findings of the paper provide several contributions to the literature. First, this represents one of the early attempts to cast light on the performance of the banking sector during the ongoing COVID-19 pandemic that has resulted in a global economic crisis. Second, it extends the limited literature (Hadriiche, 2015; Trad et al., 2017; Zeitun, 2012) on banks' performance in the GCC banking sector during crisis periods. Third, it contributes to the emerging strand of literature on the impact of COVID-19 on various sectors of the economy (Ashraf, 2020; Ji et al., 2020).

The remainder of this paper is organized as follows: the next section presents the literature review and hypotheses' development. Section 3 presents an overview of the impact of COVID-19 on GCC countries. Section 4 explains the data and methodology. Section 5 reports the results. Section 6 concludes the paper.

2 | LITERATURE REVIEW AND HYPOTHESES' DEVELOPMENT

Several studies have investigated bank performance on the basis of a single country or an entire region during various time periods, but the research on the effects of crises—such as financial and debt crises or pandemics—on bank profitability is relatively scant.

We review first the papers conducted on the performance of conventional banks. Athanasoglou et al. (2008) investigated the internal and external variables that could influence the bank profitability in the period of 1985 to 2001 in Greece, and deduced that all bank-specific variables share a significant relationship with the bank profitability, with the exception of bank size. The research of Sufian and Habibullah (2009) on the Chinese banking sector from 2000 to 2005 suggests that capitalization and liquidity have a positive impact on bank profitability. The banking sector in Pakistan seems to show a significant relationship between bank-specific indicators and bank performance, as suggested by Gul et al. (2011) and Ali et al. (2011). These studies vary from inspecting internal determinants only to inspecting both internal and external factors.

Some studies have explored banking performance determinants on a regional basis, with the European region, the most common regional research ground. Menicucci and Paolucci (2016) analyzed the 35 top European banks during the period of 2009–2013, and found a significant, but not uniform, the impact of bank-specific variables on bank performance. The investigations of Fu et al. (2014) on Asia-Pacific economies display a positive relationship between shareholder value and cost and profit efficiency, while also suggesting that bank size significantly impacts bank performance.

With regard to Islamic banks, there have been various attempts in prior literature to compare the determinants of performance of Islamic banks to those of conventional counterparts. Hadriiche (2015) investigates the determinants of the performance of Islamic and conventional banks in the GCC. The main determinants of performance in conventional banks are size, operational costs, and credit risk, while the main determinants of performance in Islamic banks are size, operational costs, and the inflation rate. Beck et al. (2013) show that conventional banks are more cost-effective and less stable in countries with a higher market share of Islamic banks.

After the global financial crisis 2007–2009, it was interesting to examine the impact of the financial crisis on the performance of banks. Dekle and Lee (2015) and Fu et al. (2014) find a negative relationship between the global financial crisis of 2007–2008 and bank profitability. Additionally, Dietrich and Wanzenried (2014) state that financial crises debilitate the banking sector. Ahmed (2009) indicates that applying Islamic finance principles can make the finance sector more sustainable and resilient, especially in crises periods.

Recently, there have been attempts to investigate the Islamic banks in terms of their risks, management of costs, and stability. Using data on GCC banks, Miah and Uddin (2017) found that conventional banks are more efficient in managing their costs compared to the Islamic banks, while they are better at managing their short-term solvency. Kabir et al. (2015) have used Merton's distance-to-default model to evaluate the credit risk of conventional and Islamic banks in 13 countries. The findings indicate that Islamic banks have lower credit risk according to Merton's model, while higher credit risk is based on Z-score and NPL ratio. Hassan et al. (2019) show that Islamic banks are better than conventional banks in managing risks. In a similar vein, Abedifar et al. (2013) found that small Islamic banks have lower credit risk and insolvency risk compared to conventional counterparts. Paltrinieri et al. (2020) examine the effect of revenue diversification on the risk-adjusted profitability and stability of 47 Islamic banks in OIC countries. The results show that the benefits of revenue diversification are limited to Islamic banks compared to conventional ones.

The literature on the effects of the COVID-19 crisis on the financial sector is quite limited due to the recency of this pandemic. The capital markets worldwide were affected, as shown by a dramatic drop in stock markets and bond yields. Ashraf (2020) finds that global stock markets have reacted negatively to COVID-19 to varying degrees depending on the stage of the pandemic in that market. Ashraf reaches these findings by running a regression model between the stock market indices' daily returns, from 64 countries, and the growth in the confirmed cases, growth in deaths, and some country-specific variables. Ji et al. (2020) document that gold and soybean commodity futures have been the two assets considered safe during the COVID-19 period. They include gold, cryptocurrency, forex currencies, and commodities in their evaluation. In a similar vein, Yarovaya et al. (2020) found that Sukuk is safe-haven financial instruments and that the spillovers between conventional and Islamic stock markets have been stronger during the COVID-19 era. Hasan et al. (2020) showed that loan spreads have increased in response to the pandemic, putting an additional burden on the borrowers.

Based on the existing literature on financial turmoil, we hypothesize the following:

Hypothesis 1 *COVID-19 had a negative effect on GCC banks' performance during the first three quarters of 2020.*

Several studies examine the difference in performance between Islamic and conventional banks. Sun et al. (2016) conducted a comparative study between conventional and Islamic banks in the OIC (Organization of Islamic Cooperation) region and investigated the determinants of banking performance for both bank types. The study concludes there is a significant divergence in the performance of the two bank types. Trad et al. (2017) explored the profitability and stability of both bank types during the global financial crisis of 2007–2008 in the Middle East and North Africa (MENA) region. The research concludes that Islamic banks showed more stability and profitability during the crisis than conventional banks. Similarly, the research of Zeitun (2012) on the determinants of performance for both bank types during the global financial crisis in the GCC region finds that size and cost-income ratio exhibited a significant impact on Islamic banks only, while capital played a significant role in explaining the performance of the conventional banks. Ben Khediria and Charfeddine (2015) indicate that Islamic banks tend to be more stable and capable of absorbing the effects of crises due to the Shariah principles that prohibit them from dealing with various risky financial instruments. They find that, compared to the conventional banks, Islamic banks in the GCC are more profitable, more liquid, better capitalized, and have lower credit risk.

On the contrary, Bourkhis and Nabi (2013) found that there is no significant difference between the impacts of the financial crisis on the soundness of Islamic and conventional banks. Similarly, Hassan and Girard (2010) showed that there is no difference between Islamic and non-Islamic stock market indexes.

The literature on banking systems suggests that the two bank types operate differently, especially during crises, and that different ratios explain their respective profitability. Based on these arguments, we expect that:

Hypothesis 2 *Compared to the conventional banks, Islamic banks were less affected by COVID-19 during the first three quarters of 2020.*

3 | OVERVIEW OF THE IMPACT OF COVID-19 ON GCC COUNTRIES

GCC countries were not far removed from the consequences of the pandemic. The economic impacts of COVID-19 were driven by the combination of businesses closures, travel restrictions, and social distancing, which were boosted by a collapse in oil prices. The price of Brent oil dropped from \$68.9 at the beginning of January 2020 to \$25.27 by the end of April 2020. Based on the expectation of the GCC Statistics Centre, the average growth of GCC countries' GDP in 2020 will be -2.2% .

The evident impact of COVID-19 on GCC countries has not only been due to precautionary measures such as business closures and travel restrictions, but also the collapse in global oil prices. In other words, the GCC countries have suffered from two crises at the same time. However, GCC governments' intervention, through various measures such as a stimulus program, has limited the negative effects of the pandemic. Moreover, the reaction of OPEC to the drop in oil prices, in cutting down production starting from May 2020 for 2 years, has pushed the oil prices slightly upward and is expected to have a higher impact over the long term.

It is anticipated that the average growth of GCC countries' GDP from non-oil sectors in 2020 will be -3.2% , driven by the recession in the services sector, which represents 44% of the non-oil sectors' GDP (GCC-STAT, 2020). Table 1 reports the expected growth rates of various sectors across the GCC countries based on the expectations of the GCC Statistical Centre. The best-performing sector is health care, followed by the IT and telecommunication sectors. During the current period, there has been enormous investment in the health care sector across the GCC countries, which explains the high expected growth rate. Furthermore, the IT sector has played a critical role in supporting all the other sectors of the economy. As predicted, the worst-performing sector is the hospitality sector, driven by the closure of hotels, restaurants, and coffee shops.

4 | DATA AND METHODOLOGY

The main sources for our data are the official websites of the stock exchange markets of the GCC countries. Our sample consists of 49 listed banks from six stock exchange markets in five GCC countries, with quarterly data for the period from 2017 through the third quarter of 2020. We use quarterly financial reports to reflect the effects of the COVID-19 crisis more accurately, given that the emergence of the virus worldwide occurred in the first quarter of 2020. However, with the selection of quarterly financial statements of listed banks in the GCC countries, some listed banks were excluded from the study due to the unavailability of some of their quarterly financial statements, mainly those from the first quarter of 2020, which play a critical role in the research. The listed banks in Bahrain were excluded as they were exempted by the central bank of Bahrain from releasing financial reports in the first quarter of 2020. Table 2 presents the data overview, which shows the number of banks per country. Our sample includes 11 banks from Saudi Arabia, 10 from Kuwait, 8 from Oman, 9 from Qatar, and 11 from UAE.

We use the following model to investigate the effect of COVID-19 on GCC banks' performance:

$$\text{Bank performance}_{it} = \beta_0 + \beta_1 \text{Size}_{it} + \beta_2 \text{CIR}_{it} + \beta_3 \text{CPTL}_{it} + \beta_4 \text{DEP}_{it} + \beta_5 \text{LOAN}_{it} + \beta_6 \text{LLP}_{it} + \beta_7 \text{COVID} + \beta_8 \text{INF}_t + \varepsilon_{it}$$

TABLE 1 Expected growth rates in various sectors in the GCC

Sector	Expected growth rate in 2020
Health care	8%
IT and Telecommunication	5.8%
Financial and Insurance	3.5%
Education	3%
Real estate	2%
Utilities	2%
Hospitality	-16%
Transportation	-12%
Retailing and Wholesaling	-9%
Entertainment	-8%

TABLE 2 Data overview

Country	Stock exchange market	Total banks	Conventional	Islamic
Saudi Arabia	Tadawul	11	7	4
Kuwait	Boursa Kuwait	10	5	5
Oman	Muscat Securities Market	8	7	1
Qatar	Qatar Stock Exchange	9	5	4
UAE	Abu Dhabi Securities Exchange	3	2	1
	Dubai Financial Market	8	4	4

Bank performance is measured by two variables: the return on equity (ROE), which is the net income to equity ratio, and the return on assets (ROA), which is the net income to total assets ratio. These variables are used widely by others, such as Naceur and Omran (2011), Kosmidou (2008), and Siddiqui (2008), and are considered to be two of the best measures of bank profitability in the related literature (Sinkey, 2002).

Bank size (Size) is measured by the natural logarithm of total assets, consistent with Zeitun (2012), Menicucci and Paolucci (2016), and Trad et al. (2017). This variable is chosen based on the common conclusion that bank size increases profitability due to economies of scale. Following Dietrich and Wanzenried (2014), Sun et al. (2016) and Saif-Alyousfi (2019), we include the cost-income ratio, which is calculated by dividing the operating expenses by the operating revenues. The cost-income ratio (CIR) measures the operating efficiency of banks, and higher efficiency leads to better performance. The capital ratio (CPTL) is measured by the ratio of equity to total assets, following Zeitun (2012) and Hadriche (2015). The capital ratio is an indicator of bank capitalization and the soundness of banks.

We include the deposits to total assets ratio (DEP), similarly to Menicucci and Paolucci (2016) and Sun et al. (2016). The deposits to total assets ratio measure the funding level of the bank's assets by its deposits, which reflect the degree of stability of funding of a bank, in turn influencing the bank's performance. The use of the loan ratio (LOAN) in this study is in line with Battaglia and Gallo (2015) and Trad et al. (2017). Loan ratio is measured as total loans to total assets ratio is important as it reflects the effects of loans on bank performance since loans are one of the main and one of the risky services that a bank provides, especially during crises periods. We also include the ratio of loan loss provisions to total loans (LLP), similarly to Athanasoglou et al. (2008), Menicucci and Paolucci (2016), and Trad et al. (2017). This ratio reflects the asset quality of a bank, which in turn influences the performance.

COVID is a dummy variable that takes the value 1 in the first three quarters of 2020, and 0 otherwise. We have also included the inflation rate (INF), a macroeconomic variable, following Zeitun (2012), Hadriche (2015), and Trad et al. (2017). Athanasoglou et al. (2006) found that the inflation rate has a positive effect on banks' performance. In contrast, Srairi (2009) found an insignificant relationship between the two.

5 | RESULTS

5.1 | Descriptive statistics

Table 3 reports the descriptive statistics, with Panel (A) showing those for the full sample. The mean of ROA is 0.3141, while that of ROE is 2.2761. This is similar to the findings of Zeitun (2012). The deposits represent around 61.4% of total assets in our sample, which is much lower than the deposits ratio found by Menicucci and Paolucci (2016) in European banks. On the contrary, the loan ratio is 62.1%, on average, while Battaglia and Gallo (2015) found that the loan ratio is 54.1% in Chinese and Indian banks, and Trad et al. (2017) found a lower loan ratio of about 45% in the banks in the MENA region. Islamic banks represent 38.8% of our observations.

Figure 1(a) illustrates the trend in ROA for conventional and Islamic banks during our sample period. The data show that the profitability of conventional banks is more stable than that of Islamic banks. The peak of the profitability of the Islamic banks is observed in the first quarter of the year 2008. A similar trend is seen in ROE in Figure 1(b), with conventional banks showing smoother profitability, while Islamic banks show fluctuation in their ROE. To investigate the COVID-19 period, Figure 2 shows the ROA and ROE of conventional and Islamic banks during the three quarters of the year 2020. It can be noticed for both ROA and ROE that the Islamic banks have relatively smooth profitability, with

TABLE 3 Descriptive statistics

	Mean	Median	SD	Min.	Max.
Panel (A): Full sample					
ROE	2.2671	2.4770	2.9110	-37.5290	20.4600
ROA	0.3141	0.3440	0.8047	-10.2970	10.3290
SIZE	17.5707	18.0280	2.0140	14.0900	22.6530
CIR	0.5136	0.4055	1.9437	-1.9150	52.5780
CPTL	0.1477	0.1360	0.0605	0.0740	0.5230
DEP	0.6142	0.6750	0.1929	0.0070	0.8610
LOAN	0.6205	0.6470	0.1416	0.0270	0.8600
LLP	0.0296	0.0250	0.0323	0.0000	0.4140
INF	0.4185	0.6000	1.8456	-3.4667	6.0000
COVID	0.2000	0.0000	0.4003	0.0000	1.0000
Panel (B): Conventional banks					
ROE	2.3236	2.3835	1.4977	-14.2140	6.8720
ROA	0.3206	0.3375	0.2294	-2.5720	1.0860
SIZE	17.4731	17.9565	1.9989	14.4230	20.7090
CIR	0.4285	0.3930	0.2183	0.1030	3.5300
CPTL	0.1408	0.1390	0.0222	0.0870	0.2130
DEP	0.6600	0.6775	0.0884	0.0330	0.8370
LOAN	0.6329	0.6380	0.1113	0.1990	0.8600
LLP	0.3070	0.0290	0.0189	0.0000	0.0800
Panel (C): Islamic banks					
ROE	2.1778	2.7610	4.2827	-37.5290	20.4600
ROA	0.3038	0.3580	1.2609	-10.2970	10.3290
SIZE	17.7250	18.0350	2.0318	14.0900	22.6530
CIR	0.6477	0.4270	3.1059	-1.9150	52.5780
CPTL	0.1586	0.1310	0.0919	0.0740	0.5230
DEP	0.5417	0.6650	0.2742	0.0070	0.8610
LOAN	0.6008	0.6640	0.1777	0.0270	0.7820
LLP	0.0279	0.0180	0.0461	0.0000	0.4140

Note: This table reports the descriptive statistics (i.e., the mean, standard deviation (SD), minimum (Min.), and maximum (Max.)) of the variables under consideration for our sample. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. Size is measured by the natural logarithm of total assets. CIR is the cost-income ratio, which is operating expenses divided by operating revenues. CPTL is the capital ratio and is measured by equity divided by total assets. DEP is the deposit ratio, which is deposits divided by total assets. LOAN is the loan ratio, which is net loans divided by total assets. LLP is the loan loss provisions, which is measured as loan loss provision divided by gross loans. INF is the inflation rate. COVID is a dummy variable which takes the value 1 for the first three quarters of 2020 and 0 otherwise.

a slight upward slope, while the conventional banks show a decline in their profitability ratios in the second quarter of 2020, recovering in the third quarter.

Going back to Table 3, we next present the descriptive statistics for conventional and Islamic banks, in Panels (B) and (C), respectively. The profitability ratios (ROA and ROE) are slightly higher in conventional banks. The cost-income ratio is higher in Islamic banks by about 21.8%. Conventional banks' deposits ratio is higher by about 11.8%. Islamic banks provide a lower quantity of loans, by about 3% than conventional banks. The loan loss provisions are much lower in Islamic banks than in conventional banks. This shows that the two types of banks operate differently, despite being of similar sizes.

Table 4 reports the correlation matrix, which shows no indication of multicollinearity between our independent variables. Therefore, the results confirm the validity and reliability of the model, and thus all of the chosen variables are used for the study. There is a negative correlation between the COVID dummy and both profitability ratios, which is considered an initial indication that COVID-19 had a negative impact on the performance of banks in the GCC.

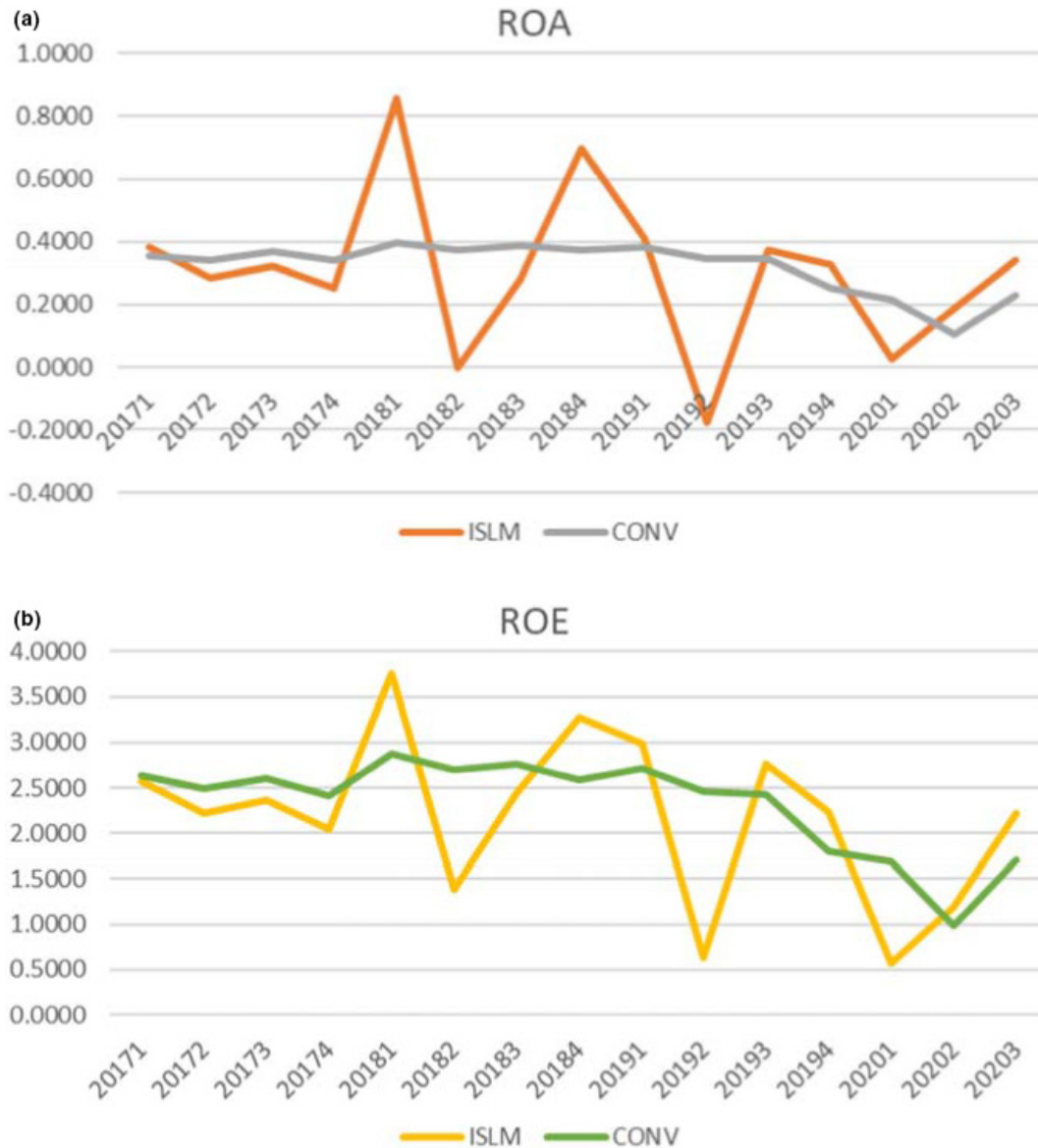


FIGURE 1 (a) Evolution of ROA of conventional and Islamic banks. (b) Evolution of ROE of conventional and Islamic banks

5.2 | Empirical models

We first examine the effect of COVID-19 on the profitability of GCC banks using pooled OLS and random effects models, consistent with Zeitun (2012) and Aslam et al. (2020). We choose the random effects over a fixed-effects model as it accounts for time-invariant predictors which are present in our model (Wooldridge, 2010). We estimate pooled OLS and random effects models with clustered standard errors to account for the possibility of heteroscedasticity and autocorrelation. Table 5 shows that COVID-19 had a negative effect on GCC bank performance, as indicated by the results in all models.

Next, we investigate the effect of COVID-19 on the performance of Islamic and conventional banks separately, presenting the results in Table 6. With regard to the ROA models, the results show that COVID-19 had an adverse effect only on the profitability of the conventional banks. When using ROE as the dependent variable, there is evidence of a negative impact of COVID-19 on the profitability of both types of banks.

With respect to the determinants of bank performance, the results show that the size has a positive effect on the bank performance of both the Islamic and conventional banks in both the ROA and ROE models, consistent with Menicucci and Paolucci (2016) and Gul et al. (2011). These findings imply that larger banks enjoy better profitability, and can be

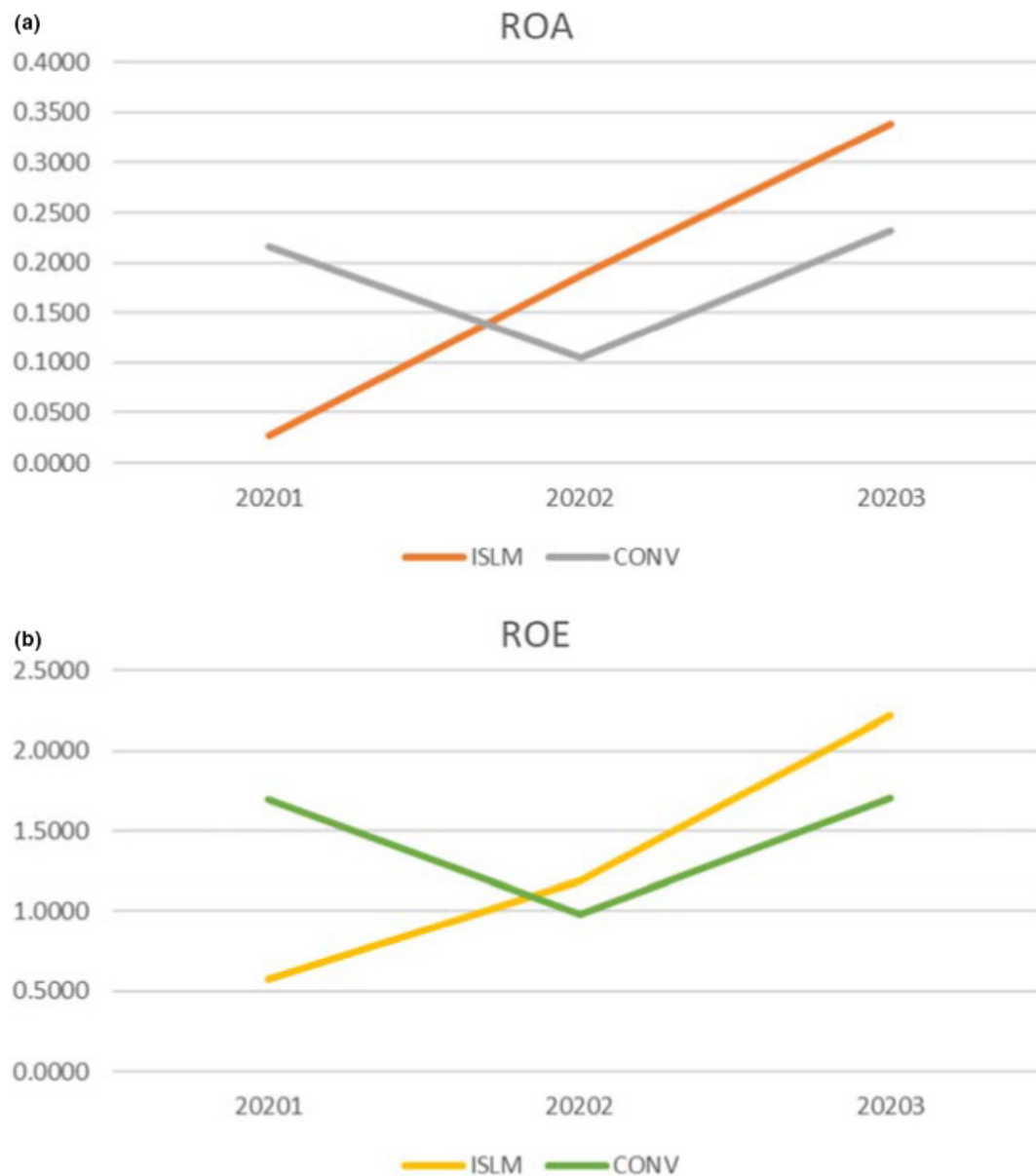


FIGURE 2 (a) Evolution of ROA of conventional and Islamic banks during COVID-19 period. (b) Evolution of ROE of conventional and Islamic banks during COVID-19 period

explained by the economies of scale theory (Bourke, 1989). As banks grow in size, their operations and services grow as well, providing more opportunities for these banks to improve their performance.

The cost-income ratio (CIR) has a positive effect on Islamic banks' performance, but a negative impact on conventional banks' performance. The results for the conventional banks are consistent with the findings of Athanasoglou et al. (2008), Zeitun (2012) and Saif-Alyousfi (2019).

The capital ratio (CPTL) has a negative effect on conventional banks' performance in the ROE model. This is in line with Zeitun (2012) and Trad et al. (2017), who show that the capital ratio is expected to be less significant to Islamic banks due to their different structure that considers deposits as equity based on the PLS principle.

The deposit ratio (DEP) has a positive impact on the bank performance of both Islamic and conventional banks in both the ROA and ROE models. This result is consistent with Gul et al. (2011), Saeed (2014) and Trad et al. (2017). Customer deposits play a role in creating loans to finance other customers, and increasing loan services improves bank performance.

The loan ratio (LOAN) exhibits a positive effect on Islamic banks' performance in the ROE model. Increasing lending services and taking advantage of highly profitable lending opportunities to improve bank performance. This result

TABLE 4 Correlation matrix

	ROE	ROA	SIZE	CIR	CPTL	DEP	LOAN	LLP	COVID	ISLM	INF
ROE	1										
ROA	0.9062	1									
SIZE	0.3042	0.284	1								
CIR	-0.0532	-0.0247	-0.0779	1							
CPTL	-0.1181	0.1228	0.286	0.0602	1						
DEP	0.2007	0.1134	-0.0945	-0.0911	-0.3896	1					
LOAN	0.1415	-0.0352	-0.3516	-0.1283	-0.6555	0.3904	1				
LLP	-0.3177	-0.2848	0.0352	0.4273	0.0643	-0.0635	-0.1082	1			
COVID	-0.1473	-0.0807	0.027	0.0799	-0.0485	-0.0173	-0.0259	0.0913	1		
ISLM	-0.0244	-0.0101	0.0609	0.055	0.1443	-0.2992	-0.1105	-0.041	0	1	
INF	0.0584	0.0667	-0.143	-0.0741	-0.0484	0.1539	0.0288	-0.1499	-0.1227	0.0025	1

Note: This table reports the pairwise correlations between the dependent and independent variables.

TABLE 5 Effect of COVID-19 on GCC banks.

	ROA		ROE	
	Pooled OLS	RE	Pooled OLS	RE
SIZE	0.1218*** (3.63)	0.1218*** (3.63)	0.6016*** (5.76)	0.6027*** (5.69)
CIR	0.0836*** (3.65)	0.0836*** (3.65)	0.3236*** (3.61)	0.3382*** (5.02)
CPTL	2.6798 (1.59)	2.6798 (1.59)	-2.0640 (-0.44)	-2.9573 (-0.62)
DEP	0.8299** (2.01)	0.8299** (2.01)	2.7108** (1.97)	2.6684* (1.84)
LOAN	0.7842*** (3.25)	0.7842*** (3.25)	4.1238*** (3.93)	3.7557*** (3.89)
LLP	-10.1871*** (-5.98)	-10.1871*** (-5.98)	-38.4770*** (-5.35)	-36.0079*** (-6.20)
COVID	-0.0878** (-2.08)	-0.0878** (-2.08)	-0.9102*** (-4.91)	-0.0946*** (-5.21)
INF	0.0249 (1.22)	0.0249 (1.22)	0.0680 (1.40)	0.0651 (1.35)
Intercept	-3.1984*** (-3.98)	-3.1984*** (-3.98)	-12.013*** (-4.71)	-11.6509*** (-4.65)
Country effects	Yes	Yes	Yes	Yes
N	734	734	734	734
R-squared	0.249	0.249	0.339	0.339
Wald test (p-value)		.000		.000

Note: This table reports the regression results of model (1) on the effect of COVID-19 on GCC banks. We use both pooled OLS and random effects models. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. Size is measured by the natural logarithm of total assets. CIR is the cost-income ratio, which is operating expenses divided by operating revenues. CPTL is the capital ratio and is measured by equity divided by total assets. DEP is the deposit ratio, which is deposits divided by the total assets. LOAN is the loan ratio, which is net loans divided by total assets. LLP is the loan loss provisions, which is measured as loan loss provision divided by gross loans. INF is the inflation rate. COVID is a dummy variable which takes the value 1 for the first three quarters of 2020 and 0 otherwise. T-statistics (or z-statistics for the random effects models) are reported in parentheses. ***, **, and * denote the statistical significance at the 1, 5, and 10% levels, respectively.

is supported by the findings of Sufian and Habibullah (2009) and Bashir (2003). On the contrary, the insignificance of LOAN for the bank performance measures in conventional banks mirrors the findings of Menicucci and Paolucci (2016), whose analysis also shows the loan-to-assets ratio having no significant impact on ROE or ROA.

As for the loan loss provisions (LLP), the results show a negative impact on Islamic banks' performance, indicating that higher risk exposure tends to lower bank performance. This outcome is consistent with Miller and Noulas (1997) and Athanasoglou et al. (2008). LLP is an indicator for asset quality, and lower loan loss provision ratios reflect healthy asset quality, which leads to increased bank performance. Finally, the inflation rate has an insignificant effect on banks' performance in line with Srairi (2009).

To confirm our earlier results, we run the model of the effects of COVID-19 on the performance of Islamic and conventional banks again using a narrower sample period including three quarters from the pre-COVID era and three during the COVID era, namely from the second quarter of 2019 to the third quarter of 2020. Table 7 reports the regression results. The findings show that our results remain qualitatively the same.

Next, we further investigate the effect of COVID-19 on the performance of Islamic and conventional banks within each GCC country, separately. This analysis is conducted for only four GCC countries as our sample for Oman only contains one Islamic bank, and the limited number of observations would hinder this analysis. Columns (1–4) of Table 8 show the results for Saudi Arabia, demonstrating that COVID-19 had an adverse effect on the profitability of both conventional and Islamic banks in that country. Columns (5–8) of Table 8 report the results for Kuwait,

TABLE 6 Effect of COVID-19 on conventional and Islamic banks

	ROA				ROE			
	Pooled OLS		Random effects model		Pooled OLS		Random effects model	
	Islamic	Conv	Islamic	Conv	Islamic	Conv	Islamic	Conv
SIZE	0.2235*** (3.28)	0.0318*** (5.17)	0.2234*** (5.69)	0.3034*** (3.96)	0.9511*** (5.27)	0.2600*** (6.96)	0.9511*** (7.68)	0.2451*** (4.85)
CIR	0.1008*** (11.56)	-0.3432*** (-6.26)	0.1008*** (4.22)	-0.3809*** (-6.91)	0.3851*** (9.17)	-1.9469*** (-3.90)	0.3851*** (5.11)	-2.2106*** (-6.42)
CPTL	2.2782 (1.02)	0.8232 (1.25)	2.2782* (1.67)	0.9949 (1.61)	-2.5737 (-0.32)	-10.9576*** (-2.78)	-2.5737 (-0.60)	-8.5309** (-2.15)
DEP	0.7711** (2.36)	0.4968*** (4.14)	0.7711*** (2.68)	0.4463*** (2.90)	2.4843** (2.13)	3.4442*** (4.23)	2.4843*** (2.74)	2.9521*** (2.98)
LOAN	1.1396 (1.37)	0.0531 (0.54)	1.1396 (1.55)	0.0947 (0.70)	5.7053 (1.52)	0.6647 (1.13)	5.7053** (2.46)	0.9288 (1.05)
LLP	-10.8586*** (-8.79)	-0.7404 (-0.83)	-10.8586*** (-6.16)	-0.8082 (-0.96)	-40.7689*** (-8.68)	-6.4871 (-1.05)	-40.7689*** (-7.33)	-6.0174 (-1.11)
COVID	-0.0379 (-0.57)	-0.1404*** (-3.57)	-0.0379 (-0.23)	-0.1373*** (-6.01)	-0.8727*** (-2.88)	-0.9460*** (-4.04)	-0.8727* (-1.70)	-0.9229*** (-6.54)
INF	0.0439 (0.89)	0.0039 (1.41)	0.0439 (1.22)	0.0033 (0.64)	0.0671 (0.63)	0.0268 (1.34)	0.0671 (0.59)	0.0241 (0.76)
Intercept	-5.1549*** (-3.71)	-0.5209*** (-4.06)	-5.1549*** (-5.14)	-0.4972** (-2.29)	-18.8573*** (-4.53)	-2.3053*** (-3.01)	-18.8573*** (-5.96)	-2.1516 (-1.52)
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	285	449	285	449	285	449	285	449
R-squared	0.303	0.314	0.303	0.312	0.398	0.377	0.398	0.373
Wald test (p-value)			.000	.000			.000	

Note: We subdivide our sample into Islamic and conventional banks to examine the effect of COVID-19 on each bank type. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. The independent variables include the size, cost-income ratio, capital ratio, deposit ratio, loan ratio, loan loss provisions, the COVID dummy, and the inflation rate. T-statistics (or z-statistics for the random effects models) are reported in the parentheses. ***, **, and * denote the statistical significance at the 1, 5, and 10% levels, respectively.

TABLE 7 Robustness check

	ROE											
	ROA						ROE					
	Pooled OLS			Random effects model			Pooled OLS			Random effects model		
	Islamic	Conv	Islamic	Conv	Islamic	Conv	Islamic	Conv	Islamic	Conv	Islamic	Conv
SIZE	0.1743*** (4.30)	0.0354*** (3.25)	0.1743** (2.44)	0.0366*** (2.63)	0.9946*** (5.60)	0.2841*** (4.44)	0.9946*** (3.53)	0.281*** (4.44)	0.9946*** (3.53)	0.2841*** (4.44)	0.9946*** (3.53)	0.2893*** (3.45)
CUR	0.0857*** (33.38)	-0.2643*** (-3.55)	0.0857*** (3.53)	-0.2939*** (-3.36)	0.3502*** (29.32)	-1.5110*** (-2.60)	0.3502*** (3.66)	-1.5110*** (-2.60)	0.3502*** (3.66)	-1.5110*** (-2.60)	0.3502*** (3.66)	-1.6696*** (-3.13)
CPTL	-0.4037 (-0.17)	-0.1137 (-0.08)	-0.4037 (-0.20)	0.7455 (0.61)	-9.6167 (-0.99)	-12.6003 (-1.58)	-9.6167 (-1.24)	0.7455 (0.61)	-9.6167 (-0.99)	-12.6003 (-1.58)	-9.6167 (-1.24)	-7.8449 (-1.06)
DEP	0.5647** (2.00)	0.2151 (1.22)	0.5647 (1.27)	0.1845 (0.65)	1.5193 (1.30)	1.9291* (1.71)	1.5193 (0.87)	0.1845 (0.65)	1.5193 (1.30)	1.9291* (1.71)	1.5193 (0.87)	1.6837 (0.98)
LOAN	0.4339 (0.42)	0.4139** (2.26)	0.4339 (0.43)	0.4476* (1.67)	4.1708 (0.94)	2.6893*** (2.47)	4.1708 (1.05)	0.4476* (1.67)	4.1708 (0.94)	2.6893*** (2.47)	4.1708 (1.05)	2.8645* (1.77)
LLP	-10.2216*** (-12.31)	-1.6898 (-1.11)	-10.2216*** (-4.65)	-2.1926 (-1.34)	-38.6973*** (-9.89)	-12.2762 (-1.26)	-38.6973*** (-4.46)	-2.1926 (-1.34)	-38.6973*** (-9.89)	-12.2762 (-1.26)	-38.6973*** (-4.46)	-14.5754 (-1.48)
COVID	0.0387 (1.01)	-0.1189*** (-2.79)	0.0346 (0.17)	-0.1116*** (-2.77)	-0.6135* (-1.75)	-0.8027*** (-2.90)	-0.6136 (-0.75)	-0.1116*** (-2.77)	-0.6135* (-1.75)	-0.8027*** (-2.90)	-0.6136 (-0.75)	-0.7637*** (-3.09)
INF	-0.0413 (-1.52)	0.0025 (0.34)	-0.0413 (-0.59)	0.0045 (0.35)	-0.1448 (-1.24)	0.0286 (0.55)	-0.1448 (-0.53)	0.0045 (0.35)	-0.1448 (-1.24)	0.0286 (0.55)	-0.1448 (-0.53)	0.0409 (0.52)
Intercept	-3.2874*** (-5.08)	-0.5702* (-1.80)	-3.2874** (-1.97)	-0.7114 (-1.64)	-16.7589*** (-4.69)	-3.2787* (-1.84)	-16.7588** (-2.54)	-0.7114 (-1.64)	-16.7589*** (-4.69)	-3.2787* (-1.84)	-16.7588** (-2.54)	-3.9926 (-1.52)
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	114	179	114	179	114	179	114	179	114	179	114	179
R-squared	0.364	0.248	0.364	0.245	0.424	0.325	0.424	0.245	0.424	0.325	0.424	0.322
Wald test (p-value)			.000	.000			.000				.000	.000

Note: We use a narrower sample period, from the second quarter of 2019 to the third quarter of 2020, to confirm the robustness of our earlier results. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. The independent variables include the size, cost-income ratio, capital ratio, deposit ratio, loan ratio, loan loss provisions, COVID dummy, and inflation rate. T-statistics (or z-statistics for the random effects models) are reported in parentheses. ***, **, and * denote the statistical significance at the 1, 5, and 10% levels, respectively.

TABLE 8 Effect of COVID-19 on conventional and Islamic banks in Saudi Arabia and Kuwait

	Saudi Arabia				Kuwait			
	ROA		ROE		ROA		ROE	
	Islamic	Conv	Islamic	Conv	Islamic	Conv	Islamic	Conv
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
SIZE	0.0916*** (4.74)	0.1000*** (3.65)	0.5202*** (3.47)	0.7225*** (4.41)	-0.0116 (-0.45)	-0.1128 (-0.54)	-0.1579 (-0.49)	-0.6099 (-0.41)
CIR	-0.8749*** (-9.14)	-0.6381*** (-3.68)	-6.3618*** (-8.58)	-4.5751*** (-4.56)	-0.9457*** (-11.11)	-1.3053*** (-5.53)	-9.0307*** (-8.56)	-10.0648*** (-5.98)
CPTL	-1.3395*** (-5.32)	-0.6354 (-0.48)	-29.9719*** (-15.37)	-19.8174** (-2.52)	3.3965*** (7.03)	1.2547 (0.68)	24.1972*** (4.04)	-4.8359 (-0.37)
DEP	-0.3989 (-1.60)	0.0313 (0.05)	-0.6838 (-0.35)	-1.2784 (-0.36)	0.4519*** (4.87)	-0.9445 (-1.52)	4.1649*** (3.63)	-6.2167 (-1.41)
LOAN	0.4858*** (3.52)	0.3859 (0.71)	2.9618*** (2.77)	3.1861 (1.00)	-0.9096*** (-4.26)	0.3937 (0.44)	-9.1326*** (-3.45)	2.4782 (0.39)
LLP	0.9711 (1.00)	-2.7837 (-0.91)	11.3503 (1.51)	-11.0063 (-0.62)	-37.8642*** (-10.70)	-58.2463*** (-9.28)	-376.9447*** (-8.60)	-420.4730*** (-9.40)
COVID	-0.1215*** (-7.35)	-0.2408*** (-3.63)	-0.7505*** (-5.86)	-1.4883*** (-3.92)	-0.0454** (-2.07)	-0.0224 (-0.62)	-0.3148 (-1.16)	-0.1936 (-0.75)
INF	0.0049*** (2.62)	0.0168 (1.31)	0.0379*** (2.61)	0.0929 (1.27)	-0.0348*** (-2.97)	-0.0361** (-1.98)	-0.3462** (-2.39)	-0.2549** (-1.96)
Intercept	-0.5826 (-1.61)	-1.2379*** (-2.83)	-0.1736 (-0.06)	-6.3129*** (-2.43)	0.9047* (1.79)	2.9529 (0.77)	10.5089* (1.68)	20.2369 (0.74)
N	60	150	60	150	75	29	75	29
R-squared	0.968	0.276	0.961	0.322	0.887	0.922	0.811	0.929
Wald test (p-value)	.000	.000	.000	.000	.000	.000	.000	.000

Note: Here, we examine the effect of COVID-19 on banks in Saudi Arabia and Kuwait. We estimate this using the random effects models. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. The independent variables include the size, cost-income ratio, capital ratio, deposit ratio, loan ratio, deposit ratio, loan loss provisions, COVID dummy, and inflation rate. Z-statistics are reported in parentheses. ***, **, and * denote the statistical significance at the 1, 5, and 10% levels, respectively.

demonstrating an insignificant effect of COVID-19 on the profitability of conventional and Islamic banks, with the exception of ROA in Islamic banks.

Columns (1–4) of Table 9 show the results for Qatar, where COVID-19 appears to have had an insignificant effect on the profitability of both conventional and Islamic banks. Columns (5–8) of Table 9 show the results for UAE, with COVID-19 having a significant negative effect only on the profitability of conventional banks, and Islamic banks seemingly not affected.

5.3 | Bank Heterogeneity and the Effect of COVID-19 on Islamic Banks' Profitability

We also consider the impact of bank heterogeneity on the relationship between COVID-19 and Islamic banks' profitability. We subdivide our sample of Islamic banks based on three characteristics: government links, age and loan ratio. Few papers examine the impact of corporate governance, such as ownership structure, board size, and board compositions on Islamic banks' performance (Ali & Azmi, 2016; Farag et al., 2018; Khan et al., 2017). Francis et al. (2012) show that banks with better governance structures were less affected during the financial crisis. Stanger (2000) finds that older banks perform better than younger ones. Hasan et al. (2020) argue that lending was essential for firms during the

TABLE 9 Effect of COVID-19 on conventional and Islamic banks in Qatar and UAE

	Qatar				UAE			
	ROA		ROE		ROA		ROE	
	Islamic	Conv	Islamic	Conv	Islamic	Conv	Islamic	Conv
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SIZE	0.8272 (1.41)	−0.0207 (−1.16)	3.1038 (1.40)	−0.0322 (−0.24)	−0.3611 (−0.78)	0.0195* (1.92)	−0.2463 (−0.26)	0.1733** (2.14)
CIR	0.0843** (2.20)	−0.4127 (−1.57)	0.3526** (2.43)	−3.2528* (−1.65)	−2.4527* (−1.81)	−0.2819*** (−6.22)	−6.4032** (−2.25)	−1.2064*** (−3.34)
CPTL	2.3526 (0.23)	−0.8651 (−0.90)	5.2558 (0.14)	−23.8923*** (−3.30)	−4.5910 (−0.34)	−0.5849 (−0.74)	−17.8973 (−0.65)	−20.7384*** (−3.31)
DEP	9.0120 (1.13)	0.1673 (0.38)	30.3561 (1.00)	2.1895 (0.67)	−3.0173 (−0.97)	0.1646 (1.03)	−3.0186 (−0.48)	1.7349 (1.37)
LOAN	−1.6451 (−0.43)	0.6004* (1.67)	−5.9191 (−0.41)	4.5431* (1.68)	−4.0876 (−0.59)	−0.0852 (−0.55)	−9.4565 (−0.67)	−0.2168 (−0.18)
LLP	−5.9205 (−1.12)	−1.4358* (−1.83)	−32.2833 (−1.61)	−11.4772* (−1.95)	−16.0429 (−0.92)	1.6419* (1.77)	−30.6573 (−0.87)	13.7357* (1.85)
COVID	−0.6558 (−0.80)	−0.020 (−0.49)	−3.4531 (−1.11)	−0.0887 (−0.29)	0.2753 (0.58)	−0.1982*** (−5.82)	−0.1502 (−0.16)	−1.4804*** (−5.46)
INF	−0.2759 (−1.06)	−0.0021 (−0.16)	−1.3433 (−1.35)	0.0266 (0.27)	0.0960 (1.22)	0.0015 (0.27)	0.2024 (1.27)	0.0005 (0.01)
Intercept	−14.880 (−1.31)	0.4987 (1.33)	−52.2478 (−1.23)	3.4013 (1.21)	14.4603 (1.08)	0.0823 (0.34)	22.8034 (0.84)	1.3867 (0.71)
N	60	75	60	75	75	90	75	90
R-squared	0.453	0.433	0.519	0.679	0.303	0.779	0.255	0.733
Wald test (p-value)	.000	.000	.000	.000	.000	.000	.000	.000

Note: Here, we examine the effect of COVID-19 on banks in Qatar and UAE. We estimate this using random effects models. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. The independent variables include the size, cost-income ratio, capital ratio, deposit ratio, loan ratio, loan loss provisions, COVID dummy, and inflation rate. Z-statistics are reported in parentheses. ***, ** and * denote the statistical significance at the 1, 5, and 10% levels, respectively.

pandemic in enabling them to cope with their fixed costs and debt-service expenses. Government links are determined by whether the government is one of the top shareholders of the bank. Micco et al. (2007) and Iannotta et al. (2007) found that government-owned banks have lower profitability than privately owned banks. Age is based on the number of years since the bank was founded. The loan ratio is measured as net loans over total assets.

Table 10 shows that the profitability of government-linked Islamic banks was negatively affected by COVID-19 to a greater extent than that of other banks. Also, age seems to play a role in the effect of COVID-19 on the performance of Islamic banks. The results indicate that old Islamic banks suffered more than young Islamic banks. Finally, COVID-19 had a more negative effect on Islamic banks with high loan ratios than on those with low loan ratios. This could have been due to their higher exposure to delays and defaults by customers during the pandemic era.

5.4 | Further analyses

5.4.1 | Propensity score matching

In Panel (A) of Table 11, we present the pairwise differences between the ROA (ROE) of Islamic and conventional banks in the propensity score-matched samples. We match each Islamic bank to a conventional bank based on size, DEP, LOAN, LLP, and CPTL. The findings show that during the pre-COVID-19 period, Islamic banks had a lower ROA (ROE) than conventional banks. On the contrary, during the COVID-19 era, Islamic banks had a higher ROA (ROE) than conventional banks.

5.4.2 | Endogeneity

To deal with possible endogeneity in our model, we estimate one-step system generalized moments of motion (GMM) regression. Panel (B) of Table 11 presents the results which confirm our earlier findings of the negative impact of COVID on the performance of GCC banks. The null hypothesis of AR (1) of no first-order autocorrelation is rejected which indicates the presence of first-order autocorrelation, whereas, the null hypothesis of AR (2) is the absence of second-order autocorrelation is accepted. The acceptance of the null hypothesis of the Hansen test for over-identification confirms the validity of the instruments.

5.4.3 | Reverse causality

We employ the panel vector regression to test for the direction of causality, following Pathak and Ranajee (2020). We run two equations for ROA (ROE) and COVID in which the first two lags of each of them are used as dependent variables. Panel (B) of Table 11 presents the results of these regressions. The findings show that COVID is significant in the model of ROA (ROE), whereas, the ROA (ROE) is insignificant in the COVID model. This rule out the possibility of endogeneity problem and confirms that COVID affects ROA (ROE) and not vice versa.

5.5 | Lessons from Islamic Banks

Overall, the pandemic has highlighted that Islamic banks possess some features which can be utilized in the post-COVID era. Some of these features are indicated by prior literature. For instance, Ben Khediria and Charfeddine (2015) show that Islamic banks are more efficient and stable than conventional banks during crisis periods due to the Shariah principles, especially in relation to interest margins. In the same context, Trad et al. (2017) and Ahmed and Elsayed (2019) argue that the objective of Islamic banks is not only to earn the maximum return but also to enhance economic growth through the fair distribution of wealth and income. Ariss (2010) shows that, compared to conventional banks, Islamic banks are better capitalized, less competitive, and allocate a greater share of their assets to financing activities. There are various principles of Islamic finance, such as PLS, prohibition of Riba and Zakat, that can be utilized in the recovery from the adverse effects of the pandemic. Furthermore, Islamic finance products such as Waqf, Qard al Hassan, and crowdfunding

TABLE 10 Influence of bank heterogeneity on the effect of COVID-19 on Islamic banks

	ROA			ROE			ROA			ROE		
	Govt	Non-Govt	Govt	Non-Govt	Young	Old	Young	Old	Low	High	Low	High
SIZE	0.0707*** (4.20)	0.1992 (1.43)	0.4843*** (3.09)	0.7741* (1.80)	0.2821*** (3.72)	0.0637*** (8.17)	1.0474*** (4.47)	0.4711*** (7.68)	0.3626*** (2.86)	0.0556*** (4.59)	1.0368*** (2.63)	0.3963*** (3.04)
CIR	-0.1283*** (-2.63)	0.0758** (2.09)	-1.2465*** (-2.68)	0.3287*** (2.94)	0.1069*** (3.13)	-0.5793*** (-6.58)	0.4253*** (4.04)	-4.0342*** (-5.83)	0.0912** (2.40)	-0.6079*** (-8.32)	0.3797*** (3.20)	-5.2000*** (-6.77)
CPTL	-1.5112** (-2.29)	6.3068 (1.07)	-19.7729*** (-3.16)	8.4354 (0.47)	3.8954* (1.67)	0.9116 (1.01)	6.2991 (0.87)	-14.6587** (-2.07)	2.1604 (0.72)	1.2182** (2.12)	-1.0444 (-0.11)	-3.9659 (-0.65)
DEP	-0.0862 (-0.66)	5.1232*** (2.80)	-0.8574 (-0.70)	15.1974*** (2.69)	1.0872* (1.69)	0.2307*** (4.84)	2.4353 (1.22)	1.5582*** (4.15)	1.1863 (1.30)	0.1116 (1.59)	4.8658* (1.72)	0.8877 (1.17)
LOAN	0.3469 (1.64)	-1.9648 (-0.60)	2.5451 (1.28)	-3.5963 (-0.36)	2.0863 (1.53)	0.2606 (1.63)	9.9507** (2.37)	1.7941 (1.43)	1.103 (0.51)	0.0226 (0.08)	5.5461 (0.82)	1.4216 (0.49)
LLP	-0.7387 (-0.45)	-2.6821 (-0.60)	-7.1986 (-0.46)	-20.2131 (-1.45)	-9.5835*** (-3.25)	-0.1673 (-0.31)	-40.3816*** (-4.44)	-1.1634 (-0.27)	-7.0878** (-1.98)	1.6922 (1.28)	-36.6317*** (-3.29)	12.7189 (0.93)
COVID	-0.1205*** (-6.04)	-0.0068 (-0.07)	-0.94709*** (-4.98)	-1.2239 (-1.04)	0.0372 (0.11)	-0.1182*** (-5.40)	-0.6531 (-0.62)	-0.9126*** (-5.30)	0.0594 (0.13)	-0.1054*** (-6.90)	0.0529 (0.20)	-0.8517*** (-5.37)
INF	-0.0069 (-1.39)	0.0795 (1.15)	-0.0389 (-0.83)	0.1516 (0.71)	0.0865 (1.15)	-0.0005 (-0.10)	0.0994 (0.43)	-0.0046 (-0.13)	0.0723 (0.85)	0.0005 (0.16)	0.0529 (0.20)	0.0067 (0.19)
Intercept	-0.6189 (-1.55)	-6.5525* (-1.75)	-2.6211 (-0.70)	-20.8811* (-1.81)	-7.3685*** (-3.67)	-0.8253*** (-5.13)	-24.6725*** (-3.97)	-3.1807** (-2.51)	-8.1093*** (-2.89)	-0.5061 (-1.60)	-22.9756*** (-2.63)	-2.3788 (-0.71)
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	165	120	165	120	143	142	143	142	117	168	117	168
R-squared	0.596	0.391	0.469	0.462	0.330	0.698	0.408	0.632	0.334	0.777	0.397	0.588
Wald test (p-value)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Note: Now, we subdivide the Islamic banks according to three bank characteristics, namely government links, age, and loan ratio. The columns labelled Young and Old are based on banks with above and below the median age. Those labelled High and Low are based on banks with above and below the median loan ratio. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. The independent variables include the size, cost-income ratio, capital ratio, deposit ratio, loan ratio, loan loss provisions, COVID dummy, and inflation rate. Z-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively.

TABLE 11 Further analyses

	Average Treatment effects (ATE)			
	Pre-COVID	During COVID		
Panel (A): Pairwise differences in ROA and ROE				
ROA	-0.0440	0.0233		
ROE	-0.2359	0.1756		
	ROA	ROE		
Panel (B) GMM Estimation				
L.ROA	-0.3687 (-1.14)			
L.ROE		-0.3356* (-1.89)		
SIZE	0.7653 (0.70)	1.4423 (1.08)		
CIR	-0.0818 (-1.58)	-0.1424 (-1.32)		
CPTL	-170.5404*** (-2.16)	-254.9681*** (-5.23)		
DEP	-13.4388 (-0.92)	-13.2873 (-0.55)		
LOAN	-42.7163 (-1.41)	-56.5478* (-1.93)		
LLP	-63.3118** (-1.97)	-84.9436** (-2.15)		
COVID	-1.8119*** (-2.98)	-3.1978*** (-3.13)		
INF	0.1479 (0.81)	0.1302 (0.52)		
Intercept	56.1099* (1.77)	65.5719 (1.59)		
Country effects	Yes	Yes		
N	685	685		
No. of instruments	18	18		
AR(1) p-value	.080	.033		
AR(2) p-value	.349	.337		
Hansen p-value	.690	.406		
	Dep. Var: ROA	Dep. Var: COVID	Dep. Var: ROE	Dep. Var: COVID
Panel (C): Panel vector regression				
ROA _{t-1}	-0.3893*** (-9.87)	-0.119 (-0.70)		
ROA _{t-2}	-0.3165*** (-7.90)	-0.0032 (-0.18)		
ROE _{t-1}			-0.3880*** (-9.69)	-0.0079 (-1.59)
ROE _{t-2}			-0.3268***	-0.0019

(Continues)

TABLE 11 (Continued)

	Dep. Var: ROA	Dep. Var: COVID	Dep. Var: ROE	Dep. Var: COVID
			(−7.77)	(−0.38)
COVID _{t−1}	−0.2937*** (−3.06)	0.9064*** (21.90)	−1.9571*** (−5.85)	0.8984*** (21.50)
COVID _{t−2}	0.0909 (0.70)	−0.0005 (−0.01)	0.5346 (1.20)	−0.0029 (−0.05)

Note: In Panel (A), we perform propensity score matching. We match each Islamic bank to a conventional bank based on size, DEP, LOAN, LLP, and CPTL. In Panel (B), we estimate GMM regression to account for the possible endogeneity in the model. We use two measures of bank profitability, ROA measured as net income over total assets, and ROE measured as net income over total equity. The independent variables are as in the baseline model. ***, **, and * denote the statistical significance at the 1, 5, and 10% levels, respectively. In Panel (C), we present the results of panel vector regression which involve estimating two equations for return on assets and equity (ROA, ROE) and COVID, respectively. The independent variables include the first two lags of return on assets and equity (ROA, ROE) and COVID. T-statistics are reported in parentheses. ***, **, and * denote the statistical significance at the 1, 5, and 10% levels, respectively.

can be used as a solution for SMEs and other affected businesses, to help them overcome the finance problems caused by the pandemic.

6 | CONCLUSION

We examine the impact of COVID-19 on the performance of GCC banks, distinguishing between Islamic and conventional banks. We utilize quarterly data for 49 banks from five GCC countries during the period from the first quarter of 2017 to the third quarter of 2020. Using various panel data models and robustness checks, we show that the pandemic had an adverse effect on the performance of GCC banks. However, the impact is more pronounced in conventional banks. We argue that the characteristics of Islamic banks, such as the prohibition of Riba, Gharar, the use of asset-backed products, and the PLS principle, have mitigated the negative effects of the pandemic. The results also show that banks in Saudi Arabia and UAE were affected more than banks in other GCC countries.

Next, we investigate the impact of bank heterogeneity on the effect of the pandemic on banks' performance. The findings show that government-linked banks, large banks, and those with higher loan ratios have suffered more during the pandemic than other banks.

The results of the paper have highlighted the role which Islamic banks can play in the recovery of the economy from the pandemic. The main principles of Islamic finance, of helping each other, could be very useful in the current period, to aid SMEs and other affected businesses.

Our paper opens avenues for future research. For instance, further research can be carried out on the effects of the pandemic on banks in the MENA region. It would also be interesting to examine the impact of COVID-19 on Islamic stock market indices.

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