CHAPTER 5

RESULTS AND DISCUSSION

5.1 Introduction

This chapter presents a detailed analysis of the relationship between credit and liquidity risk exposures and bank performance. This chapter is divided into five sections: Section 5.2 shows the descriptive analysis of the dependent, independent, and control variables. Section 5.3 provides the findings of the analytical procedures and diagnostic tests to determine the existence of such issues as multicollinearity, outliers, normality, and unit root. Section 5.4 reviews and discusses the multiple regression analysis and hypotheses testing. Finally, Section 5.5 summarizes the chapter.

5.2 Descriptive Statistics

This section provides the descriptive statistics for the study sample, i.e., maximum, minimum, mean, and standard deviation.

5.2.1 Descriptive Statistics of Bank Performance

Table 5.1 presents the descriptive statistics of the financial performance of banks. The study used ROA, ROE, and Tobin's Q as measures of bank performance. The results showed that the mean value of the first dependent variable, ROA, was 0.0147. The highest was Saudi Arabia (M = 0.0185), followed by Qatar (M = 0.0166) and Jordan (M = 0.0116).

The second dependent variable, ROE, had a mean value of 0.1068. The highest was Saudi Arabia (*M* = 0.1285), then Qatar (*M* = 0.1234) and Jordan (*M* = 0.0879). The third dependent variable, Tobin's Q, had a mean value of 2.4372. The highest was Saudi Arabia (*M* = 5.1110), followed by Qatar (*M* = 1.4019) and Jordan (*M* = 1.1021).

Table 5.1: Descriptive Statistics of Bank Performance Variables

Variable	Country	N	Mean	Std. Deviation	Min	Max
ROA	Jordan	75	0.0116	0.0049	0.0005	0.0205
	Saudi Arabia	55	0.0185	0.0038	0.0086	0.0265
	Qatar	40	0.0166	0.0052	0.0038	0.0261
	Total	170	0.0147	0.0045	0.0039	0.0232
ROE	Jordan	75	0.0879	0.0378	0.0114	0.1766
	Saudi Arabia	55	0.1285	0.0323	0.0596	0.1951
	Qatar	40	0.1234	0.0399	0.0259	0.1825
	Total	170	0.1068	0.0354	0.0301	0.1788
TQ	Jordan	75	1.1021	0.4538	0.5418	2.4799
	Saudi Arabia	55	5.1110	9.7052	0.1210	52.3462
	Qatar	40	1.4019	3.6857	0.0800	22.4125
	Total	170	2.4372	4.1940	0.2272	23.2302

5.2.2 Descriptive Statistics of Credit Risk Exposures

This section presents the descriptive statistics for credit risk exposures variables. Table 5.2 shows that the mean value of NPL was 0.0304. The highest was Jordan (*M* = 0.0541), followed by Qatar (*M* = 0.0177) and Saudi Arabia (*M* = 0.0123). The mean value of CAR was 0.1714. The highest value was Qatar (*M* = 0.2844), then Saudi Arabia (*M* = 0.1483) and Jordan (*M* = 0.1371).

The mean value of CPL was 0.0385. The highest value was Jordan (*M* = 0.0507), followed by Saudi Arabia (*M* = 0.0395) and Qatar (*M* = 0.0206). The mean value of LLR was 0.0292. The highest value was Jordan (*M* = 0.0454), then Saudi Arabia (*M* = 0.0199) and Qatar (*M* = 0.0172). Finally, the mean value of LGR was 0.1091. The highest was Qatar (*M* = 0.1667), then Jordan (*M* = 0.1035) and Saudi Arabia (*M* = 0.0843).

Table 5.2: Descriptive Statistics of Credit Risk Exposures Variables

Variable	Country	N	Mean	Std. Deviation	Min	Max
NPL	Jordan	75	0.0541	0.0242	0.0145	0.1160
	Saudi Arabia	55	0.0123	0.0045	0.0065	0.0280
	Qatar	40	0.0177	0.0137	0.0009	0.0565
	Total	170	0.0304	0.0146	0.0083	0.0701
CAR	Jordan	75	0.1371	0.0306	0.0781	0.2447
	Saudi Arabia	55	0.1483	0.0316	0.0925	0.2671
	Qatar	40	0.2844	0.9257	0.0984	5.9923
	Total	170	0.1714	0.2406	0.0852	1.5971
CPL	Jordan	75	0.0507	0.0133	0.0205	0.0776
	Saudi Arabia	55	0.0395	0.0752	0.0184	0.5842
	Qatar	40	0.0206	0.0076	0.0094	0.0389
	Total	170	0.0385	0.0316	0.0166	0.2301
LLR	Jordan	75	0.0454	0.0183	0.0123	0.0892
	Saudi Arabia	55	0.0199	0.0063	0.0086	0.0382
	Qatar	40	0.0172	0.0130	0.0007	0.0479
	Total	170	0.0292	0.0126	0.0080	0.0604
LGR	Jordan	75	0.1035	0.1430	-0.1013	0.8501
	Saudi Arabia	55	0.0843	0.1016	-0.0602	0.3969
	Qatar	40	0.1667	0.1333	-0.0310	0.5882
	Total	170	0.1091	0.1231	-0.0685	0.6169

5.2.3 Descriptive Statistics of Liquidity Risk Exposures

This section presents the descriptive statistics for liquidity risk exposures variables using the same sample as above. The result in Table 5.3 shows that the mean value of CR was 0.3057. The highest mean was Qatar (*M* = 0.4699), then Jordan (*M* = 0.3002) and Saudi Arabia (*M* = 0.2211). The mean value of LDR was 0.7526. The highest was Qatar (*M* = 0.9647), Saudi Arabia (*M* = 0.7965), and Jordan (*M* = 0.6506).

The mean value of LAR was 0.5599. The highest was Qatar (*M* = 0.6521), followed by Saudi Arabia (*M* = 0.6278) and Jordan (*M* = 0.4938). The mean value of CDR was 0.1910. The highest was Jordan (*M* = 0.3305), then Saudi Arabia (*M* = 0.1186) and Qatar (*M* = 0.0703). The mean value of LR was 5.5933 percent. The highest was Jordan (*M* = 6.0458%), followed by Saudi Arabia (*M* = 6.0107%) and Qatar (*M* = 4.9266%).

Table 5.3: Descriptive Statistics of Liquidity Risk Exposures Variables

Variable	Country	N	Mean	Std. Deviation	Min	Max
CR	Jordan	75	0.3002	0.0850	0.1621	0.6500
	Saudi Arabia	55	0.2211	0.1944	0.0131	1.2603
	Qatar	40	0.4699	0.3797	0.1213	2.0087
	Total	170	0.3057	0.1872	0.0995	1.1480
LDR	Jordan	75	0.6506	0.1197	0.4254	1.0338
	Saudi Arabia	55	0.7965	0.0784	0.5957	1.0505
	Qatar	40	0.9647	0.1015	0.7635	1.1804
	Total	170	0.7526	0.0985	0.5475	1.0433
LAR	Jordan	75	0.4938	0.0907	0.3148	0.7198
	Saudi Arabia	55	0.6278	0.0784	0.5957	0.7130
	Qatar	40	0.6521	0.0618	0.5016	0.7499
	Total	170	0.5599	0.0773	0.4404	0.7035
CDR	Jordan	75	0.3305	0.5503	0.0456	3.4788
	Saudi Arabia	55	0.1186	0.0328	0.0568	0.2045
	Qatar	40	0.0703	0.0154	0.0447	0.1121
	Total	170	0.1910	0.2408	0.0477	1.5250
LR	Jordan	75	6.0458	1.9445	0.7954	9.7808
	Saudi Arabia	55	6.0107	1.3901	2.7429	9.8076
	Qatar	40	4.9266	2.4567	0.9408	9.2998
	Total	170	5.5933	1.8285	1.4363	9.3886

5.2.4 Descriptive Statistics of Control Variables

This section presents the descriptive statistics of control variables used in this study. Tables 5.4 and 5.5 shows that the mean value of bank size, measured as the natural logarithm of total assets, was 9.7238. The highest mean was Saudi Arabia (*M* = 10.6107), then Qatar (*M* = 10.3819), and Jordan (*M* = 9.3455). The mean value of board size was 9.8451. The highest was Jordan (*M* = 11.0666), followed by Saudi Arabia (*M* = 9.7636) and Qatar (*M* = 9.0500).

The mean of the natural logarithm of gross domestic product was 10.7698. Saudi Arabia had the highest mean (*M* = 11.8430), followed by Qatar (*M* = 11.2450) and Jordan (*M* = 10.4243). By bank type, there were more commercial banks (*M* = 0.7353) than Islamic banks (*M* = 0.2647).

Table 5.4: Descriptive Statistics of Control Variables

Variable	Country	N	Mean	Std. Deviation	Min	Max
BSIZE	Jordan	75	9.3455	0.4820	8.0000	10.6905
	Saudi Arabia	55	10.6107	0.2845	9.9915	11.0832
	Qatar	40	10.3819	0.3744	9.8492	11.3404
	Total	170	9.7238	0.3786	8.8441	10.6560
BOARD	Jordan	75	11.0666	1.5000	7.0000	13.0000
	Saudi Arabia	55	9.7636	0.7926	8.0000	11.0000
	Qatar	40	9.0500	1.2800	6.0000	12.0000
	Total	170	9.8451	1.1753	6.8824	11.7353
GDP	Jordan	75	10.4243	0.0291	10.3778	10.4609
	Saudi Arabia	55	11.8430	0.0288	11.8095	11.8787
	Qatar	40	11.2450	0.0527	11.1810	11.3143
	Total	170	10.7698	0.0337	10.7248	10.8127

Table 5.5: Descriptive Statistics of Bank Type

	Country	N	Islamic %	Conventional %	Islamic	Conventional
TYPE	Jordan	75	0.1333	0.8667	10	65
	Saudi Arabia	55	0.3636	0.6364	20	35
	Qatar	40	0.3750	0.6250	15	25
	Total	170	0.2647	0.7353	45	125

5.3 Results of Analytical Procedures

This study used multiple regression analysis to examine the associations between the independent variables and the dependent variables (ROA, ROE, and Tobin's Q). Several assumptions must first be satisfied before the data can be analyzed: outliers, unit root, multicollinearity, normality, heteroscedasticity, autocorrelation, and the Hausman test. These are explained below.

5.3.1 Outliers

Ramsey (2009) pointed out that there are two ways to deal with outliers. First is by trimming or removing the outliers from the dataset. In this case, the sample size will decrease, and the dataset may become unbalanced. The second way is winsorizing, that is, replacing the extreme outliers to the next lowest, highest, or mean

value in the sample that is not an outlier, so the sample size does not change (Lusk, 2011; Tang & Ren, 2014). In this study, the extreme values were winsorized.

5.3.2 Unit Root

In statistics, a unit root test examines whether a time series variable is non-stationary and possesses a unit root. The null hypothesis is generally defined as stationary, trend stationary, or explosive root, depending on the test used. The stationarity of a series is a prerequisite before conducting any econometric work.

Granger and Newbold (1974) discussed that working with non-stationary variables may produce spurious results that could lead to incorrect results. The study employed the Harris-Tzavalis unit root test for each variable. Furthermore, the first differences of the variables were investigated for a unit root. The test results proved that all of them were stationary. Table 5.6 presents the results of the unit root tests.

Table 5.6: Unit Root Test

Variable	Country	Z - Value	P- Value	Status
ROA	Jordan	-3.4002	0.0003	Stationary at Level
	Saudi Arabia	-4.0628	0.0000	Stationary at Level
	Qatar	-4.4705	0.0000	Stationary at 1st Difference
ROE	Jordan	-4.2418	0.0000	Stationary at Level
	Saudi Arabia	-2.7011	0.0035	Stationary at Level
	Qatar	-4.0015	0.0000	Stationary at 1st Difference
TQ	Jordan	-3.6562	0.0001	Stationary at Level
	Saudi Arabia	-4.5802	0.0000	Stationary at Level
	Qatar	-1.7209	0.0426	Stationary at Level
NPL	Jordan	-1.7053	0.0441	Stationary at Level
	Saudi Arabia	-4.4282	0.0000	Stationary at 1st Difference
	Qatar	-1.9568	0.0252	Stationary at Level
CAR	Jordan	-6.3880	0.0000	Stationary at Level
	Saudi Arabia	-3.9296	0.0000	Stationary at 1st Difference
	Qatar	-32.0685	0.0000	Stationary at Level
CPL	Jordan	-5.2401	0.0000	Stationary at 1st Difference
	Saudi Arabia	-3.4319	0.0003	Stationary at Level
	Qatar	-2.3157	0.0103	Stationary at Level
LLR	Jordan	-1.7748	0.0380	Stationary at Level
	Saudi Arabia	-1.9369	0.0264	Stationary at Level
	Qatar	-2.9823	0.0014	Stationary at Level

Table 5.6, continued

Variable	Country	Z - Value	P- Value	Status
CGR	Jordan	-6.2313	0.0000	Stationary at Level
	Saudi Arabia	-1.7799	0.0375	Stationary at Level
	Qatar	-2.4757	0.0066	Stationary at Level
CR	Jordan	-3.2583	0.0006	Stationary at Level
	Saudi Arabia	-4.8607	0.0000	Stationary at Level
	Qatar	-3.4904	0.0002	Stationary at 1st Difference
LDR	Jordan	-5.6285	0.0000	Stationary at Level
	Saudi Arabia	-3.3267	0.0004	Stationary at 1st Difference
	Qatar	-6.2685	0.0000	Stationary at 1st Difference
LAR	Jordan	-5.3666	0.0000	Stationary at Level
	Saudi Arabia	-2.0080	0.0223	Stationary at Level
	Qatar	-2.5846	0.0049	Stationary at 1st Difference
CDR	Jordan	-6.8178	0.0000	Stationary at Level
	Saudi Arabia	-3.9010	0.0000	Stationary at Level
	Qatar	-5.3162	0.0000	Stationary at Level
LR	Jordan	-2.0966	0.0180	Stationary at Level
	Saudi Arabia	-4.6698	0.0000	Stationary at 1st Difference
	Qatar	-2.5438	0.0055	Stationary at 1st Difference
BSIZE	Jordan	-5.2517	0.0000	Stationary at Level
	Saudi Arabia	-3.4090	0.0003	Stationary at 1st Difference
	Qatar	-2.5806	0.0049	Stationary at 1st Difference
BOARD	Jordan	-5.1821	0.0000	Stationary at 1st Difference
	Saudi Arabia	-4.5370	0.0000	Stationary at Level
	Qatar	-5.0597	0.0000	Stationary at Level
GDP	Jordan	-3.4990	0.0002	Stationary at 1st Difference
	Saudi Arabia	-4.4327	0.0000	Stationary at 1st Difference
	Qatar	-4.2169	0.0000	Stationary at 1st Difference
TYPE	Jordan	-3.9736	0.0000	Stationary at Level
	Saudi Arabia	-3.4028	0.0003	Stationary at Level
	Qatar	-2.9019	0.0019	Stationary at Level

Table 5.6 shows that all variables are stationary at level, except for GDP for Jordan, Saudi Arabia, and Qatar; BSIZE, LR, and LDR for Qatar and Saudi Arabia; ROA, ROE, CR, and LAR for Qatar; NPL and CAR for Saudi Arabia; and CPL and BOARD for Jordan. These variables were stationary at first difference.

5.3.3 Multicollinearity

The aim of this analysis is to investigate the presence of multicollinearity between the dependent and independent variables and between the dependent variables (Shukeri & Nelson, 2012). According to Hair et al. (2011), multicollinearity

is present if the correlation between independent variables is above 0.90. Two methods were used to discover multicollinearity in this study: Pearson correlation (correlation matrix) and variance inflation factor (VIF).

Table 5.7 shows the Pearson correlation between the explanatory variables. All the correlation coefficients were less than 0.90, indicating the absence of multicollinearity. The correlation matrix shows that the highest correlation (r = 0.7905) was between NPL ratio and loan loss reserve ratio in Jordan.

Table 5.7: Pearson Correlation among the Variables

Variable	Countries	NPL	CAR	CPL	LLR	CGR	CR	LDR	LAR	CDR	LR	SIZE	TYPE	BOARD	GDP
NPL	Jordan	1.0000													
	Saudi Arabia	1.0000													
	Qatar	1.0000													
CAR	Jordan	0.1884	1.0000												
	Saudi Arabia	-0.2454	1.0000												
	Qatar	0.0085	1.0000												
CPL	Jordan	0.4331	0.2255	1.0000											
	Saudi Arabia	0.0513	-0.0913	1.0000											
	Qatar	0.6653	-0.1058	1.0000											
LLR	Jordan	0.7905	0.1827	0.5353	1.0000										
	Saudi Arabia	0.5832	-0.2610	-0.1927	1.0000										
	Qatar	0.6992	0.0396	0.7392	1.0000										
CGR	Jordan	-0.1973	-0.1457	-0.2908	-0.2857	1.0000									
	Saudi Arabia	-0.2063	-0.0474	0.0074	-0.0494	1.0000									
	Qatar	-0.2356	-0.0568	-0.1392	-0.2631	1.0000									
CR	Jordan	-0.0690	0.3459	0.1845	0.0519	-0.1324	1.0000								
	Saudi Arabia	0.0975	-0.0546	-0.1257	0.1904	0.0590	1.0000								
	Qatar	-0.3602	-0.1292	-0.1324	-0.4031	0.4533	1.0000								
LDR	Jordan	0.1169	0.4303	0.0452	0.1318	-0.1558	0.0257	1.0000							
	Saudi Arabia	-0.2029	0.5153	0.0854	-0.1739	0.0675	0.0229	1.0000							
	Qatar	0.1439	-0.0593	0.0385	0.1739	-0.3686	-0.5347	1.0000							
LAR	Jordan	-0.0663	0.1805	-0.0971	-0.0132	-0.1334	-0.0822	0.6998	1.0000						
	Saudi Arabia	-0.1496	0.2326	0.0888	-0.0344	0.0837	0.0390	0.6756	1.0000						
	Qatar	-0.2297	0.1760	-0.4552	-0.1167	-0.2260	-0.7028	0.6223	1.0000						
CDR	Jordan	-0.2902	-0.1044	-0.1713	-0.2167	-0.1012	0.2517	0.1437	0.2233	1.0000					
	Saudi Arabia	0.1563	0.0943	0.0800	0.3221	-0.2018	0.0152	-0.1089	-0.0990	1.0000					
	Qatar	0.6124	0.1421	0.4354	0.5663	-0.1074	-0.2653	0.0077	-0.1577	1.0000					

Table 5.7, continued

Variable	Country	NPL	CAR	CPL	LLR	CGR	CR	LDR	LAR	CDR	LR	SIZE	TYPE	BOARD	GDP
LR	Jordan	0.1778	-0.4152	0.0685	0.0688	0.1708	-0.2884	-0.4976	-0.4967	-0.5354	1.0000				
	Saudi Arabia	0.1613	-0.7528	0.0770	0.1878	0.1693	0.0710	-0.5145	-0.2635	-0.1249	1.0000				
	Qatar	0.3361	0.2795	0.0398	0.4393	0.0491	-0.2046	-0.1076	-0.0465	0.3651	1.0000				
BSIZE	Jordan	0.0870	0.0134	0.1262	0.3538	-0.1385	0.2243	-0.0511	0.0012	-0.3174	0.1931	1.0000			
	Saudi Arabia	0.1493	0.0041	-0.0170	0.1427	-0.3696	0.0266	-0.2871	-0.3678	0.2238	-0.0902	1.0000			
	Qatar	0.1951	0.4109	-0.0045	0.2371	-0.0380	-0.3738	0.0661	0.3772	0.2075	0.3221	1.0000			
BTYPE	Jordan	-0.3654	-0.2296	-0.2289	-0.2881	-0.1012	0.1633	0.2777	0.4493	0.7134	-0.7069	-0.2774	1.0000		
	Saudi Arabia	-0.1138	0.0406	-0.0324	0.1948	0.3140	0.0407	0.2757	0.4260	-0.0977	0.0650	-0.5143	1.0000		
	Qatar	-0.5384	-0.1200	-0.2597	-0.6420	-0.0175	0.2500	0.0243	0.1083	-0.4544	-0.6160	-0.1834	1.0000		
BOARD	Jordan	0.0581	-0.1246	0.1810	0.1963	0.0863	-0.0308	-0.0666	-0.1251	-0.0900	0.1528	0.2739	-0.1228	1.0000	
	Saudi Arabia	0.1676	0.0333	0.0663	0.5460	-0.1035	0.0968	0.1612	0.3038	0.4037	-0.1578	0.1276	0.1794	1.0000	
	Qatar	-0.0650	0.1156	-0.0876	-0.2822	0.0275	0.1753	-0.3738	-0.2001	0.2050	-0.0866	0.2607	0.2962	1.0000	
GDP	Jordan	-0.3452	-0.1164	-0.0720	-0.2830	0.1022	-0.2198	0.2298	0.3094	-0.0392	0.0620	0.1207	0.0000	0.3271	1.00
	Saudi Arabia	-0.0394	-0.0707	0.1394	0.0052	0.4641	-0.0842	-0.2555	-0.2243	0.2246	0.1600	-0.0789	0.0000	0.0018	1.00
	Qatar	-0.1006	-0.0645	0.0307	-0.1410	0.3747	0.2748	-0.4819	-0.3740	0.1889	-0.1010	-0.1374	0.0000	0.0588	1.00

In addition, tolerance and variance inflation factor (VIF) were used to examine the assumption of multicollinearity. According to Hair et al. (2011), a VIF value of lower than 10 or a tolerance value of higher than 0.1 is acceptable. Table 5.8 presents the VIF and tolerance values for every variable and location. The table shows that the VIF values of all variables were lower than 10, while their tolerance values were higher than 0.1. Therefore, multicollinearity was absent.

Table 5.8: VIF and Tolerance

Variable	Jordan		Saudi Arabia		Qatar	
	VIF	**Tolerance**	**VIF**	**Tolerance**	**VIF**	**Tolerance**
TYPE	8.85	0.112994	3.88	0.257449	3.8200	0.261929
LAR	8.18	0.122249	2.68	0.373748	6.0500	0.165289
LDR	7.20	0.138889	5.76	0.173611	2.0900	0.478572
LR	6.90	0.144927	6.11	0.163666	2.6000	0.384830
CAR	6.46	0.154798	7.25	0.137931	1.2500	0.801435
LLR	5.01	0.199583	3.71	0.269853	3.9000	0.256354
CDR	4.81	0.207878	2.71	0.368677	3.6400	0.274416
NPL	3.78	0.264708	1.58	0.632015	5.6500	0.176991
SIZE	2.26	0.442011	6.47	0.154559	7.0600	0.141643
GDP	2.08	0.479628	2.83	0.352797	1.9100	0.523024
CR	2.02	0.495275	2.11	0.474890	2.7900	0.357992
CPL	1.77	0.564343	3.49	0.286620	4.7100	0.212314
BOARD	1.56	0.642327	5.39	0.185430	2.2400	0.445735
CGR	1.26	0.795445	5.93	0.168634	7.8600	0.127226
MEAN VIF	4.43		4.27		3.96	

5.3.4 Normality

Kurtosis and skewness values were used to check the normality of all variables. Skewness and kurtosis are the most common methods in describing the distribution of a dataset. This study transformed total assets (as a measure of bank size) and gross domestic product into the natural logarithm to ensure that the variables were normally distributed.

According to Kline (1998), normality means that the distribution of the dataset is shaped like a bell curve. To test the normality of all variables in the models, the skewness and kurtosis values were used. The data were considered reasonably normal

if the absolute skewness value is 1.96 and absolute kurtosis value is 3. Table 5.9 shows that all absolute kurtosis values of all the variables were around 3 and absolute skewness values were around 1.96.

Therefore, the data were normally distributed except for Tobin's Q, CPL, CR, NPL, CAR, CGR, LDR, LAR and LR for Saudi Arabia; Tobin's Q, CAR, ROA, NPL, CGR, CR, BSIZE and BOARD for Qatar; and CGR, CDR, Tobin's Q, CAR, CR, LDR, LR, BSIZE, BOARD and TYPE for Jordan.

While the skewness and kurtosis values were still unsatisfactory, modest violations of univariate normality are not a problem so long as they are not caused by outliers (Hair et al., 2011).

Moreover, the dataset comprised of 75, 55, and 40 observations for Jordan, Saudi Arabia, and Qatar, respectively. These are higher than the central limit theorem threshold (30 observations), and thus the normality assumption in this case was not seriously affected.

Table 5.9: Test of Skewness and Kurtosis

Variable	Country	N	Skewness	Kurtosis
ROA	Jordan	75	-0.4765	2.5116
	Saudi Arabia	55	-0.2378	2.7213
	Qatar	40	-0.5863	3.1062
ROE	Jordan	75	-0.1347	2.6709
	Saudi Arabia	55	0.2725	2.6232
	Qatar	40	-0.4967	2.7841
TQ	Jordan	75	1.5107	4.6772
	Saudi Arabia	55	3.0291	13.0045
	Qatar	40	4.8775	27.8813
NPL	Jordan	75	0.5812	2.8989
	Saudi Arabia	55	1.5152	6.1754
	Qatar	40	1.0905	3.4943
CAR	Jordan	75	0.2923	3.6934
	Saudi Arabia	55	1.1189	5.3168
	Qatar	40	6.0818	38.0019

Table 5.9, continued

Variable	Country	N	Skewness	Kurtosis
CPL	Jordan	75	-0.0464	2.4384
	Saudi Arabia	55	7.0825	51.7868
	Qatar	40	0.6554	2.3565
LLR	Jordan	75	0.3391	2.8212
	Saudi Arabia	55	0.2857	2.7108
	Qatar	40	0.8765	2.8658
CGR	Jordan	75	2.4612	12.1057
	Saudi Arabia	55	0.9911	4.1036
	Qatar	40	1.1336	4.1750
CR	Jordan	75	0.9391	5.3237
	Saudi Arabia	55	4.0251	20.5230
	Qatar	40	1.9773	7.9114
LDR	Jordan	75	0.3121	3.4972
	Saudi Arabia	55	-0.0186	4.2468
	Qatar	40	0.2832	2.5415
LAR	Jordan	75	0.2065	2.9565
	Saudi Arabia	55	-0.9166	3.1991
	Qatar	40	-0.3918	2.4778
CDR	Jordan	75	3.8361	19.0260
	Saudi Arabia	55	0.3439	2.8946
	Qatar	40	0.4689	2.7698
LR	Jordan	75	-0.9226	4.0794
	Saudi Arabia	55	0.3550	3.4324
	Qatar	40	-0.1008	1.7195
BSIZE	Jordan	75	0.9039	5.6016
	Saudi Arabia	55	-0.2750	2.1502
	Qatar	40	1.0699	3.6384
BOARD	Jordan	75	-1.1767	4.6021
	Saudi Arabia	55	-0.0081	2.3533
	Qatar	40	-0.0196	3.0893
GDP	Jordan	75	-0.3866	1.8962
	Saudi Arabia	55	0.1277	1.2842
	Qatar	40	0.0027	0.2331
BTYPE	Jordan	75	2.1572	5.6538
	Saudi Arabia	55	0.5669	1.3214
	Qatar	40	0.5163	1.2666

5.3.5 Heteroscedasticity

Homoscedasticity is the assumption that the variances of a regression model are constant across the values of the predictor variables. This is a desirable result as the dependent variable variance should not be concentrated on a limited range of the independent variables. The violation of homoscedasticity is heteroscedasticity. Heteroscedasticity has a tendency to make the coefficient estimates to be

underestimated, and in some cases, it makes non-significant variables to be significant (Hair et al., 2011).

In this study, homoscedasticity and the independence of error terms were examined with the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity. Heteroscedasticity is present if the alternative hypothesis is supported ($p < 0.05$). Table 5.10 shows the results of the heteroscedasticity test. All Chi^2 probabilities were non-significant ($p > 0.05$), indicating the absence of heteroscedasticity.

Table 5.10: Test of Heteroscedasticity

Variable	Country	Chi2	Prob.
ROA	Jordan	0.12	0.7336
	Saudi Arabia	0.05	0.8231
	Qatar	3.29	0.1210
ROE	Jordan	0.0001	0.9829
	Saudi Arabia	0.57	0.4516
	Qatar	2.78	0.0954
TQ	Jordan	0.23	0.7302
	Saudi Arabia	2.02	0.1551
	Qatar	3.77	0.0521

5.3.6 Autocorrelation

The presence of autocorrelation is checked using the Breusch-Godfrey LM test. This test detects the existence of autocorrelation in the errors of a regression analysis. Autocorrelation is absent if the probability of the Breusch-Godfrey LM test is higher than five percent (Kazmier, 2004). As Table 5.11 shows, the probability values of the Breusch-Godfrey LM test were higher than five percent. Therefore, autocorrelation was absent in the sample data.

Table 5.11: Breusch-Godfrey LM Test of Autocorrelation

Variable	Country	Chi2	df	Prob.
ROA	Jordan	3.638	1.0000	0.0565
	Saudi Arabia	3.017	1.0000	0.0523
	Qatar	0.449	1.0000	0.5030
ROE	Jordan	2.801	1.0000	0.0738
	Saudi Arabia	2.649	1.0000	0.1036
	Qatar	1.247	1.0000	0.2642
TQ	Jordan	3.747	1.0000	0.0511
	Saudi Arabia	3.299	1.0000	0.0581
	Qatar	3.571	1.0000	0.0532

5.3.7 Hausman Test of Random Vs. Fixed Effects Models

The Hausman test is used to determine whether the fixed effects model or the random effects model is more appropriate. If $p < 0.05$, the fixed effects model is more appropriate; if $p > 0.05$, the random effects model is more appropriate. Table 5.12 shows the results of the Hausman test.

Table 5.12: Hausman Test for Random or Fixed Effects Model

Variable	Country	Chi2	Prob.
ROA	Jordan	12.80	0.3838
	Saudi Arabia	12.67	0.4740
	Qatar	3.97	0.9915
ROE	Jordan	12.98	0.3705
	Saudi Arabia	71.64	0.0000
	Qatar	5.83	0.9522
TQ	Jordan	41.78	0.2601
	Saudi Arabia	7.77	0.8582
	Qatar	24.42	0.1017

The results showed that the random effects model is more appropriate than the fixed effects model in interpreting the results of the study, $p > 0.05$. The only exception was the ROE model for Saudi Arabia, as the fixed effects model was found to be more appropriate, $p < 0.05$. Therefore, this study only presented the results related to the appropriate effects model.

5.4 Multivariate Analysis

This section discusses the results of the multivariate analysis to test the research hypotheses. The multiple regression analysis was used to examine the association between credit and liquidity risk exposures, and bank performance. The FGLS (Feasible Generalized Least Square) were used in order to make sure the regression results are free from autocorrelation and heteroscedastic problems.

5.4.1 Empirical Results for Return on Assets (H1.1 to H1.10)

This section examines the first set of hypotheses (H1.1 to H1.10). These hypotheses examined the impact of credit and liquidity risk exposures on bank performance, measured by ROA. The results of the regression analysis for the first set of hypotheses (ROA) for Jordan, Saudi Arabia, and Qatar are shown in Tables 5.13, 5.14, and 5.15.

Table 5.13: Results of FGLS Regression in Jordan (ROA)

ROA	Coef.	St.Err.	t-value	p-value
NPL	-0.074	0.026	-2.840	0.005
CAR	0.039	0.033	1.170	0.243
D.CPL	-0.115	0.035	-3.270	0.001
LLR	0.130	0.037	3.470	0.001
CGR	-0.003	0.002	-1.170	0.243
CR	0.020	0.005	3.740	0.000
LDR	-0.057	0.009	-6.060	0.000
LAR	0.083	0.014	5.780	0.000
CDR	-0.003	0.002	-2.140	0.032
LR	-0.001	0.001	-1.060	0.287
SIZE	-0.004	0.001	-3.650	0.000
TYPE	-0.009	0.005	-1.850	0.064
D.BOARD	0.001	0.000	4.820	0.000
D.GDP	-0.045	0.014	-3.220	0.001
Constant.	0.499	0.145	3.430	0.001
Mean dependent var	0.012		SD dependent var	0.005
R	0.7082		R-Sq	0.5015
Number of obs	75		Chi-square	140.962

**** p<.01, ** p<.05, * p<.1*

Table 5.14: Results of FGLS Regression in Saudi Arabia (ROA)

ROA	Coef.	St.Err.	t-value	p-value
D.NPL	-0.160	0.060	-2.680	0.007
D.CAR	-0.111	0.035	-3.150	0.002
CPL	-0.003	0.003	-1.020	0.309
LLR	0.203	0.055	3.690	0.000
CGR	0.002	0.003	0.690	0.488
CR	0.001	0.001	0.940	0.349
D.LDR	0.000	0.007	0.040	0.970
LAR	-0.020	0.011	-1.800	0.071
CDR	-0.003	0.006	-0.530	0.594
D.LR	-0.003	0.001	-4.350	0.000
D.SIZE	0.008	0.001	8.000	0.000
TYPE	0.002	0.001	2.020	0.043
BOARD	0.000	0.000	0.980	0.328
D.GDP	0.017	0.009	1.940	0.052
Constant	-0.226	0.105	-2.150	0.032
Mean dependent var	0.019		SD dependent var	0.004
	0.8482		R-Sq	0.7194
Number of obs	55		Chi-square	339.913

**** p<.01, ** p<.05, * p<.1*

Table 5.15: Results of FGLS in Qatar (ROA)

ROA	Coef.	St.Err.	t-value	p-value
NPL	0.225	0.174	1.29	0.197
CAR	-0.001	0	-2.29	0.022
CPL	-0.113	0.27	-0.42	0.676
D.LLR	-0.429	0.177	-2.42	0.015
CGR	-0.01	0.004	-2.61	0.009
D.CR	-0.002	0.005	-0.38	0.706
D.LDR	-0.024	0.012	-2.03	0.042
D.LAR	0.067	0.027	2.46	0.014
CDR	-0.007	0.056	-0.13	0.895
D.LR	0	0.002	-0.1	0.921
D.SIZE	0	0.003	0.12	0.904
TYPE	0	0.009	0.01	0.993
BOARD	0	0.001	0.17	0.864
D.GDP	0.036	0.016	2.29	0.022
Constant	-0.405	0.166	-2.45	0.014
Mean dependent var	0.017		SD dependent var	0.005
R	0.7831		R-Sq	0.613
Number of obs	40		Chi-square	91.268

**** p<.01, ** p<.05, * p<.1*

The FGLS regression model for Jordan (R2 = 50.15%, Wald Chi2 = 140.962, p < .001), Saudi Arabia (R2 = 71.94%, Wald Chi2 = 339.913, p < .001), and Qatar (R2 = 61.30%, Wald Chi2 = 91.268, p < .001) fitted the data and significantly explained

the changes in ROA. Ten hypotheses were developed regarding the relationships between the variables of CRM, LRM, and ROA. These are discussed in the following sections.

5.4.1.1 Non-Performing Loan Ratio and Return on Assets (H1.1)

Hypothesis 1.1 posits that NPL ratio is significantly and negatively related to the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis showed a negative and significant association between NPL and ROA in Jordan and Saudi Arabia (t = -2.84, p = .005) (t = -2.68, p = .007). This finding supports the results of previous studies (e.g., Singh, 2015; Musyoki & Kadubo, 2012; Poudel, 2015). The negative result implies that higher percentage of NPLs can hurt the financial performance of banks, as the banks are unable to collect the owed interest, which means lower interest income, less money to pay their operating costs (Samir & Kamra, 2013) as cited in Kingu et al. (2018), higher provision for doubtful debts, and write-off of bad debts. Furthermore, the acuteness of NPLs increases when banks are forced to keep aside provisions to cover potential NPLs. Therefore, NPL results in high provisioning, which leads to lower financial performance (Alshebmi et al., 2020).

A higher NPL will adversely affect the profitability of banks and the lender's stock price (Ombaba, 2013) as cited in Kingu et al. (2018). This factor threats the sustainable development of economies, if the NPL is not resolved it may cause crises in the system and serious financial problems (Erdas & Ezanoglu, 2022). From the financial intermediation theory, adverse selection in banks substitutes high quality borrowers with low quality borrowers, which leads to the impairment of the overall

quality of the loan portfolio. This in turn causes the accumulation of NPLs, reducing the profitability and capital of the banks (Bofondi & Ropele, 2011).

According to the institutional theory, central banks around the world have significant roles in determining the monetary tools and instruments for maintaining economic stability in the world. The increase in NPL results from several reasons: ineffective or weak instruments, insufficient regulations, and inadequate legal framework. Therefore, banks should use and adhere to international regulations in their risk management (Nordlinder & Sundell, 2017). Therefore, H3.1 was accepted for the Jordanian and Saudi banking sector.

Qatari banks have insignificant and positive relationship between nonperforming loans and ROA (t = 1.29, p = .197), but this finding contradicts the initial expectation. The positive relationship means that the banks need to establish effective and efficient arrangements to deal with CRM (Alshatti, 2015), Furthermore, the non-significant results mean that NPL does not explain the profitability of banks; in other words, a higher or lower percentage of NPL will not significantly affect ROA. A positive relationship between the two has been reported in previous studies (e.g., Rajha, 2017; Alshatti, 2015), while a non-significant relationship is consistent with other studies (e.g., Kithinji, 2010). Therefore, H1.1 was rejected for Qatari banks.

5.4.1.2 Capital Adequacy ratio and Return on Assets (H1.2)

Hypothesis 1.2 posits that capital adequacy ratio (CAR) positively and significantly relates to the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis for Jordanian banks showed a non-significant positive association between CAR and ROA, t = 1.17, p = .243. This means that CAR

has a positive and insignificant impact on ROA. This finding and it has been reported in previous studies (Afriyie & Akotey, 2013).

The association between CAR and ROA in Saudi Arabia and Qatar was negative and significant, (t = -3.15, p = .002), (t = -2.29, p = .022). This means that CAR is negatively associated with ROA. In other words, an increase in CAR would decrease the ROA of Saudi Arabian and Qatari banks. This result is congruent with previous studies (e.g., Poudel, 2012; Chandrasegaran, 2020). The findings for Saudi Arabia and Qatar contradict the theories stating that banks with higher CAR will have more capacity to pay for credit defaults and increase their profitability. These results demonstrate an ambiguous impact on profitability, and they can be ascribed to the role of risks in the financial sector and to the lingering effects of the financial crisis (Mendoza & Rivera, 2017). Therefore, H1.2 was rejected for the entirely banking sector.

5.4.1.3 Cost per Loan Ratio and Return on Assets (H1.3)

Hypothesis 1.3 posits that cost per loan (CPL) ratio is negatively and significantly related to the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis indicate that the association between CPL and ROA was negative and significant in Jordanian banking sector (t = -3.27, p = .001). This negative relationship indicates that the bank's risk occurs due to inadequate internal processes, such as human error or system failure. This increases costs, which decreases profit before tax, eventually reducing the bank's overall profitability. Risk can come from reduced profit, which is influenced by the operational cost structure and service failures carried out by the company (Zakhariah & Hesniati, 2022).

Thus banks that can effectively control and manage their costs will earn higher profits (Y. R. Bhattarai, 2017). Lower underwriting, loan monitoring, and retail deposit processing expenses would lead to more capital market funding, more short-term investments, and higher profitability (Iannotta et al., 2007). This result is consistent with previous studies (Iannotta et al., 2007).

The negative direction is consistent with the stakeholder theory, as firms affect and are affected by various stakeholders on top of their own shareholders (Fanta et al., 2013). The management has to balance between the competing demands of the various stakeholder groups (Harrison & Freeman, 1999). For instance, managers should balance between the interests of customers and shareholders, since enhancing customer service level could negatively affect the profitability of banks (Ogden & Watson, 1999).

Based on the financial intermediation theory, adverse selection tends to lead to higher utilization of resources to monitor and manage weak loans, which in turn raises the operating expenses and cost to income ratio. This evinces poor bank management practices in monitoring, controlling, and underwriting its loan portfolio (Berger & Deyoung, 1997). Therefore, H1.3 was accepted for the Jordanian banking sector.

The relationship between CPL and ROA in Saudi Arabian and Qatari banks was negative and non-significant (t = -1.02, p = .309) (t = -.42, p = .676). This means that CPL is not associated with ROA. In other words, an increase or decrease in CPL will not significantly affect ROA. This result is consistent with previous studies (e.g., Poudel, 2012; Musyoki & Kadubo, 2012). Therefore, H1.3 was rejected for the Qatari and Saudi Arabian banking sectors.

5.4.1.4 Loan-Loss Reserve and Return on Assets (H1.4)

Hypothesis 1.4 posits that LLR is negatively and significantly related to the ROA of listed banks in Jordan, Saudi Arabia, and Qatar.

The relationship between LLR and ROA in Jordan and Saudi Arabia was positive and significant, (t = 3.47, p = .001), (t = 3.69, p = 0.000). This result is similar to previous results (Eng & Nabar, 2007). This means that LLR is positively associated with ROA. In other words, a higher percentage of LLR will lead to higher ROA. Therefore, H1.4 was rejected for the Jordanian and Saudi Arabian banking sector.

According to the institutional theory, LLR helps to enhance bank soundness and stability while accomplishing its lending function to firms, governments, and individuals. Therefore, bank regulators require banks to reserve adequate LLR to mitigate anticipated losses. The minimum capital requirements pillar in Basel II has three approaches to deal with LLR. Firstly, the internal ratings-based approach states that if the anticipated losses are higher than the LLR, the bank should deduct the difference from its tier 1 and tier 2 capitals. Secondly, the standardized approach requires banks to include an LLR of up to a maximum of 1.25% risk-weighted assets. Thirdly, the advanced measurement approach requires banks to determine their own methodology for evaluating their LLR (Basel Committee on banking supervision, 2004).

The results of the regression analysis showed a negative and significant association between LLR and ROA and Qatar (t = -2.42, p = .015). This result is consistent with (e.g., Al-Rdaydeh et al., 2017; Noman et al., 2015; and Karim & Alam, 2013). This negative relationship means that banks face high credit risk and they provision loan loss reserve to reduce it. This leads to declining profitability for

two reasons. Firstly, loan loss reserve is allocated from the annual earning of banks. Secondly, undertaking more lending activities will make the banks more profitable, so a higher amount of loan loss reserve will decrease their ability to give loans and thus depress their returns (Ul Mustafa et al., 2019). Therefore, H3.4 was accepted for the Jordanian banking sector. Therefore, H1.4 was accepted for Qatari banking sector.

5.4.1.5 Loan Growth Ratio and Return on Assets (H1.5)

Hypothesis 1.5 posits that CGR is negatively and significantly related to the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis showed that CGR and ROA had a non-significant negative association in Jordan (t = -1.17, p = .243) and an insignificant positive association in Saudi Arabia (t = .69, p = .488). This means that LGR is not associated with ROA. In other words, a higher or lower percentage of LGR will not significantly affect the ROA of all listed banks. Several studies show the insignificant results (e.g., Thiong'o et al., 2017; Berger & Udell, 2004). Therefore, H1.5 was rejected for Jordanian and Saudi Arabia banking sectors.

Qatar banking sector was a negative and significant relationship with ROA (t = -2.61, p = 0.009). This finding is consistent with several previous studies (e.g., Fahlenbrach et al., 2018; Clair, 1992; Foos et al., 2010). The negative relationship may be because the banks are granting loans at rates below the competitive loan and are growing by accepting lower quality borrowers. Providing loans at a rate that does not compensate for default risk may help to increase loan growth, but this strategy will decline the average interest income for the outstanding loans, thus lowering the profitability of banks (Foos et al., 2010).

On the other hand, there are logical arguments for loan growth. For instance, the bank seeks to maximize its market share by decreasing its underwriting standards to attract more debtors. The underwriting standards include personal guarantees of borrowers, loan covenant, and collateral requirements. If a bank decreases these non-price items to attract new debtors, loan quality will decline, thus increasing the risk exposure of the bank. In addition, previous studies found that loan growth increases NPLs and decreases bank solvency with a time lag of many years (Kashif et al., 2016).

As a result of adverse selection in the financial intermediation theory, if a bank is trying to earn the business of borrowers that have established a relationship with the bank, it will work the hardest to keep their highest quality borrowers. The lowest quality customers will be easiest to attract, so banks that are trying to grow by attracting lower quality borrowers would suffer from lower loan quality in the future. Furthermore, if a bank tries to increase loans rapidly without providing sufficient resources for credit administration, it may face higher NPLs in the future. Thus, the misallocation of resources can lead to lower loan quality if the bank has not decreased its underwriting standards (Clair, 1992). Therefore, H1.5 was accepted for Qatari banking sector.

5.4.1.6 Current Ratio and Return on Assets (H1.6)

Hypothesis 1.6 posits that CR is significantly associated with the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis showed that the relationship between CR and ROA was positive and significant in Jordan, $t = 3.74$, $p = 0.00$. This result implies that high liquidity is a sign of financial strength. Holding cash provides a safety margin for eventual downturns and enables the bank to pay for daily expenses such as taxes, salaries, and materials. In addition,

holding cash guarantees the undertaking of highly profitable investments that demand instant payment, which positively affects the profitability of banks (Vieira, 2010). This result is consistent with (Al-Qadi & Khanji, 2018).

According to the stakeholder theory, the management of current ratio is an extremely sensitive area. It includes making decisions on the composition and amount of current assets and the financing of these assets (Joshi, 1995, as cited in John (2015). Furthermore, the main goal of managing working capital is to make sure that the firm is able to perform its functions and to receive sufficient cash for meeting future functional costs and short-term obligations.

Moreover, a firm should balance between excessive and lack of liquidity. An extremely high level of liquidity is bad because the assets do not earn anything. On the other hand, the lack of liquidity will decrease the creditor's confidence, resulting in bad credit image and lawsuits, which may cause the firm to close. Therefore, it is important to maintain an appropriate balance between liquidity and profitability. Therefore, H1.6 was accepted for Jordanian banking sector.

On the other hand, the relationship between CR and ROA in Saudi Arabia positive and insignificant (t = -0.94, p = .349). This result is consistent with previous studies (Madushanka & Jathurika, 2018). while, Qatar banking sector was negative and non-significant (t = -0.38, p = .709), similar to (Ashraf et al., 2017). This means that CR is not associated with ROA. In other words, a higher or lower percentage of CR will not significantly affect the ROA of all listed banks. However, the negative result indicates that the fixed assets are usually more profitable than current assets. In other words, the money invested in fixed assets generates higher returns than current assets. Furthermore, the amount invested in current assets generate additional costs,

reducing the profitability of banks (Assaf Neto, 2003) as cited in Vieira (2010). Therefore, H1.6 was rejected for Saudi Arabia and Qatar banking sector.

5.4.1.7 Loan to Deposit Ratio and Return on Assets (H1.7)

Hypothesis 1.7 posits that LDR is significantly and negatively associated with the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The result indicated a negative and significant relationship between LDR and ROA in Jordanian and Qatari banking sectors, (t = -6.06, p = 0.00) (t = -2.03, p = .042.). Several studies have found a negative and significant relationship between LDR and ROA (e.g., Almazari, 2014; Al-Rdaydeh et al., 2017). A higher LDR is associated with higher liquidity risk, which reduces the profitability of banks. Because most bank activities are based on the capability to liquidate assets, when necessary, the lack of this function will diminish the income from the lending-based business. The diminishing income will reduce the profitability of banks due to the diminishing interest margin. Furthermore, liquidity risk may lead to lower customer confidence, especially if withdrawal demands cannot be met (Al-Rdaydeh et al., 2017). Therefore, H1.7 was accepted for the Jordanian and Qatari banking sector.

The association between LDR and ROA for Saudi Arabia was positive and insignificant, t = .04, p = .97, indicating that credit distribution does not affect profitability. Greater disbursement of credit does not guarantee higher profitability if the credits are extended with no regard to quality. In fact, this could increase the possibility of bad loans, causing profit to decline (Makkar & Hardeep, 2018, as cited in Sriyono & Nabellah (2022). This result is consistent with (Rengasamy, 2014; Charles & Kenneth, 2013). Therefore, H1.7 was rejected for Saudi Arabian banks.

5.4.1.8 Loan to Asset Ratio and Return on Assets (H1.8)

Hypothesis 1.8 posits that LAR has a significant and negative relationship with the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The results indicated that the association between LAR and ROA in Jordan and Qatar was positive and significant, (t = 5.78, p = 0.00), (t = 2.46, p = .014). A higher ratio indicates the high proportion of loans in the total asset structure, thus better financial performance on the credit level (Syaifuddin et al., 2018). This result supports the findings of previous research (Salim & Zaroug, 2016). Therefore, H1.8 was rejected for the Jordanian and Qatari banking sectors.

LAR and ROA were negatively and significantly related in Saudi Arabia, t = -1.800, p = .071. This finding is consistent with other studies (e.g., Sufian et al., 2012; Bougatef & Korbi, 2018). This negative association may be caused by several reasons, such as problems in credit distribution, like bad credit resulting from late or delinquent payment (Syaifuddin et al., 2018), uncollectable loans due to misguided lending policies, illegal manipulation, and mismanagement. The banks have to bear a huge risk and lower profitability (Siam, 2007). If this rate increases, asset quality is reduced, and it will increase the number of marginal borrowers that default (Tibebe & Gujral, 2022). Therefore, H1.8 was accepted for the Saudi Arabia banking sector.

5.4.1.9 Cash-Deposit Ratio and Return on Assets (H1.9)

Hypothesis 1.9 posits that CDR has a non-significant relationship with the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The results showed that CDR and ROA in Jordan were negatively and significantly related, t = -2.14, p = .032. This finding is consistent with several previous studies (e.g.,Thiagarajan, 2015; Mishra & Pradhan, 2019). This means that CDR is negatively associated with ROA. In other

words, an increase in CDR will lead to a decrease in ROA. This means that banks should avoid keeping excessive liquidity as a reserve for unforeseen client withdrawal needs. They should think about different ways to meet such needs, such as loaning and receiving at reasonable rates of return on the interbank market, as well as limiting qualified bills (Ojo et al., 2022). Therefore, H1.9 was rejected for the Jordanian banking sector.

In Saudi Arabia and Qatar, the relationship between CDR and ROA was negative and insignificant, (t = -.530, p = .594) (t = -.13, p = .895). The insignificant result is similar to past studies (e.g., Goel & Kumar, 2016; Warrad, 2017). This means that CDR is not associated with ROA. In other words, an increase or decrease in CDR will not significantly affect ROA. Therefore, H1.9 was accepted for the Saudi Arabian and Qatari banking sector.

5.4.1.10 Leverage Ratio and Return on Assets (H1.10)

Hypothesis 1.10 posits that LR has a positive and significant relationship with the ROA of listed banks in Jordan, Saudi Arabia, and Qatar. The result showed that LR and ROA in Jordan and Qatar was insignificantly and negatively associated, (t = -1.06, p = .28), (t = -.1, p = .921).

According to the stakeholder theory, the success of the firm is dependent mainly on the relationship between the firm's management and the stakeholders as a whole. One of the most important stakeholders who can exercise the strongest power on the firm is creditors, who have the ability to supply economic power to the firm by providing debt. Credit power relies on the degree to which the firm depends on debt financing (Roberts, 1992). If the firm depends mainly on debt financing, it is more likely to be seen as a firm with lower risk, as it embodies a superior environmental

performance strategy in its strategic planning decision. Thus, financial leverage has a positive and significant relationship with the financial performance of banks (Elijido-Ten, 2007).

The association between LR and ROA in Saudi Arabia was negative and significant, t = -4.35, p = 0.000. This means that LR is negatively associated with ROA, indicating that highly profitable firms have enough cash flow to finance their operations. Thus, the firms will increase their debt only if internal funds cannot cover their financing needs (Elijido-Ten, 2007). This finding is consistent with (Alshatti, 2015). Therefore, H1.10 was rejected for entirely banking sectors.

5.4.1.11 Control Variables and ROA

The regression analysis showed that bank size was significantly and negatively associated with ROA in Jordan (t = -3.65, p = 0.00), consistent with Karim and Alam (2013). In contrast, the relationship was positive in Saudi Arabia (t = 8.00, p = 0.000), consistent with previous studies (e.g., Chowdhury & Rasid, 2015; Smaoui & Salah, 2012; Boahene et al., 2012). In Qatar, the relationship was positive but not significant (t = .12, p = .904).

According to the financial intermediation theory, a large intermediary can engage with a large number of lenders and borrowers. The size advantage is assumed to result in diversification, which is valuable even in an environment where all agents are risk neutral. It also minimizes the contracting cost among symmetrically informed agents. Moreover, a larger size does not only reduce the cost of contracting but also permits intermediaries to fund a large number of profitable investments. Pooled risk is also eliminated and reduced. The theory posits that large intermediaries are more

efficient than small ones, hence a negative relationship between size and the probability of failure (Boyd & Runkle, 1993).

There was a significant and positive relationship between board size and ROA in Jordan (t = 4.82, p = 0.00). This positive result is consistent with past studies (e.g., Oyerogba et al., 2016; Jackling & Johl, 2009; Haniffa & Hudaib, 2006). Board size and ROA had a non-significant positive relationship in Saudi Arabia (t = .98, p = .328) and Qatar (t = .17, p = .864). The insignificant results are consistent with several studies (e.g., Goel & Sharma, 2020; Yammeesri & Herath, 2010; Darko et al., 2016) .

The stakeholder theory considers managers as the representatives of all stakeholders; they make the best use of their knowledge, expertise, experience, and skills to improve firm performance. The main role of the board of directors is to provide effective leadership and management to make the best use of the firm's financial assets and human resources. The board of directors must be of adequate size and balances between executive and non-executive directors. A large board of directors can provide more creative ideas and effective information, which the firm can use to improve its performance. Several studies found that a larger board leads to fewer agency problems, such as conflict of interest and information asymmetry, and better monitoring for the firm. Other studies found that a large board of directors can reduce communication among its members and weaken firm performance, as the CEO can easily direct the board to perform his interests rather than those of the firm's shareholders (Alqatan et al., 2019).

The regression analysis showed that bank type was significantly and negatively associated with ROA in Jordan (t = -1.85, p = 0.064) but positively so in Saudi Arabia (t = 2.02, p = 0.043), consistent with past studies (e.g., Abdel Megeid, 2017; Khan et al., 2016; Ben Khediri et al., 2015). The relationship was positive but insignificant for

the Qatari banking sector (t = .01, p = .993). Finally, there was a significant and negative relationship between ROA and GDP in Jordan (t = - 3.22, p = 0.001), consistent with previous studies (e.g., de Leon, 2020; Tan & Floros, 2012). In contrast, ROA and GDP were positively associated in Saudi Arabia (t = 1.94, p = 0.052) and Qatar (t = 2.29, p = 0.022). These results are consistent with several studies (e.g., Yüksel et al., 2018; Obamuyi, 2013).

The financial intermediation theory was first formalized and popularized by Goldsmith (1969), Mckinnon (1973), and Shaw (1973), who saw that financial markets (both capital and money markets) play a pivotal role in economic development. They attributed the differences in economic growth across countries to the quality and quantity of services provided by financial institutions. Financial system refers to the set of regulations and rules and the aggregation of financial institutions, arrangements, and agents that interact with each other and the rest of the world to foster economic growth and development of a nation. The financial system is a primary driver of economic development. It fulfills this duty through the financial intermediation process, which entails providing a medium of exchange necessary for the mobilization and transfer of saving from surplus to deficit economic units. This arrangement increases productive activities and thus aggregate economic growth and output.

5.4.2 Empirical Results for Return on Equity (H2.1-H2.10)

This section examines the second set of hypotheses (H2.1 to H2.10). These hypotheses examined the impact of credit and liquidity risk exposures on bank performance, measured by ROE. The results of the regression analysis for the second main hypothesis are shown in Tables 5.16, 5.17, and 5.18.

Table 5.16: Results of FGLS Regression in Jordan (ROE)

ROE	Coef.	St.Err.	t-value	p-value
NPL	-0.583	0.187	-3.11	0.002
CAR	0.124	0.266	0.47	0.640
D.CPL	-0.862	0.276	-3.12	0.002
LLR	0.928	0.273	3.4	0.001
CGR	-0.018	0.017	-1.06	0.290
CR	0.169	0.04	4.19	0.000
LDR	-0.476	0.075	-6.39	0.000
LAR	0.692	0.113	6.11	0.000
CDR	-0.044	0.013	-3.47	0.001
LR	0.002	0.005	0.48	0.630
SIZE	-0.027	0.008	-3.42	0.001
TYPE	0.004	0.04	0.1	0.919
D.BOARD	0.008	0.002	5.2	0.000
D.GDP	-0.387	0.095	-4.07	0.000
Constant.	4.225	0.996	4.24	0.000
Mean dependent var	0.088		SD dependent var	0.038
	0.6957		R-Sq	0.4840
Number of obs	75		Chi-square	113.19

**** p<.01, ** p<.05, * p<.1*

Table 5.17: Results of FGLS Regression in Saudi Arabia (ROE)

ROE	Coef.	St.Err.	t-value	p-value
D.NPL	-0.985	0.383	-2.57	0.01
D.CAR	-0.757	0.272	-2.78	0.005
CPL	-0.024	0.02	-1.18	0.239
LLR	1.495	0.362	4.13	0
CGR	0.018	0.019	0.94	0.348
CR	0.004	0.005	0.81	0.42
D.LDR	0.059	0.057	1.04	0.299
LAR	-0.198	0.081	-2.45	0.014
CDR	-0.055	0.049	-1.13	0.26
D.LR	-0.004	0.006	-0.71	0.479
D.SIZE	0.065	0.008	8.42	0
TYPE	0.015	0.006	2.36	0.018
BOARD	0.002	0.003	0.61	0.545
D.GDP	0.144	0.063	2.29	0.022
Constant	-2.093	0.76	-2.75	0.006
Mean dependent var	0.129		SD dependent var	0.032
R	0.8654		R-Sq	0.7489
Number of obs	55		Chi-square	677.925

**** p<.01, ** p<.05, * p<.1*

Table 5.18: Results of FGLS in Qatar (ROE)

ROE	Coef.	St.Err.	t-value	p-value
NPL	-0.823	1.024	-0.800	0.422
CAR	0.000	0.002	0.270	0.790
CPL	0.393	1.635	0.240	0.810
D.LLR	-1.774	0.968	-1.830	0.067
CGR	0.003	0.042	0.070	0.943
D.CR	0.000	0.023	-0.010	0.993
D.LDR	-0.208	0.107	-1.940	0.052
D.LAR	0.515	0.192	2.670	0.008
CDR	-0.002	0.374	-0.010	0.995
D.LR	-0.009	0.007	-1.210	0.228
D.SIZE	0.043	0.016	2.740	0.006
TYPE	-0.087	0.051	-1.700	0.089
BOARD	-0.002	0.003	-0.540	0.589
D.GDP	0.124	0.104	1.190	0.234
Constant	-1.740	1.160	-1.500	0.134
Mean dependent var	0.123		SD dependent var	0.04
R	0.7437		R-Sq	0.553
Number of obs	40		Chi-square	169.274

**** p<.01, ** p<.05, * p<.1*

5.4.2.1 Non-Performing Loan and Return on Equity (H2.1)

Hypothesis 2.1 posits that NPL is significantly and negatively related to the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis showed that NPL and ROE were negatively and significantly in Jordan and Saudi Arabia. (t =-3.11, p = 0.002), (t = -2.75, p = .01), while negatively and insignificant for Qatar (t = -.80, p = .422). Therefore, H2.1 was accepted for Jordanian and Saudi Arabian banking sectors and rejected for Qatari banking sector.

5.4.2.2 Capital Adequacy Ratio and Return on Equity (H2.2)

Hypothesis 2.2 posits that CAR is significantly and positively related to the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results showed that CAR and ROE were positively and non-significantly associated in Jordan and Qatar (t =.47, p = .640) (t = .270, p = .790). In other words, an increase in CAR would lead to an increase in ROE. The association was negative and significant in Saudi Arabia same

for ROA (t = -2.78, p = .005). Therefore, H2.2 was rejected for entirely banking sectors.

5.4.2.3 Cost per Loan Ratio and Return on Equity (H2.3)

Hypothesis 2.3 posits that CPL is negatively and significantly related to the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results showed that CPL and ROE were negatively and significantly associated in Jordan (t = -3.12, p = 0.002) and negative but insignificant in Saudi Arabia (t = -1.18, p = .239). This result is consistent with the ROA results. Therefore, H2.3 was accepted for the Jordanian banking sector.

In Qatar, the association between CPL and ROE was positive and non-significant, (t = 0.24, p = .810). This means that CPL is not associated with ROE. The positive association supports the findings of previous studies (e.g., Shrestha, 2015; Bhattarai, 2017), while the non-significant result supports the findings of prior studies (e.g., Poudel, 2012; Musyoki & Kadubo, 2012). Therefore, H2.3 was rejected for the Qatari and Saudi Arabian banking sectors.

5.4.2.4 Loan-Loss Reserve and Return on Equity (H2.4)

Hypothesis 2.4 posits that LLR is significantly and negatively related to the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results indicated that LLR and ROE were positively and significantly related in Jordan and Saudi Arabia, (t = 3.4, p = .001), (t = 4.13, p = 0.00), but negative and significant in Qatar (t = -1.83, p = .067). This is similar to the ROA model. Therefore, H2.4 was rejected Jordan and Saudi Arabia, but accepted for Qatari banking sector.

5.4.2.5 Loan Growth Ratio and Return on Equity (H2.5)

Hypothesis 2.5 posits that LGR has a significant and negative relationship with the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results indicated that LGR and ROE had a negative and non-significant association in Jordan (t = -1.06, p = .29) and Qatar. This means that LGR is not associated with ROE. In other words, a higher or lower percentage of LGR will not significantly affect ROE. In Saudi Arabia and Qatar, the association between LGR and ROE was positive and insignificant (t = .94, p = .348) (t = 0.070, p = .943). Therefore, H2.5 was rejected for entirely banking sectors.

5.4.2.6 Current Ratio and Return on Equity (H2.6)

Hypothesis 2.6 posits that CR is associated with the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis showed that the relationship between CR and ROE is similar to ROA model. Jordan was positive and significant, (t = 4.19, p = 0.000). Therefore, H2.6 was accepted for the Jordanian banking sector.

The relationship between CR and ROE was non-significant and positive in Saudi Arabia (t = 0.81, p = .42) and negative in Qatar (t = -0.01, p = .993). This means that a higher or lower percentage of CR will not significantly affect ROE. This finding is similar to (Madushanka & Jathurika, 2018). Therefore, H2.6 was rejected for Saudi Arabian and Qatari banks.

5.4.2.7 Loan to Deposit Ratio and Return on Equity (H2.7)

Hypothesis 2.7 posits that LDR is significantly and negatively associated with the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The regression analysis

showed a significant negative association between LDR and ROE in Jordan (t = -6.39, p = 0.000) and Qatar (t = -1.94, p = .052). This means that LDR is negatively associated with ROE. In other words, a higher percentage of LDR will reduce ROE. Therefore, H2.7 was accepted for the Jordanian and Qatari banking sectors. The association between LDR and ROE in Saudi Arabia was insignificant and positive, t = 1.04, p = .299. These results are similar to ROA model. Therefore, H2.7 was rejected for the Saudi Arabian banking sector.

5.4.2.8 Loan to Asset Ratio and Return on Equity (H2.8)

Hypothesis 2.8 posits that LAR has a significant and negative relationship with the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results showed that the relationship between LAR and ROE was positive and significant in Jordan and Qatar, (t = 6.11, p = 0.000), (t = 2.67, p = 0.008). This finding is consistent with the ROA results. Therefore, H2.8 was rejected for the Jordanian and Qatari banking sector. The relationship between LAR and ROE in Saudi Arabia was negative and significant, t = -2.45, p = .014. Therefore, H2.8 was accepted for the Saudi Arabian banking sector.

5.4.2.9 Cash-Deposit Ratio and Return on Equity (H2.9)

Hypothesis 2.9 posits that CDR has a non-significant relationship with the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results showed a similar result as the ROA model: there was a negative and significant relationship between CDR and ROE in Jordan, t = -3.47, p = .001. Therefore, H2.9 was rejected for the Jordanian banking sector. The relationship between CDR and ROE was negative and

insignificant in Saudi Arabia (t = -1.13, p = .26) and Qatar (t = -0.010, p = .995). Therefore, H2.9 was accepted for Saudi Arabian and Qatari banking sectors.

5.4.2.10 Leverage Ratio and Return on Equity (H2.10)

Hypothesis 2.10 posits that LR has a positive and significant relationship with the ROE of listed banks in Jordan, Saudi Arabia, and Qatar. The results indicated insignificant positive relationship between LR and ROE in Jordan (t =.48, p = .630). This means that LR is positively associated with ROE, and more profitable firms have a higher level of debt. Increasing debt is worthwhile due to the tax savings resulting from raised interest expenses. Consequently, firms ought to raise their total debt to benefit from tax savings, which means the increase in total debt to asset ratio (Andersson & Minnema, 2018). The positive result is consistent with (Adeusi et al., 2014), but the irrelevance of capital structure indicates that the choice of equity or debt will not affect the bank's value (Elijido-Ten, 2007).

The association between the two variables was in Saudi Arabia and Qatar was negative and non-significant, (t = -.71, p = .479), (t = -1.21, p = .228). This means that LR is not associated with ROE. Therefore, H2.10 was rejected for entirely banking sectors.

5.4.2.11 Control Variables and ROE

There was a significant and negative relationship between bank size and ROE in Jordan (t = -3.42, p = .001), but this relationship was positive in Saudi Arabia (t = 8.42, p = 0.00) and Qatar (t = 2.74, p = 0.006). There was also a positive but insignificant relationship between bank type and ROE in Jordan (t = .1, p = .919). This relationship was positive and significant in Saudi Arabia (t = 2.36, p = .018).

Bank type and ROE had a significant negative relationship in Qatar (t = -1.7, p = 0.089).

In addition, there was a significant positive relationship between board size and ROE in Jordan (t = 5.2, p = 0.000). However, the relationship was positive but not significant in Saudi Arabia (t = .61, p = .545) and negative but not significant in Qatar (t = -.54, p = .589). Finally, there was a significant negative relationship between GDP and ROE in Jordan (t = -4.07, p = .000) and a significant positive relationship in Saudi Arabia (t = 2.29, p = .022). There was a non-significant relationship between GDP and ROE in Qatar (t = 1.19, p = .234).

5.4.3 Empirical Results for Tobin's Q (H3.1- H3.10)

This section examines the third set of hypotheses (H3.1 to H3.10). These hypotheses examined the impact of credit and liquidity risk exposures on bank performance, measured by TQ. The results are shown in Tables 5.19, 5.20, and 5.21.

Table 5.19: Results of FGLS Regression in Jordan (TQ)

TQ	Coef.	St.Err.	t-value	p-value
NPL	-5.026	1.671	-3.01	0.003
CAR	9.741	2.629	3.71	0.000
D.CPL	-7.209	2.706	-2.66	0.008
LLR	10.308	2.856	3.61	0.000
CGR	-0.052	0.203	-0.26	0.798
CR	1.078	0.389	2.77	0.006
LDR	-3.175	0.669	-4.74	0.000
LAR	2.185	0.932	2.35	0.019
CDR	-0.193	0.107	-1.79	0.073
LR	0.173	0.048	3.64	0.000
SIZE	0.025	0.095	0.26	0.794
TYPE	1.57	0.356	4.41	0.000
D.BOARD	0.031	0.018	1.66	0.098
D.GDP	-0.069	1.09	-0.06	0.950
Constant.	-0.457	11.227	-0.04	0.968
Mean dependent var	1.102	SD dependent var		0.454
	0.6528	R-Sq		0.4261
Number of obs	75	Chi-square		157.566

*** $p<.01$, ** $p<.05$, * $p<.1$

Table 5.20: Results of FGLS Regression in Saudi Arabia (TQ)

TQ	Coef.	St.Err.	t-value	p-value
D.NPL	-115.096	108.589	-1.060	0.289
D.CAR	206.170	127.822	1.610	0.107
CPL	2.179	4.692	0.460	0.642
LLR	11.290	127.185	0.090	0.929
CGR	10.634	9.118	1.170	0.244
CR	9.740	3.238	3.010	0.003
D.LDR	-10.886	22.002	-0.490	0.621
LAR	29.830	34.878	0.860	0.392
CDR	-1.696	16.183	-0.100	0.917
D.LR	3.790	2.800	1.350	0.176
D.SIZE	3.531	2.707	1.300	0.192
TYPE	4.158	1.788	2.330	0.020
BOARD	-2.481	1.287	-1.930	0.054
D.GDP	16.325	19.294	0.850	0.397
Constant	-269.594	241.341	-1.120	0.264
Mean dependent var	5.111		SD dependent var	9.705
R	0.7227		R-Sq	0.522
Number of obs	55		Chi-square	36.318

**** p<.01, ** p<.05, * p<.1*

Table 5.21: Results of FGLS in Qatar (TQ)

TQ	Coef.	St.Err.	t-value	p-value
NPL	-148.115	99.675	-1.490	0.137
CAR	-33.316	43.535	-0.770	0.444
CPL	13.979	142.798	0.100	0.922
D.LLR	77.604	69.731	1.110	0.266
CGR	4.967	2.999	1.660	0.098
D.CR	5.550	3.309	1.680	0.094
D.LDR	6.102	5.035	1.210	0.226
D.LAR	-7.858	23.714	-0.330	0.740
CDR	-66.720	38.879	-1.720	0.086
D.LR	-2.341	1.100	-2.130	0.033
D.SIZE	-0.678	2.874	-0.240	0.813
TYPE	-14.334	4.861	-2.950	0.003
BOARD	-0.445	0.409	-1.090	0.277
D.GDP	-0.174	10.563	-0.020	0.987
Constant	37.904	122.326	0.310	0.757
Mean dependent var	1.402		SD dependent var	3.686
R	0.6473		R-Sq	0.419
Number of obs	40		Chi-square	472.716

**** p<.01, ** p<.05, * p<.1*

5.4.3.1 Non-Performing Loan and Tobin's Q (H3.1)

Hypothesis 3.1 posits that NPL is significantly and negatively related to the Tobin's Q of listed banks in Jordan, Saudi Arabia, and Qatar. The results showed that

the association between NPL and TQ model in Jordan was negative and significant similar to the previous models (t = -3.01, p = .003). On the other hand, Saudi Arabia and Qatar had a non-significant and negative relationship (t = -1.06, p = .28) (t = -1.49, p = .137). This means that NPL is not associated with TQ. In other words, a higher or lower percentage of NPL will not significantly affect TQ , and it has been reported in previous studies Kithinji (2010). Therefore, H3.1 was accepted for the Jordanian banking sector but rejected Saudi Arabian and Qatari banking sectors.

5.4.3.2 Capital Adequacy Ratio and Tobin's Q (H3.2)

Hypothesis 3.2 posits that CAR is significantly and positively related to the Tobin's Q of listed banks in Jordan, Saudi Arabia, and Qatar.

The results of the regression analysis showed that the relationship between CAR and TQ was significant and positive in Jordan, t = 3.71, p = 0.000 is different from the ROA and ROE models. This result is consistent with previous studies (e.g., Ramadan et al., 2011; Almazari, 2014; Smaoui & Salah, 2012), which found that well-capitalized banks with higher CAR will be able to cope with unpredicted losses, minimize bankruptcy costs, and exploit investment opportunities, all of which reflect positively on the profitability of banks. In other words, the higher the CAR, the stronger the bank's ability to bear the risk of any risky credit/productive assets. Therefore, capital is an important factor in developing a bank's business. With sufficient capital, a bank can carry out its activities without experiencing difficulties and losses that can affect its profitability. This finding is also compatible with the institutional theory, which states that CAR is a proxy of external corporate governance. Higher CAR leads to more implementation of good corporate governance practices and minimizes the risk-taking behavior of banks, thus motivating investors

to purchase the banks' shares and deposit their money in the banks. These, in turn, would increase the banks' profitability (Fanta et al., 2013). Banks with sufficient capital can carry out its activities without losses and experiencing difficulties that may increase and then affect increasing profitability, therefore capital adequacy is one of the important aspects of bank's business unit and the higher of the capital lead to higher public trust to save their funds in the bank regardless of whether its operate or not (Sriyono & Nabellah, 2022b). Therefore, H3.2 was accepted for the Jordanian banking sector.

In addition, there was a non-significant relationship in Saudi Arabia and positive (t = 1.61, p =.107). The association between CAR and TQ in Qatar was negative and non-significant (t = -0.77, p = 0.444). This means that CAR is not associated with ROA. In other words, an increase or decrease in CAR will not significantly affect the ROA of Qatari banks. This result is consistent with previous studies (Almumani, 2013; Alshatti, 2015). Therefore, H1.2 was rejected for the Saudi Arabia and Qatari banking sector.

5.4.3.3 Cost per Loan Ratio and Tobin's Q (H3.3)

Hypothesis 3.3 posits that CPL has a significant and negative relationship with the Tobin's Q of listed banks in Jordan, Saudi Arabia, and Qatar. The results of the regression analysis showed that the relationship between CPL and TQ was negative and significant in Jordan, t = -2.66, p = .008. This result is consistent with the two previous models. Therefore, H3.3 was accepted for the Jordanian banking sector.

The association between CPL and TQ model was positive and non-significant in Saudi Arabia, t = 0.46, p = .642, and Qatar, t = 0.100, p = .922. This means that CPL

is not associated with TQ. Therefore, H3.3 was rejected for Saudi Arabian and Qatari banks.

5.4.3.4 Loan Loss Reserve and Tobin's Q (H3.4)

Hypothesis 3.4 posits that LLR ratio has a significant and negative relationship with the Tobin's Q of listed banks in Jordan, Saudi Arabia, and Qatar. The regression analysis showed a positive and significant association between LLR and TQ in Jordan, $t = 3.61$, $p = 0.000$, this result is the same for ROA and ROE model.

The relationship between LLR and TQ was positive and insignificant for Saudi Arabia and Qatar, ($t = 0.09$, $p = .929$), ($t = 1.110$, $p = .266$). This result is consistent with previous studies (Pelealu & Worang, 2018). This result means that banks will earn higher profitability if loan loss reserve increases, but there is still a possibility of incurring losses. In other words, a higher or lower percentage of LLR will not significantly affect ROA (Pelealu & Worang, 2018). Therefore, H3.4 was rejected for entirely banking sectors.

5.4.3.5 Loan Growth Ratio and Tobin's Q (H3.5)

Hypothesis 3.5 posits that LGR has a significant and negative relationship with the TQ of listed banks in Jordan, Saudi Arabia, and Qatar. The results showed that the relationship between LGR and TQ was negative and non-significant in Jordan ($t = -.26$, $p = .798$), but positive and insignificant for Saudi Arabia ($t = 1.17$, $p = .244$). This means that LGR is not associated with Tobin's Q. In other words, a higher or lower percentage of LGR will not significantly affect TQ.

Qatar banking sector had a positive and significant association between CGR and T'Q ($t = 1.66$, $p = 0.098$) indicating that loan growth can improve bank profitability. Loan

growth helps promote the equalization of profit rates across industries and can bring short-term benefits to banks when interest income and firm performance increase. In addition, loan growth minimizes bank risk, as good capital mobilization ability offsets the bank's liquidity when managing risk effectively (Wu et al., 2022). This result is consistent with several studies (e.g., Le, 2020; Carbó-valverde et al., 2011). Therefore, H3.5 was entirely rejected.

5.4.3.6 Current Ratio and Tobin's Q (3.6)

Hypothesis 3.6 posits that CR has a significant relationship with the Tobin's Q of listed banks in Jordan, Saudi Arabia, and Qatar. The results in Jordan, Saudi Arabia, and Qatar as CR and TQ showed a positive and significant association, (t = 2.77, p = .006) (t = 3.010, p = .003) (t = 1.68, p = 0.094). Therefore, H3.6 was accepted for entirely banking sectors.

5.4.3.7 Loan to Deposit Ratio and Tobin's Q (H3.7)

Hypothesis 3.7 posits that LDR is significantly and negatively associated with the TQ of listed banks in Jordan, Saudi Arabia, and Qatar. The regression results showed a negative and significant association between LDR and TQ in Jordan (t = -4.74, p = 0.000).

There is a negative and insignificant relationship in Saudi Arabia (t = -.49, p = .621). This result is supported by (Hussain et al., 2016). Qatar banking sector had a positive and insignificant relationship (t = 1.21, p = .226). This result is consistent with (Rengasamy, 2014). This means that LDR is not associated with TQ. In other words, a higher or lower percentage of LDR will not significantly affect TQ.

Therefore, H3.7 was accepted for Jordanian banking sector and rejected for Saudi Arabian and Qatari banking sectors.

5.4.3.8 Loan-Asset Ratio and Tobin's Q (H3.8)

Hypothesis 3.8 posits that LAR has a negative and significant relationship with the Tobin's Q of listed banks in Jordan, Saudi Arabia, and Qatar. The regression results showed that the relationship between LAR and TQ was positive and significant in Jordan is similar for ROA and ROE (t = 2.35, p = .019).

There is a positive and insignificant relationship in Saudi Arabian banking sector (t = 0.86, p = .392) this result is consistent with (Noman et al., 2015). This means that LAR is not associated with TQ. In other words, an increase or decrease in LAR will not significantly affect TQ. In the Qatari banking sector, LAR and TQ had a negative and insignificant relationship (t = -0.330, p = 0.740). This result is consistent with previous studies (e.g., Almumani, 2013; Chowdhury, 2015; Smaoui & Salah, 2012). This finding suggests that there is a weak negative impact between lending and profitability. In other words, a decrease or increase in LAR will not affect the profitability of banks (Syaifuddin et al., 2018). Therefore, H3.8 was entirely rejected.

5.4.3.9 Cash-Deposit Ratio and Tobin's Q (H3.9)

Hypothesis 3.9 posits that CDR has a non-significant relationship with the Tobin's Q of listed banks in Jordan, Saudi Arabia, and Qatar. The regression results showed a negative significant association between CDR and TQ in Jordan and Qatar, (t = -1.79, p = .073), (t = -1.72, p = .086). Therefore, H3.9 was rejected for Jordanian and Qatari banks. Meanwhile, the relationship between CDR and TQ was non-significant and negative in Saudi Arabia (t = -.100, p = .917). These result means that

CDR is not associated with TQ. This could be attributed to the fact that the banks are not too retail-oriented in their operations and have been long-standing in their industry. Therefore, their liquidity level in previous periods could significantly enhance their financial performance, but the previous level of profitability could not increase their liquidity in the current period. So, there is no causal relationship between liquidity and profitability, which may be related to the intrinsic structural weakness in the industry during the study period (Olarewaju & Adeyemi, 2015). Therefore, H3.9 is accepted for Saudi Arabia banking sector.

5.4.3.10 Leverage Ratio and Tobin's Q (H3.10)

Hypothesis 3.10 posits that LR has a significant and positive relationship with the TQ of listed banks in Jordan, Saudi Arabia, and Qatar. The regression results in Jordan and Saudi Arabia showed a positive and insignificant association between LR and TQ, (t = 3.64, p = .794), (t = 1.35, p = .176). This means that LR is positively associated with TQ. The relationship between LR and TQ was negative and significant analysis in Qatar (t = -2.13, p = .033). This means that LR is negatively associated with TQ. Therefore, H3.10 was rejected for entirely banking sectors.

5.4.3.11 Control Variables and Tobin's Q

The regression results showed that there was an insignificant positive association between bank size and Tobin's Q in Jordan (t = .26, p = .794) and Saudi Arabia (t = 1.33, p = .192). This relationship was also non-significant in Qatar, though it was negative (t = -.24, p = .813). The non-significant results are consistent with several studies (e.g., Akhtar et al., 2011; Rajha, 2017; Ramadan et al., 2011; Almumani, 2013). There was a significant positive association between bank type and

Tobin's Q in Jordan (t = 4.41, p = 0.000) and Saudi Arabia (t = 2.33, p = .020); however, the association was negative in Qatar (t = -2.95, p = 0.003).

In addition, there was a significant association between board size and Tobin's Q in Jordan (t = 1.66, p = .098) and a negative and significant association in Saudi Arabia (t = -1.93, p = .054). These findings are similar to several studies (e.g., Guest, 2009; Rostami et al., 2016). Board size and Tobin's Q was negatively associated in Qatar, but this association was not significant (t = -1.09, p = .277). Finally, there was an insignificant negative association between GDP and Tobin's Q in Jordan (t = -.06, p = .95) and Qatar (t = -.020, p = .989) and an insignificant positive association in Saudi Arabia (t = .85, p = .397). The non-significant results are consistent with Sheefeni (2015). Table 5.22 summarizes the results of the hypotheses testing.

Table 5.22: Summary of Hypotheses Testing

Variable	Predicted Sign	Country	ROA	ROE	Tobin's Q
NPL	Negative and significant	Jordan	Accept	Accept	Accept
		Saudi Arabia	Accept	Accept	Reject
		Qatar	Reject	Reject	Reject
CAR	Positive and significant	Jordan	Reject	Reject	Accept
		Saudi Arabia	Reject	Reject	Reject
		Qatar	Reject	Reject	Reject
CPL	Negative and significant	Jordan	Reject	Accept	Accept
		Saudi Arabia	Reject	Reject	Reject
		Qatar	Reject	Reject	Reject
LLR	Negative and significant	Jordan	Reject	Reject	Reject
		Saudi Arabia	Reject	Reject	Reject
		Qatar	Accept	Accept	Reject
CGR	Negative and significant	Jordan	Reject	Reject	Reject
		Saudi Arabia	Reject	Reject	Reject
		Qatar	Accept	Reject	Reject
CR	Significant	Jordan	Accept	Accept	Accept
		Saudi Arabia	Reject	Reject	Accept
		Qatar	Reject	Reject	Accept
LDR	Negative and significant	Jordan	Accept	Accept	Reject
		Saudi Arabia	Reject	Reject	Reject
		Qatar	Accept	Accept	Reject
LAR	Negative and significant	Jordan	Reject	Reject	Reject
		Saudi Arabia	Accept	Accept	Reject
		Qatar	Reject	Reject	Reject

Table 5.22, continued

Variable	Predicted Sign	Country	ROA	ROE	Tobin's Q
CDR	Non-significant	Jordan	Reject	Reject	Reject
		Saudi Arabia	Accept	Accept	Accept
		Qatar	Accept	Accept	Reject
LR	Positive and significant	Jordan	Reject	Reject	Reject
		Saudi Arabia	Reject	Reject	Reject
		Qatar	Reject	Reject	Reject

5.4.4 Results for the Differences in Credit Risk Exposures between Countries

To find out the differences in CRE variables between Jordan, Saudi Arabia, and Qatar, the mean and standard deviations were calculated. The one-way ANOVA test was used to detect the significance of the differences between countries. The results are shown in Table 5.23.

Table 5.23: Differences in Credit Risk Exposures Indicators between Sample Countries

Variable	Country	N	Mean	Std. Deviation	Mean Square	F-Calculated	F-Tabulated	Sig.
NPL	Jordan	75	0.054	0.024	0.033	106.359	2.9957	0.000
	Saudi Arabia	55	0.012	0.005				
	Qatar	40	0.018	0.014				
	Total	170	0.032	0.026				
CAR	Jordan	75	0.137	0.031	0.313	1.557	2.9957	0.214
	Saudi Arabia	55	0.148	0.032				
	Qatar	40	0.284	0.926				
	Total	170	0.175	0.450				
CPL	Jordan	75	0.051	0.013	0.012	6.155	2.9957	0.003
	Saudi Arabia	55	0.040	0.075				
	Qatar	40	0.021	0.008				
	Total	170	0.040	0.045				
LLR	Jordan	75	0.045	0.018	0.015	73.952	2.9957	0.000
	Saudi Arabia	55	0.020	0.006				
	Qatar	40	0.017	0.013				
	Total	170	0.031	0.019				
LGR	Jordan	75	0.104	0.143	0.084	5.048	2.9957	0.007
	Saudi Arabia	55	0.084	0.102				
	Qatar	40	0.167	0.133				
	Total	170	0.112	0.132				

Table 5.23 illustrates the differences in the indicators of credit risk exposures between Jordan, Qatar, and Saudi Arabia. The results showed that NPL (F = 106.359,

$p < .001$), CPL ($F = 6.155$, $p = 0.003$), LLR ($F = 73.952$, $p < .001$), and CGR ($F = 5.048$, $p = .007$) significantly differed between Jordan, Saudi Arabia, and Qatar. No significant difference was found for CAR, $F = 1.557$, $p = .214$. Furthermore, the results indicated that credit risk management in GCC is better than Jordan. More specifically, Jordanian banks are less efficient in managing credit risk because they had the highest NPL ($M = 0.054$, $SD = 0.024$), CPL ($M = 0.051$, $SD = 0.013$), and LLR ($M = 0.045$, $SD = 0.018$), while Qatar had the lowest CPL ($M = 0.021$, $SD = 0.008$) and LLR ($M = 0.017$, $SD = 0.013$). Saudi Arabia, on the other hand, had the lowest NPL ($M = 0.012$, $SD = 0.005$) and LGR ($M = 0.084$, $SD = 0.102$).

5.4.5 Results for the Differences in Liquidity Risk Exposures between Countries

To find out the differences in liquidity risk exposures variables between Jordan, Saudi Arabia, and Qatar, the mean and standard deviations were calculated. The one-way ANOVA test was used to detect the significance of the differences between countries. The results are shown in Table 5.24.

Table 5.24: Differences in Liquidity Risk Exposures Indicators between Sampled Countries

Variable	Country	N	Mean	Std. Deviation	Mean Square	F-Calculated	F-Tabulated	Sig.
CR	Jordan	75	0.300	0.085	0.731	14.881	2.9957	0.000
	Saudi Arabia	55	0.221	0.194				
	Qatar	40	0.470	0.380				
	Total	170	0.315	0.239				
LDR	Jordan	75	0.651	0.120	1.312	122.006	2.9957	0.000
	Saudi Arabia	55	0.797	0.078				
	Qatar	40	0.965	0.102				
	Total	170	0.772	0.162				
LAR	Jordan	75	0.494	0.091	0.443	83.199	2.9957	0.000
	Saudi Arabia	55	0.628	0.049				
	Qatar	40	0.652	0.062				
	Total	170	0.574	0.102				

Table 5.24, continued

Variable	Country	N	Mean	Std. Deviation	Mean Square	F-Calculated	F-Tabulated	Sig.
CDR	Jordan	75	0.331	0.550	1.157	8.595	2.9957	0.000
	Saudi Arabia	55	0.119	0.033				
	Qatar	40	0.070	0.015				
	Total	170	0.201	0.383				
LR	Jordan	75	6.046	1.945	18.673	5.033	2.9957	0.008
	Saudi Arabia	55	6.011	1.390				
	Qatar	40	4.927	2.457				
	Total	170	5.771	1.972				

There were significant differences between Jordan, Qatar, and Saudi Arabia in all indicators of liquidity risk exposures: CR (F = 14.881, p < .001), LDR (F = 122.006, p < .001), LAR (F = 83.199, p < .001), CDR (F = 8.595, p < .001), and LR (F = 5.033, p = .008). Furthermore, the results indicated that the LRM of Jordanian banks is better than GCC banks. Jordanian banks had the lowest average for LDR (M = 0.651, SD = 0.120) and LAR (M = 0.494, SD = 0.091), and the highest average for CDR (M = 0.331, SD = 0.550) and LR (M = 6.046, SD = 1.945). Saudi Arabian banks had moderate ratios, while Qatari banks were the least efficient in LRM.

5.4.6 Results for the Differences in Risk Exposures Variables by Bank Type

To find out the differences in credit and liquidity risk exposures variables by bank type, the mean and standard deviations were calculated. Independent sample t-test was used to detect the significance of the differences between Islamic and conventional banks. The results are shown in Table 5.25.

Table 5.25: Differences in Risk Exposures between Islamic and Conventional Banks

Variable	Bank type	N	Mean	Std. Deviation	Mean Difference	T-Calculated	T-Tabulated	Sig.
NPL	IBs	45	0.015	0.011	-0.023	-5.458	1.960	0.000
	CBs	125	0.038	0.028				
CAR	IBs	45	0.141	0.041	-0.047	-0.601	1.960	0.548
	CBs	125	0.188	0.524				
CPL	IBs	45	0.032	0.013	-0.011	-1.439	1.960	0.152
	CBs	125	0.043	0.052				
LLR	IBs	45	0.019	0.012	-0.016	-5.021	1.960	0.000
	CBs	125	0.035	0.020				
LGR	IBs	45	0.126	0.121	0.018	0.791	1.960	0.430
	CBs	125	0.107	0.135				
CR	IBs	45	0.374	0.222	0.081	1.974	1.960	0.050
	CBs	125	0.293	0.242				
LDR	IBs	45	0.853	0.155	0.110	4.086	1.960	0.000
	CBs	125	0.743	0.155				
LAR	IBs	45	0.644	0.084	0.095	5.811	1.960	0.000
	CBs	125	0.549	0.097				
CDR	IBs	45	0.397	0.708	0.267	4.194	1.960	0.000
	CBs	125	0.130	0.058				
LR	IBs	45	3.980	2.451	-2.436	-8.463	1.960	0.000
	CBs	125	6.416	1.258				

Table 5.25 shows that there were negative and significant differences between Islamic and conventional banks in NPL (t = -5.458, p < .001) and LLR (t = -5.021, p < .001). Islamic banks were more efficient than conventional banks in CRM because that have lower NPL and LLR. The results suggest that the quality of loans or assets of CBs are lower than IBs (Hanif et al., 2012). Lower LLR also shows that IBs are less vulnerable to credit risk than CBs, as IBs move negative shocks on the assets side to investment deposit (*mudarabah* and *musharakah*) (Noman et al., 2015). There were no significant differences in CAR, CPL, and LGR.

In addition, there were significant differences between Islamic and conventional banks in all indicators of liquidity risk exposures: CR (t = 1.974, p = .005), LDR (t = 4.086, p < .001), LAR (t = 5.811, p < .001), CDR (t = 4.194, p < .001), and LR (t = -8.463, p < .001). IBs have higher LAR and LDR than CBs, which means that the Islamic banking sector is tied up in loans and has lower liquidity compared to the

conventional banking sector (Hanif et al., 2012). This lower liquidity is due to the low availability and volume of Islamic-based liquidity reserve instruments in the money market (Noman et al., 2015). IB managers should therefore prepare financial and marketing strategies to maintain liquidity within a desired level, the management should expend significant resources, time, and energy, to manage the banks' portfolio and assets. Moreover, banks should perform periodic cash flow projections to predict deficit or excess liquidity level. If the deficit is below the required operational level, managers should take correct actions to resolve this problem (Abdel Megeid, 2017). At the same time, IBs have higher CR and CDR than CBs because IBs cannot depend on loans from the central bank or any other sources (Abu Loghod, 2010).

CBs have higher LR than IBs, which suggests that banks should not be highly financed by debt. Higher financial leverage will lead to higher debt services and liabilities, which negatively affect the financial performance of banks. This finding contradicts with the notion that financial leverage is one of the best ways by which banks can maximize their profit (Alshatti, 2015).

5.4.7 Results for the Differences in Performance Variables between Countries

To find out the differences in performance variables by country, the mean and standard deviations were calculated. The one-way ANOVA test was used to detect the significance of the differences between countries. The results are shown in Table 5.26. There were significant differences between the sampled countries in ROA (F = 36.774, p <.001), in ROE (F = 23.263, p < .001), and Tobin's Q (F = 8.447, p < .001). Saudi Arabian banks had the highest profitability, followed by Qatari and Jordanian banks.

Table 5.26: Differences in Performance Variables between Countries

Variable	Country	N	Mean	Std. Deviation	Mean Square	F-Calculated	F-Tabulated	Sig.
ROA	Jordan	75	0.0116	0.0049	0.001	36.774	2.9957	0.000
	Saudi Arabia	55	0.0185	0.0038				
	Qatar	40	0.0166	0.0052				
	Total	170	0.0150	0.0056				
ROE	Jordan	75	0.0879	0.0378	0.031	23.263	2.9957	0.000
	Saudi Arabia	55	0.1285	0.0323				
	Qatar	40	0.1234	0.0399				
	Total	170	0.1094	0.0412				
TQ	Jordan	75	1.1021	0.4538	284.840	8.447	2.9957	0.000
	Saudi Arabia	55	5.1113	9.7052				
	Qatar	40	1.4019	3.6857				
	Total	170	2.4698	6.0574				

Table 5.27: Differences in Performance Variables between Islamic and Conventional Banks

Variable	Bank type	N	Mean	Std. Deviation	Mean Difference	T-Calculated	T-Tabulated	Sig.
ROA	IBs	45	0.016	0.006	0.0013	1.386	1.960	0.168
	CBs	125	0.014	0.005				
ROE	IBs	45	0.118	0.048	0.0119	1.682	1.960	0.094
	CBs	125	0.106	0.037				
TQ	IBs	45	5.363	10.046	3.9352	3.891	1.960	0.000
	CBs	125	1.427	3.171				

Table 5.27 shows that there were no significant differences between Islamic and conventional banks in ROA (t = 1.386, p = .168), but a significant difference in ROE (t = 1.682, p = .094), and Tobin's Q (t = 3.891, p < .001). The results indicated that the Tobin's Q and ROE of Islamic banks were higher than conventional banks, but there were no significant differences between the ROA of Islamic and conventional banks.

5.5 Chapter Summary

This chapter started with a descriptive analysis of the dependent, independent, and control variables, then it reported the results of analytical procedures and the empirical results. This chapter has revealed that the relationships between credit and

liquidity risk exposures, and bank performance differed according to the measure of bank performance. In brief, the hypotheses related to the impact of credit and liquidity risk exposures on bank performance were supported for ROA, but not necessarily so for ROE and TQ.

In addition, there were obvious differences in the CRE and LRE in Jordan, Saudi Arabia, and Qatar. The one-way ANOVA test showed that the CRE in GCC banks was lower than Jordanian banks, while LRE in Jordanian banks were lower than selected GCC banks. Furthermore, there were significant differences between conventional and Islamic banks. The results indicated that Islamic banks were more efficient than conventional banks in managing credit risk, and they had more liquidity than conventional banks.