



THE PERFORMANCE OF BANKS IN A DEVELOPING COUNTRY: HAS COVID-19 MADE ANY DIFFERENCE?

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ABSTRACT

Purpose- The full implications of COVID-19 are yet to be seen. However, it has become clear that the virus has hit the supply and demand sides of economies, impacted banks and stocks markets, and led to significant decreases in the global flows of capital. Within this context, the purpose of this paper is to report on the performance of Jordanian banks in 2020, and examine the determinants of their performance.

Methodology- To realize the objectives of this paper, the performance of all listed Jordanian banks (13) during the period 2010-2020 is examined in terms of return on assets (ROA) and net interest margin (NIM). Using the Seemingly-Unrelated Regression (SUR), the dependent variables (ROA and NIM) are regressed on independent variables that include equity capital, bank expenses, size, income diversification, loan loss provisions, lending to the government, and economic growth.

Findings- The 2020 financial statements show that the profits of Jordanian banks (return on assets) have decreased from 1.43 percent in 2019 to 0.74 percent in 2020, or by about 48 percent. As far as the econometric results are concerned, it is interesting to note that while loan loss provisions impact bank profitability in a negative and significant manner, this "cost" is passed-on, at least partly, to bank customers in the form of wider costs of financial intermediation (NIM).

Conclusions- While the known determinants of bank performance are applicable to the Jordanian banks, it is encouraging to note that these banks have managed to finish their 2020 financial year in a good shape. Indeed, this is the result of their strong financial positions that enabled them to increase their loan loss provision by large proportions.

Keywords: Jordan; Banks; Profitability; Net Interest Margin; Bank Size; Seemingly-Unrelated Regression.

JEL Codes: G20, G21, G24.

1. INTRODUCTION

The role of banks and stocks markets has led to, not only the publication of some theoretical models, and numerous applied research papers, but also resulted in academic contention. Well-known figures in economics like Bagehot (1873), Schumpeter (1912), Robinson (1952), and Lucas (1952) could not agree on the importance of finance per se. These disagreements, notwithstanding, the fact remains that banks and stock markets encourage and pool savings, allocate capital, monitor investments, helps investors in the management of the risk of their portfolios, and others (Levine, 2004).

Banks across the globe, have been investigated in terms of many aspects. Among others, these include the determinants of the performance of banks (i.e. accounting profit, net interest margin), determinants of credit growth, measurement and determinants of bank competition, determinants of non-performing loans, impact of bank competition on the stability of financial systems, determinants of banks' capital, and the impact of foreign banks on the performance / behavior of local banks.

It is unfortunate that COVID-19 has proved to be a human and economic tragedy. In economic terms, however, the virus has impacted, not only the demand and supply sides of the affected economies, but also their financial systems, and the global flows of capital, including remittances and Foreign Direct Investment (FDI).

The Jordanian economy, like many others across the globe, has been impacted by COVID-19. Within this context, the primary objective of this paper is to report on the 2020 performance of Jordanian banks relative to previous years, and to examine the determinants of their return on assets and net interest margin.

The rest of the paper is composed of three sections. Section 2 contains a review of the literature which examines the determinants of bank performance in terms of return on assets and net interest margin. In section 3, the data and methodology are outlined, and the results are presented and discussed. Finally, section 4 summarizes and concludes the paper.

2. BANK PERFORMANCE: A BRIEF SUMMARY OF THE LITERATURE

The literature that examines the determinants of bank performance is simply huge. However, following any effort, one realizes that almost all published papers regress a measure of bank performance on a number of factors. The two commonly used dependent variables are return on assets and net interest margin. As far as the explanatory variables are concerned, they include a multitude of measures including bank size, capital adequacy, overhead costs, credit risk, economic growth, and others.

The pioneering papers that looked at the performance of banks include Ho and Saunders (1981), Allen (1988), McShane and Sharpe (1985), Agbanzo (1997), Demirguc-Kunt and Huizinga (1999), Saunders and Schumaker (2000), and Demirguc-Kunt and Huizinga (2000). Following the publication of these papers, numerous empirical papers looked at the performance of banks across the globe. These papers examine the performance of banks in single countries or across-countries.

Some of the recently published papers include Chortareas et al. (2011), Naceur and Omran (2011), Fungacova and Poghosyan (2011), Gurbuz et al. (2013), Trujillo-Ponce (2013), Nassar et al (2014), Helhel (2015), Shami et al (2015), Yaseen et al. (2015), and Hashem (2016), Topak and Tirmandioglu (2017), Al-Homaidi et al. (2018), Almaqtari et al. (2019), Batten and Vo (2019), Omet (2019), Al-Homaidi et al. (2020), Caliskana and Lecunab (2020), Jadah et al. (2020), Le and Ngo (2020), Le and Nguyen (2020), Saif Alyousfi (2020), and Farooq et al. (2021).

Le and Ngo (2020), for example, examine the determinants of banks' return on assets and net interest margin in 23 countries (2002-2016). Based on their Generalized Method of Moments (GMM) methodology, the results indicate that the number of issued bank cards, number of automated teller machines, and the number of sale terminals positively affect bank profitability. However, the results also indicate that these factors widen bank net interest margin.

Jadah et al. (2020) examine the determinants of bank profitability in Iraq. Based on their data (18 banks / 2005-2017), and panel data methodology (fixed effects), their results indicate that while bank size, equity capital to total assets, real GDP growth rate positively impact the return on assets of banks, they have a significant and positive impact on net interest margin as well. Interestingly, the results indicate that total loans to total assets widen net interest margin, but have no impact on bank profitability.

As far as Jordanian banks are concerned, Yaseen et al (2015) looked at the impact of foreign banks on the performance of local banks in terms of net interest margin, and competition. Using all 13 listed Jordanian banks and five foreign banks (2000-2010), the results indicate that foreign banks have no impact on either the cost of financial intermediation nor bank competition. In addition, the fact that 6 of the 13 Jordanian banks offer cash prizes (lottery) to the depositors, Shami et al (2015) examine the impact of this marketing strategy on their performance during the period 2002-2012. Interestingly, the results clearly indicate that while the distribution of lottery prizes has a significant and positive impact on bank profitability, this marketing tool widens net interest margins. In other words, the cost of offering prizes is "passed-on" to bank customers by widening net interest margin.

Finally, it is also worth mentioning that Omet (2019) examines the income of income diversification (in terms of sectoral distribution of credit and non-interest income) on the performance of Jordanian banks. Again, based the all 13 listed banks, and the period 2009-2017, the results indicate that while income diversification positively affects bank profitability, diversification widen significantly net interest margin.

3. THE DATA, METHODOLOGY, AND ESTIMATED RESULTS

As mentioned in the first section, the objective of this paper is to look at how COVID-19 impacted the performance of listed Jordanian banks in 2020, and to examine the determinants of their return on assets and net interest margin.

To realize the objective of the paper, the analysis includes all 13 listed Jordanian banks. In addition, the annual data that is used in the econometric estimations covers the period 2010-2020. The Islamic banks (3 in total) are not include in the analysis as their financial statements are different from traditional banks. The collected data is used to estimate two main models:

$$ROA_{i,t} = \beta_1 Equity_{i,t} + \beta_2 Expense_{i,t} + \beta_3 Size_{i,t} + \beta_4 Bonds_{i,t} + \beta_5 Diversification_{i,t} + \beta_6 Provisions_{i,t} + \beta_7 GDP_t + \epsilon_{i,t} \quad (1)$$

$$NIM_{i,t} = \beta_1 Equity_{i,t} + \beta_2 Expense_{i,t} + \beta_3 Size_{i,t} + \beta_4 Bonds_{i,t} + \beta_5 Diversification_{i,t} + \beta_6 Provisions_{i,t} + \beta_7 GDP_t + \epsilon_{i,t} \quad (2)$$

where, i refers to banks ($i = 1, \dots, 13$) and t refers to time period ($t = 1, \dots, T = (2010-2020)$).

The definitions of the two dependent variables are as follows:

ROA = Profit before taxes divided by total assets (return on assets).

NIM = Net interest margin = [(Interest income – Interest expense) / Total assets].

The definitions of the seven independent variables are as follows:

Equity = Equity capital to total assets.

Expense = Operating expenses / (interest income – interest expense).

Size = Natural logarithm of total assets.

Bonds = Investment in government securities to total credit.

Diversification = Net commission income / (interest income – interest expense).

Provisions = Loan loss provisions to total credit.

GDP = Real GDP growth rate.

To estimate the above-mentioned two models, we use the Period Seemingly Unrelated Regression / pooled EGLS. This technique corrects for period serial correlation and period heteroskedasticity between the estimated residuals. Indeed, this is important given the fact that the data involves 11 years and a cross section of 13 banks only. In addition, it is worth noting that this method uses the residuals which are calculated from the first stage estimates to estimate the feasible GLS specification.

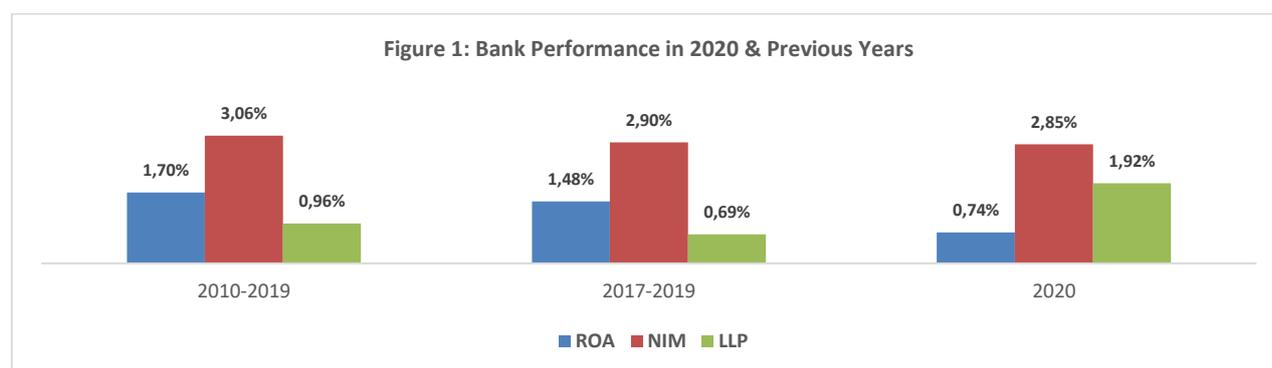
The estimated results are reported in Tables 1 – 4. Below, we outline and discuss the following observations.

1. The overall mean of the return on assets (ROA) decreased from 1.43 percent in 2019 to 0.74 percent in 2020 or by 48.3 percent (Table 1). While the mean net interest margin (NIM) of the 13 banks did not change in any significant proportion, loan loss provisions (LLP) increased from 0.76 percent in 2019 to 1.92 percent in 2020, or by 152.6 percent. In addition, it is interesting to note that during the period 2010-2020, the financial year 2020 witnessed the lowest ROA, narrowest NIM, and highest LLP.

Table 1: Return on Assets and Net Interest Margin: Annual Mean Values

Year	ROA	NIM	Loan Loss Provisions
2010	1.87%	3.19%	1.30%
2011	1.57%	3.10%	1.72%
2012	1.75%	3.21%	1.55%
2013	1.87%	3.03%	0.88%
2014	2.01%	3.09%	0.72%
2015	1.83%	3.11%	0.66%
2016	1.63%	3.13%	0.65%
2017	1.48%	2.93%	0.82%
2018	1.53%	2.88%	0.50%
2019	1.43%	2.88%	0.76%
2020	0.74%	2.85%	1.92%

2. During the period 2010-2019 (2017-2019), the mean value of return on assets (ROA) was 1.70 percent (1.48 percent). In 2020, this measure fell to 0.74 percent (Figure 1). In other words, the impact of COVID-19 on Jordanian banks was significant. Similarly, during the period 2010-2019 (2017-2019), the overall mean value of loan loss provisions (LLP) was equal to 0.96 percent (0.69 percent). In 2020, this measure increased to 1.92 percent. In other words, the impact of COVID-19 on the LLPs was significant. This sudden increase in provisions, indicates that Jordanian banks, on average, chose this option to manage their increased credit risk. Indeed, the increase in LLPs is one major reason behind the decrease in the 2020 return on assets. The cost of financial intermediation (net interest margin) did not reflect any significant changes between the period 2010-2019, 2017-2020, and in 2020.



3. On average, the mean values of the dependent and independent variables are close to their respective median values. In other words, the probability distribution of all the variables is normal. In addition, it is informative to note that all variables reflect significant variability. Indeed, the differences between the minimum and maximum values of each variable are large. For example, the minimum and maximum values of diversification (net commission income / (interest income – interest expense)) are equal to 5.9 percent and 76.8 percent respectively (Table 2).

Table 2: Dependent and Independent Variables: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Deviation
ROA	0.016	0.017	0.036	-0.002	0.007
NIM	0.030	0.030	0.044	0.011	0.007
Equity	0.072	0.071	0.209	0.022	0.033
Expense	0.577	0.565	0.845	0.314	0.110
Size	21.555	21.447	24.026	19.652	0.934
Bonds	0.208	0.202	0.366	0.008	0.074
Diversification	0.203	0.189	0.768	0.059	0.100
Provisions	0.010	0.009	0.045	0.000	0.013
GDP	0.020	0.023	0.034	-0.016	0.013

4. It is interesting to note that the overall mean value of bonds (bank investment in government securities to total credit) is equal to 20.8 percent. However, in some banks, this ratio is much higher. The maximum value of this ratio is equal to 36.6 percent. Within this context, it is also useful to note that in Jordan, there is no secondary market for government securities (treasury bills and bonds). These securities are bought by the banks and the Jordan Social Security Corporation, and held until maturity.
5. Listed Jordanian banks do not realize benefits from scale economies. The coefficients of bank size (Size) and equity capital (Equity) are not significant when the dependent variable is return on assets (Table 3), and in both periods (2010-2019 and 2010-2020). However, these coefficients are negative and significant when the dependent variable is net interest margin (Table 4). In other words, larger banks and higher capitalized banks tend, on average, have narrower net interest margins.

Table 3: Determinants of Return on Assets (ROA)

Variable	2010 - 2019		2010 - 2020	
	Coefficient	t-Statistic	Coefficient	t-Statistic
C	0.026	1.338	0.029	1.942***
Equity	0.016	1.037	0.019	1.492
Size	0.001	0.545	0.001	0.616
Expense	-0.039	-9.911*	-0.038	-9.011*
Bonds	-0.004	-2.030**	-0.003	-1.612
Diversification	0.007	1.589	0.004	1.189
Provisions	-0.362	-5.196*	-0.339	-7.439*
GDP	0.219	8.215*	0.106	10.234*
Adjusted R-Squared	0.864			
F-Statistic	118.412*		184.377*	
D-W Statistic	2.003		2.009	

*, **, *** indicate significance at the 99%, 95%, and 90% levels.

Table 4: Determinants of Net Interest Margin (NIM)

Variable	2010 - 2019		2010 - 2020	
	Coefficient	t-Statistic	Coefficient	t-Statistic
C	0.085	4.814 [*]	0.078	5.240 [*]
Equity	-0.024	-2.044 ^{**}	-0.023	-2.180 ^{**}
Size	-0.002	-2.715 [*]	-0.002	-2.717 [*]
Expense	-0.009	-7.241 [*]	-0.008	-6.775 [*]
Bonds	-0.021	-8.153 [*]	-0.018	-8.226 [*]
Diversification	-0.012	-7.270 [*]	-0.012	-7.427 [*]
Provisions	0.031	1.824 ^{***}	0.052	3.501 [*]
GDP	0.109	2.856 [*]	0.062	6.096 [*]
Adjusted R-Squared	0.584		0.559	
F-Statistic	26.873 [*]		26.816 [*]	
D-W Statistic	1.866		1.815	

*, **,*** indicate significance at the 99%, 95%, and 90% levels.

6. Bank expenses (operating expenses / interest income – interest expense) are significant and negative in their impact on return on assets (Table 3). It is interesting to note that the impact of bank expenses on net interest margin is also negative and (Table 4). This implies that banks do not pass-on the “higher” expenses to their customers by widening their cost of financial intermediation.
7. Bank investment in government securities (bonds) impacts bank performance (ROA) negatively and significantly (Table 3). This is expected given the lower interest income on these securities. However, it is informative to note that for the period 2010-2020, the coefficient of this variable become insignificant. Naturally, this is due to the sudden decrease in the profitability of all banks in 2020. In addition, it is interesting to note that bank investment in government securities has a negative and significant impact on net interest margin (Table 4). This indicates that the “lower” risk of the portfolio of some banks, as a result of their investments in government securities, is passed-on, at least partly, to their customers, in the form of lower cost of financial intermediation.
8. Bank diversification (net commission income / (interest income – interest expense) has no impact no impact on bank performance (ROA). However, diversification has a negative and significant impact on net interest margin (Table 4). This indicates that some of the benefits that banks realize from the diversification level of their assets are passed-on, at least partly, to their customers, in the form of lower cost of financial intermediation.
9. As expected, loan loss provisions impact bank profitability in a negative and significant manner. The coefficients of this variable during the periods 2010-2019 and 2010-2020 are equal to -0.362 and -0.339 respectively (Table 3). On average, the cost of loan loss provisions are passed-on, at least partly, to bank customers in the form of wider costs of financial intermediation (Table 4).
10. The impact of real growth (GDP) on bank profitability is positive and significant. However, given the sudden decrease in the return on assets in 2020, it is interesting to note that the coefficient of this sign for the period 2010-2020 (+0.106) is much lower than in the period 2010-2019 (+ 0.219). However, the positive impact of economic growth on the performance of banks is not passed-on, even partly, to bank customers in the form of narrower cost of financial intermediation (Table 4).

4. SUMMARY AND CONCLUSIONS

In economic terms, COVID-19 has impacted the demand and supply sides of the affected economies. The virus has also dealt a serious blow to stock markets and banks across the globe. Within this context, this paper has looked at the performance of the Jordanian banking sector in two measures (return on assets and net interest margin).

On average, while most of the empirical results are expected, they are encouraging. First, the overall mean return on bank assets has collapsed from 1.43 percent in 2019 to 0.74 percent in 2020. However, what is encouraging is the fact that this decrease in profitability was the result of the equally increase in loan loss provisions. Indeed, loan loss provisions to total credit facilities increased from 0.76 percent to 1.92 percent in 2020.

As far as the determinants of bank performance are concerned, the results are similar to the international literature. However, the interesting finding is related to loan loss provisions. This measure impacts bank profitability in a negative and significant manner. The coefficients of loan loss provision during 2010-2019 and 2010-2020 are equal to -0.362 and -0.339 respectively. This “expense”, however, is passed-on, at least partly, to bank customers in the form of wider costs of financial intermediation (NIM). Once the world (and Jordan) is free of COVID-19, the cost of financial intermediation is expected to narrow.

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