"Determinants of banks' profitability – the case of Jordan"

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Ali Sulieman Alshatti (Jordan)

Determinants of banks' profitability — the case of Jordan

Abstract

This paper seeks at investigating the critical determinants that affected the profitability of the commercial banks in Jordan by applying a balanced panel data set of these banks. So that it seeks to identify the significant bank-specific variables, by comprising 130 observations of thirteen banks over the years (2005-2014). A measurement of banks' profitability is the return on assets (ROA) and the return on equity (ROE). The results indicate that the variables of capital adequacy, capital and leverage positively effect on the banks' profitability, and the variable of assets quality negatively effects on the banks' profitability.

Results also indicate that rising bank's profitability in Jordan is associated with well-capitalized banks, accompanied by high capital adequacy.

Keywords: banking, profits, profitability measurements.
JEL Classification: G21, F65, G39.

Introduction

Banks are such types of companies, where customers' deposits are posting in liabilities' side and on the other side issuing debt securities posting in the assets part (Fama, 1980). Financial managers mostly direct their efforts to maximize profits in order to grow shareholders' worth and survival. The commercial banks' function has remained as a Focal point in financing economic activities in the different parts of the markets (Munyambonera, 2010). In order to do so they need to remain profitable (Ongore and Kusa, 2013). The dynamic financial system enhances banks' profitability by raising the amount of money available for investment, and at the same time improving the quality of services provided for the customers (Saona, 2011). This should lead to protect banks, and as such high profits could achieve financial stability (Olweny and Shipho, 2011).

The factors that determine the banks' profit are divided into internal and external determinants. This research will investigate the internal factors, which are influenced by particular decisions and policies of the banks, represented in differences in banks operating results, including profitability.

Problem statement. This research seeks to empirically explore the variables that determine the banks' profitability in Jordan during the study period (2005-2014). The researcher attempts to test the theories relating to profitability determinants.

In his effort to achieve the study objective, the researcher has formulated the following questions:

Does the assets size determine the banks' profitability?
Does the assets structure determine the banks' profitability?

Does the assets quality determine the banks' profitability?
Does the capital adequacy determine the banks' profitability?
Does the capitalization determine the banks' profitability?
Does the liquidity determine the banks' profitability?
Does the financial structure determine the banks' profitability?
Does the leverage determine the banks' profitability?

Research objectives. This research attempts to identify the factors that determine banks' profitability in Jordan, by investigating the effect of each one of them on profitability, mainly (assets size, assets structure, assets quality, capital adequacy, capitalization, liquidity, financial structure, leverage).

Research arrangement. The research is arranged as follows. Section one discusses the literature review. Section two depicts the research methodology. Section three presents the research findings. Final section provides the research conclusion and summary.

1. Literature review

1.1. Theoretical literature. This study tries to examine some theories related to determinants of banks' profitability, including the signaling theory, risk-return hypothesis, and relative efficiency hypothesis.

Signaling theory states that, bank management sends distinctive signals that the future expectancy is promising by increasing capital (Berger, 1995; and Trujillo-Ponce, 2012).

So that Ommeren (2011) indicated that a decrease in leverage ratio means that banks performance is better than their rivals who cannot enhance their equity without further decreasing in their profits.

Risk-return hypothesis predicts that the relationship between capital and profitability will be negative (Dietrich and Wanzenrid, 2009; Ommeren, 2011; Saona, 2011; Sharma and Gounder, 2012).

Ali Sulieman Alshatti, Department of Banking and Finance, Philadelphia University, Jordan.

The relative efficiency hypothesis indicates that the larger banks will be more profitable than smaller ones since they are more efficient, and this superior efficiency is considered rather than of any conspiracy (Clarke et al., 1986). This impact of bank size also interferes with the notion that large banks can get advantages from economies of scale (e.g. Baumol, 1982).

1.2. Empirical review. The researcher reviewed some studies related to banks' profitability.

McDonald (1999) found that lagged profitability affects current profit, and industry concentration positively affects firm profit margins.

Chirwa (2003) found that concentration positively determines performance.

Hassan and Bashir (2003) pointed out the existence of a positive effect of the macroeconomic environment and the regulatory tax factors and a negative impact of the banking system size on the banks profitability.

Holden and El-bannany's (2004) results show that, there is a positive relationship between the number of automated teller machines installed by a bank and bank profitability.

Goddard et al. (2005) found a negative impact of size and firm's gearing on profitability, but a positive impact of market share and liquidity on profitability.

Bodla and Verma (2006) found that variables of non-interest income, operating expenses, provision and contingencies and spread have an effect on net income.

Atasoy (2007) indicated that there is a positive relationship between the equity ratio and total assets and inflation rate on profitability (ROA) and a negative effect of concentration ratio in the banking sector, and ratios of fixed assets on profitability.

Kader, Asarpota and Al-Maghaireh (2007) showed that Islamic banks are relatively more profitable than those conventional ones.

Sufian and Chong (2008) suggested that banks' size, credit risk and inflation have a negative impact on bank profitability, but capitalization has a positive impact.

Alexiou and Sofoklis (2009) suggested that most of the internal determinants impact on bank profitability.

Ben Khediri and Ben-Khedhiri (2009) indicated to the existence of a positively relationship between capitalizations, inflation and management efficiency with profitability, and also a negative relationship between banks' operational efficiency and profitability.

Dietrich and Wanzenried (2009) found that the effective tax rate and the market concentration ratios have a negative effect on profitability, and there is a positive relationship between the growths of GDP factor and the bank profitability.

Sayilgan and Yildirim (2009) said that the capital adequacy and improving budget balance positively effect on profitability, and there is a negative effect of growing off-balance sheet and inflation on profitability.

Srairi (2009) documented that ratio of credit risk as proxy, displays a positive sign for Islamic banks and negative sign for conventional banks as a result of high loan losses provisions and default costs in conventional banks, and the financial risk (total liabilities/total assets) and economies of scale increase the profitability of Islamic banks.

Ben Khediri et al. (2010) showed that higher economic growth, inflation and bank size lead to increase profitability, while credit risk and operating efficiency decrease it.

Bhayani (2010) found that liquidity, the firm age, interest rate and inflation rate have a dynamic role in determining the profitability.

Lee et al. (2010) showed that profitability is positively affected by some variables such as the quantity of the obtained products, the financial experts' efficiency, and the consumers' satisfaction.

Liua and Wilson (2010) found that the profitability is affected by variables of market concentration, (GDP) growth and the improvements in the stock market.

Nunes et al. (2010) found that profitability is impacted by specific determinants in Portuguese service SMEs.

Alper and Anbar's (2011) results showed that variables of asset size and non-interest income positively affect on bank profitability, but variables of credit portfolio size and loans under follow-up negatively effect on bank profitability.

Mirzaei, A. and Mirzaei, Z. (2011) found that liquidity, capital and efficiency determine profitability. Off-balance-sheet activities reduce bank profits and the Middle Eastern banks don't seem to anticipate inflation, meaning that the influence of inflation is negative for the Middle East at least for the period under consideration.

Javaid et al. (2011) found that profitability is impacted by equity and Deposits variables.

Noor and Ahmad (2011) demonstrated a close relationship between monetary factors in determining Islamic banks profitability.

Ramadan et al. (2011) showed that banks which are well-capitalized, with high lending ratios and minimum credit risk lead to higher bank profitability.

Staikouras and Wood (2004) found that bank profitability is positively affected by the variables of concentration and market share.

Ahmad et al. (2012) denoted that Cost, EQAS and LOSRES effect negatively on profitability.

Ćurak et al. (2012) concluded that the profitability is impacted by determinants as solvency risk, liquidity risk, economic growth, banking system reform and concentration.

Dave, A.R. (2012) suggested that TASR and CRVS optimized the profitability of the enterprise.

Obamuyi (2013) indicated that capital, interest income and efficient management of expenses lead to higher profitability in Nigeria.

Petria et al. (2013) found that the profitability is positively affected by Credit and liquidity risk, management of efficiency competition and the economic growth.

Ponce (2013) concluded that bank profitability is related to a high leverage ratio, increased percent of deposits and good efficiency.

Vu and Nahm's (2013) findings showed that a larger size and better management ability lead to increase profitability, and low quality of assets and too high level of capitalization contribute to decrease it.

Al-Jafari and Alchami's (2014) empirical results revealed that the internal variables of liquidity risk, credit risk, bank size, and management efficiency effect on bank profitability, and there is no effect of concentration ratio on bank profitability.

Albulescu, C.T. (2014) discovered that non-performing loans and the non-interest expenses negatively affect on banks' profitability. But the interest rate margins positively affect the banks' profitability.

Ferrouhi (2014) found that banks' profitability is positively influenced by banks' size, foreign direct investments, and the recognition of the financial squeeze, while it is negatively influenced by the external part of total liabilities and unemployment rate.

Krishnan and Sukar (2014) found that the most significant determinant of bank capital is bank size,

with smaller size banks holding more capital relative to their risk adjusted assets.

Vătavu (2014) indicated that profitability is negatively influenced by tangibility, business risk, the level of taxation, high levels of liquidity, periods of unstable economic conditions, and the current financial crisis.

Zhang and Daly (2014) found that banks with lower credit risk, which are well capitalized, are more profitable, while banks with higher expense preferences exert a negative impact on bank performance. Their results also suggest that greater economic integration through increased trade and capital flows coincides with an increase in bank profitability.

Alalaya and Al Khattab (2015) concluded that Assets logarithm of banks had a significant negative relationship with ROA, whereas ROE had a positive and significant relationship, TD/TA had a positive effect, GDP had a negative impact, GDP and per capita inflation rate were found to be negatively signed.

Căpraru and Ihnatov (2015) found that banks' profitability is negatively influenced by the cost to income ratio, banks' size, and credit risk and market concentration.

1.3. Research features. This research tries to add improvements on the existing studies, through investigating the determinants of banks' profitability in Jordan, by using an updated published data on these banks. However, the researcher considers the effect of the internal factors and excludes the other external factors, so as to identify the precise effect of these bank-specific variables on profitability.

1.4. Jordan commercial banks. The commercial banks in Jordan composed of 13 banks, as follows:

Table 1. Commercial banks in Jordan

Number	Name	Number	Name
1	The Housing bank	8	Capital Bank
2	The Arab Bank	9	Union Bank
3	The National Bank	10	SocieteGeneraleBanque
4	Jordan Kuwait Bank	11	ABC Bank
5	Bank of Jordan	12	Jordan Investment Bank
6	Cairo Amman Bank	13	Jordan Commercial Bank
7	Investment Bank		

1.5. Research hypothesis. The research hypotheses have been formulated as follow:

1. Assets size determines banks' profitability in Jordan.
2. Assets structure determines banks' profitability in Jordan.
3. Assets quality determines banks' profitability in Jordan.

4. Capital adequacy determines banks' profitability in Jordan.
5. Capitalization determines banks' profitability in Jordan.
6. Financial structure determines banks' profitability in Jordan.
7. Liquidity determines banks' profitability in Jordan.
8. Leverage determines banks' profitability in Jordan.

2. Research methodology

2.1. Data. In order to achieve the research objectives in investigating the banks' profitability determinants in Jordan during the period (2005-2014) by using some statistical techniques, the study is based on the annual financial reports about commercial banks in Jordan, published by Amman Stock Market and by banks themselves.

2.2. Research model. The researcher used the following two equations to examine the banks' profitability determinants, as follows:

$$Y_1 = a_0 + a_1x_1 + a_2x_2 + a_3x_3 + a_4x_4 + a_5x_5 + a_6x_6 + a_7x_7 + a_8x_8, \tag{1}$$

$$Y_2 = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8. \tag{2}$$

The 1st equation examines the determinants of the banks' profitability by using ROA as a measure of banks' profitability.

The 2nd equation examines the determinants of the banks' profitability by using ROE as a measure of banks' profitability.

2.3. The research variables. The following variables represent the research independent variables:

x_1: Assets size. x_2: assets structure. x_3: Assets quality. x_4: Capital adequacy. x_5: Capitalization. x_6: Financial structure. x_7: Liquidity. x_8: Leverage. Y_1, Y_2 represent the two dependent variables (ROA, ROE) respectively. $(a_1 - a_8)$ are the coefficient of the 1st model variables. $(b_1 - b_8)$ are the coefficient of the 2nd model variables.

Table 2. Research variables definition

Variables	Description	Measurement
ROA	How does a bank realize profits by well utilizing of its assets?	Profits/total assets
ROE	Measures the success of a business in realizing satisfactory return on capital invested.	Profits/capital employed
Liquidity LQD	The ratio of liquid (cash and marketable securities) to total assets	Liquid assets/total assets
Capitalization	The equity to total assets ratio	Equity/total assets (%)
Assets size	Using the banks total assets as a proxy for bank size	(Log. TA)
Capital adequacy	Is a measure of the amount of bank's core capital expressed as a percentage of its risk-weighted asset (Wikipedia)	Capital funds /risk weighted assets
Leverage LEV	How much companies rely on debt more than equity in financing their operations.	Debt/equity long-term debt divided by capital equity
Asset structure	The relative magnitudes of balance sheet items	Total loans/total assets (%)
Asset quality	The credit risk associated with assets	Loan loss provisions/net loans (%)
Financial structure	How the company finances its operations by using sources of debt and equity.	Customer deposits/total liabilities (%)

2.4. Data analysis. The researcher uses the descriptive and econometrics analysis approach in examining the determinants of banks' profitability, using the multiple regression method, by applying the (E-views) program on the cross sectional data relating to the profitability measurements and profitability determinants variables, and also in investigating the influence of each one of the determinants on the banks' profitability in Jordan.

2.5. Analysis section. *2.5.1. Descriptive analysis.*

Table 3. Descriptive analysis output

	ROA	ROE	Assets size	Assets quality	Assets structure	Capital adequacy	Capitalization	Financial structure	Leverage	Liquidity
Mean	0.015166	0.115989	0.211611	0.174975	56.38839	0.149809	0.139713	0.745023	0.857277	0.175096
Median	0.014600	0.100750	0.210612	0.149694	0.736900	0.145100	0.136063	0.744262	0.855300	0.149050
Maximum	0.049700	0.942100	0.239760	1.490837	7236.000	0.320600	0.225634	0.899614	0.923000	0.999000
Minimum	-0.001700	-0.014500	0.189080	-0.955244	0.541500	0.106700	0.073046	0.558706	0.780400	0.097300
Std. dev.	0.006935	0.090824	0.010961	0.253039	634.5749	0.034776	0.028971	0.084002	0.029480	0.144325
Observations	130	130	130	130	130	130	130	130	130	130

From the analysis output, the bank's profitability indicators, the mean of ROA related to the Jordanian commercial banks is less than the mean of ROE of these banks. On average, assets structure gets the highest value (56.39), and then leverage with a high ratio equals 85.73%, and financial structure with ratio of 74.5%, but the lowest one is capitalization, which equals 13.97%.

2.5.2. Multicollinearity test.

Table 4. The correlation matrix

	Assets quality	Assets size	Assets structure	Capital adequacy	Capitalization	Financial structure	Leverage	Liquidity
Assets quality	1.000000	0.150116	-0.066655	0.071514	0.025450	0.040735	-0.055757	-0.045637
Assets size	0.150116	1.000000	0.216676	0.538651	-0.137814	0.147900	0.074430	-0.058543
Assets structure	-0.066655	0.216676	1.000000	0.031002	0.053775	-0.056520	-0.043963	-0.010834
Capital adequacy	0.071514	0.538651	0.031002	1.000000	-0.058371	0.221191	-0.186939	-0.120452
Capitalization	0.025450	-0.137814	0.053775	-0.058371	1.000000	-0.072282	-0.863027	-0.096465
Financial structure	0.040735	0.147900	-0.056520	0.221191	-0.072282	1.000000	0.004211	-0.074407
Leverage_	-0.055757	0.074430	-0.043963	-0.186939	-0.863027	0.004211	1.000000	0.094711
LIQUIDITY	-0.045637	-0.058543	-0.010834	-0.120452	-0.096465	-0.074407	0.094711	1.000000

The correlation matrix output insures that absent of multicollinearity between the independent variables, except the correlation between leverage ratio and capitalization, and this exception will not affect the result regarding the number of independent variables.

2.5.3. The research models suitability. To examine the research models suitability, by using the F-statistic test, to confirm if the two models are proper to explore the effect of the independent variables on each one of the two dependent variables.

The decision rule is as follows:

If Sig. F < 5%, that means the models are suitable.

Table 5. F-statistic outputs

Model No.	F-statistic value	Sig.	The decision
1st model	2.25992	0.027510	suitable
2nd model	2.03005	0.005233	suitable

From the table above, the Sig. F for the 1st model equals to 0.02751, and for the 2nd model the Sig. F equals to 0.005233, so both models are appropriate, and this means that the independent variables are proper determinants of the banks' profitability.

2.5.4. The two models coefficients testing. To examine the importance of each independent variable in achieving the banks' profitability in Jordan, we need to identify the coefficient of each one of these independent variables and its significant value in the two research models.

Table 6. The 1st model coefficients

Var.	Coefficient	Significant
x_1	-0.093155	0.2915
x_2	0.000548	0.7865
x_3	-0.007519	0.0068
x_4	0.047755	0.0002
x_5	0.054236	0.0075
x_6	-0.002665	0.6137
x_7	0.027363	0.0119
x_8	-7.02E-05	0.9903
Constant	-0.003458	0.6166

Based on the 1st model coefficients output, the 1st model equation is as follows:

Y_1= -0.003458 – 0.093155x_1 + 0.000548x_2 – – 0.007519x_3 + 0.047755x_4 + 0.054236x_5 – – 0.002665x_6 + 0.027363x_7 – 0.000527x_8.

From the equation above, the researcher concluded that:

1. The determinants of Capital adequacy, Capitalization and Leverage positively impact on the banks' profitability in Jordan.
2. The Assets quality determinant has a negative influence on the banks' profitability in Jordan.
3. The determinants of Assets size, Assets structure, Financial structure and Liquidity don't have a significant effect on the banks' profitability in Jordan.

Table 7. The 2nd model coefficients output

Var.	Coefficients	Significant
x_1	-0.668661	0.2377
x_2	1.09E-07	0.9273
x_3	-0.067849	0.0066
x_4	0.193661	0.1020
x_5	0.373176	0.0485
x_6	0.057438	0.4741
x_7	0.296848	0.0183
x_8	-0.027236	0.5510
Constant	-0.176006	0.7759

Based on the 2nd model coefficients output, the 2nd model equation as follows:

Y_2= -0.176006 – 0.668661x_1 + 0.00109x_2 – – 0.067849x_3 + 0.193661x_4 + 0.373176x_5 – – 0.057438x_6 + 0.296848x_7 – 0.027236x_8.

From the equation above, the researcher concluded that:

1. The determinants of Capitalization and Leverage positively impact on the banks' profitability in Jordan.
2. The Assets quality determinant affects negatively on the banks' profitability in Jordan.
3. The determinants of Assets size, Assets structure, Capital adequacy, Financial structure and Liquidity don't have an influence on the banks' profitability in Jordan.

3. Findings

The research seeks to identify the determinants of banks' profitability in Jordan, by identifying these determinants and the banks' profitability measurements, during the years (2005-2014), and it examines the effect of each one of these determinants on the banks' profitability in Jordan, according to the two profitability measurements (ROA, ROE).

Based on the research results, the researcher discovered that, the determinants of Capital adequacy, Capitalization and Leverage have a positive impact on the banks' profitability in Jordan as measured by ROA, and there is a positive effect of Capitalization and Leverage when measured by ROE.

This conclusion corresponds with Sayilgan and Yildirim (2009) who found that capital adequacy positively impacts on profitability, and Albulescu (2015), discovered that the capitalization positively affects the banks' profitability, and Sufian and Chong (2008) found that capitalization positively impacts on banks' profitability, and Ben Khediri and Ben-Khedhiri (2009) suggested that capitalization enhances bank profitability.

On the other hand this result is on contrary with Ferrouhi (2014) where his results showed that Banks' performance depends negatively on contribution of capital in financing their total assets.

The research results also showed that the Assets quality determinant negatively impacts on the banks' profitability in Jordan when using both measurements of profitability.

Conclusion

The research objective is to empirically investigate the factors that determine the banks' profitability in Jordan, considering the internal variables (assets size, assets structure, assets quality, capital adequacy, capitalization, financial structure, leverage, and liquidity), where it was neutralizing impact of other external factors, and concentrating on the impact of factors related to the bank directly.

The researcher reviewed a number of theoretical and previous empirical studies related to the determinants of banks' profitability, including the signaling theory, risk-return hypothesis, and relative efficiency hypothesis. Two research regression models were implied in the research, using a panel data of thirteen banks in Jordan during the years 2005-2014.

The research findings emphasize some of the previous studies, whereas the determinants of Capital adequacy, Capitalization and Leverage positively effect on the banks' profitability in Jordan as measured by ROA, and positively affect on Capitalization and Leverage when measured by ROE, and the assets quality variable negatively affects on both measures of profitability, and there is no role of the other independent variables in determining the banks' profitability in Jordan.

The researcher believes that the negative effect of the assets quality variable is due to the structure of the banks' assets, and this result requires banks to reconsider their assets quality so as to assist in the reduction of the credit risk associated with them.

Finally, the researcher recommends that the leverage ratio needs to be increased to the highest possible level, whereas the higher debt ratio (leverage) helps in rising profitability, provided that the banks being able to reinvest these funds at interest rates higher than the interest paid to depositors by the banks.

The central banks and bank regulators should maintain insure that banks carefully react with the minimum capital adequacy ratios specified to protect its financial strength and stability. And although the research results haven't shown that effect of liquidity on the banks' profitability in Jordan, banks need to achieve an equipoise between liquidity and profitability, as it is theoretically known an increase in liquidity negatively affects profitability as it is measured by the return on assets (ROA).

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