

Commercial Banks Profitability and Stock Market Developments

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Abstract

The study examines whether the market capitalization and trading volume could be the determinants of the commercial banks profitability in Jordan and then to evaluate which performance measure between returns on assets (ROA) and returns on equity (ROE) is better to be used in measuring the profitability of those banks. Two Multiple regression models are used to examine these relationships for 13 Jordanian commercial banks within 2009-2013. It is found that market capitalization variable has negative and significant influence on ROA, but it has significant positive influence on ROE; trading volume has strongly significant and positive influence on both ROE and ROA, suggesting that trading volume is the determinant for the profitability; and finally, ROE is a more superior measure of profitability to ROA. Our results might assist all interested parties in indicating the relationship boundaries between stock market developments and banks' profitability then may represent an explanation for financial incentives and barriers in financing nonfinancial industries which will be affected by the changes in bank competition in stock market.

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Keywords: Jordanian commercial banks, ROA, ROE, market capitalization and trading volume

1 Introduction

Profitability has been considered as a performance measure for the banking industry in different economies. Usually, return on equity (ROE) and return on assets (ROA) ratios, as profitability indicators, are employed widely to determine banks' performance in

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empirical studies. ROE and ROA indicators are used to determine bank profitability, evaluate the performance of banking industry and predict the market structure trend. Developments such as market capitalization and trading volume in a stock market may influence this profitability.

Recently, empirical research mainly focused on banking system performance of US, Western and developed countries, while fewer studies examined this performance in developing economies [26]. As stated by [22] and up till now, studies on banking industry performance and efficiency in the Arab world are rare in extant literature. Hence assessing more studies on bank industry profitability is needed to enrich the literature. Few studies on the banks' financial performance have been conducted in Jordan [3]; [4]; [2] among other few studies). None of them examined how the Jordanians' bank performance can be affected by stock market developments.

The influence of market capitalization and trading volume as stock market developments on banks' profitability has been investigated for Jordan among 80 and 150 developed and developing countries for period 1988-1995 and 1990s by [12] and [14] respectively in comprehensive studies. Our study expands the literature to examine the commercial banks performance that has not been well examined in Jordan as single country and for the period 2009-2013 employing ROE and ROA as measures of Jordanian commercial banks profitability affected by market capitalization and trading volume.

The study tries to answer questions of, which stock market development between market capitalizations and trading volume could be the determinant for the commercial banks' profitability in Jordan? Accordingly, is ROA superior to ROE in measuring the profitability of the commercial banks in Jordan? The study aims to examine the selected stock market developments that could be the determinant of the profitability of the commercial banks in Jordan; and then to evaluate which performance measure (ROE or ROA) is better to be used in measuring the profitability of the commercial banks in Jordan.

As we believe, measuring this relationship contributes to the current and potential domestic and foreign investors in addition to the other interested parties in evaluating the banks' performance and profitability. Our evidence indicates boundaries of the relationship between stock market developments and banks' profitability then may represent an explanation for financial incentives and barriers in financing nonfinancial industries which will be affected by the changes in bank competition in stock market. Therefore, regulation that directly affects the market structure of the banking industry will also have effects, perhaps undesirable, down the line in nonfinancial product markets. Additionally, since Jordanian banking industry performs a key role in financing non-financial industries to push them forward the highest economic growth rates [2], results of our examination will contribute to those industries. These considerations point to novel directions of analysis of the impact of banking market structure on social welfare. Therefore, this study provides evidence about the influence of stock market developments on the commercial bank profitability in Jordan.

2 Prior Research and Theoretical Approach

The important function of bank management is to maximize operating profits and bank value in a stock market. The market power of commercial banks provides a chance to keep relationships with their older clients, who grow larger, at the expense of potential

new entrants [9] and to attract new and more clients in turn increase operations and their profits.

2.1 Market Capitalization

Since rich countries have the tendency to create large stock markets, some developing countries such as Jordan establish well developed stock markets. This according to [13] who examined the ratio of the stock market capitalization to total assets and found it significantly positively related to banks' profitability. This result has been supported by [6] who examined the financial structure as stock market capitalization divided by total assets or GDP and found it to be positively related to ROA in Tunisian banks for the period 1980-2000.

[14] examined financial structure of 150 countries for the period 1990-1995. To measure market size, they used market capitalization as a share of GDP. This ratio rises when one moves from the poorest quartile of countries across to the highest quartile of countries. They found that GDP per capita is significantly related to market capitalization.

[15] investigated markets specific profitability determinants for Greek commercial banks. The findings showed the imperfect competition of Greek banks where both concentration ratios and market shares as market specific variables were found to have a positive but insignificant impact on profitability measures. Since [20] concluded positive impact of market share on banks' ROE, [18] investigated macroeconomic variables as stock market development and found it to be positively related to banks' profitability.

ROE was investigated by [1] and found it to be positively influenced by stock market capitalization to GDP ratio covering ten developed countries for the period 1981-2003. [23] examined both domestic and foreign banks' profitability and found it to be significantly influenced by the financial market structure as stock market capitalization to GDP. [24] supported this result by finding a positive and significant impact of stock market capitalization to GDP ratio on ROA in AGCC countries. [25] investigated Korean banks to indicate the external determinant that influenced banks profitability (ROE and ROA). He found that the stock market capitalization to GDP ratio was positively and significantly related to bank profitability.

Consistent with the previous studies, it is expected for this study that banks' market capitalization will positively influence the profitability of Jordanian commercial banks. This variable will be measured by stock market capitalization divided by GDP of a bank in a year.

2.2 Trading Volume

The total value of stocks traded divided by GDP (TV/GDP) is a representative for stock market activity. It complements the market capitalization by determining how much of bank's market size is really traded. Jordan has stock market activity at 0.12 percent of GDP compared with some developing countries such as Bolivia, Guatemala, Nepal, Nigeria, Paraguay and Zambia that have stock market activity at 0.2 percent of GDP or less, and among the developed countries such as Austria, Greece, and Italy that have trading volume at less than 10 percent of GDP and less than Hong Kong and Malaysia which have stock market activity at 1.08 and 1.14 percent of GDP respectively [13].

Research on quality used profitability in addition to growth as a firm performance measure. This is according to [10] who examined the association between quality and

growth as well as profitability and market value and found that growth drove both profitability and market value. [28] and [11] examined firm performance by using ROE and ROA respectively. They found significant association between market value and growth and significant and strong association between market value and profitability. The ratio of the total value of stocks traded divided by GDP (TV/GDP), as an indicator of stock market activity, has been tested by [13] and concluded positive and significant signs with bank profitability.

To measure trading regarding the economy size, stock market liquidity and stock market activity, [14] used total value traded as a share of GDP (TV/ GDP). This ratio measures the value of stock transactions relative to economy size and it is frequently employed to evaluate market liquidity because it measures trading regarding economic activity [14]. A small active market may have low total value traded / GDP. This ratio rises if a bank moves from countries' poorest quartile to highest one. The correlation between GDP per capita and total value traded as a share of GDP is about 0.4 [14].

Consistent with the previous studies, it is expected for this study that banks' trading volume will positively influence the profitability of the commercial banks in Jordan. This variable will be measured by total value of stocks traded divided by GDP of a bank in a year.

2.3 Profitability measures ROA and ROE

ROA reflects the ability of a bank's management to generate profits from the bank's assets. ROE indicates the return to shareholders equity and it can be calculated by multiplying ROA by the total assets to equity ratio. The latter is used to measure financial leverage. Banks having lower leverage (higher equity) will produce higher ROA but lower ROE. ROA is considered to be the key ratio for bank profitability evaluation since ROE analysis ignores the greater risks that are associated with the high leverage emerges as the key ratio for the evaluation of bank profitability. Both ROE and ROA are measured as running year averages ([19]; [5]). Many studies on bank profitability ([13]; [17]) showed that conducting a meaningful analysis of bank profitability was possible by using linear models to investigate the impact of various stock market developments on profits.

2.4 Theoretical and Conceptual Framework

Different ways have been used to organize financial institutions. Relying on agency theory, many studies have examined the association between organizational form and differences in frontier efficiency. Stronger incentives have been expected to face firms owned by stockholders to control costs and/or enhance profits compared to mutual organizations where firms' owners are depositors or policyholders [8]. [7] argued that market power and efficient structure theories compete in explaining such positive correlations.

Two hypotheses are included in the market power theory, which are the traditional structure conduct performance and the relative market power hypotheses. The first hypothesis states that higher loan rates and lower deposit rates could be the results of more concentrated markets due to lessened competition. The second hypothesis refers to that pricing and raise profits could be influenced only by large banks with some brand identification. The main difference between the two hypotheses is whether market power proves a market in general or individual banks within a market. [4] pointed that prior

theoretical investigations and empirical studies have consistently linked firm performance, defined by measures of profitability, to market power degree exercised by individual firms.

Accordingly and based on the research questions and objectives, we investigate the following hypotheses:

H1_A: Bank market capitalization influences the profitability measure (ROA) in Jordanian commercial banks.

H1_B: Bank market capitalization influences the profitability measure (ROE) in Jordanian commercial banks.

H2_A: Bank trading volume influences the profitability measure (ROA) in Jordanian commercial banks.

H2_B: Bank trading volume influences the profitability measure (ROE) in Jordanian commercial banks.

H3: Bank profitability measured by ROA is greater than that measured by ROE in Jordanian commercial banks.

The profitability framework for the current study links the profitability measures as ROE and ROA to stock market developments. ROE and ROA are the research dependent variables (DVs) and the stock market developments (market capitalization and trading volume) are the research independent variables (IVs). This study hypothesized the relationship between the research DVs and IVs in three main hypotheses to investigate the impact of the selected stock market developments on the profitability of Jordanian commercial banks for the period 2009-2013.

The hypotheses of the study are grouped as follows:

- H1 and H2 hypothesized the relationship between the stock market developments and commercial banks' profitability in Jordan.
- H3 hypothesized the relevant bank profitability measure among ROE and ROA.

Figure 4.1 illustrates the conceptual framework of this study.

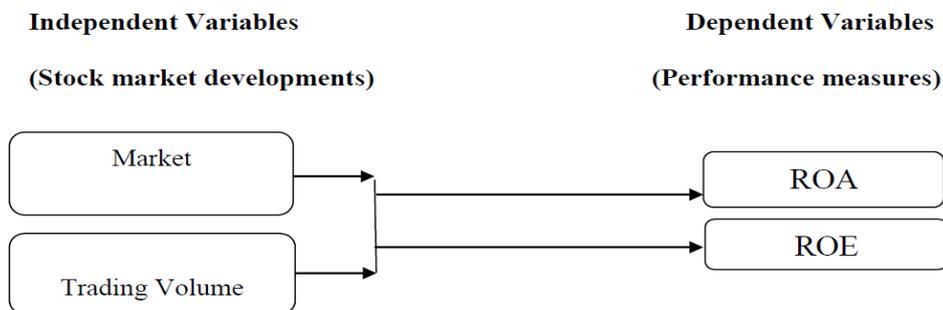


Figure 1: Conceptual framework

3 Research Models, Sample and Data Collection

Following [16] and [21] among others, this study will examine the influence of a stock market developments on Jordanian commercial banks' profitability using ROE and ROA indicators. This study will use two models to measure the hypotheses to indicate the

Jordanian commercial banks' ability to produce their profits within the recent circumstances. To test the hypotheses, the profitability measures (ROE and ROA) will be used as shown below:

1- The general expression of ROA in the form of regression equation is written as follow:
 $ROA = f \{ MCAP/GDP + TV/GDP \}$

where: ROA = return on total assets; MCAP/GDP = market capitalization divided by GDP and TV/GDP = total value of stocks traded divided by GDP.

Hence, the regression model will be rewritten as follow:

$$ROA = \beta_0 + \beta_1 MCAP/GDP + \beta_2 TV/GDP + e$$

where e = errors term.

2- The general expression of ROE in the form of regression equation will be as follow:

$$ROE = f \{ E/TA + SIZE + L/TA + MCAP/GDP + TV/GDP \}$$

where ROE = return on equity.

Hence, the regression model will be rewritten as follow:

$$ROE = \beta_0 + \beta_1 MCAP/GDP + \beta_2 TV/GDP + e$$

Dealing with historical data of ASE listed banks will be the strategy of the current study. the current study is considered to be a quantitative research. Practically, the data about the study's two independent variables and two dependent variables will be extracted from the annual banks' financial statements and ASE database. Regression model will be adopted in this study to examine the relationships among the study's variables. The following subsections will discuss the measurement of the DVs and IVs.

Since the current study's data will be collected from banks' financial statements and ASE database, selecting sample will be according to certain criteria that banks sample must be established and listed in ASE before 2005 and have complete information about the study variables.

The sample of the study includes 13 Jordanian commercial banks which form 93% of banks listed in ASE for the period 2009-2013 (refer to Table 1). The total sample is 65 banks/years (13 banks x 5 years) and the pooled observations in the process will be 260 (65 x 4 variables). The data of the study is secondary in nature. This study will depend on the data published by the 13 Jordanian commercial banks and ASE database. So, the data about the selected financial factors will be gathered from the banks financial statements and the data about the selected stock market developments will be collected from other resources that are available in the ASE database for the period 2009-2013.

The results of regression analysis for the pooled sample will be used in this study to judge (accept/reject) the hypotheses. This will be depended on T test and sign.

4 Findings and Discussion

At the beginning, descriptive statistics (mean, standard deviation, skewness and kurtosis, minimum and maximum) are conducted to state the mean differences among the variables within the observed period. As reported in Table 1, it can be seen that the means for all the variables fall between a minimum 0.0012 (trading volume) and the maximum 12.81 (ROE). However, this table also reported standard deviation values for all the variables. It is observed that the standard deviation falls between a minimum of 0.0033 which belongs to trading volume and maximum of 6.04 which belongs to the profitability indicator ROE.

The results of the regression analysis are reported based on bank profitability measures (ROE and ROA) and the pooled sample as stated in Tables 2. Based on this table, the stock market variables (market capitalization and trading volume) show significant values with ROA in the pooled sample (H1_A: t-test = -1.708, $p < 0.1$ and H2_A: t-test = 3.188, $P < 0.01$ respectively). From this table, it can be seen that market capitalization has negative sign with ROA, while trading volume has positive sign.

Table 1: Descriptive statistics

		ROA	ROE	MCAP	TV
N	Valid	65	65	65	65
	Missing	0	0	0	0
Mean		1.7194	12.8188	.0951	.0012
Std. Deviation		.75934	6.04417	.24844	.00331
Skewness		1.642	1.564	1.434	2.349
Std. Error of Skewness		.297	.297	.297	.297
Kurtosis		5.093	5.084	1.502	3.630
Std. Error of Kurtosis		.586	.586	.586	.586
Minimum		.12	1.01	.00	.00
Maximum		4.98	39.92	1.61	.01

ROA = return on assets; ROE = return on equity; MCAP = stock market capitalization divided by GDP; TV = total value of stocks traded divided by GDP.

From Table 2, it is clear that the stock market variables are significant with ROE in the pooled sample for market capitalization (H1_B: t-test = 1.753, $p < 0.1$) and finally for trading volume (H2_B: t-test = 2.694, $P < 0.01$). From the Table, it can be seen that the market capitalization and trading volume have positive sign with ROE.

Our results indicate that market capitalization variable has a significant negative impact on ROA and a significant positive impact on ROE in the pooled sample. Therefore, H1_A and H1_B will be accepted. These results are consistent with previous studies that concluded positive impact for market capitalization on bank profitability ([14]; [13]; [15]; [18]; [1] ; [23; [6]; [24]; [25]). The results are consistent with the study of [27] in concluding a negative impact for this variable on bank profitability.

Table 2: Regression analysis results:
The relationship among ROE and ROA with IVs

Profitability Indicator	Model Test		Variables Test	MCAP	TV
ROA	.229	3.499	Beta	-.331	.475
			t-test	-1.708	3.188
			Sig.	.093*	.002***
ROE	.336	5.974	Beta	.315	.375
			t-test	1.753	2.694
			Sig.	.085*	.009***

* Significant at $p < 0.10$; ** Significant at $p < 0.05$; *** Significant at $p < 0.01$

MCAP = stock market capitalization divided by GDP;

TV = total value of stocks traded divided by GDP.

Number of observations = 260

The relationship between total values of stocks traded divided by GDP and bank profitability has not been well researched in the literature. Results that are conducted by this study indicate that trading volume shows positive and strongly significant impact on both ROE and ROA in the pooled sample. Therefore, H2_A and H2_B will be accepted. This result is consistent with the few studies that have examined this variable and found it to have a significant impact on bank profitability ([14]; [13]).

Testing our hypotheses will answer the study's first question which requires to indicate which stock market development between market capitalization and trading volume could be the determinant for the commercial banks' profitability in Jordan. Our study has concluded that while both market capitalization and trading volume of a bank are significantly related to its profitability, trading volume shows a stronger significant positive impact on both profitability indicators (ROE and ROA) than market capitalization. This suggests that bank trading volume could be a determinant for commercial banks profitability in Jordan.

Continuously and based on the results, it is clear that the selected stock market variables react more significantly with ROE than ROA. Therefore, H3 will be rejected. Since no study that examined the superiority of the profitability measures (ROE and ROA) in the commercial bank has been found in the literature, as far as our study is concerned, we can conclude that ROA is not superior to ROE as a measure of profitability. Hence, this will answer the study's second question which requires to indicate whether ROA is superior to ROE in measuring the profitability of the commercial banks in Jordan.

5 Conclusions, Limitations and Future Research

We have concluded that some of the stock market variables have influenced the commercial bank profitability in Jordan. Regarding the impact of two stock market developments on the profitability measures in Jordanian banking sector we have concluded that; market capitalization variable has negative and significant influence on ROA, but it has significant positive influence on ROE; trading volume has strongly significant and positive influence on both ROE and ROA, suggesting that trading volume is the determinant for the commercial banks profitability; and finally, we have also concluded that the ROE is a more superior measure of profitability to ROA.

In conducting our study, we have found some constraints. The number of commercial banks in Jordan is small compared to other countries especially the developed ones. The small number of our sample observations has been treated by the results of pooled sample. Some variables have not been well researched in the literature. This makes it difficult to compare the findings with other studies.

On future research we feel there is a need to employ other profitability measures, in addition to ROE and ROA such as net interest margin (NIM) and return on investment (ROI). Future works also might examine the impact of other indicators on banks' profitability. The number of observations can also be extended to include more years. It will be beneficial if research on commercial bank profitability can provide a comparison across many countries.

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