THE IMPACT OF BANK SIZE ON PROFITABILITY*"AN EMPIRICAL STUDY ON LISTED JORDANIAN COMMERCIAL BANKS"*

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Abstract

This study is aimed to investigate the effect of bank size on its profitability for Jordanian listed commercial banks within different size bank categories. Data for Jordanian commercial banks for the years from 2007 up to 2012 were used to classify banks for three categories according to their asset size, in respect to their Total Assets. Profitability was measured by Return on Equity (ROE) as dependent variables. The study is constructed to reveal if there is a statistical difference in profitability according to size. Simple regression was applied by using dummy variables for categories to proxy asset size. The results of the study revealed a significance difference in the profitability of these different sized banks.

Keywords: Bank Size, Profitability, Return on Equity, Jordan, Commercial Banks.

Introduction

Banking sector in all countries has an important effect on economy movements, due to the essential role played by banks for improvement of the overall economic activities, including out its mediation and its financial activities that are necessary for the economic growth of any country (Monnin and Jokipii, 2010). Accordingly, bank is defined as a financial institution that invests the money of its clients and investors, and works as a financial broker

between the investors who have a surplus of money (depositors) and the investors who borrow these money to cover their investment needs (borrowers) (Albertazzi and Gambacorta, 2010).

However, banks are considered one of the most important financial entities that invest deposits of investors to gain profit. This profit is calculated as the difference between the interest that banks take from borrowers and the interest that paid to depositors. Furthermore, banks also provides other financial activities to their clients, such as credit services, cashing cheques, issuing letters of credit and letters of guarantee, safety deposit boxes, portfolio management, foreign currency exchange services, trading of commercial papers, bank acceptance and underwriting of financial instruments (Bendi and D'Agnolo, 2008).

In all countries and Jordan is no exception banking sector plays a vital role in economy improvement and stability in order to increase economic growth. Moreover, Banks activities are also highly important in the process of money creation which in turn impacts the payment system. Therefore, banks funds and money support are an important for growth to other industrial and service sectors.

The banking sector of many developing countries, such as Jordan recently has witnessed an important change and many improvements over the last two decades. These improvements highly affected by the growth of banks profitability. For instance, Jordanian banks have benefited from the new advances banking technology and from the growth of investors' numbers particularly those coming from close Arab oil countries.

Interestingly, the Jordanian banking industry has also expanded over the last two decades, this expansion witnessed through an increase in the number of bank branches and in the size of its investments. It is always had been argued that, the smaller the bank size the higher the profitability of bank, this can be justified by many reasons. On one hand the difficulty of large banks to invest their high liquidity in comparison to small and medium sized banks, another reasons that might explain the decrease of profitability for large banks is the huge startup costs for these banks like technological high costs such as computer mainframes which is too expensive software costs that lowers the profitability rates. Research and development costs are also considered another main problem for large banks that might decreases the bank profitability. Furthermore, high political costs are always found in

large banks rather than small ones. All of these reasons could be a major cause for the decrease of profitability ratios for large banks.

Thus, this study is aimed and constructed to extend the accounting literature by investigating the Jordan banks' profitability relative to their size over the period from 2007–2012.Thisperiod is assumed to be adequate and convenient to draw some conclusions about the profitability of Jordanian's banks relative to their size.

Importance of the study

The study importance is stemmed from the importance of the subject that the study discusses and deals with. In addition to revealing important information about banks performance measured by its profitability, the study is also important to overview the relationship between bank size and profitability in emerging market (Jordan).

Literature review

Many previous studies were conducted to investigate the effect of size on profitability. Scholars argued that the size measured by total assets has significant effect on profitability ratio. Studies that have been conducted in recent years in different countries such USA, UK, Asian countries like China, Malaysia, and gulf region, almost all of these studies reached controversial results on how the bank size impacted its profitability. The following discussion overview some of these studies related to our study issue.

Redmond et al. (2007) in their study about the effect of bank size on profitability categorized banks into 5 categories according to their size of assets, the (ROE) ratio is used as a measure of profitability, however, two types of analysis were applied through their study: first; tests are run on the mean of (ROE) for the different bank categories, to capture if there is a statistical difference in profitability for the bank categories under their study. Second, a simple regression was applied using dummy variables to proxy banks asset size; the hypothesis questioned of their study was, if there is a statistical difference in profitability ratio for these different sized banks. The results of tests showed that, there is a negative significant relationship between profitability and the volume of assets.

Banks effectiveness and efficiency represented by profitability also has been argued that profitability is strongly related to total assets.

Kasimodou et al. (2006) in their study when testing the banks effectiveness of UK using the bank size as a key factor categorized UK banks for two types, large and small according to assets volume. The results of their study concluded that, small banks showed higher performance in comparison to large ones. Further, the size of bank was proved to have an effect on profitability besides other factors such as liquidity.

Banks performance and usefulness of investments are always has been evaluated through the trend and pattern of profitability. Murthy (2008) tested banks 'income and profitability in the gulf cooperation council countries (GCC).Data of 78 banks were used for the years 2002 to 2008. The study assumed many factors might affect the profitability results in the gulf region. Bank size was assumed one from the important factors that influence profitability for gulf banks. The size of the total assets was found with a significant effect on banks profitability. Some banks appeared to have high profitability relative to other banks according to some clustered created by the researcher.

Recently, almost all banks were forced to enhance their services and profits due to the high increase in local and international competition between banking markets and due to the changes in banking environment. These challenges that imposed on banks locally and internationally recently considered an important issue in emerging market to reconsider their bank ratios. Spathes (2002) had tested the financial markets through a study conducted to investigate Greek banks, his study focused on the banks asset size effect, he aimed of his study to investigate the effectiveness of large and small Greek banks through investigating (ROE) as a profitability measure and its relationship with some factors classification such as assets volume, liquidity and risk. Data from year1990 up to 1999 were used to discover the success factors of these banks, the results of the study proved that, large banks are more efficient than small ones; small banks are characterized by high capital yield (ROE) while large banks are characterized by high asset yield (ROA).

Many studies also were continued to undertake and examine banks efficiency issue through focusing on assets size as the most important critical factor that effect profitability. Almost all of this research has been carried out in the western countries like Europe and USA. The research about this topic has been small to developing countries. Recently, some effort appeared to cover the efficiency of the financial institutions in developing countries too.

Nevertheless, few of these studies have tested the relationship between profitability and different bank size categories. Halkos and Salamouris (2004) investigated the effect of bank assets on its efficiency, they concluded from their study about Greek banks that, the higher the bank assets the higher the efficiency. Similar results were found by (limam, 1998) in gulf countries that is, a positive relationship between asset size and efficiency, and the same results were found in European banking sectors through a study of Bikker (1999). In contrast, Contradictory results were shown by Darrat and Yousif (2002) in the case of Kuwait, whom found a negative relationship. Furthermore, Leong and Dollar (2002) when investigated the Singaporean banks have highlighted more inefficiencies in the activities of larger and more complexes banks.

The effect of assets size on profitability continued to be controversial issue through accounting literature. In some studies, no conclusive evidence had been found to prove this relationship. Girardone (2004) when investigated the Italian banks did not reached to any conclusive relationship between assets size and profitability for the banks under his study. Similarly, in a study conducted by Isik and Hassan (2002), asset size was found not highly related to technical efficiencies. In Japanese banks, Drake and Hall (2003) showed that, technical efficiency is eroded when size is increased particularly for middle sized banks. The same conclusion was also found by Das (1999) for Indian banks about the size effect when he tested the relationship between assets size and profitability. The results of regression revealed a negative relationship between size and profitability ratios.

In contrast to previously discussed studies, many studies revealed positive relationship between size and profitability beside other factors. Mullineaux (1978) in his study revealed a positive impact for bank's size on profitability. The location of bank was is also found to have positive impact on profitability as Emery (1971) and Vernon (1971) was found. On the other hand, Kwast and Rose (1982), Heggested (1977) and Smirlock (1985) revealed that bank size have little effect on profitability. Regarding the number of branches as a measure of bank size, Hester and Zoellner (1966) did not prove any relationship for this factor with profitability (Al-Jarrah et al. 2010).

In Africa, Naceur (2003) investigated the factors that affect Tunisian banks' profitability over the period 1980-2000. The results of his study showed that, the capital ratio, loans and stock market improvements have a

positive relationship with profitability while the assets size found to have a negative relationship (Al-Jarrah et al. 2010).

Regarding the size effect, many local Jordanian studies have also shown mixed results. Some studies found a positive relationship between size and profitability while others showed negative ones. Haron (2004) proved that, size has no significant effect on profitability measured by ROA. On the other hand, the results that reached by Hassan and Bashir (2003) proved that, size has a negative relationship on profitability. The same result was found by Alkassim (2005) study, whom results shown that, total assets have a negative effect on profitability for Jordanian commercial banks. On the same issue Alrashdan (2002) also investigated the determinants of Jordanian's banks profitability covering the period of 1985-1999. The results of his study revealed that, return on asset (ROA) is positively related to liquidity and total assets while it's negatively related to financial leverage and cost of interest. Finally, the results showed insignificant relation between interest rate risk and ROA (Al-Jarrah et al. 2010).

As a conclusion, mixed different results were founded for the effects of bank size on its profitability.

Banking System in Jordan

Banking sector in Jordan recently has a strong international orientation, witnessed by an increase in the number of banks branches locally and internationally. The banking sector in Jordan represents an important and vital component of Jordan economy as it contributes significantly to it. Since 1990 the average growth in banking industry has been increased approximately to more than 6% yearly, performing from the whole Jordan economy growth which grew on average about 2.5% (CBJ, 2010).

Jordan banking sector is highly vital in supporting the Jordanian economy, almost all Jordanian economic sectors witnessed an extremely abnormal growth and improvements through the last century due to support and help of Jordanian banks (CBJ, 2013). A large proportion of banks deposits and investments are used from these sectors under the encouragement from Jordanian government to achieve long term plans or policies to improve economy.

Establishment of Jordanian banking system goes back to 1927, the British bank was the first bank opened in Jordan, and its main activity was to work as a fiscal agent to the government due to the absence of a central bank

at that time. After the British bank, the Arab Bank opened his first branch in Amman, which became the head office in 1949 after it had its head office in Jerusalem in 1930; the British Bank of the Middle East was next to open its branch in Amman by 1949. The second national Jordanian bank that followed Arab Bank was Jordan National Bank in 1956. In 1960, also another two additional commercial banks were established: Cairo Amman Bank and Bank of Jordan. Due to government financial needs and the increased numbers of commercial banks the Jordanian government established the Central Bank of Jordan (CBJ) in 1964 (CBJ, different annual issues).

By the end of 2012, Jordanian banking system consisted from 26 international and local banks. Although, the banking system in Jordan has maintained acceptable number of banks but it reached high level of technological activities, financial tools, credit services. In addition to previously mentioned 26 banks, there were five other specialized credit institutions, three of them were owned and fully controlled by Jordanian government and another two were jointly owned by the public and private sector (CBJ, 2011). The number of bank branches witnessed a tremendous growth through the last 30 years; looking in depth, in 1986 number of bank branches was 254 branches while in late 2012 it reached 695 branch spread all over Jordan, compromising more than 100% growth in 25 year (CBJ, 2011).

As a part of its role in organizing and reforming the banking industry through CBJ, the government issued a new banking law in 2000 to modernize laws, rules, and regulations in order to regulate the banking work in Jordan (CBJ, 200).The main purpose of the law was to improve and increase the banking industry's efficiency, through enhancing banks' regulations and supervision, and establishing large financial institutions to meet the needs of globalization and intensified competition (Al-Zu'bi and Omet, 2007).

However, before the year 2000 similar to other developing countries, Jordanian banks work was based only on traditional banking activities, namely, the extension of direct credit facilities, as a main source of income. The credit facilities that offered by these banks include short and long term loans especially housing loans, discounted trade bills and personal overdrafts. The issuance of 2000 new law has opened the door for new working environment by widen the banking activities along with new imported

innovations (CBJ, 2001). Generally, the new banking law enabled banks to offer more widely financial services and changed the old traditional bank work to a new concept that is the comprehensive bank, this new concept increased the services to include: agency services, financial consultant, investment portfolio, managing and investing customers money, leasing, dealing with open market operations like dealing in futures, forwards, and derivatives. In addition to that, the new law also allowed banks to establish non-banking financial companies like insurance companies (Al-Zu'bi and Omet, 2007).

Since the turn of the new millennium, a high growth in this sector was witnessed, for example; the consolidated balance sheet of licensed banks was increased more than 300% in size, rising from JD14.15 billion in assets back in 2000 to JD37.69 billion at the end of 2011. With a small Jordanian population of 6.5 million and 26 banks and a total combined 695 branches across the Kingdom, the market is arguably reached its capacity. Nonetheless, the different activities that provided by the banking sector remain relatively immature, and therefore offer a wide range of opportunities for expansion, rendering the sector attractive to new entrants. The removal of restrictions by the Central Bank of Jordan, which prohibited the entry of new banks to the market, brought in a number of new banks; three new banks was entered to the banking system in 2004; the National Bank of Kuwait, Banque Audi, and BLOM Bank (CBJ, 2012).

The year of 2010 also witnessed a new bank entry, the National Bank of Abu Dhabi; the following year also witnessed Al-Rajhi Bank entrance in the market. However, despite of Central Bank permit for new banks entry to the sector, it has made its efforts to encourage the existing banks into consolidation through mergers or acquisitions, by raising the minimum paid-up capital requirement for local banks to JD100 million. Being largely family-owned businesses, particularly with regards the smaller banks, the sector has been resistant to this, and it’s not expected to witness any consolidation in the short to medium-term.

Before the year 2008, the banking industry in Jordan had been enjoying a period of increasing in both wealth and high success. Fuelled by an overall economic boom, our stock market bubble was witnessed which in turn confused many activities such as the real estate sector. In contrast, Jordanian banks also was able to capitalize the rapid needs for many credit activities; large development projects needed an extensive financing

services, jointed big loans, while companies and individuals were alike by taking out loans or personal huge credit to finance more additional investments in the stock market. Credit facilities were increased so rapidly. Over the twelve year period from 2000-2012, the facilities granted for construction sector increased from JD744.9 million to reach JD3, 463.6 million (CBJ, 2011).

The Jordanian government prudent instructions and regulations that placed by the CBJ have enabled the sector to partially overcome the negative expected consequences of the global financial crisis and economic slowdown. This is not to say that the sector escaped them unharmed, but rather that the banks were flexible in both their growth and profitability. The well-capitalized position of the banks, with capital adequacy ratios exceeding the required Basel II ratios by far, as well as strong liquidity positions, due to Central Bank restrictions on the level of lending, meant that the banks had adequate protection against the shocks, sufficiently capitalized, profitable with strong liquidity (CBJ, 2011).

The role of Central Bank (CBJ)

The Central Bank of Jordan (CBJ) is the main governmental body that responsible for regulating and supervising all banks, financial institutions and money market activities. The CBJ has wide ranging powers and autonomy from the central government, and supervises banking system requirements.

The Jordan government started to establish the Central Bank of Jordan in the late of 1950s. Subsequently, the law of CBJ was published in the year 1959, and by the year 1964 the preparation to carry out its duties were finalized to take over the work of Jordan Monetary Committee which established on 1950 (CBJ, 2005).The main objective and responsibilities of CBJ is to: maintain the stability of money in Jordan and preserving the stability of exchanging rate for Jordanian Dinar, companied with enhancing and assuring the increasing of economic growth parallel with governmental public economic policy (CBJ, 2005).

The monetary policy application by the CBJ was tacked two stages, the first stage from 1964-1989 where a direct intervention by the CBJ was dominant. Moreover, the CBJ focused on employing traditional monetary policy tools until the financial crisis in 1980s. The second stage was started by 1990-till now. Due to 1988 financial and monetary crisis, the CBJ in

cooperation with International Monetary Fund (IMF) and World Bank (WB) started in implementing a new Economic Adjustment Program (EAP). This program had affected directly the banking industry by enhancing and increasing the level of competition throughout reducing some regulatory restrictions, which was earlier limited market competition (CBJ, 2005).

Interestingly, by 1989, the CBJ has started a number of new reforms to make the banking activities more secure and competitive, for example; local Jordanian banks paid-up capital was increased up to $ 28.25 million, foreign banks paid-up capital was also increased to reach USD 14.12 million, by the new regulations 80% of required reserves should be hold at the CBJ, no limitations was imposed on the inter-bank foreign exchange market, restrictions on the flow of trade in foreign currency were removed during 1997, and the main restrictions on foreign capital were removed during 1997 (ROSC, 2012).

The total assets of the licensed banks are increased dramatically. For instance, the total assets rose by about $531, 37.82 Million in 2011 compared to $9520.6 Million in 1993. The total deposits and credit facilities of licensed banks were also increased showing a growth of commercial banks in Jordan and the increasing importance of banking sector in the economic development (ROSC, 2012).

Based on above, table 1 shows that the total deposits in Jordanian banks grew by $6964.55 Million in 1993 compared to $34,372.84 Million in 2011. Furthermore, the outstanding balance of credit facilities increased from $3,865.233 million in 1993 to $22,350.19 million in 2011. Increasing the availability of credit for different economic sectors participate in the providing stability and decrease the consequences of the financial crisis (ROSC, 2011).

Table 1 Licensed Banks Assets, Deposits and Credit Facilities

Year	Assets (Millions USD)	Total Deposits (Millions USD)	Credit Facilities (Millions USD)
2008	42013.21	25524.67	18392.46
2009	45059.23	28620.74	18777.25
2010	49312.07	31731.77	20376.47
2011	53137.82	34372.84	22350.19

Source: International Monetary Fund 2012.

Central bank of Jordan has its responsibility to pertain the full compliance of Jordanian commercial banks to local laws, regulations and instructions enacted by the Jordan securities commission and any international requirements'.

However, the central bank of Jordan role also monitors the Jordanian banks from violating the any enacted laws or adopting any discretionary accounting methods that might misleads the accounting information users, and consequently reducing the trust in the whole financial system.

Methodology and hypothesis of the study

This study is constructed to achieve two objectives; the first objective is to test the study hypothesis; if there are any significant differences between the profitability of commercial banks in Jordan with different asset sizes. These sizes are grouped for three categories as shown in table (2)

Table (2) asset categories

A1	Assets above JD 6001 millions
A2	Assets of JD 2001-6000 millions
A3	Assets below JD 2000 millions

Through study **Return on Equity (ROE)** was used as measure for bank profitability of different three established categories. Therefore, the average **ROE** of the relevant A(1…..3) bank is donated as ROE(1….3) (where "1" represents banks with assets above JD 6000 million, "2" represents banks with assets of JD 2001-6000 Millions, and "3" represents banks with assets below JD 2000 millions), as noted in table (2).

Therefore the hypotheses of the study are:

(1) H0: ROE(1….3)- ROE (1….3) = 0

(2) H1: ROE(1….3)- ROE(1….3) ≠ 0

The null hypothesis holds that, there is no significant difference between the ROE of the banks of a different asset size, while the alternate hypothesis holds that there is a statistical difference between the profitability of these different sized banks.

Model and variable discussion

The second goal of the study is to use a regression model to test the effect of the size of the bank on its profitability. Similarly, the **ROE** is used to measure the profitability. It has been argued that, there are numerous factors that might affect banks profitability when comparing the differences

between the profitability of different size banks categories. Ziorklui (1994) mentioned such factors as liquidity when measured by cash on hand relatively to assets; efficiency also was another factor when measured by total assets relative to number of employees. And final factor is, the assets composition if the amount of commercial loans compared to total assets. On the other hand, Wheelock and Wilson (2001), as discussed previously, mentioned another factors such as, the inclusion of operating costs and interest expenses in the model. However, as the aim of this study is on the volume of assets, these other factors, while admittedly relevant, are minimized and the only focus solely will be on the effect of the asset size.

Variables of the study

Profitability

Is the dependent variable of the study and measured by the Return on Equity (ROE), as discussed previously in literature many studies argued that the bank profitability is expected to be positively correlated with assets size of the bank, while other studies concluded that large banks profitability is lower than smaller ones as a result of weak liquidity investment. Large banks tend to maintain high level of liquidity against failure probabilities or liquidity shortage to overcome any insolvency problems, on the contrary small banks tend to invest all its available liquidity to increase returns for growth purposes.

Asset Size

The independent variable of the model is the size of the bank and it's measured by the banks total assets. The size variable is expected to have a negative influence on the probability. That is, as the size of the banks increase it is less likely that they will earn more. Larger banks have the advantage of more access to additional financing sources, but dealing with liquidity problems and diversifying risk is another issue. This is probably due to the fact that larger banks benefit from fail policy plans and are believed to be more likely to survive than smaller banks.

Therefore, in order to focus on the study issue of profitability relative to assets size, dummy variables of assets size are used in the regression model. The equation for **ROE** is as follows, and the variables for this model are presented in table (3):

$$ROE = \alpha + \beta_1 A_1 + \beta_2 A_2 + \beta_3 A_3 + e$$

Table 3: Variables of the study

Variable	Variable Notation	Type	Variable Description
Return on equity	**ROE**	Dependent	Net Income/Equity
Dummy Variables Assets size	**A1**	Independent	Assets above JD 6001 million
	A2	Independent	Assets of JD 2001-6000 million
	A3	Independent	Assets below JD 2000 million

As it was previously mentioned, this study is aimed to examine the relationship between the size of a bank measured by its assets and its assets and is profitability measured by ROE. Therefore, dummy variables (A1…3) were applied in the study model to show this effect. A1 indicates assets size above JD 60001 million (although this variable is excluded to prevent (Multicollinearity).

Therefore, A2 represents assets of JD 2001 – 6000million; A3 represents assets below JD 2000 million, the study analysis with the assumed dummy variables is expected to reveal if there are increasing returns to scale, indicating that banks profitability will increase as the bank size increase. Constant return relative to size would show if the size of the bank the bank has no effect on ROE. The decreased returns to according to size would therefore indicate that banks become less profitable as their assets increase. Therefore our hypothesis is that: the larger the bank size, the more profitable will be the bank.

Data sources

Primary Data of the model are gathered from Amman stock exchange annual reports for the available of 15 commercial banks for the period from 2007-2012. Secondary data are collected from journals. The data are used to categorize these banks for three categories, large size, medium and small size.

Results of the study

The results from statistical and hypothesis tests for the differences between the (ROE) of the different bank size categories are presented below. These results are understood by concentrating on the labels that have incorporated into the first entry.

- Lists the two ROE measures that are being compared.
- Lists of the descriptive statistics of the respective measures.

- Defines the difference of the average mean measure.
- An estimate of the difference, along with 95%confidence interval.
- The t-value of the difference along with the corresponding p-value.

The previously mentioned results for the difference of the average mean measure presented in tables (4-9) showed that, the smaller the sized bank is presented first (ROE1 vs. ROE2…..ROE3). Each value that yields a positive value, is indicates that, profitability is on average greater for banks with lower volume of assets. However, the null hypothesis does not sound to be true in this analysis results. In each table the estimate for difference was statically different from zero, as all t-values are (-4.827, -6904 and -3.035) which is the threshold for the alpha of 5%. The point that the means are all significantly different is also evident, as zero never falls within the 95% confidence intervals of any of these estimates.

Table (4) **Paired samples statistics**

		Mean	**N**	**Std. deviation**	**Std. error mean**
Pair 1	**ROE_1**	10.0280	30	1.0793	.4827
	ROE_2	12.1680	30	.6205	.2775

Table (5)

		Paired differences					**t**	**df**	**Sig**
		Mean	**Std. deviation**	**Std. error mean**	**95% confidence interval of the difference**				
					Lower	**upper**			
Pair 1	**ROE_1 & ROE_2**	-2.1400	.9914	.4434	-3.3710	-.9090	-4.827	59	.008

Table (6)

		Mean	**N**	**Std. deviation**	**Std. error mean**
Pair 2	**ROE_1**	10.0280	30	1.0793	.4827
	ROE_3	14.3360	30	1.4407	.6443

Table (7)

		Paired differences					**t**	**df**	**Sig**
		Mean	**Std. deviation**	**Std. error mean**	**95% confidence interval of the difference**				
					Lower	**upper**			
Pair 2	**ROE_1 & ROE_3**	-4.3080	1.3952	.6240	-6.0404	-2.5756	-6.904	59	.002

Table (8)

		Mean	N	Std. deviation	Std. error mean
Pair 3	**ROE_2**	12.1680	30	.6205	.2775
	ROE_3	14.3360	30	1.4407	.6443

Table (9)

		Paired differences					t	df	Sig
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
					Lower	upper			
Pair 3	**ROE_2 & ROE_3**	-2.1680	1.5972	.7143	-4.1512	-.1848	-3.035	59	.039

One way ANOVA is also conducted to examine the mean differences for the study variables, the results in table (10) showed that, the f-value was 19.197 with a Sig. 0.000; this result confirms the rejection of our null hypothesis because this result represent an existence of a statistical difference in profitability between the three categories due to the size of bank assets.

Table 10 **ANOVA**

	Sum of squares	Df	Mean squares	F	Sig.
Between groups	46.398	2	23.199	19.197	0.000
Within groups	14.502	28	0.517		
total	60.899	30			

Testing of homogeneity of variance (Levine static) was applied by the researcher to determine the type of tests that should be conducted for determining the mean differences source. Table (11) showed that the significance of (Levine statistic) is greater than 5% therefore (Scheffe test) should be used to investigate if there is a difference or not between groups. Table (14) present Scheffe results, these results revealed a significance difference between the three tested groups.

Table 11 **ROE**

Levine statistic	Df 1	Df 2	Sig.
.771	2	28	0.484

Table12 **Scheffe**

	N	**Subset for alpha = 0.05**		
ROE		**1**	**2**	**3**
3	30	10.0280		
2	30		12.1680	
1	30			14.3360
Sig.		0.000	0.000	0.000

Table (13) show the correlation between variables of the study, the correlation matrix provide preliminary evidence about the significance correlation between profitability and assets size, the value as appear is (-0.590) with a significance below 5%.

Table (13)

		ROE	**SIZE**
ROE	Pearson correlation	1.000	-0.590
	Sig.	.	0.020
	N	90	90
SIZE	Pearson correlation	-0.590	1.000
	Sig.	0.020	.
	N	90	90

Regression

The goal of applying simple regression test was for further investigation of the size of bank impact on its profitability. The results from this exercise are presented in tables (14-16) and table (17) summarizes all regression results.

Table (14) **M-regression**

Model	R	R squares	Adj. R squares	Std. error of the estimate
1	.873	.762	.722	1.0993

A predictors: (constant), S_size, M_size.

Table (15) **ANOVA**

Model		Sum of squares	Df	Mean squares	F	Sig.
1	Regression	46.398	2	23.199	19.197	.000
	Residual	14.502	28	0.517		
	total	60.899	30			

A predictors: (constant), S_size, M_size.

B dependent variable: ROE

Table (16)

		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	beta		
1	(constant)	10.028	.492		20.398	.000
	M_size	-2.140	.695	.501	-3.078	.000
	S_size	-4.308	.695	1.008	-6.196	.000

A dependent variable: ROE

Table (17) **Summary of Regression results**

Variable	Coefficient	Standard error	t-value	p-value
Constant	10.028	0.492	20.398	0.000
A2	- 2.114	0.695	- 3.018	0.001
A3	- 4.308	0.695	- 6.196	0.000

The corresponding regression equation based on regression results is presented below.

$$\mathbf{ROE = 10.028 - 2.114A_2 – 4.308A_3}$$

The results from the results of our regression model assures that, the size of the bank affect its profitability. All of the study dummy variables were significant at an alpha of 5%, proving that the size of a bank measured by its total assets is a significant predictor of its profitability. As it was expected in the earlier section, the profitability when by ROE tends to decrease as the assets size of the bank increases. This is evidenced through the coefficients' that become increasingly negative as the size of the bank increases.

Summary and conclusion

This study was aimed to test the size of a bank influence on its profitability. However, the results of different conducted tests proved that, as the profitability tended to decrease as the volume of assets increases. The study used a two sample t-test on the means of ROE for three the selected groups. The results showed that each of the samples had statically different means than the other. Also the analysis revealed that the profitability increases as the asset size decreases. Next, a simple regression was employed for further capture the effect of size on profitability. A similar result was also found after this analysis, as the coefficients' on the asset size dummy variables were statically significant, but they were increasingly negative as

the asset size increased. These findings could be very important information for Jordanian bank officers and shareholders of these banks.

The study final conclusion indicates that size effect exists, that small and medium sized banks exhibits higher overall performance compared to large banks. These results support the initial hypothesis that the smaller the bank assets are the higher its profitability. Finally, further research could be conducted to classify banks in the current size in proportion to their differences in profitability, liquidity, or capital adequacy.

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