Evaluating Profitability and Efficiency of the Banks in Palestine

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ABSTRACT

Nowadays, the role of banks in economics is undeniable. All the financial activities are depending on them because they help to develop the economy quickly, so the profitability measurements of the banking system should be investigated.

The goal of this study is to find the profitability measurements for 7 commercial Palestinian banks and the researcher will do that on an analysis of bank for the period 2007-2013. The Palestinian banks profitability will be done by evaluating two main parts of ratios; the first one is the bank specific ratios which are capital adequacy ratio, liquidity ratio, management efficiency ratio, and the last one is the asset quality ratio. In addition, the second part is macroeconomic determinants (inflation and interest rate).

In this research, panel data is used to evaluate the relationship between the variables. The study followed the previous studies such as the case of Turkey (Alper and Anbar, 2011) that investigated the profitability to measure the bank-specific performance for 10 commercial banks for the period of 2002-2010 and they came out that there is a positive relationship between the interest rate and profitability and this result agrees with the statistical analysis for of this study's case.

The study concluded that the macroeconomic factors have more impact to the profitability of the banks in Palestine when compared to the bank specific determinants that exist because of the special structure of each bank, so for that the researcher concluded the study by suggesting some solutions to the problems faced in

this study.

ÖZ

Günümüzde bankaların ekonomideki rolü inkar edilemez.Onlar finansal faaliyetlerin kalbidir ve ekonomik kalkınma hızını artırmak için yardımcı olurlar. Böylece bankacılık sisteminin karlılığı belirleyicileri değerlendirilmelidir.Bu tezin amacı,7 ticari Filistin bankalarının karlılık belirleyicilerini bulmak için 2007-2013 dönemi için bir banka analizi yapmaktır. Filistin bankaları karlılık makroekonomik belirleyicileri olarak sermaye oranı, aktif kalitesi oranı, yönetim verimliliği oranı, banka-özel ve enflasyon ve faiz oranı gibi likidite oranını uygulayarak tarafından incelenir.

Bu araştırmada, panel değerlendirilme tarihi ilişkisi kullanılmıştır.Çalışma sonucu değerlerinin makroekonomik belirleyicileri tarafından belirlendigi ve karlılık oranın filistin bankalarında farklı oldugu anlaşıldı çünkü her bankanın özel bir kar oranı belirleyicisi vardır ve Filistin bankalarının makroekonomik etkilerinden farklı oldugu anlaşılıyor. Biz bu çalışmada karşılaşılan sorunlara bazı çözümler önerdik.

Anahtar Kelimeler: Filistin, panel tarihi, banka karlılığı, makroekonomi faktörü, banka spesifik belirleyicileri.

Dedicated To My Family

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LIST OF ABBREVIATIONS

PMA: Palestine Monetary Authority

JOD: Jordanian Dinar

NIS: New Israel Shekel

GDP: Gross Domestic Product

ROA: Return on asset

ROE: Return on equity

CAR: Capital adequacy ratio

EFF: Management efficiency ratio

ASQ: Asset quality ratio

LQR: Liquidity ratio

INF: Inflation

IR: Interest rate

Chapter 1

INTRODUCTION

Obviously, banks have a tangible effect on the economy of any country, most of the developments that happen in a country can be referred to the role of the banks, because most of the development projects and the financial activities are funded by the banks, from here we realize the importance of studying and evaluating the profitability measurements of the banks. Profitability of the banking sector is a very important tool or indicator of the financial system because it affects the whole economy.

The Palestinian banking sector consists of domestic and foreign banks. We have 17 banks in Palestine 10 of them are domestic and the rest are foreign. The Palestinian Monetary Authority (PMA) was established in 1997, the role of the PMA is to formulate and implement the monetary banking policy in order to protect the banking sector and guarantee the national growth of the economy and the financial stability in a balanced and sustainable way. So this can be achieved by issuing valuable rules and monitoring the banks.

1.1 Goal of the Study

Therefore, the main goal of the study is to evaluate the banks' profitability factors to see which indicators have what impact on banks performance towards making more profit. In order to achieve aim of the study 7 major commercial banks are taken into account from the Palestinian banking sector, depending on the assets size of the banks, to be analyzed for the period of 2007-2013, at first we will analyze the effect

of the banks specific factors on the profitability of the Palestinian banks, and then we will apply the same for the microeconomic factors. Capital adequacy, asset quality, management efficiency and liquidity ratios will be used from the bank specific factors, and the inflation and interest rate will be used to measure the profitability from the microeconomic factors.

The aim of the study is to analyze the indicators of bank profitability in the case of Palestine, find the factors that affect the profitability of the banks in Palestine for the period 2007 to 2013, depending on the bank size, bank-specific factors and macroeconomic factors that affect the profitability.

1.2 Research Methodology

The data of 7 commercial Palestinian banks were collected according to the asset-size of Palestine banks and the data availability in order to determine the factors or the independent variables that influence or affect the profitability of Palestine banks over the period 2007-2013.

The variables are comprised of two groups the first one is dependent variables, which are ROA and ROE return on assets, and return on equity, and independent variables comprised of two categories the first one is the microeconomic factors which are inflation and interest rate and the second one is the bank specific factors.

1.3 Framework of the Study

This study is structured as follow: Chapter 1 includes the introduction, while chapter 2 includes the overview of banking sector in Palestine, chapter 3 reviews the previous studies that supports or study, and chapter 4 explains the research methodology, data and variables used in data analysis, chapter 5 presents the findings and empirical results, and finally chapter 6 summarizes the conclusion and recommendations.

Chapter 2

OVERVIEW OF PALESTINE BANKING SECTOR

The economy of any country based on its major industries and banking sector is one of them. Banking sector considered as a backbone of a country's economy and economic growth is not possible without a strong banking industry. Therefore, banking industry is considered as one of the major source and sector worldwide. The financial sector is controlled by the banking sector in most of the countries. Correspondingly, the financial sector in Palestine is also controlled by the banking sector that is still striving to grow.

To help implement and regulate the Palestinian banking industry, the government endorsed the Palestine Monetary Authority (PMA) after collaboration between the Israel and PNA. The Palestine Monetary Authority always takes sufficient actions to stable the banking industry in Palestine. Some of the steps towards improving the banking industry performance include the development of a cohesive payment system, capital requirements, and credit bureaus. Moreover, PMA is still developing rules to secure enough credit to run the banking industry effectively (PMA, 2014).

2.1 Banking Sector Size

The Palestinian territory is home to twenty private banks. 50% of all the banks operating in Palestine are domestic. Consequently, there are seventeen commercial banks besides three Islamic affiliated banks. Many of the foreign banks operating in Palestine are owned by Jordan entities. Statistics indicate that the Arab Bank is so far

biggest banking institution in Palestine. It has assets that total up to 40% coupled with around 160 branches across all the Palestinian territories (MDA, 2009).

The banking industry has the capacity to grow well in the future. Currently, Palestine has around 4.2 million citizens who depend on 232 branches of banking institutions countrywide. Holding the growth of the population of Palestine constant, the banks should grow by 100% to serve the citizens effectively; that is, each bank branch to serve 10, 000 customers (BOP, 2015). Table 2.1 below shows the number of banks offering financial services in Palestine.

Table 2.1: Number of Banks in Palestine

Items	2008	2009	2010	2011	2012
	Number of Banks				
Local Banks	10	10	8	8	7
Foreign Banks	11	10	10	10	10
Jordanian Banks	8	8	8	8	8
Egyptian Banks	2	2	1	1	1
British Banks	1	1	1	1	1
Total	21	20	18	18	17
	Number of Banks				
Local Banks	89	104	110	118	121
Foreign Banks	101	105	102	108	111
Jordanian Banks	93	98	95	101	104
Egyptian Banks	7	6	6	6	6
British Banks	1	1	1	1	1
Total	190	209	212	226	232

Source: Bank of Palestine

The table indicates that the Palestinian banking industry has grown significantly over the recent years. Customer deposits have particularly grown from $150 million in

1993 to $4 billion in the last-quarter of 2000. The lending trends increased in size from 0, which was the value of 1993 to $1.4 billion. Palestinian banks have a net worth of assets which exceed $5 billion as per the end of 2013. The statistics indicate that many Palestinian banks have been performing fairly well. Therefore, it is clear that the local Palestinian banking industry is growing at a fair rate.

Table 2.2: Total assets, deposits and loans for Palestine banking sector (2008 - 2012)

Total Assets (US)	2008	2009	2010	2011	2012
Banking Sector	7,259,387,314	7,718,180,756	8,554,270,628	9,110,234,260	9,797,014,817
BOP	1,046,532,914	1,283,017,502	1,545,038,022	1,653,960,732	2,004,494,095
Deposits (USD)	2008	2009	2010	2011	2012
Banking Sector	5,825,154,051	6,203,378,593	6,772,696,986	6,972,474,546	7,484,129,223
BOP	840,497,297	1,016,683,776	1,251,482,935	1,296,568,931	1,554,493,702
Loans (USD)	2008	2009	2010	2011	2012
Banking Sector	1,683,043,944	2,033,036,514	2,812,449,551	3,487,055,390	4,111,307,849
BOP	285,337,011	343,311,230	545,026,391	720,173,048	976,394,928

Source: Bank of Palestine

The main assessment engaged the Palestinian local banks and their affiliates operating in various regions in Palestine. It is believed that the growth is not tied to the services offered by these banks. Many of them operate as commercial financial institutions that provide standard banking services (Ahmad Aweidah, 2014).

The table 2.2 above shows the total assets, deposits and loans of Palestine banking sector for the period of 2008 to 2012. Throughout 2010, the banking industry in Palestine experienced an increase in assets by 7.54%; deposits had grown by 7.3% while loans had increased by 17.9%. The non-performing loans had declined by 3%

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in 2011. The fall was breathtaking owing to the fact the value stood at 11% in 2006. An examination of the trajectory of the banking industry in Palestine for the previous five years indicates that assets have risen by 35%, loans 144% and deposits by 29% (BOP, 2015).

2.2 GDP of Palestine

The Palestinian Gross Domestic Product stood at 1.10% during the last quarter of 2014. The annual growth rate of GDP has reached 4.09% since 2011-2014. Therefore, it reached 26.03 % in the third quarter of 2003. The last quarter of 2006 recorded a 21.59%. Figure 1 is an illustration of the growth of the Gross Domestic Product of Palestine for three years since 2012-2015. In 2012, the growth of GDP was 5.57%. Six months later, it increased to 7.75%.
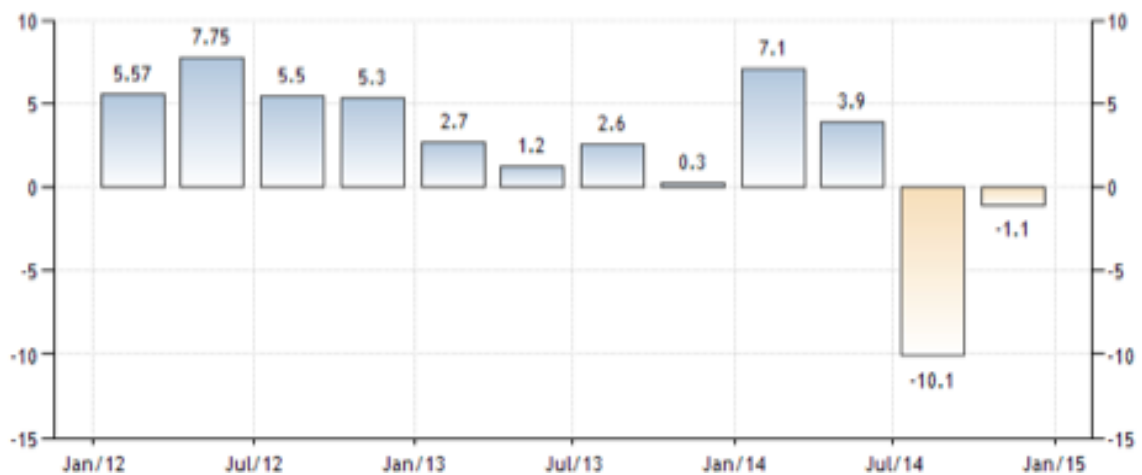

Figure 2.1: Palestine GDP annual growth (tradingeconomics, 2015)

The GDP of Palestine starts decreasing at the end of 2012 and the beginning of 2014 has the lowest growth by 0.3%. The GDP level increased to 7.1% and after that there is a consistent decrease and last year it reached to the negative GDP ratio of -10.1%.

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Thus, there are too any variations in GDP growth of Palestine, as it suddenly decreases too much and increases as well (tradingeconomics, 2015).

2.3 The Role of PMA in Palestine Banking Sector

The Palestine Monetary Authority (PMA) is one of the independent public institutions in Palestine that formulate and implement some set monetary policies in Palestine. Its aims include shielding the banking industry and initiating the growth of the economy in a cohesive manner. The Palestine Monetary Authority (PMA) works towards maintaining both financial and monetary stability through promoting sustainable economic development. Its mission is to attain monetary stability and keep a balance over the rate of inflation. It does this through the management of the Palestinian currency and coming up with a sound monetary strategy to create a reliable business environment. Moreover, it acts as the financial and economic advisor of the Palestinian government (PMA, 2014).

The growth of the Palestinian banking industry has led to a relatively good performance of the industry over the recent years under the leadership of the Palestinian Monetary Authority. The Palestine Monetary Authority remains on its toes to enhance institutional capacity to match that of the Central Bank. It supervises and regulates the activities of the banking industry in line with the international monetary practice. Currently, PMA is on the run to draft a law to consolidate its independence and come up with a legislative framework for it to become a fully-fledged central bank. PMA improves the banking industry on a regular basis through developing its infrastructure. The PMA board of directors drafted and approved a deposit Insurance Law. The development is expected to bring harmony to the Automated Teller Machines (ATMs) and personal banking operations (W B, 2012).

2.4 The Role of the Banking Sector in Palestine's Economy

The economic infrastructure of Palestine is branded as being average. The country has experienced a gradual growth in the recent years. The growth has influenced the development of the Palestinian economy as well as its business structure. One of the major sectors of the Palestinian economy that have a major output is the agricultural industry. There are three major factors that influence the growth of the Palestinian economy. The factors influence both the private and public sector. The three major factors cannot be easily controlled. They include:

- The speed of curbing the Israeli restrictions

- Drawbacks that emanate from donor aids

- Growth of the economy of Israel as it is accountable for 2/3 of Palestinian exports.

In either of the ways, its correlation with the global economy remains limited (BOP, 2015).

The economic role of the Palestinian banking industry remains restricted due to political instability as well as a weak economy. The country has also faced a number of crises such as the output's ambiguity and incomprehensible debt collection collateral. PMA is always on the run to improve its capital resources, the payment system as well as the dictates of the credit bureau (West bank & Gaza, 2014). Palestine is home to the major banks in the Middle East. Its banking system is well developed when compared to the situation in other countries. Its banking industry has grown gradually over the recent decades when compared to other countries in the region. In fact, it uses modern day procedures to run many of its banking operations. Initially, the economy of Palestine depended on the black market to meet its financial

needs. However, after a few years, the banking industry in Palestine has grown fairly well. Noteworthy is the fact that Palestine is now a home to 22 major banks with around 114 branches countrywide. Many of these domestic and foreign banks are mainly located in cities and urban centers in Palestine. In addition, they are also available in major villages. When compared to the growth rate of other industries in Palestine, the banking industry is so far the fastest especially in the last few years. It is important to note that the Palestinian banking industry has a sound banking system in place (Aweidah, 2014).

The Palestinians has secured a large share in field of banking in Middle East region and considered as a main actor in the development of banking system. Banking operations are getting stronger by progress in structure, utilization of modern technology and diversification as compared to other countries. in past year the Palestine was dependent on unofficial black market to fulfill its financial services needs but recent development in banking sector encouraged several foreign banks to serve there as consequence 22 Palestinian and foreign banks are functioning and have more than 114 branches in urban and ruler areas.

No sector of the Palestinian economy has witnessed the rate of growth seen in the banking sector in recent years. While results are mitigated so far, the basic elements of a sound and efficient banking system are already in place (Aweidah, 2014).

Chapter 3

LITERATURE REVIEW

There are many studies conducted to evaluate domestic versus foreign banks' performance analysis by using various methods and techniques. As the ultimate goal of this study is to perform the profitability ratio analysis of Palestine domestic and foreign banks, thus this section presents researches done previously. The most frequently adopted methods for banks' financial analysis include CAMEL rating system, SERVQUAL (service quality) model, and Profitability (ROE & ROA) ratio analysis are discussed in this section.

Demirguc-Kunt and Harry Huzinga (2000) investigated the impact of financial system development and growth on the performance of banks. For this purpose, they worked on the bank level data of developing countries and deeply analyzed the interest margins, profitability ratios and other variables. The findings prove that the countries do not have proper financial system have a higher profit margin, then ones have a well developed system.

Alper and Anbar (2011) investigated the profitability factor as the main important criterion to measure the bank-specific performance of the sample of 10 commercial banks for the period of 2002-2010 for the case of Turkey. They came up with the result that the bank size and non − interest income have a significant and positive effect on the bank profitability, in other word, the larger size a bank has, the higher

the profitability of that bank, but in the other hand, he found that the size of credit portfolio and loan has a significant negative impact on the bank profitability. Therefore, higher interest rate can have a direct effect on increasing bank profitability. They also found out that the remaining bank specific variables such as liquidity; deposit volume, capital adequacy and net interest margin do not have impact on the bank profitability. Also, macroeconomic factors (i.e. real GDP growth rate and inflation rate) have not significant to effect on the bank profitability.

Nicolae P. et. al (2015) carried out a study to investigate the determinants of a profit margin of EU27 (27th state member). The study was based on both the internal and external factors that were specific to particular bank and specific to the industry. They analyzed the performance using EU27 banks' data of eight years. The aim of the study was to identify some of the factors that determine the performance and the profitability of European Union's commercial banks. The findings of the study revealed that commercial banks affect their returns on assets and equity owing to their liquidity ratios, adequacy of the assets, credit and management. Moreover, the findings revealed that economic growth impacts positively on the profitability of the banks.

Azam and Siddiqui (2012) carried out an investigation to unearth the profitability ratios of commercial banks. The study was based on a quarterly data of the sample population of 36 commercial banks operating in Pakistan since 2004-2010. They split the sample into three subsets. They included:
- Government controlled domestic banks
- Privately run domestic banks
- Foreign banks

The findings of the study revealed that foreign banks earn more profits when compared to domestic banks run by the government or those run privately. Similarly, the findings indicated that the determinants of the profit margin between foreign and domestic banks are different. Therefore, the factors which determine the profit margin of domestic banks may not necessarily apply to the case in foreign banks.

Ünsal and Duman (2005) found out that domestic and foreign banks operating in Turkey have different financial ratios. They carried out an investigation to unearth this difference. During the study, they examined 32 foreign, public and private banks operating in Turkey through an analysis of various factors. They found out that the financial ratios of public banks were better off than those of other banks. The only difference occurred in the equity ratios in mid-2003. Privately run banks achieved significant equity ratios in the second half of 2013.

Ali (2005) carried out a study to investigate the profitability of both foreign and domestic banks. The study also aimed at finding out the differences in the profit margins as well as the determinants of the profits in Lebanon. Ali also examined the profits earned by both foreign and domestic banks based in Lebanon between the fiscal years 1993-2003. The study revealed that foreign banks earned more profits when compared to all the domestic banks based in Lebanon regardless of the form of ownership. He also found out that the determinants of the profitability of foreign and domestic banks were not identical. Thus, results showed that foreign banks have better strategies to cope with the macro-economic environment of the country when compared to domestic banks.

Kraft et al. (2006) analyzed the trend of privatization of banks, entry of foreign banks and their performance of seven years (1994-2000) in Croatia. as a result of deep

research and study he presented the estimate of Fourier frontier cost. He believed that privatization of banks is not efficient solution every time and it's not a good option to increase bank's productivity immediately. His study leads to the conclusion that is, foreign banks are performing well as compared to domestic either they are private or not.

Matthew & Esther (2012) made a comparison of the performance of foreign and domestic banks in Ghana in 2005-2011. They compared the banks in terms of their size, profitability, asset quality, liquidity, and capital adequacy. The findings revealed that foreign banks have a relatively lower equity and returns on assets when compared to domestic banks. However, the liquidity ratios, asset quality, size and capital adequacy of foreign banks was higher when compared to that of domestic banks.

Awdeh (2005) carried out an analysis of the differences between determinants of profitability of foreign and domestic banks in Lebanon in 1993-2003. Awdeh found out that foreign banks accrue more profits when compared to all the domestic banks, although all of them were in the same market. Moreover, the determinants of profitability between the banks were not identical. This study indicated that foreign banks had a better capacity to cope with the macroeconomic factors of the country in which they operate when compared to domestic banks.

Lensink and Hermes (2003) paid attention to the short term impact of the availability of foreign banks to the performance of domestic banks. They collected the data sets of 990 banks for the period dated 1990-1996. This research paper examines the short term impacts that emanate from the influx of foreign banks in relation to how the

domestic banks behave. Arguably, the impacts depend on the economic growth of the country. In countries with a slow economic growth, foreign banks have to cope with higher costs and profit margins initiated by the domestic banks. Countries with a fair economic growth do not face the harsh effects of the entry of foreign banks in the economy. In such an economy, the influx of foreign banks is related to the reduction of costs and profit margins for domestic banks. However, the case is not attributed to the changes in the variables that affect domestic banks' variables.

Weller (1999) indicates that the entry of multinational banks causes a significant reduction of the supply of credit to banks in Poland during a transition period. The effect of increased competition of international banks in Poland affected the supply of credit. In many instances, the credit supply lowered in many banks in Poland; thus, making commercial investment unfavorable.

San et al (2011) examined how foreign and domestic banks perform in Malaysia. They performed analysis by using Data Envelopment Analysis. To carry out the exercise, they collected the data sets of 12 foreign banks and 9 domestic banks respectively. The findings of the study indicated that foreign banks in Malaysia were less competitive and effective when compared to foreign banks.

Nimalathasa (2008) did a comparative analysis of the financial performance of state banks, foreign, private and domestic banks operating in the Bangladesh banking industry. They used the data sets on the banks from 1999-2006. They observed that foreign banks perform well when compared to domestic banks in terms of their interest income, liquidity and profitability.

Sufian (2006) investigated the performance of 15 Islamic banks operating in Malaysia in 2001-2014. The findings of the study indicated that domestic Islamic affiliated banks were technically better when compared to foreign banks. In addition, foreign Islamic affiliated banks have a better capacity to regulate their operating costs.

Gupta V. & Jain P. K. (2003) carried out an analysis to compare how public, foreign and private banks perform. They used variables such as financial management, profits and productivity. The results of the study indicated that public banks performed dismally in all areas when compared to foreign and private banks. Commercial banks can potentially perform well if they brand profit as their core responsibility.

Chapter 4

DATA AND METHODOLOGY

This chapter will cover the data and methodology implemented to fulfill the study aim. It will also cover the chosen sample for data analysis, variables and finally the methodology used to analyze the data in order to get final results.

4.1 Data

The data of 7 commercial Palestinian banks were collected according to the asset-size of Palestine banks and the data availability in order to determine the factors or the independent variables that influence or affect the profitability of Palestine banks over the period 2007-2013. All needed data was calculated by Microsoft excel to make it ready for E-views, In order to perform regression analysis of collected data, E-views software has been chosen. E-views is a very useful tool, which can stimulate and forecast all the ratios needed to get statistical results.

4.2 The Variables

The variables are comprised of two groups the first one is dependent variables, which are ROA and ROE return on assets, and return on equity, and independent variables comprised of two categories the first one is the microeconomic factors which are inflation and interest rate and the second one is the bank specific factors which are capital adequacy (CA), asset quality (ASQ), management quality (EFF), and finally liquidity (LQ).

The Dependent Variables:

Table 4.1: Dependent Variables of the regression model

Variables	Description	Formula
ROA	Return on Assets	Net Income/Total Assets
ROE	Return on Equity	Net Income/Shareholder's equity

Return on assets (ROA):

The return on assets ratio is normally used to measure the efficiency of management for the financial institutions such as banks, and it is used also to compare the performance of those financial institutions and the ability of any financial institution to generate more earnings or profits using it's total assets.

ROA is used widely to compare the performances of the financial institutions because most of the assets are recorded in the financial statements at a value close to the real market value.

So we can use ROA to make a comparison between the banks because ROA is an indicator that measures the profitability of the bank before leverage or before borrowing. So we can calculate the return on assets by dividing the net income over the total assets.

Return on assets = Net Income/Total Assets.

Return on Equity (ROE)

The return on equity measures profitability for the financial institutions by exposing the profits generated by the financial institution using the money generated and invested by the shareholders. So a high return on equity ratio means that the financial institution have a good ability to generate cash internally.

So the higher return on equity ratio the better earnings if we are comparing financial institutions.

Return on Equity = Net Income/Shareholder's Equity.

Independent Variables

Table 4.2: Independent Variables of the regression model

Variables	Description	Formula
CAR	Capital Adequacy	Capital/Total Assets
ASQ	Asset Quality	Total Loans/Total Assets
EFF	Management Efficiency	Interest Income/Interest Expense
LQR	Liquidity	Cash/Total Assets
INF	Inflation	$i = P1 - P0/ P0 * 100$
IR	Interest Rate	

Capital Adequacy:

Capital adequacy ratio is used to measure if the assets of a financial institution can cover or meet its financial obligations. So, capital adequacy can be calculated by dividing the financial institution capital divided by the total assets.

Capital Adequacy: Capital /Total Asset.

Asset Quality:

Asset quality ratio is related to loan performance of banks, it determines the total loans given by a bank as a percentage of its total assets. The higher this ratio reflects that the bank is loaned up and it has a low liquidity so if this ratio is high that means that the bank is exposed to higher defaults.

So, asset quality ratio can be calculated by dividing the total loans over total assets.

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Asset Quality: Total loans / Total assets.

Management Efficiency Ratio:

Management efficiency ratio is used to determine how the banks and financial institutions make use of the bank assets and liabilities. Moreover it's used to determine the receivable turnover, equity's quality and capacity of the bank to pay back its liability. So, management efficiency ratio can be calculated by dividing the interest income over the interest expenses.

Management Efficiency: Interest income / Interest expenses.

Liquidity Ratios:

Liquidity ratio is used to determine if the banks liquidity are capable to cover short-term debts. So, liquidity ratio can be calculated by dividing the liquid assets of the bank over the total assets.

Liquidity: Cash / Total assets.

Interest Rate:

Interest rate reflects the growth rate of purchasing power, which is obtained from any investment. Also it is one of the macroeconomic factors that affect the banking profitability. Because of the occupation Palestine is a special case, cause it doesn't have real rate of government, so the interest rate will be measured according to deposit interest rate, which is paid by similar banks for demand.

Inflation Rate:

Inflation affects the profitability of any banking sector; it is one of the macroeconomic factors that demonstrate the change of prices. This inflation ratio can be calculated by this formula:

$i = P_1 - P_0 / P_0 * 100$

4.3 The Methodology

Panel cross sectional data analysis will be used to evaluate the profitability of 7 Palestinian banks during the period of 2007-2013, the banks were chosen depending on the asset size of the banks.

The data will be analyzed by running a simple regression using E-views software to find out if the independent variables are statistically significant, and if they have an impact on dependent variables (ROA, ROE) or not, the researcher will also apply the panel unit root test to decide whether the data is stationary or not, and to analyze whether there is a change over time of the mean variance and covariance. In the unit root test there will be null and alternative hypothesis, the null is not stationary and the alternative is stationary. We found out that all variables were stationary in this study. Correlation analysis will be applied also to see if there is a multicollinearity problem in our model, in other words to see if there is a linear relationship among the variables or not. And finally we will use E-views software to apply a simple regression.

The basic panel regression equation in econometrics is:

$Y_{i,t} = \beta_0 + \beta X_{i,t} + \varepsilon t$

Where

$Y_{i,t}$ - dependent variable of the function

β_0 – intercept (constant) of model

$X_{i,t}$ – coefficients of the model, independent variables in the corresponding time (t)

εt - error term

Using E-views software the following regression models were estimated:

$ROA = \beta_0 + \beta_1(CAR)_{i,t} + \beta_2(ASQ)_{i,t} + \beta_3(EFF)_{i,t} + \beta_4(LQR)_{i,t} + \beta_5(INF)_{i,t} + \beta_6(IR)_{i,t} + \varepsilon t.$

$ROE = \beta_0 + \beta_1(CAR)_{i,t} + \beta_2(ASQ)_{i,t} + \beta_3(EFF)_{i,t} + \beta_4(LQR)_{i,t} + \beta_5(INF)_{i,t} + \beta_6(IR)_{i,t} + \varepsilon t.$

CHAPTER 5

EMPIRICAL RESULTS AND DISSCUSSIONS

5.1 Unit Root Test

In this chapter we will use E-views software to test and analyze our model by running regression for our model, but at first we should run the panel unit root test to determine whether our data was stationary or not, depending on Levin, Lei & Chu (LLC) & Im Pesaran Shin (IPS) & Wu (PP), the null hypothesis of the test is non stationary while the alternative hypothesis is the stationary. So if the null hypothesis was rejected we can conclude that the variable is stationary. This will be done at different significance level 1%, %5, 10%.

Table 5.1: Panel Unit Root Test for Palestinian Banks

Variables	Test Equation	LLC	IPS	PP
LROE	τ_T	-7.84*	-0.27	38.61*
	$\tau,$	-6.94*	-1.61***	33.47*
	τ	-3.85*	-	36.59*
LROA	τ_T	-10.85*	-0.88	47.22*
	$\tau,$	-5.64*	-1.90**	40.72*
	τ	-4.00*	-	31.63*
LCAR	τ_T	-9.80*	-0.62	39.38*
	$\tau,$	-5.32*	-1.45***	27.64**
	τ	2.46	-	10.86
LLQR	τ_T	-6.26*	0.36	23.07***
	$\tau,$	-3.84*	-0.14	12.59
	τ	-14.32*	-	21.46

LASQ	τ_T	-9.11*	-.0716	21.74*
	$\tau,$	-3.92*	.7561	26.54**
	τ	-2.109*	-	34.29*
LEFF	τ_T	-4.68*	0.19	24.97**
	$\tau,$	-3.54*	-1.73**	33.37*
	τ	0.4	-	8.68
LINF	τ_T	-7.34*	-0.19	30.78*
	$\tau,$	-8.24*	-2.54*	54.38*
	τ	-2.32*	-	27.68**
LIR	τ_T	-15.20*	0.32	69.70*
	$\tau,$	-14.27*	-1.27	68.42*
	τ	-14.80*	-	89.48*

H_0: Series include a unit root / not stationary

H_1: series don't have a unit root / stationary

5.2 The Model of Simple Regression

The data will be analyzed by running a simple regression using E-views software to find out if the independent variables are statistically significant and have an impact on dependent variables or not, after applying the panel unit root test we found out that our data is stationary and that means that there is no problem in running the simple regression because the variance and covariance moves in the same direction.

Table 5.2: Regression Analysis Results for ROA

Variables	Coefficient	STD.ERROR	T- Statistics	Probability
C	-1.388116	0.599005	-2.329573	0.0267
LCAR	0.087919	0.041202	2.172071	0.0378
LASQ	0.029819	0.009937	2.913113	0.0071
LEFF	0.135471	0.088650	1.544174	0.1341
LQR	0.209811	0.021347	10.36230	0.0000
LIR	0.268850	0.046450	5.894320	0.0000

LINF	0.362662	0.111054	3.287226	0.0032
R-Squared				0.661212
F-Statistics				8.659012
Durbin-Watson				2.015070

Table 5.3: Regression Analysis Results for ROE

Variables	Coefficient	STD.ERROR	T- Statistics	Probability
C	-1.388723	0.598429	-2.323994	0.0275
LCAR	-0.914350	0.040316	-22.77634	0.0000
LASQ	0.029921	0.009726	2.904602	0.0080
LEFF	0.136635	0.087826	1.547843	0.1500
LLQR	0.207988	0.020514	10.27857	0.0000
LIR	0.268756	0.045664	5.889240	0.0000
LINF	0.362560	0.110231	3.286183	0.0042
R-Squared				0.642331
F-Statistics				76.13488
Durbin- Watson				2.015915

The intercept is defined as the value of change in the dependent variable when all the independent variables equal to zero, or when there is no change in the independent variables.

Interest rate is statistically significant in the two models at 5% significance level. In the model where ROA was dependent variable IR is equal to 0.268850 while in the

second model IR is equal to 0.268756. This can be interpreted, as follows when interest rate increase by 1% ROA will increase by 0.27% and so will ROE approximately. This result complies with literature review and previous study Alper and Anbar (2011), which were conducted on turkey.

Inflation rate was statistically significant at 1% significance level. Inflation is positively correlated with both ROA and ROE. It is equal to 0.36 approximately in the two models. This means that when the inflation rate increases by 1% ROA and ROE will increase by 0.36%.

Assets Quality was statistically significant at 1% significance level. It is positively correlated with both ROA and ROE. It is equal to 0.030 approximately in the two models. This means that when the Assets Quality increases by 1% ROA and ROE will increase by 0.030%.

Liquidity Ratio was statistically significant at 1% significance level in both models. It is positively correlated with both ROA and ROE. It is equal to 0.21 approximately in the two models. This means that when the Assets Quality increases by 1% ROA and ROE will increase by 0.21%. Liquidity ratio is important to judge whether the banks can cover their short-term debt or not.

Management efficiency ratio was statistically not significant.
Capital Adequacy was statistically significant at 5% significance level. It is positively correlated with ROA and correlated negatively with ROE. It is equal to 0.09 approximately in ROA model and it is equal to -0.91 in ROE model. This means that when the capital adequacy increases by 1% ROA will increase by 0.09%, and

ROE will decrease by -0.91% This ratio check if the bank can meets it financial obligation or not.

5.3 Autocorrelation

Autocorrelation will occur if the dependent variable is correlated with its previous values. That is it if the dependent variable a time T depends on dependent variable at time t-1 autocorrelation will occur. Autocorrelation problem can be detected by conducting Durbin Watson test. If the value of the test is far from 2 there will be autocorrelation.

Durbin Watson statistic was 2.01, which shows that there is no autocorrelation problem. R-Squared was 0.771212 in the model where ROA was the dependent variable and it was 0.822331 when ROE was the dependent variable.

R-Squared is defined as the percentage of the explained part by our model, which means the variation in the ROA and ROE that is explained by the model. Here we can say that 77% of the variation in ROA is explained by the model while 82% of the variation in ROE is explained by the model.

In the two tables above the results of the two regression models are shown. L stands for log and the log was used to make the data more close to normality and to change it to percentages.

Also we used Q-test to check if there is an autocorrelation problem or not. Autocorrelation affects the validity of the results, the null hypothesis of Q-test is that there is no Autocorrelation.

And if we take a look at the table below we realize that Q results failed to reject the null hypothesis. So we conclude that there is no Autocorrelation problem in our model.

Table 5.4: AC, PAC and Q-Stat for 10 Lags

Lag	AC	PAC	Q-Stat	Prob.
1	0.032	0.032	0.0370	0.847
2	-0.011	-0.012	0.0415	0.979
3	-0.068	-0.067	0.2132	0.975
4	-0.044	-0.040	0.2867	0.991
5	-0.110	-0.110	0.7782	0.978
6	0.045	0.046	0.8626	0.990
7	0.004	-0.007	0.8633	0.997
8	-0.059	-0.076	1.0227	0.998
9	0.030	0.033	1.0665	0.999
10	-0.055	-0.070	1.2154	1.000

5.4 Heteroskedasticity

Breusch-Pagan-Godfrey test will be conducted to check if there is heteroskedasticity or not. The variance of error is constant at all level of independent variables, which is known as homoscedasticity. Heteroskedasticity is the absence of homoscedasticity. The null hypothesis of this test is that there is no heteroskedasticity problem.

The result of the Breusch-Pagan-Godfrey test indicates the absence of heteroskedasticity problem. Then we fail to reject the null hypothesis.

Table 5.5: BP Test

F-statistic	1.051862	Prob. F(5,44)	0.3888
Obs*R-squared	4.261927	Prob. Chi-Square(5)	0.3717
Scaled explained SS	1.428287	Prob. Chi-Square(5)	0.8393

5.5 Correlation Analysis

The aim of running this test is to measure the strength of the linear significant relationship between the tested variables. Our goal is to see if the independent variables have a significant effect on the dependent variables or the profitability indicators ROA and ROE. As it was discussed previously in Chapter 4, there are dependent variables and independent variables. The correlation coefficient range starts from -1 to +1; zero correlation coefficient shows that there is no linear relationship between two variables, -1 correlation coefficient shows that there is a negative relationship between two variables, +1 correlation coefficient shows that there is a positive relationship between two variables. There is a positively weak correlation between two variables if the correlation coefficient ranges from 0 to 0.50, There is a negatively weak correlation between two variables if the correlation coefficient ranges from 0 to -0.50, There is a Positively strong correlation between two variables if the correlation coefficient ranges from 0.50 to 0.90, and negatively strong relationship when the coefficient ranges between -0.90 and -0.50. Now we are going to discuss the relationship between independent variables and the dependent variables according to our results, which was obtained by E-views software.

Table 5.6: Correlation Analysis of variables

	LROA	LROE	LCAR	LASQ	LEFF	LLQR	LIR	LINF
LROA	1.000							
LROE	0.693	1.000						
LCAR	0.126	-0.628	1.000					
LASQ	0.188	0.228	-0.111	1.000				
LEFF	-0.349	-0.102	-0.237	-0.244	1.000			

LLQR	-0.104	0.018	-0.135	-0.473	0.339	1.000		
LIR	0.368	0.161	0.176	-0.101	-0.477	-0.245	1.000	
LINF	0.184	0.128	0.019	0.039	-0.147	0.002	-0.112	1.000

There was only one strong correlation between variables, which is negative and it was between the return on equity and the capital adequacy ratio (whose coefficient was -0.628).

Negative and positive relation between different variables can be seen in the table above.

There is a weak positive significant correlation between ROA and the capital adequacy ratio by 0.126 so if the ROA increase the CAR will increase as well. On the contrary CAR had strong and negative significant correlation with ROE by -0.628 and which means that the capital adequacy will decrease in Palestine banks if the ROE return on equity increased.

There is a weak positive significant correlation between ROA and the asset quality ratio by 0.188 so if the ROA increase the ASQ will increase as well. ASQ has a weak positive significant correlation with ROE because its 0.228 which means that the asset quality ratio will increase in the Palestinian banks, if the return on equity increased.

There is a weak negative significant correlation between ROA and the management efficiency ratio by -0.348 so if the ROA increase the EFF will decrease. The same for ROE, EFF had a negative weak significant correlation with ROE because its -0.102

and that means that the management efficiency will decrease in the Palestinian banks but with lower percentage than the ROA if the return on equity increased.

There is a weak negative significant correlation between ROA and the liquidity ratio by -0.104 so if the ROA increase the LQR will go down or decrease. On the contrary LQR had positive weak significant correlation with ROE because its 0.018 which means that the liquidity will increase in the Palestinian banks if the return on equity increased.

As for the microeconomic factors the inflation and interest rate, which are included in the model we found out that both of inflation and interest rate have a weak positive significant correlation with ROA and with ROE but its higher for ROA than the ROE, so ROA (Return on assets) had positive correlation with IR (interest rate) because its 0.368 and another positive weak correlation with INF by 0.184. As for ROE it has the same weak positive significant correlation but with lower percentage, so for IR it was 0.161 and for INF it was 0.128

Correlation analysis is used to discover whether there is a relationship between variables, and to find out the direction of the relationship, whether it is positive, negative or zero, and to find the strength of the relationship between the two variables. Looking at the data in the table above it can be easily seen that no correlation between any two independent variables is high enough to create multicollinearity problem. In other words, there is no multicollinearity problem in this model and we can continue the analysis.

Chapter 6

CONCLUSION AND RECOMMENDATIONS

The banking and the economic system is linked or attached to each other, because the economic growth can be measured by having a well performing banking system. In this study the effect of determinants of profitability was measured for the Palestinian banks by analyzing 7 commercial banks during the period 2007-2013.

These results were acquired from the analysis; the capital adequacy ratio has a positive effect on ROA, which means that the profitability must be escorted with the adequacy of bank capital. On the contrary, the capital adequacy ratio has a negative effect on ROE, so in order to increase the banks capital adequacy ratio and add more safety to the banking system and influence the ROE positively, so my recommendation to the Palestinian banks is to increase their reserve accounts. So they have to optimize their capital levels to generate higher return on equity.

We found out that our dependent variables ROA and ROE have a positive relationship with the liquidity ratio, and that proves that most of the short-term debts can be covered in the Palestinian banks because of the good reserve of liquidity that it have, and that's a good sign which can guarantee the continuity of the banks.

We found out that there is a positive relationship between the management efficiency ratio and our dependent variables ROA and ROE, and that should encourage the

investors to invest more in the future because the banking sector is not fully developed in Palestine so, that's a good indicator which shows the success and the efficiency of the banks management in managing the assets and liabilities of the Palestinian banks.

We discovered that we have a positive relationship between asset quality and ROA & ROE, because managers of the banks are interested to give a high quality loans because as we know, loans are one of the important sources to provide earnings for the banks.

Having a positive inflation rate can be explained as a good sign under all conditions for the Palestinian economy, because the Palestinian economy depends on three different currencies the New Israeli Shekel (NIS), Jordanian Dinar (JOD) and US Dollar (USD).

As for the interest rate, having a positive interest rate indicates that the interest rate is high as rate of deflation because the nominal interest rate is too close to zero. In this research we found out that the macroeconomic factors (inflation and interest rate) have more significant effect on the profitability of the banking sector in Palestine if we compare it with the effect of the bank-specific factors, and that can be explained by the different structure of the banks in Palestine.

In further work, researchers will try to increase the number of independent variables such as the size of the banks and the researcher will also try to increase the number of years to get more accurate results.

REFERENCES

Ali, A., (2005). Domestic banks and foreign banks profitability and differences and their determinants. *Case business school city of London*.

Alper, D. & Anbar, A. , (2011). Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey. *Business and Economics Research Journal*, 2 (2),139-152.

Awdeh, A., (2005). Domestic Banks and Foreign Banks Profitability: Differences and Their Determinants. *Cass Busineszs School*, City of London.

Aweidah, A., (2014). Banks in Palestine. Last Accessed on May, 2015. Source:http://archive.thisweekinpalestine.com/details.php?id=478&ed=42&edid=

Azam, M., & Siddiqui, S., (2012). Domestic and Foreign Banks' Profitability: Differences and their Determinants. *International Journal of Economics and Financial Issues*, 1(2), 33-40.

Bank   of   Palestine,   (2015). Source:http://www.bankofpalestine.com/en/ar2012/overview/banking-sector.

Kunt, D., & Huizinga, H., (2000). Financial Structure and Bank Profitability. *International Journal of Economics and Financial Issues*, 4, 25-34.

Gupta V. & Jain P. K., (2003). "A Reliable and Valid Measurement Scale for Perceived Service Quality of banks". *International Journal of Bank Marketing Issues*, 2, 84-91.

Kraft, E., Hoffler, R. & Payne, J., (2006). Privatization, foreign bank entry and bank efficiency in Croatia: A Fourier-flexible function stochastic cost frontier analysis. *Applied Economics*, 38, 2075-2088.

Lensink, R., & N. Hermes., (2003). The Short-term Effects of Foreign Bank Entry on Domestic Bank Behaviour: Does Economic Development Matter?. Journal of *Banking and Finance Issues*, Vol.27, forthcoming.

Matthew, N. G. & Esther, L. A. (2012). Financial Performance Comparison of Foreign VS Local Banks in Ghana. International Journal of *Business and Social Science* 3(21), 82- 87.

MDA (Market demand and assessment for e-banking services in Palestine), (2009). *Palestine international business forum* - PIBF, Palestine.

Petria, N., Capraru, B. & Ihnatov, I. (2015). *Determinants of banks' profitability: evidence from EU 27 banking systems.* Procedia Economics and Finance, 518 – 524.

Nimalathasan, B. (2008). Comparative Study of Financial Performance of Banking Sector in Bangladesh – An Application of Camels Rating System. *International Journal of Economics and Financial Issues*, (3), 27-34.

Palestine monetary authority, (2014). Source: http://www.tradingeconomics.com

San, O., T., Theng L., L., & Heng, T., B., (2011). A Comparison on Efficiency of Domestic and Foreign Banks in Malaysia: A DEA Approach, *Business Management Dynamics*, 1(4), 33-49.

Sufian, F., (2006). Size and Returns to Scale of the Islamic Banking Industry in Malaysia: Foreign Versus Domestic Banks. Journal of *Economics and Management*, 14(2), 147-175.

Trading Economics, (2015).Source:http://www.tradingeconomics.com/palestine/gdp-growth-annual.

Ünsal A., Duman, S., (2005) Türkiye'deki Bankaların Performanslarının Temel Bileşenler yaklaşımı ile *Karşılaútırmalı Analizi*, 26-27 May, VII.

Weller, C., (1999). Financial Liberalisation, Multinational Banks and Credit Supply: The Case of Poland, *Working Paper B10*, Centre for European Integration Studies, Rheinische Friedrich-Wilhelms-Universitat Bonn.

West Bank & Gaza, (2014). West Bank and Gaza *financial review*. Source: http://go.worldbank.org/3MDXJCDN50.

World Bank, (2012). Economic Monitoring Report to the Ad Hoc Liaison Committee Source:https://siteresources.worldbank.org/INTWESTBANKGAZA/Resources/AHLCReportFinal.pdf. Last Accessed: May, 2015.

APPENDICES

Appendix 1: Panel Unit Root Tests for Palestinian Banks

Variables		Levels		
		LLC	IPS	PP
LROE	τ_T	-7.84*	-0.27	38.61*
	τ_μ	-6.94*	-1.61***	33.47*
	τ	-3.85*	-	36.59*
LROA	τ_T	-10.85*	-0.88	47.22*
	τ_μ	-5.64*	-1.90**	40.72*
	τ	-4.00*	-	31.63*
LCAR	τ_T	-9.80*	-0.62	39.38*
	τ_μ	-5.32*	-1.45***	27.64**
	τ	2.46	-	10.86
LLQR	τ_T	-6.26*	0.36	23.07***
	τ_μ	-3.84*	-0.14	12.59
	τ	-14.32*	-	21.46
LASQ	τ_T	-9.11*	-.0716	21.74*
	τ_μ	-3.92*	.7561	26.54**
	τ	-2.109*	-	34.29*
LEFF	τ_T	-4.68*	0.19	24.97**
	τ_μ	-3.54*	-1.73**	33.37*
	τ	0.4	-	8.68
LINF	τ_T	-7.34*	-0.19	30.78*
	τ_μ	-8.24*	-2.54*	54.38*
	τ	-2.32*	-	27.68**
LIR	τ_T	-15.20*	0.32	69.70*
	τ_μ	-14.27*	-1.27	68.42*
	τ	-14.80*	-	89.48*

Notes: τ_T represents the most general model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the most restricted model without a drift and trend. Optimum lag lengths are selected based on Schwartz Criterion. *, **, *** Denote rejection of the null hypothesis at the 1%, 5%, 10% levels. Tests for unit roots have been carried out in E-VIEWS 7.1.

Appendix 2: Regression Result for ROA

Dependent Variable: LROA
Method: Panel EGLS (Period SUR)
Date: 08/12/15   Time: 23:18
Sample: 2007 2013
Periods included: 7
Cross-sections included: 7
Total panel (balanced) observations: 49
Linear estimation after one-step weighting matrix
White period standard errors & covariance (no d.f. correction)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.388116	0.599005	-2.329573	0.0267
LCAR	0.087919	0.041202	2.172071	0.0378
LASQ	0.029819	0.009937	2.913113	0.0071
LEFF	0.135471	0.088650	1.544174	0.1341
LLQR	0.209811	0.021347	10.36230	0.0000
LIR	0.268850	0.046450	5.894320	0.0000
LINF	0.362662	0.111054	3.287226	0.0032

Weighted Statistics

R-squared	0.661212	Mean dependent var	-3.803245
Adjusted R-squared	0.615245	S.D. dependent var	8.319261
S.E. of regression	0.831325	Sum squared resid	26.96297
F-statistic	8.659012	Durbin-Watson stat	2.015070
Prob(F-statistic)	0.000005		

Unweighted Statistics

R-squared	0.203884	Mean dependent var	-4.334463
Sum squared resid	17.58428	Durbin-Watson stat	0.901544

Appendix 3: Regression Result for ROE

Dependent Variable: LROE
Method: Panel EGLS (Period SUR)
Date: 08/12/15   Time: 23:57
Sample: 2007 2013
Periods included: 7
Cross-sections included: 7
Total panel (balanced) observations: 49
Linear estimation after one-step weighting matrix
White period standard errors & covariance (no d.f. correction)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.388723	0.598429	-2.323994	0.0275
LCAR	-0.914350	0.040316	-22.77634	0.0000
LASQ	0.029921	0.009726	2.904602	0.0080
LEFF	0.136635	0.087826	1.547843	0.1500
LLQR	0.207988	0.020514	10.27857	0.0000
LIR	0.268756	0.045664	5.889240	0.0000
LINF	0.362560	0.110231	3.286183	0.0042

Weighted Statistics

R-squared	0.642331	Mean dependent var	-2.182822
Adjusted R-squared	0.629328	S.D. dependent var	5.393973
S.E. of regression	0.832023	Sum squared resid	26.94338
F-statistic	76.13488	Durbin-Watson stat	2.015915
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.175311	Mean dependent var	-2.529607
Sum squared resid	17.62176	Durbin-Watson stat	0.901544

Appendix 4: Q-Test

Date: 09/15/15   Time: 22:37
Sample: 2007 2013
Included observations: 49
Q-statistic probabilities adjusted for 1 dynamic regressor

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. | . |	. | . |	1	0.032	0.032	0.0370	0.847
. | . |	. | . |	2	-0.011	-0.012	0.0415	0.979
. *| . |	. *| . |	3	-0.068	-0.067	0.2132	0.975
. | . |	. | . |	4	-0.044	-0.040	0.2867	0.991
. *| . |	. *| . |	5	-0.110	-0.110	0.7782	0.978
. | . |	. | . |	6	0.045	0.046	0.8626	0.990
. | . |	. | . |	7	0.004	-0.007	0.8633	0.997
. | . |	. *| . |	8	-0.059	-0.076	1.0227	0.998
. | . |	. | . |	9	0.030	0.033	1.0665	0.999
. | . |	. *| . |	10	-0.055	-0.070	1.2154	1.000

*Probabilities may not be valid for this equation specification.

Appendix 5: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.051862	Prob. F(5,44)	0.3888
Obs*R-squared	4.261927	Prob. Chi-Square(5)	0.3717
Scaled explained SS	1.428287	Prob. Chi-Square(5)	0.8393