Bank Performance Evaluation in Emerging Market
The Case of Turkey and Brazil

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ABSTRACT

This study tries to investigate the banking performance in Turkey and Brazil as the two countries in emerging markets. Considering the many years as well as a sufficient number of the best banks in each country, and also using the CAMEL model as a powerful and strong ratio to evaluate the overall situation of banks has allowed us to have an accurate information about the banks' performance. This study is focused on the years of recent global financial crisis and obviously tries to show the performance of the top banks in the selected countries. It is planned to measure the performance in terms of capital adequacy, asset quality, management, earnings and liquidity. For this aim, it is referred to most commonly used ratios in banking system. In this study, regression analysis is used to make the hypothesis test and determine the ratio significance. Consequently, the result of this study can be very useful for investors who look to diversify the markets considering that the expected markets are saturated in developed countries.

Keywords : Emerging market , CAMEL , Financial crisis

ÖZ

Bu çalışmada, gelişen piyasalarda bulunan Türkiye ve Brezilya'daki bankacılık performansı araştırılmaktadır. Her iki ülkenin en iyi çalışan bankaların sayıları ve çalışma yılları göz önünde bulundurulması ve bankaların genel durumunu değerlendirmek için güçlü ve etkili bir model olan CAMEL'in kullanılması, banka performanslarıyla ilgili doğru bilgilere ulaşılmasında yardımcı olmuştur. Bu çalışmanın önemli noktası, seçilen ülkelerdeki bankaların, yakın geçmişte gerçekleşen küresel ekonomik kriz dönemindeki performansının incelemesidir. Performansların, sermaye yeterliliği, malvarlığı kalitesi, yönetim, kazanç ve likidite temelinde ölçülmesi planlanmıştır. Bu amaç doğrultusunda, bankacılık sistemlerinde kullanılan oranlar temel alınmıştır. Bu çalışmada hipotezleri test edebilmek ve oranlardaki anlamı belirleyebilmek için regresyon analizi kullanılmıştır. Buna bağlı olarak çalışmanın sonuçları, gelişmekte olan ülkelerin piyasalarını inceleyerek, piyasayı çeşitlendirmeyi amaçlayan yatırımcılar için yararlı olacaktır.

Anahtar Kelimeler: Gelişen Piyasa, CAMEL, Ekonomik Kriz.

To My Dear Parents

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I would like to thank to everybody who encouraged and supported me in each stage of my life. Especially, I would like to thank my supervisor, Assoc. Prof. Dr. Nesrin Özataç and Prof. Dr. Salih Katırcıoğlu, Chair of Department of Banking and Finance.

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INTRODUCTION

1.1 Background of the Study

Banks have always been considered as safe places for people in an economy to keep their valuable items. When the financial institutions started their first activities, they were not called as a bank, yet their main activities were the same as the banks nowadays.

One simply cannot ignore the importance of financial institutions and more specifically the banks in nowadays economy. Banks are considered to play an important role in economies in different countries since they are dealing with different types of financial instruments every day. In fact the importance of the role played by these institutions is that economy cannot survive without them.

However, the banks were not somehow safe and comfortable in their first activities during the previous centuries. With the advancement of technology, they have become safer and more comfortable than before. Especially, after the invention of Internet and World Wide Web, most of the transactions are done through using it, hence modern banking is developing with a high pace.

Based on customers' needs, banks are obligated to provide proper services. For this reason they are categorized in different levels. Investment banks, retail banks,

commercial banks, online banks, and others are amongst them which every one of them represents different services.

According to Faezah (2007), most of the mentioned categories of the banks are active under the supervision of central banks. In Turkey, banks first started their activities during the famous empire of Ottomans (Atici and Gursoy, 2011). Statistics show that there are 45 different banks; 32 Commercial Banks (3 state-owned, 12 private and 17 foreign banks) and 13 Development and Investment Banks (3 public, 6 private and 4 foreign banks).

During the past few decades, the emerging countries such as Turkey and Brazil have faced serious issues and recessions. Among them, those of 1991, 1994, 1998, 2001 and 2008 (World crisis) are the most important ones.

Of course each of these periods had their own negative effects on Turkish banking system and at the end on Turkish economy, yet, the last two periods significantly affected the Turkish economy.

Certainly other internal shocks such as the Marmara earthquake in 1999 gave unpredictable damages to the economy. The crisis of 2001 and 2008 were the severest ones (Atici, 2008).

On the other hand, Public banks were established in Brazil during the early 20th century with the purpose of impelling the economic growth. A strong banking system was crucial to Brazil's development because of the need to finance infrastructure and develop the already existing enterprises.

Prior to 1964, there existed only a handful of state banks. Since there was high inflation and currency volatility at that time, private banks were prevented from engaging in long-term capital financing.

As private banks could not take uncertain long-term positions, and there were not enough state banks to handle the country's demand for long-term financing, the Brazilian government responded by increasing the number of state banks. The government's arbitrary increase in the number of state banks led to significant problems.

The lack of proper management and transparencies led these banks to be abused by their respective state governments. This, in turn, caused two main issues for the federal government to deal with:

1. The increasing budget deficit from the ongoing bail-out of state banks,

2. The prevention of adopting proper monetary policy.

These problems had to be solved to prevent a potential collapse of the economy.

The current study focuses on two important countries which are active in emerging markets; Brazil and Turkey. Both countries have shown to have a great potential in terms of investment and economic growth. However, they have both experienced hardship during certain time horizons. This study takes the latest financial crisis into consideration and tries to evaluate the performance of these countries under the crisis situation.

1.2 Objective of the Study

The current study tries to investigate those profitability related factors in Turkish and Brazilian banks. To do so, the study has chosen the period of 2007 to 2011 which includes the financial crisis of 2008. Moreover, for each country a number of 13 banks are selected; based on their Capital I tier.

Different ratios such as net interest margin, return on assets and return on equity are used as the interest risk and profitability indicators. Those variables which are likely to cause changes on them are chosen according to CAMEL ratios (Capital Adequacy, Asset Quality, Management Efficiency, Liquidity and the Bank Size (Total Asset).
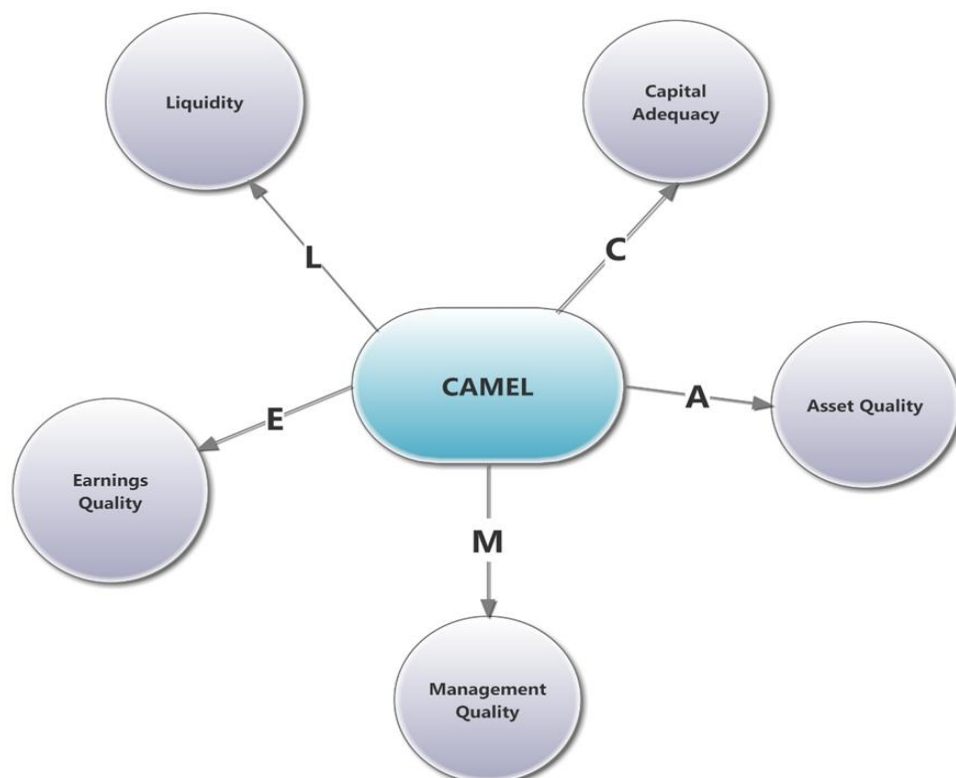
Figure 1. CAMEL Components

1.3 Research Questions

One of the most important parts of each study is the questions which need to be answered. The current study uses banking sectors in Turkey and Brazil in a five year period of 2007 to 2011.

The following questions are to be answered:

1. What were the profitability indicators on banks during the financial crisis in Brazil and Turley?

2. Which CAMEL component could significantly affect the banking sector in Brazil and Turkey?

3. Which country performed better than the other?

The results and answers of the mentioned questions could be useful for Brazilian and Turkish banking management, as well as to policies makers, in order to improve the financial institution performance.

1.4 Thesis Structure

This thesis is divided into 5 consecutive sections.

The first part is the introduction of the study. The second part, literature review, focuses on the background of the study in both Turkey and Brazil. The third part explains the methodology. Chapter 4 brings the empirical results and finally in Chapter 5 the study ends with a comprehending conclusion.

Chapter 2

LITERATURE REVIEW

2.1 Overview of Banking in Turkey

Turkey is known to be one of the most important developing countries. According to International Monetary Fund (**IMF**), it is ranked as the 17th by having **GDP** of 827209 (Millions of USD).

In Turkey, banks first started their activities in the famous Ottoman Empire period (Atici and Gursoy, 2011). Statistics show that there are 45 different banks; 32 Commercial Banks (3 state-owned, 12 private and 17 foreign banks) and 13 Development and Investment Banks (3 public, 6 private and 4 foreign banks).

Turkish economy and specifically Turkish banks have faced a number of serious crises. According to Atici (2011), one of the most crucial times for Turkish banking system was the crisis of 1994. The crisis was the result of unbounded domestic growth. However, the crisis of 1994 was not the only crisis which Turkish economy has experienced. The Russian crisis which happened in 1998, and then the earthquakes of Marmara in Turkey in 1999 were the other shocks to Turkish economy (Atici, 2011).

Table 1. List of 30 top banks in Turkey (by total assets Million $ as of 30 September 2012)

Rank	Bank	Rank	Bank
1	Türkiye İş Bankası	16	Türkiye Sınai Kalkınma Bankası
2	Ziraat Bankası	17	Alternatif Bank
3	Yapı ve Kredi Bankası	18	Citibank
4	Garanti Bank	19	Anadolubank
5	Akbank	20	Burgan Bank
6	Halk Bankası	21	İMKB Takas ve Saklama Bankası
7	VakıfBank	22	Tekstilbank
8	Finansbank	23	Deutsche Bank
9	Türk Ekonomi Bankası	24	Fibabanka
10	Denizbank	25	Aktif Yatırım Bankası
11	HSBC Bank	26	The Royal Bank of Scotland
12	ING Bank	27	Türkiye Kalkınma Bankası
13	Türk Eximbank	28	Turkland Bank
14	Şekerbank	29	Arap Türk Bankası
15	İller Bankası	30	Merrill Lynch

Source : World Data Bank (2012)

2.2 Overview of Banking in Brazil

Banks in Brazil mainly go back to the imperial regime. During this time, Brazilian banks were poorly spread among the country. Rio de Janeiro has always been an important part of Brazil. Hence, almost 30 percent of banks, holdings and deposits were in this city, and 70 percent is in the other parts of the country.

After the first republic president was elected by the nation, he came by a financial solution to confront the issue of high demand for credit. By loosening the regulations, printing more money, and leaving banks with more liberty were among those plans he implemented in order to improve the banking system in Brazil. First, the state bank of Brazil, which is called Credito Real de Minas Gerais, was founded while the financial plan was running in 1889. The government aimed to help the growth of the economy. It has to be said that the plan did not go as it was supposed to and hence the inflation and currency depreciation happened from 1889 to 1892.

Banks were not isolated from these events. They came across the bankruptcy and default boarder, in order to survive; they chose to grant loans to non-creditable customers and organizations and as the collateral, accepted stocks.

Since the government promised to help the banks, they had to grant large loans in order to support them and prevent the financial crisis and collapse. As the result, two banks had to merge and become one as a treasury agent which was called Banco da Republica, which later renamed as Banco do Brasil.

Years later, between the 1960's and 1970's both federal and state governments established development and commercial banks. By early 1970's, there existed 24 state commercial banks. Almost every state (with the exception of Mato Grosso do Sul and Tocantins) had its own state bank. In many cases these banks were created by turning a pre-existent private bank in a public bank.

State Banks in Brazil were primarily created with the purpose of helping the country's development, and substituting for private banks' absence in specific

sectors that were not being properly served. In an attempt to boost the economy in 1956, the government used funds from the monetary reserve, which ended up resulting in a drastic increase in inflation. The public deficit accounts grew significantly.

The government attempted to boost the economic growth with implementation of selected reforms. However, inflation was a problem for the long term financing which was necessary. The harsh economic environment led the government to endorse the creation of banks to fulfill the long term financial needs. The high inflation environment was the main incentive behind the explosive growth of banks throughout the 20th century, thus defying the initial objectives of State Banks.

Many different studies were done to determine the accurate profitability indicators of banking in Brazil. Among them, the ones mentioned in the following table are the most important ones:

Table 2. Previous studies in bank profitability in Brazil

Author/Year	Research synthesis	Technique	Sample	Period
Oliveira (2008)	Assessed whether the profitability of the banking sector is uniform in terms of size, capital origins, and credit operations level. Found that the profitability of the banking sector showed non-uniform behavior in the analyzed interval and that only the size variables displayed uniformity for profitability.	ANACOR and HOMALS	215 banks	1996-2006
Maffili, Bressan and Souza (2007)	Analyzed possible relations between capital structure, credit and treasury operations, spread and return on equity (ROE) ratio of Brazilian retail banks, and found a statistically significant relation in the analysis period.	Panel Data	20 banks	1999-2005
Gregório (2005)	Compared the profitability (ROE) of the private banking sector with private nonfinancial sectors. Verified that, on average, the profitability of the banking sector was higher than that of nonfinancial sector and showed lesser volatility.	Comparison of means and standard deviations	Mean 40 banks per year	1997-2004
Schlottfeldt (2004)	Aimed to explore the relation between required capital and profitability of banks in Brazil. The results found did not evidence significant relations between profitability (ROE) and the Basel Ratio.	Panel Data	144 banks	1995-2003
Ceretta and Niederauer (2001)	Comparatively investigated the competitive position of financial clusters in the Brazilian banking sector through the profitability versus productive efficiency matrix. Found that large banks perform better and that small banks show low profitability and low operating efficiency.	Data Envelopment Analysis	144 banks	Second semester 1999

Source: World Data Bank (2012)

Table 3.List of 30 top banks in Brazil (by total assets Million $ as of 30 September 2012)

Rank	Bank	Rank	Bank
1	Banco do brasil	16	BNB
2	Itau Unibanco	17	BNP Paribas
3	Bradesco	18	BIC
4	Brazilian development bank	19	BMG
5	Caixa Economica Federal	20	Bansicredi
6	Santander	21	Societe Generale
7	HSBC	22	Bancoob
8	Votorantim	23	Alfa
9	Safra	24	Panamericano
10	Citibank	25	ABC Brasil
11	BTG Pactual	26	Daycoval
12	Banrisul	27	Fibra
13	Deutsche Bank	28	Mercanti Do Brasil
14	Credit Suisse	29	Banestes
15	JPMorgan Chase	30	Rabobank

Source : World Data Bank (2012)

2.3 Previous Research on Profitability Indicators of Banks

There are many different studies done on the profitability indicators of banks. For instance, in a study done by Molyneux and Thornton (1992), they investigated the banks' determinants by using Bourke's method (1989). They did their study on European banks in 18 different European countries. The methodology used by them was pooled regression analysis. In their results they showed that there is positive

and significant correlation among bank concentration, nominal interest rate and profitability.

In their study, Demirgüç-Kunt and Huizinga (1999) evaluated banks' performances in 80 different countries with in the period of 1988 to 1995. They used pooled regression to analyze the data. They concluded that different factors such as bank characteristics, macroeconomic conditions, implicit and explicit taxing, regulation, financial structure and legal and institutional aspects could significantly affect the banks' profitability.

Another study, which used panel data dynamic, was done in 10 different countries for the period of 1981 to 2003 by Albertazzi and Gambacorta (2009). They investigated the relation between the economic cycle and profitability in banking sector. They verified that bank profitability in Anglo-Saxon countries was structurally higher, despite the differences in economic cycles, financial system and tax development.

Sufian and Habibullan (2009) did their large study for more than 200 Chinese banks for the period of 2000-2005. They investigated the indicators during the post-reform period.

2.4 CAMEL

The Uniform Financial Institutions Rating System (**UFIRS**), commonly known as the CAMELS rating system, was adopted by the Federal Financial Institutions Examination Council (**FFIEC**) on November 13, 1979.

The FFIEC updated the UFIRS in December 1996 and the revision was effective by January 1, 1997. These revisions included the addition of a 6th component addressing the sensitivity to market risks - identification of risks within the component and composite rating descriptions. It can be said that the UFIRS helps maintaining stability and the confidence in the nation's financial system.

UFIRS assigns a composite rating based on an evaluation and rating of 6 essential components of an institution's financial condition and operations. With UFIRS, there are two types of ratings: CAMEL stands for Capital adequacy, Asset quality, Management capability, Earnings quantity and quality, the adequacy of Liquidity. However, it was later updated with the sixth key component, which is Sensitivity to market risk – so, since then it is CAMELS.

2.5 Capital Adequacy

A critical assessment of the variables is associated with the determination of capital adequacy and credit, which directly affects the overall condition of the financial institution. It includes determining the strength of the credit union's capital position based on the basic assumptions in the next year or within the next few years. One critical factor in the planning of risk management is the credit institution.

Factors such as the assessment of credit rating, interest rate, liquidity, strategic risk, reputation, and trade and investment opportunities may affect the credit union now or in the future.

2.6 Asset Quality

Asset quality is known as those loans which present the risk to the credit of a financial institution.

This item is said to be depended on the following factors:

1. Whether the practices and policies related to the investment decisions are appropriate,

2. The risk factor of a specific investment in comparison with earnings and capital structure of the unit,

3. Comparisons between market value and book value of invested capital.

Ranking asset quality depends on the circumstances, the likelihood of future deterioration or improvement in economic conditions as well as the current practices.

A good component for asset quality and management assessment of credit risk is the credit union.

Along with the credit risk, the possibility to test and evaluate the impact of other risks such as interest rate, liquidity and strategic factors is possible. All the assets of quality and process should be considered in the ranking.

These include loans, investments and other real estate owned (ORE0s) and other assets that can have a negative impact on the financial status of credit unions affect.

2.7 Liquidity

This factor relates to the management of assets and liabilities. To be more on the point by evaluating and controlling while monitoring the balance sheet risk which itself contains two other risks known as interest rate risk (which can be both income and expense) and liquidity risk. Current assets in a financial institution usually include cash or other instruments which means liquidity. Hence the variable can be extremely important in terms of operating the expenses.

2.8 Earnings Quality

Surviving and continuing credit union depends on its ability to get good returns on its assets that enables the firm to remain in the competition and rising action to make their capital.

The evaluation and ranking of income is not sufficient just to study the past and present performance evaluation of the future performance, including the institution's most considerable values in different situations economy.

Ability to institute long-term profitability is an important factor in the credit union. Credit Union Budget Survey for reasonableness and underlying assumptions are very suitable for this purpose. Also taking into account the interactions with other high risk areas such as interest rates and credit is very important.

2.9 Management Quality

One of the most important indicators of the current condition of a firm and a key determinant which can reflect whether a firm is able to overcome the financial stress is the management. Managers' decisions not only affect the firms presents income and expenses, but also can have great impact on the future of the firm.

Managers are expected to identify, measure, monitor, and control the risks of the credit union's activities, ensure its safe and sound operations, and ensure compliance with applicable laws and regulations. Management practices should address some or all of the following risks: credit, interest rate, liquidity, transaction, compliance, reputation, strategy, and other risks.

Chapter 3

METHODOLOGY

3.1 Research Data

Since each study has its own unique characteristics, the data related to any study would be different accordingly. It is known that for studies which are classified in the field of bank analyses or quantitative finance use numerical data in order to achieve the desirable results. The current study uses numerical data which are obtained via data stream provided by Eastern Mediterranean University. Accordingly, when the results are calculated, it needs to be comprehended in a way which could be understandable for the readers. The current study uses EVIEWS 8 to calculate the results.

3.2 Research Design

Research design is known to be one of the most important and key steps of each study. According to Robson (1993), the design of a research is those procedures which enhance the researcher to make sure that the information related to the study is viable and could lead to proper results accordingly.

According to (Yin, 2003), the study aims to achieve the following objectives:

1) The study uses the CAMEL ratios to understand the performance of banks chosen for the study in two different countries; Brazil and Turkey. The ratios would be calculated for each bank and each country separately.

2) Afterwards, the study proposes a comparison between banks in both countries and tries to demonstrate the strength and weakness of each country's banks with respect to the different ratios chosen for the study.
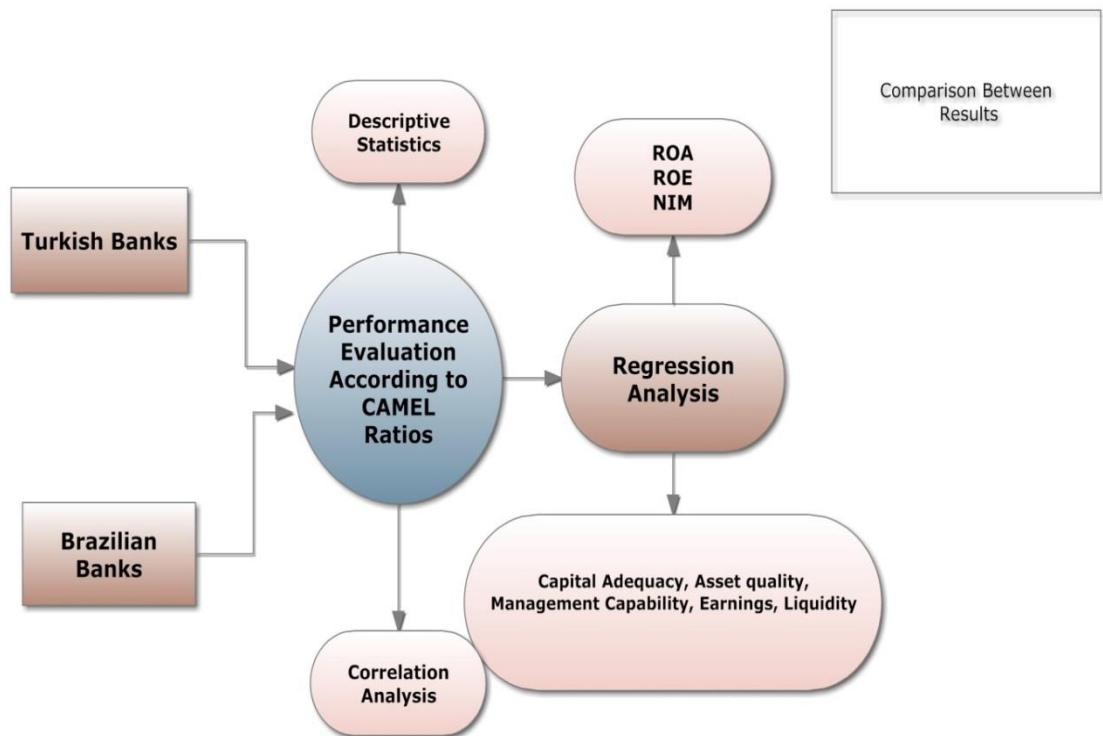
Figure 2. Research Design

3.3 Sample of Research

The current study uses two different countries which have active economy in emerging markets.

Emerging markets are defined as those active economies which have the potentials of developed markets, but they are technically considered as a developed market since the market has not yet reached its full potential (Marois, Thomas, 2012).

The countries chosen for the study are Turkey and Brazil. The study is investigating these two countries since they are facing a growing economy and are developing with a high pace. A number of 13 banks are chosen out of each country based on their Tier I capital reported in 2013.

The study credits that comparing banks' performances between these two countries which are active in emerging markets could lead to interesting results in terms of how they are managing their assets and equities and liabilities. The period chosen for the study is 5 years from 2007 up to 2011. The study takes the global financial crisis into consideration since during the financial crisis, emerging markets were an interesting destination for investors to either invest or diversify (Kvint, Vladimir, 2009).

3.4 Variables Chosen for the Study

The study tries to investigate the performance of different banks in Turkey and Brazil based on CAMEL ratios. After calculating the ratios, the study takes the other management efficiency (Profitability Indicator) ratios into consideration. Afterwards, a regression analysis is employed to evaluate the effect of CAMEL ratios to those of management efficiency (Profitability Indicator) ratios. Hence the variables chosen for the study are divided in to two different categories.

3.4.1 Dependent Variables

A dependent variable is what the study measures in the experiment and what is affected during the experiment. Dependent variables are those which react to the changes in independent variables.

The dependent variables chosen for the study are according to management efficiency (Profitability Indicator) ratios. These variables are Return On Assets (ROA), Return On Equity (ROE) and NIM (Net Interest Margin). The study has considered these variables as dependent variables since previous literatures have done so (Hasan, Bashir 2004, and Faysal, 2005).

1) **Return on Assets** (**ROA**)

Return on assets is known as the ratio which could reflect the profitability of a firm with respect to its total assets. The ratio is known as to give an idea of how the management is efficient in terms of generating the income out of existing assets. This study used the ratio as the division of annual earnings over the total assets. Both of these elements are extracted from the financial statements of the banks.

$$ROA = \frac{NET\ INCOME}{TOTAL\ ASSETS}$$

2) **Return on Equity** (**ROE**)

Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

According to the usage of each ratio, different types of ROE are usually used:

1) Those investors who seek the common equity are likely to decrease the preferred dividends from net income hence the ratio would be as following:

$$ROCE = \frac{Net\ Income - Preferred\ Dividends}{Common\ Equity}$$

2) Return on equity may also be calculated by dividing the net income by average shareholders' equity. Average shareholders' equity is calculated

by adding the shareholders' equity at the beginning of a period to the shareholders' equity at period's end and dividing the result by two.

3) The final approach is using the average equity of shareholders (beginning - ending). This ratio is considered to be useful for those investors who seek short term investments in firms.

However, the current thesis uses the usual of ROE which is common among financial and non-financial institutions.

$$ROE = \frac{Net\ Income}{Total\ Equity}$$

3) Net Interest Margin (NIM)

It is considered to be one of those metrics which illustrates how successful investment decisions of firms are. The calculated ratio is as following:

$$Ney\ Interest\ Margin = \frac{Investment\ Returns - Interest\ Expenses}{Average\ Earnings}$$

3.4.2 Independent Variables

1) Capital Adequacy

In this study the capital adequacy is measured via the ratio of total equity over total assets. The ratio describes the percentage of total assets which are financed through shareholders.

$$TETA = \frac{Total\ Equity}{Total\ Assets}$$

2) Asset Quality

The ratio of asset quality in this study is PLLTL. This ratio represents the division of provision for loan losses that banks have allocated for non-performing loans over total loans.

$$PLLTL = \frac{\text{provision for loan losses}}{Total\ Loans}$$

3) Management Quality

This study has used the ratio of total loans over total deposits as the measure of management quality. This ratio reflects the power of management in attracting fund from financially strong and creditable customers and transfers it to those reliable and creditworthy clients which are applying for loans.

$$MN = \frac{Total\ Loans}{Total\ Deposits}$$

4) Earnings Quality

This study uses the ratio of operating costs over operating revenues. Both of these factors are extracted from the financial statements of banks, specially the income statement. Operating costs usually include salaries, wages and other expenses.

$$CR = \frac{Operating\ Costs}{Operating\ Revenues}$$

5) Liquidity Quality

Liquidity ratio has always been considered as one of the most important ratios in firms which can reflect the amount of cash in hand. The ratio is the division result of current assets over the total deposits. In non-financial firms, the ratio is calculated by dividing the current assets over current liabilities. However, in banks current liabilities are the deposits acquired form customers.

$$Liquidity = \frac{Current\ Assets}{Total\ Deposits}$$

6) Logarithm of Total Assets

This variable is used in this study, since the scale of banks can play an important role in terms of their profitability. Hence, total asset can be considered as a variable

which can affect the profitability in financial firms, and specifically banks. The reason behind using the logarithmic form of the variable is that, the study could use it in regression analysis. This ratio represents the size of the banks.

The study has considered these variables as independent variables since previous literatures have done so (Hasan, Bashir 2004, and Faysal (2005).

3.5 Methodology

According to Berg, Bruce L (2009), methodology is defined as those approaches which help the structure of the study to get shaped and leads into a specific branch and section of knowledge. The current section tries to explain those approaches and their results.

3.6 Descriptive Analysis

The procedure which explains the total sample used for the study in descriptive coefficients of the collected data is called descriptive statistics (Trochim, William M. K, 2006).

The study implemented two different categories of descriptive statistics. Firstly, the procedure is operates separately for each country. Afterwards, a total descriptive analysis operates for the whole sample of both countries to have a general idea of the whole data.

3.6.1 Descriptive Statistics for Brazil

Table 4. Descriptive Statistics for Brazil

	LIQ	CR	LTA	MN	PLLTL	ROA	ROE	TETA	NIM
Mean	0.110435	0.878854	7.404349	1.197322	0.050015	0.016830	0.086034	0.242252	0.078535
Median	0.101769	1.050633	7.039078	1.067636	0.049253	0.016843	0.073667	0.211955	0.066153
Maximum	0.424924	6.885816	8.911352	2.446399	0.087858	0.034621	0.275135	0.537851	0.262655
Minimum	0.000996	-12.48026	6.346859	0.579144	0.012172	0.003314	0.006691	0.081075	0.019271
Std. Dev.	0.101199	2.495650	0.788055	0.490333	0.022587	0.008749	0.064690	0.127311	0.052535
Sum	6.626112	52.73124	444.2609	71.83933	1.965846	1.009776	5.162067	14.53512	4.712100
Sum Sq. Dev.	0.604230	367.4678	36.64079	14.18519	0.030099	0.004517	0.246902	0.956282	0.162837

The table illustrates the information of ratios in Brazilian banks. As it is shown in the table, three important factors would be discussed; mean maximum and minimum.

CR has the mean of 0.87, which shows that banks in Brazil, in average, generate more operating income and spend less than what they have generated. Hence, the ratio is interpreted as banks in Brazil are successful in overcoming the operating expenses via the generated operating income. Although the maximum of ratio is calculated to be as large as 6.88, the ratio has a minimum of -12, which is happened in BANCO INDUSVAL S.A. in 2009. Thus, the bank has generated a negative income.

The other ratio is the liquidity, which is calculated through the division of current assets over current liability. As it is shown in table 3.1, the ratio is dramatically low by facing the value of 0.11, 0.42 and 0.0009 for mean, maximum and minimum respectively. Since the frontier line of each financial and non-financial institution is the amount of cash they have, the results calculated on this ratio show that banks in Brazil are facing serious problems in terms of liquidity and management. Decision should be made to overcome the issue.

The next ratio is the natural logarithm of total assets. The mean for this ratio is 7.40 while the maximum and minimum values are 8.91 and 6.34 respectively.

Management efficiency ratio (MN), which is calculated by dividing total loans over total deposits, has the mean of 1.19 which shows the value of banks' loans provided

through the acquired deposits from customers. The minimum value of ratio is 0.57, which states that only half of the loans granted are financed via the deposits.

PLLTL is the next ratio which is calculated via the division of provision for loan losses over the total assets. The mean of ratio has a very low value which indicates that banks in Brazil allocate a petit amount of cash for those non-performing loans which are not expected to be returned.

TETA is the other ratio used in the study, which is calculated by dividing the total equity over the total assets. This ratio is considered as the capital adequacy ratio in CAMEL. It represents that on average only 24% of total assets are financed through the shareholders' channel. The maximum value of the ratio is 0.53, which indicates that almost half of the total assets is financed via using shareholders' money. It is expected for the banks to have low values for this ratio since banks are highly leveraged on the deposits they acquire.

ROA, ROE and NIM have the mean of 0.01, 0.08 and 0.07 in Brazilian banks. The values of ROA and ROE are low which indicate that net income generated via total assets and equity in Brazilian banks are low. Hence, it can be support the view that the profitability indicators in Brazilian banks are low.

3.6.2 Descriptive Statistics for Turkey

Table 5. Descriptive Statistics for Turkey

	LIQ	CR	LTA	MN	PLLTL	ROA	ROE	TETA	NIM
Mean	0.096261	1.761692	7.495332	1.111393	0.014406	0.018564	0.094869	0.210984	0.064710
Median	0.096308	0.677828	7.537907	1.084363	0.015837	0.018047	0.099619	0.194106	0.060806
Maximum	0.262379	15.57179	8.133310	1.549079	0.036967	0.037685	0.194186	0.407342	0.130064
Minimum	0.006054	0.243413	6.328235	0.786458	-0.001054	0.000228	0.000671	0.118365	0.030664
Std. Dev.	0.062845	3.573617	0.498365	0.193821	0.008421	0.007599	0.045801	0.068974	0.024719
Sum	6.256938	114.5100	487.1965	72.24054	0.936420	1.206645	6.166457	13.71393	4.206124
Sum Sq. Dev.	0.252770	817.3272	15.89554	2.404261	0.004538	0.003696	0.134256	0.304475	0.039106

The table illustrates the information of ratios in Turkish banks. As it is shown in the table, three important factors would be discussed; mean maximum and minimum.

CR has the mean of 1.76, which shows that banks in Turkey, in average, generate less operating income and spend more than what they have generated. Hence, the ratio is interpreted as banks in Turkey are not successful in overcoming the operating expenses via the generated operating income. Although the maximum of ratio is calculated to be as large as 15.57, the ratio has a minimum of 0.24.

The other ratio is the liquidity, which is calculated through the division of current assets over current liability. As it is shown in table 3.2, the ratio is dramatically low by facing the value of 0.096, 0.26 and 0.00605 for mean, maximum and minimum respectively. Since the frontier line of each financial and non-financial institution is the amount of cash they have, the results calculated on this ratio show that banks in Turkey are facing serious problems in terms of liquidity and management. Decision should be made to overcome the issue.

The next ratio is the natural logarithm of total assets. The mean for this ratio is 7.49, while the maximum and minimum values are 8.13 and 6.32 respectively.

Management efficiency ratio (MN), which is calculated by dividing total loans over total deposits, has the mean of 1.11, shows the value of banks' loans provided through the acquired deposits from customers. The minimum value of the ratio is 0.78, which states that only half of the loans granted are financed via the deposits.

PLLTL is the next ratio that is calculated via the division of provision for loan losses over the total assets. The mean of ratio has a very low value, which indicates that banks in Turkey allocate a petit amount of cash for those non-performing loans that are not expected to be returned.

TETA is the other ratio used in the study. The ratio is calculated by dividing the total equity over total assets. This ratio is considered as capital adequacy ratio in CAMEL. It represents that, on average, only 21% of total assets are financed through the shareholders' channel. The maximum value of the ratio is 0.407, which indicated that almost half of the total assets is financed via using shareholders' money. It is expected for the banks to have low values for this ratio since banks are highly leveraged on the deposits they acquire.

ROA, ROE and NIM have the mean of 0.018, 0.09 and 0.06 in Turkish banks respectively. The values of ROA and ROE are low, which indicate that net income generated via total assets and equity in Turkish banks is low. Hence, it supports that the profitability indicators in Turkish banks are low.

Almost all the ratios in both countries are same except for Liquidity and Cost to Revenue ratios. They both have larger values in Brazil. Hence, banks in Brazil are more liquidated than Turkish banks. However, Turkish banks seem to have lower costs since the ratio is much lower with respect to the same ratio in Brazil.

3.7 Correlation Analysis

The current study uses EVIEWS to implement the correlation analysis. The results are shown in the following tables. It is known that Pearson correlation matrix can show if the variables have multi-collinearity problems. This problem can lead into

miscalculation of the coefficients in regression analysis. However, the issue was not found amongst the variables in this study.

3.7.1 Correlation Matrix- Brazil

Table 6. Correlation table - Brazil

	LIQ	CR	MN	LTA	NIM	PLLTL	ROA	ROE	TETA
LIQ	1.000000	0.090453	-0.272320	0.598882	0.337399	0.300469	0.315109	0.286333	-0.087627
CR	0.090453	1.000000	-0.111549	0.158952	0.004484	-0.229498	0.149336	0.101983	0.073904
MN	-0.272320	-0.111549	1.000000	-0.180802	-0.301880	-0.278559	-0.117281	-0.502028	0.427831
LTA	0.598882	0.158952	-0.180802	1.000000	-0.060737	0.217858	-0.091175	-0.038275	-0.191878
NIM	0.337399	0.004484	-0.301880	-0.060737	1.000000	0.095852	0.433636	0.340404	-0.060740
PLLTL	0.300469	-0.229498	-0.278559	0.217858	0.095852	1.000000	-0.108758	-0.215108	0.130826
ROA	0.315109	0.149336	-0.117281	-0.091175	0.433636	-0.108758	1.000000	0.556603	0.149280
ROE	0.286333	0.101983	-0.502028	-0.038275	0.340404	-0.215108	0.556603	1.000000	-0.551057
TETA	-0.087627	0.073904	0.427831	-0.191878	-0.060740	0.130826	0.149280	-0.551057	1.000000

According to the results of the Pearson's correlation matrix, CR is positively correlated to NIM, ROE and ROA in Brazil. It can be said that earnings quality ratio is positively correlated to profitability indicators.

On the other hand, management efficiency ratio is negatively correlated to profitability indicators. PLLTL is positively correlated to NIM and negatively to ROA and ROE.

TETA is negatively correlated to ROE and NIM, while it is positively correlated to ROA.

3.7.2 Correlation Matrix- Turkey

Table 7. Correlation table – Turkey

	CR	LIQ	LTA	MN	PLLTL	TETA	ROE	ROA	NIM
CR	1.000000	0.074378	-0.488487	0.382374	0.068877	0.250489	-0.586369	-0.600368	0.167174
LIQ	0.074378	1.000000	-0.294260	0.292198	0.016777	0.048536	-0.079029	0.049948	-0.076788
LTA	-0.488487	-0.294260	1.000000	-0.303832	-0.326843	-0.159378	0.503525	0.482676	-0.190748
MN	0.382374	0.292198	-0.303832	1.000000	-0.017956	0.538221	-0.490254	-0.395228	0.161826
PLLTL	0.068877	0.016777	-0.326843	-0.017956	1.000000	0.057676	-0.110185	0.115267	-0.004145
TETA	0.250489	0.048536	-0.159378	0.538221	0.057676	1.000000	-0.705533	-0.310958	0.125614
ROE	-0.586369	-0.079029	0.503525	-0.490254	-0.110185	-0.705533	1.000000	0.789999	-0.042157
ROA	-0.600368	0.049948	0.482676	-0.395228	0.115267	-0.310958	0.789999	1.000000	0.209781
NIM	0.167174	-0.076788	-0.190748	0.161826	-0.004145	0.125614	-0.042157	0.209781	1.000000

According to the results of the Pearson's correlation matrix, CR is positively correlated to NIM and negatively related to ROE and ROA in Turkey. It can be said that earnings quality ratio is positively correlated to ROA and ROE.

Management efficiency ratio is positively correlated to NIM and negatively to ROA and ROE. PLLTL is positively correlated to ROA and negatively to NIM and ROE. TETA is negatively correlated to ROE and ROA, while it is positively correlated to NIM.

3.8 Model

In Previous sections, the study tried to describe the independent and dependent variables and their contribution to the study. Now, the current section discusses the applied model. The other aim of this section is to develop a different hypothesis according to the chosen variables and model. The methodology used in the study is according M. Kabir Hassan and Abdel-Hameed M. Bashir (2005). Since the data includes both time series and cross section data, the approach used in the study is Pooled panel ordinary least squares (OLS) regression model with cross section fixed effect.

The common equation of simple linear regression model is as following:

$$Yit = \alpha + \beta X_{it} + \mu_{it} \tag{1}$$

Where Y represents the dependent, and X is the independent variable. The current study uses a combination of time series and cross section data which is called Panel regression.

It is known that panel data could investigate the complex data more in depth (to Schulman et al, 1996).

The model is described through the following equation:

$$Yit = \alpha i + \beta_{i1}X_1 + \beta_{2i}X_{2+ \ldots\ldots\ldots} + \beta_{ij}Xj + \mu_{it} \qquad (2)$$

Y stands as the dependent, and X represents the independent. α and β represents the coefficient of variables.

The full model related to the current study is as follows:

ROE=α 1 +β 1 (CR)+β 2 (TETA)+β 3 (PLLTL)+β 4 (LD)+β 5 (LTA)+β 6 (LIQ)+β 7 (GGDP)+ε

ROA=α 2 +β 1 (CR)+β 2 (TETA)+β 3 (PLLTL)+β 4 (LD)+β 5 (LTA)+β 6 (LIQD)+β 7 (GGDP)+ε

NIM=α 3 +β 1 (CR)+β 2 (TETA)+β 3 (PLLTL)+β 4 (LD)+β 5 (LTA)+β 6 (LIQD)+β 7 (GGDP)+ε

Where, ROA bt represents the Return on Assets,

ROE bt represents the Return on Equity,

NIM bt represents the Net Interest Margin,

CR bt   represents the Cost to Revenue,

α 1 , α 2 , α 3 represents alpha (constant) for each model respectively,

 β represents the coefficients of the regression equation,

CR represents the Cost to Revenue,

TETA represents Total Equity to Total Asset,

PLLTL represents Provision of Loan Losses over Total Loans,

LD represents Loans to Deposits,

LTA   represent the logarithmic of Total Assets,

LIQD represents Liquid Assets to Deposits,

E represents error term.

It has to be mentioned that the current study uses Panel Regression with cross-section fixed effect.

3.9 Hypotheses

According to the research questions of the study, the following null hypotheses are developed.

3.9.1 First Part

1) CR Ratio could not significantly affect the profitability indicators (ROA, ROE and NIM) in Turkey and Brazil.

2) Liquidity ratio could not significantly affect the profitability indicators (ROA, ROE and NIM) in Turkey and Brazil.

3) Management Efficiency ratio could not significantly affect the profitability indicators (ROA, ROE and NIM) in Turkey and Brazil.

4) LTA could not significantly affect the profitability indicators (ROA, ROE and NIM) in Turkey and Brazil.

5) PLLTL could not significantly affect the profitability indicators (ROA, ROE and NIM) in Turkey and Brazil.

6) TETA could not significantly affect the profitability indicators (ROA, ROE and NIM) in Turkey and Brazil.

3.9.2 Second Part

Turkish banks were more profitable than Brazilian banks during the chosen period of the financial crisis.

3.10 Case Study

The current study tries to investigate the determinants of profitability in two important economies, which are categorized in emerging markets. There are different public and private banks active in both countries. However, this study selected the banks according to their capital tier I, which is reported in their central banks. The study selected 13 banks among the top 30 banks active in Turkey and Brazil. If the data was not available on a selected bank, the next best bank was chosen. The following banks are selected according to the mentioned criteria in both Turkey and Brazil (thebanker.com).

Table 6. 13 Top Banks in Turkey and Brazil

Turkey	Brazil
Türkiye İş Bankası	BANCO DO BRASIL S.A
Yapı ve Kredi Bankası	ITAU UNIBANCO
Garanti Bank	BANCO BRADESCO SA
Akbank	BANCO SANTANDER
VakıfBank	BCO RIO GRANDE SUL
Halk Bankası	BANCO DO NORDESTE DO
Finansbank	BANCO DA AMAZONIA SA
Türk Ekonomi Bankası	BCO ALFA INVESTIMENT
Denizbank	BCO MERCANTIL BRASIL
Asya bank	BANESTES SA-SANTO
Şekerbank	BRB BANCO DE
Fortis Bank	BANCO INDUSVAL S.A
Tekstilbank	BCO VOLKSWAGEN S.A

Source: World Data Bank (2012)

Chapter 4

RESULTS

Previous sections of this study focused on Literature and applied methodology. Based on the unique characteristics of the study, different hypotheses were developed and discussed. It based on selected variables and their correlation to the applied model. Different types of analysis, such as correlation and descriptive analysis were employed for both countries subjected to the study.

However, the current section focuses on the analytical perspective of the study. It provides the techniques used to investigate the relation between variables. The following model describes the conceptual framework of this chapter.
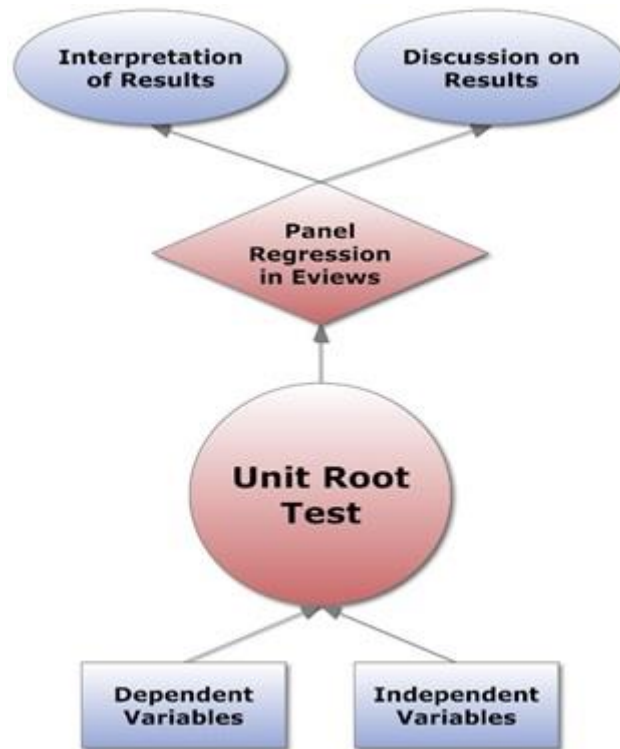
Figure 3. Framework of Result

4.1 Unit Root Test

Unit root test is an approach, which indicates whether the data is stationary or not. Stationary data is known as the data which the mean, variance and covariance is constant over the time horizon and does not change. If these indicators change over the time, the data would not be stationary and other procedures must be applied to data to proceed with regression analysis. The current study uses panel data; hence panel unit root test is used. According to methodologies developed by Levin, Lin and Chu (LLC), the data rejected the null hypothesis, which indicates that the data is stationary. Results are shown in the following tables.

Table 7. Panel Unit Root Tests - Brazil

Variable	LLC	Prob	Breitung t-stat	IPS	ADF	PP
CR						
Tπ	-7.71310	0.0000	-3.33631	0.40951	10.4647	17.6517
T	-10.23606	0.0108			37.8292	46.3102
LIQ						
Tπ	-11.3954	0.0000	-1.91188	-0.12372	17.1469	27.5592
T	-7.55350	0.0602			23.7414	37.1530
LTA						
Tπ	-9.66335	0.0000	-3.03006	-0.23707	21.4119	41.3038
T	7.98435	0.0998			11.3648	12.1699
MN						
Tπ	-8.77475	0.0000	-3.05957	0.15218	14.0162	27.4954
T	-10.07717	0.04692			21.3538	33.8325
NIM						
Tπ	-18.8764	0.0000	-3.18221	-0.57949	23.1243	42.8046
T	7.52962	0.0998			4.00638	2.08298
PLLTL						
Tπ	-8.91976	0.0000	-3.77660	0.13225	14.0981	24.9641
T	-7.39269	0.0819			23.6347	26.5181
ROA						
Tπ	-8.06295	0.0000	-0.73995	0.34806	12.8168	20.8148
T	-7.12375	0.04508			19.3953	26.2757
ROE						
Tπ	-7.69300	0.0000	-2.92378	0.23727	13.7716	24.2932
T	-7.05978	0.0011			32.3706	37.6036
TETA						
Tπ	-7.30653	0.0000	-2.56411	0.45373	10.6543	15.6405
T	7.12610	0.0869			13.0212	18.2455

Table 8. Panel unit root tests - Turkey

Variable	LLC	Prob	Breitung t-stat	IPS	ADF	PP
CR						
Tπ	-8.79668	0.0000	-3.25538	0.22415	13.9090	25.7691
T	-3.22825	0.0006			38.0054	54.7722
LIQ						
Tπ	-11.9229	0.0000	-1.62078	0.23563	14.7029	23.0732
T	8.12467	0.05019			21.1367	31.9250
LTA						
Tπ	-8.33748	0.0000	-1.45946	0.21386	15.3323	27.7136
T	14.21938	0 .0000			4.59845	4.63139
MN						
Tπ	-7.40382	0.0000	-2.94304	0.33159	13.1756	20.3720
T	-1.88712	0.0296			45.7835	60.1819
NIM						
Tπ	-8.67926	0.0000	-1.51464	0.12958	15.7894	32.9723
T	-5.60689	0.0000			53.6844	75.6348
PLLTL						
Tπ	-10.4944	0.0000	-3.63766	-0.13946	19.0757	32.2982
T	-1.36663	0.0859			19.9616	25.8525
ROA						
Tπ	-9.27083	0.0000	3.42369	0.14793	20.4005	34.1490
T	-5.34543	0.0000			46.8251	64.3230
ROE						
Tπ	-9.16424	0.0000	-2.80528	0.05327	16.9506	30.8130
T	-2.21669	0.0133			36.9099	54.1743
TETA						
Tπ	-6.32351	0.0000	-1.00390	0.51319	11.3200	18.4898
T	8.46907	0.0395			19.4004	30.0377

4.2 Autocorrelation

 "Correlation between elements of a series and others from the same series separated from them by a given interval" is defined as the autocorrelation. In e-views, the existence of the problem could be checked by the value provided by Durbin-Watson test. This value is known to be between zero and 4. For those numbers which are greater or equal to, it is said that the data set and regression analysis do not suffer from the autocorrelation problem. Values close to four show the negative autocorrelation. On the other hand, values close to zero strongly show autocorrelation. The values for each regression are allocated under its own table.

Due to the values related to R-Squared and Durbin-Watson in regression results, the possibility of the mentioned issue is rejected. Results on these values are reported in tables related to regression results.

4.3 Heteroskedasticity

Heteroskedasticity is defined as the deviation of a variable, which is not constant over a time interval. There are two different forms when the problem arises; Conditional and unconditional. Conditional Heteroskedasticity is usually seen in stocks' and bonds' prices since the volatility level of these assets are not likely to be predicted over any valid time period. When it comes to small samples, the possibility of the problem is higher. As it is said before, the current study uses e-views to perform the statistical tests. However, e-views do not offer white test to check the heteroskedasticity. So, the current study used other forms of data in e-views to perform the test.

The result of the white test strongly rejected the Heteroskedasticity problem since the coefficient is statistically significant.

4.4 Results on Regression

This section describes the regression results. These results are shown into three different equations according to the dependent variables and independent variables. Since the current study focuses on two companies, results on each ratio for countries are interpreted within a part and are compared simultaneously.

4.5 Results on Net Interest Margin (NIM)

1) Turkey

Table 10 shows the regression results, where NIM is the dependent variable and others are independent. As it is shown in the table, out of six chosen variables, three of them are reported to be statistically significant (Liquidity, LTA and PLLTL). It means that these variables can cause or predict changes in the dependent variable (NIM).

a) Liquidity (LIQ)

Liquidity is reported to cause significant changes on NIM. The variable is statistically significant at 10% (t-stat = -1.882812) and is negatively correlated to NIM. The coefficient of this relation is 0.2 with a negative sign, which indicates that, by a unit (percentage) change in liquidity of banks it is expected that Net Interest Margin decreases by 0.2.

Liquidity is division product of current assets over the total deposits. If the ratio is to increase, current assets (e.g. cash) should also increase. Increase in liquidity leads NIM to decrease. An increase in liquidity could be the result of increase in investment returns, or decrease in interest expenses, or increase in average earnings. Hence, when earnings are increased or expenses are decreased, it is expected that the firm, or in this case, banks be more liquidated. Results of this

part is parallel to previous studies, such as Dumičić, M., & Ridzak, T (2012). The results lead in to the rejection of the second hypothesis.

b) Logarithm of Total Assets (LTA)

LTA is reported to cause significant changes on NIM. The variable is statistically significant at 5 and 10% (t-stat = -2.220027) in 5% and is negatively correlated to NIM. The coefficient of this relation is 0.2 with a negative sign, which indicates that, by a unit (percentage) change in LTA of banks, it is expected that Net Interest Margin decreases by 2.8. It can be said that by increase in banks size, the NIM is likely to decrease in Turkey. Previous studies such as Lartey et al. (2013) have concluded the same results. Thus, the results lead into the rejection of the fourth hypothesis.

c) Provision for Loan Losses over Total Assets (PLLTL)

PLLTL is reported to cause significant changes on NIM. The variable is statistically significant at 1, 5 and 10% (t-stat = -3.578397) in 1% and is negatively correlated to NIM. The coefficient of this relation is 0.32 with a negative sign, which indicates that, by a unit (percentage) change in PLLTL of banks, it is expected that Net Interest Margin decreases by 0.32.

This result can be interpreted as, when banks allocate fund for the non-performing loans, they are blocking a large amount of cash which is probably fetched from the generated income. Hence, when cash in hand is not used in operating interaction or other actions, such as investments or granting customers loans, it is expected that the profitability, and thus NIM, decrease. The coefficient can also be interpreted as that the decrease in PLLTL would increase the earnings before tax EBT, so they paid more tax, which decreases the ratio. The results lead into the rejection of the fifth hypothesis.

Table 9. Results on Net Interest Margin (NIM) in Turkey

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.470352	2.554595	0.575571	0.5703
CR	-0.000578	0.102379	-0.005650	0.9955
LIQ	-0.203914	0.108303	-1.882812	0.0719
LTA	-2.816411	1.268639	-2.220027	0.0361
MN	-0.395513	0.689700	-0.573457	0.5717
PLLTL	-0.326434	0.091223	-3.578397	0.0015
TETA	0.361742	0.280382	1.290176	0.2093

R-squared: 0.526903 Adjusted R-squared : 0.270642 F-statistic : 10.056121 Prob (F-statistic) : 0.001058

Durbin –Watson stat : 2.497489

R-squared value is 0.52. This value indicates that, the variables chosen for this model can jointly explain 52% of those movements in dependent variable. Durbin-Watson value is greater than 2 (almost 2.5), which rejects the possibility of autocorrelation problem.

2) Brazil

Table 12 illustrates the regression results, where NIM is the dependent variable and others are independent in Brazilian Banks. As it is shown in the table, out of six chosen variables only two of them are reported to be statistically significant (TETA, LTA). It means that these variables could cause or predict changes in the dependent variable (NIM).

a) Logarithm of Total Assets (LTA)

In Brazil, the ratio is statistically significant at 1, 5 and 10% (t-stat = 4.626547) in 1 %. Since the coefficient of this relation is positive, it can be said that LTA is statistically significant and positively correlated to NIM in Brazil.

It can also be said that in Brazil, when total assets or size of banks increase, it can significantly affect NIM to increase as well. Hence, if total assets are increased in banks, profitability of them is likely to increase too. It can be stated that, if the measurement of profitability is LTA, those banks with higher assets are more profitable. When LTA increases by one unit, NIM will increase by 0.37 units. Results are in line with those of Spathic, Kosmidou, Doumpos (2002). So, the results lead into the rejection of the fourth hypothesis.

b) TETA

TETA is reported to cause significant and positive changes on NIM. The variable is statistically significant at 5 and 10% (t-stat = 2.254271) in 5% and is positively correlated to NIM. The coefficient of this relation is 0.45 with a positive sign, which indicates that, by a unit (percentage) change in TETA of banks, it is expected that Net Interest Margin increases by 0.45. It can be said that, in Brazil, when the bank equity increases, profitability increases too.

Table 10. Results on Net Interest Margin (NIM) in Brazil

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.858701	0.603715	-4.735183	0.0000
CR	-0.000360	0.002172	-0.165887	0.8690
LTA	0.378711	0.081856	4.626547	0.0000
LIQ	0.120142	0.079348	1.514106	0.1375
MN	-0.005734	0.027942	-0.205223	0.8384
TETA	0.453373	0.201117	2.254271	0.0295
PLLTL	0.525343	0.385528	1.362659	0.1803

R-squared: 0.669211 Adjusted R-squared : 0.575797 F-statistic : 8.234385 Prob (F-statistic) : 0.000000

Durbin –Watson stat : 1.719242

When comparing the results on NIM, it is revealed that banks in Brazil are more profitable than Turkish banks when it comes to total assets. When total assets increase in Turkey, then profitability will decrease. While, the results show that both equity and total assets could significantly help banks in order to be more profitable in Brazil. In Turkey, total equity does not seem to make any significant changes in terms of profitability, while in Brazil the situation is reverse. According to the results on NIM in Turkey, it can be said that if Turkish firms could manage the interest rates, they could increase their profitability, while in Brazil, being a more profitable could be achieved by gaining more assets and equity. Hence (according to CAMEL), management quality is important in Turkey while capital adequacy could help banks to be more profitable. The results lead into the rejection of hypothesis 6.

4.6 Results on Return on Assets (ROA)

1) Turkey

Table 13 shows the regression results, where ROA is the dependent variable and others are independent. As it is shown in the table, out of six selected variables three of them are reported to be statistically significant (CR, LTA and PLLTL). This means that these variables could cause or predict changes in the dependent variable (ROA).

a) CR

In this study CR represents the cost to revenue ratio. CR is shown to cause significant and negative changes on ROA. The variable is statistically significant at 1, 5 and 10% (t-stat = -2.715500) in 1 % and is negatively correlated to ROA. The coefficient of this relation is -0.0006 with a negative sign which indicates that by a unit (percentage) change in CR of banks, it is expected that ROA decreases by 0.0006. CR represents costs over the revenue. When CR increases, it means that

cost is definitely increases. On the other hand, ROA represents the profitability and to be more accurate. It stands for amount of net income which is generated via assets. It is reasonable that when cost increases net income decreases and that is why the regression results in Turkey by an increase in cost, net income and subsequently ROA or profitability decreases. Results are in line with those of Lartey (2013). The results lead into the rejection of the first hypothesis.

b) LTA

In Turkey, the ratio is statistically significant at 1, 5 and 10%. Since the coefficient of this relation is positive, it can be said that LTA is statistically significant and positively correlated to NIM in Turkey (coefficient= 0.03, t-stat=3.28).

It can be said that when the total asset or size of the banks increases in Turkey, it can significantly affect ROA to increase as well. Hence, if total assets are increased in banks, it will lead to generate larger income. It can be stated that, if the measurement of profitability is LTA, those banks with higher assets are more profitable in terms of ROA. When LTA increases by one unit, ROA will increase by 0.031 units. The results lead into the rejection of the fourth hypothesis.

c) Provision for loan losses over total assets (PLLTL)

PLLTL is reported to cause significant changes on ROA. The variable is statistically significant at 10% (t-stat = 1.753112) in 10% and is positively correlated to ROA. The coefficient of this relation is 0.169 with a positive sign, which indicates that by a unit (percentage) increase in PLLTL of banks, it is expected that ROA increases by 0.16.

This result can be interpreted as, if Turkish banks identify those non-performing loans which could result in to defaults, they can increase their profitability by 0.16 for each unit. The results lead into the rejection of the fifth hypothesis.

Table 11. Results on Return On Assets (ROA) in Turkey

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.211632	0.073174	-2.892158	0.0058
CR	-0.000644	0.000237	-2.715500	0.0093
LIQ	-0.002410	0.032777	-0.073525	0.9417
LTA	0.031605	0.009608	3.289232	0.0019
MN	-0.006404	0.008825	-0.725650	0.4717
PLLTL	0.169850	0.096885	1.753112	0.0862
TETA	-0.003101	0.032119	-0.096541	0.9235

R-squared: 0.730785 Adjusted R-squared : 0.625439 F-statistic : 6.937046 Prob (F-statistic) : 0.000000

Durbin –Watson stat : 1.897469

2) Brazil

a) CR

In this study CR represents the cost to revenue ratio. CR is shown to cause significant and negative changes on ROA. The variable is statistically significant at 1, 5 and 10% (t-stat = -4.963572) in 1% and is negatively correlated to ROA. The coefficient of this relation is -0.512743 with a negative sign which indicates that by a unit (percentage) increase in CR of Brazilian banks, it is expected that ROA decreases by -0.512. CR represents the costs over the revenue. When CR increases, it means that the cost is definitely increases. On the other hand, ROA represents the profitability and to be more accurate. It stands for the amount of net income which is generated via the assets. It is reasonable that when cost increases net income decreases and that is why in the regression results in Brazil, by an increase in cost, net income and subsequently ROA or profitability decreases. Results are in line with those of Lartey (2013). The results lead into the rejection of the first hypothesis.

b) LTA

LTA is reported to cause significant changes on ROA. The variable is statistically significant at 1, 5 and 10% (t-stat = -4.227177) in 1% and is negatively correlated to ROA. By a unit (percentage) change in LTA of banks, it is expected that ROA decreases by 2.4. It can be said that by increase in banks size, the ROA is likely to decrease in Turkey. Previous studies such as Lartey et al. (2013) have concluded the same results. The results lead into the rejection of the fourth hypothesis.

Table 12. Results on Return on Assets (ROA) in Brazil

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.502924	1.212933	1.239082	0.2211
CR	-0.512743	0.103301	-4.963572	0.0000
LIQ	0.323091	0.059246	5.453406	0.0000
LTA	-2.405343	0.569019	-4.227177	0.0001
MN	-0.047269	0.211157	-0.223855	0.8238
TETA	0.136407	0.133677	1.020425	0.3124
PLLTL	-0.100102	0.070143	-1.427110	0.1598

R-squared: 0.613961 Adjusted R-squared : 0.567637 F-statistic : 13.25346 Prob (F-statistic) : 0.000000

Durbin –Watson stat : 1.601448

When comparing the results in Brazil and Turkey, it is seen that cost to revenue ratio has the same behavior to ROA in both countries. Although, the coefficient in Brazil is much bigger than it is in Turkey, still both variables are reported to have significant effects on ROA. It can be said that, profitability in Turkish and Brazilian banks heavily depends on how they manage their costs. Since the value represents the earning quality among CAMEL ratios, it can be stated that the earning quality is extremely important for banks in both countries.

4.7 Results on Return on Equity (ROE)

1) Turkey

Table 15 illustrates the regression results where ROE is the dependent variable and others are independent in Turkish Banks. As it is shown in the table, out of six chosen variables four of them are reported to be statistically significant (CR, LTA , PLLTL and TETA). This means that these variables could cause or predict changes in the dependent variable (ROE).

a) CR

In this study CR represents the cost to revenue ratio. CR is shown to cause significant and negative changes on ROE. The variable is statistically significant at 1, 5 and 10% (t-stat = -12.59536) in 1% and is negatively correlated to ROE. The coefficient of this relation is -0.934288 with a negative sign which indicates that, by a unit (percentage) increase in CR of Turkish banks, it is expected that ROE decreases by -0.934288. CR represents the costs over the revenue. When CR increases, it means that the cost definitely increases. On the other hand, ROE represents the profitability and to be more accurate, it stands for the amount of net income over the total equity, which is generated via equity. It is reasonable that when cost increases net income generated from using shareholders' equity decreases and that is why in the regression results in Turkey by an increase in cost, net income and subsequently ROE or profitability decreases. It can be said that, if manager, or banks in general, are not able to control the expenses, it will significantly and negatively affect the ROE. The results lead into the rejection of the first hypothesis.

b) LTA

LTA is reported to cause significant changes on ROE. The variable is statistically significant at 1, 5 and 10% (t-stat = -3.373318) in 1% and is negatively correlated to

ROE. By a unit (percentage) change in LTA of banks, it is expected that ROE decreases by 3.3. It can be said that by increase in banks' size, the ROA is likely to decrease in Turkey. Previous studies such as Lartey et al. (2013) have concluded the same results. The results lead into the rejection of the fourth hypothesis.

c) PLLTL

PLLTL is reported to make significant changes on ROE in Turkey. The variable is statistically significant at 10% (t-stat = -1.784327) in 10% and is negatively correlated to ROE. The coefficient of this relation is 0.1 with a negative sign which indicates that by a unit (percentage) increase in PLLTL of banks, it is expected that ROE decreases by 0.1.

As an interpretation of this result, it can be stated that, the higher the non-performing loan and charge-off percentages, the higher the provision for loan losses should probably be. Consequently, this would reduce the net income and earnings per share. Hence, the income generated from using shareholders' money would decrease. In other words, the increase in PLL will lower earnings before tax EBT, so they pay less tax that increases the net income relative to the total equity. The results lead into the rejection of the hypothesis 5.

d) TETA

TETA is statistically significant. The variable is statistically significant at 1, 5 and 10% (t-stat = -6.038796) in 1% and is negatively correlated to ROE. The coefficient of this relation is -1.215140 with a negative sign, which indicates that by a unit (percentage) change in TETA of banks, it is expected that ROE decreases by 1.2. It can be stated that TETA has inverse relationship with ROE in Turkey. The results lead into the rejection of the hypothesis 6.

Table 13. Results on Return on Equity (ROE) in Turkey

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.752334	1.969799	1.397267	0.1677
CR	-0.934288	0.074177	-12.59536	0.0000
LIQ	0.082954	0.059562	1.392741	0.1691
LTA	-3.373434	1.000034	-3.373318	0.0013
MN	0.384604	0.432810	0.888620	0.3779
PLLTL	-0.107246	0.060104	-1.784327	0.0797
TETA	-1.215140	0.201222	-6.038796	0.0000

R-squared: 0.886272 Adjusted R-squared : 0.874301 F-statistic : 74.03273 Prob (F-statistic) : 0.000000

Durbin –Watson stat : 2.079149

2) Brazil

Table 16 illustrates the regression results, where ROE is the dependent variable and others are independent in Brazilian Banks. As it is shown in the table, out of six chosen variables only one of them is reported as not to be statistically significant (MN). This means that this variable which is related to the management quality could not affect the ROE in Brazil.

a) TETA

TETA is statistically significant. The variable is statistically significant at 1, 5 and 10% (t-stat = -6.905672) in 1% and is negatively correlated to ROE. The coefficient of this relation is -0.832635 with a negative sign which indicates that by a unit (percentage) change in TETA of banks, it is expected that ROE decreases by 0.8. It can be stated that TETA has inverse relationship with ROE in Brazil. The results lead into the rejection of the last hypothesis.

b) PLLTL

PLLTL is reported to make significant changes on ROE in Brazil. The variable is statistically significant at 5 and 10% (t-stat = -2.456271) in 5% and is negatively

correlated to ROE. The coefficient of this relation is 0.15 with a negative sign, which indicates that by a unit (percentage) increase in PLLTL of banks, it is expected that ROE decreases by 0.1.

As an interpretation of this result, it can be stated that, the higher the nonperforming loan and charge-off percentages, the higher the provision for loan losses should probably be. Consequently, this would reduce the net income and earnings per share. Hence, the income generated from using shareholders' money would decrease. The results lead into the rejection of the hypothesis 5.

c) LTA

LTA is reported to cause significant changes on ROE. The variable is statistically significant at 1, 5 and 10% (t-stat = -4.234218) in 1% and is negatively correlated to ROE. By a unit (percentage) change in LTA of banks, it is expected that ROE decreases by 2.17. It can be said that by increase in banks size, the ROE is likely to decrease in Brazil. The results lead into the rejection of the hypothesis 4.

d) Liquidity

Liquidity is reported to be statistically significant in Brazil. The variable is statistically significant at all three levels (t-stat = 6.296530) and is positively correlated to ROE. The coefficient of this relation is 0.336473 with a positive sign, which indicates that by a unit (percentage) change in liquidity of banks, it is expected that Net Interest Margin increases by 0.33.

Liquidity is division product of current assets over the total deposits. If the ratio is to increase, current assets (e.g. cash) should increase. Increase in liquidity leads the ROE to increase. An increase in liquidity could be the result of the increase in income. Hence, it is expected that the ratio increases consequently. The results of

this part is line with previous studies such as Dumičić, M., & Ridzak, T (2012). The results lead into the rejection of the hypothesis 2.

e) **CR**

In this study CR represents the cost to revenue ratio. CR is shown to cause significant and negative changes on ROE. The variable is statistically significant at 1, 5 and 10% (t-stat = -5.097291) in 1% and is negatively correlated to ROE. The coefficient of this relation is -0.474938 with a negative sign, which indicates that by a unit (percentage) increase in CR of banks, it is expected that ROE decreases by 0.47. CR represents the costs over the revenue. When CR increases, it means that the cost definitely increases. On the other hand, ROE represents the profitability and to be more accurate. It stands for amount of net income which is generated from the equity. It is reasonable that when cost increases net income decreases and that is why the regression results in Brazil by an increase in cost, net income and subsequently ROE or profitability decreases. The results are in line with those of Lartey (2013). The results lead into the rejection of the hypothesis 1.

Table 14. Results on Return on Equity (ROE) in Brazil

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.885517	1.094030	0.809409	0.4221
TETA	-0.832635	0.120573	-6.905672	0.0000
PLLTL	-0.155400	0.063267	-2.456271	0.0176
MN	-0.064319	0.190458	-0.337709	0.7370
LTA	-2.173161	0.513238	-4.234218	0.0001
LIQ	0.336473	0.053438	6.296530	0.0000
CR	-0.474938	0.093175	-5.097291	0.0000

R-squared: 0.818121 Adjusted R-squared: 0.796296 F-statistic : 37.48472 Prob (F-statistic) : 0.000000
Durbin –Watson stat: 1.441238

Now by comparing the results of ROE in both countries, it is revealed that, ROE is the most sensitive variable with regard to CAMEL. In other words, when the CAMEL ratios are used to understand the profitability of banks in Turkey and Brazil, return on equity seems to react more than the other profitability indicators to them.

In both countries cost to revenue ratio which represents earning quality of banks is reported to be significant. The ratio has a negative relation in both countries; however, the effect of it on ROE is much larger in Turkey.

Liquidity quality seems to be indifferent in Turkey; however, the ratio is strongly significant with a positive correlation. Hence, Brazilian banks are more likely to be successful when it comes to confront their short term obligations.

At the end, capital adequacy, asset quality and size of banks are reported to have effect on banks profitability in both Turkey and Brazil.

Chapter 5

CONCLUSION

The current study tried to investigate those profitability related factors in Turkish and Brazilian banks. To do so, the study has chosen the period of 2007 to 2011 which includes the financial crisis of 2008. Moreover, for each country a number of 13 banks are selected based on their Capital I tier that is reported in 2013.

Different ratios such as the net interest margin, return on assets and return on equity are used as the interest risk and profitability indicators. Those variables which are likely to cause changes on them are chosen according to CAMEL ratios (Capital Adequacy, Asset Quality, Management Efficiency, Liquidity and the Bank Size (Total Asset).

The study is investigating Turkey and Brazil since they are facing a growing economy and are developing with a high pace. The study believes that comparing banks' performances between these two countries, which are active in emerging markets could lead to interesting results in terms of how they are managing their assets and equities and liabilities. The study takes the global financial crisis into consideration since during the financial crisis, emerging markets were an interesting destination for investors to either invest or diversify (Kvint, Vladimir, 2009).

To figure out the different determinants of the profitability in both Brazilian banks and Turkish banks, the study applied different statistical techniques.

For instance, the result of the descriptive analysis shows that the ratio of cost over the revenue is much larger than 1 which states that banks in both countries are facing cost managing issues. The result on this ratio could arise from the challenges the banks faced during and after the financial crisis. When the economy is in crisis, it is likely for both the financial and non-financial firms to face an increase in costs since the consequence of the crisis could be an increase in inflation, exchange rate volatility and interest rate. Also, foreign direct investment inflow could significantly decrease the amount in those countries with troubled economies. The other ratio which usually is considered as a measure for investors is liquidity. Liquidity is interestingly and drastically low in both countries. The reported value of this ratio for both countries illustrates how the banks are at risk during the financial crisis. Return on assets and return on equity for both countries are relatively low. These values show that firms were not able to use the whole potential of the money acquired from the shareholders. They also could not utilize the assets to generate the income. It is likely for firms -both financial and non-financial- to not to be able to decrease the cost and increase those incomes of assets.

When it comes to regression results, it is shown that three variables were likely to make changes in net interest margin; Liquidity, LTA and PLLTL. It could be resulted that assets could play an important role during the crisis. To be more accurate, the amount of cash banks holding during the crisis could determine the profitability of the banks in Turkey. However, in Brazil, it is calculated that not only

the assets are important but the amount of money that shareholders contributed to the firm could also play an important part.

In terms of ROA, cost to revenue, LTA and PLLTL played an important role on the efficiency of banks. Again, it could be said that firms in Turkey are heavily depended on the amount of cash they hold to cover expenses such as the operating expenses. Interestingly, CR and LTA are again reported to cause significant changes in ROA in Brazil. Hence, it can be said that, the profitability of banks in Brazil and Turkey during and after the financial crisis heavily depends on the cost management and the amount of assets they are holding. These assets could be earned via different sources. For instance, the deposit of customers is one of those sources. If managers are willing to be profitable they need to have plans on cost management and asset earning.

The last ratio that the study evaluated is the ROE. This ratio is considered to be the ultimate measure for those investors to select a destination either to invest or diversify. In both countries almost all the variables are reported to make changes on return on equity, which shows that investors could use this ratio to completely evaluate the profitability of banks in Turkey and Brazil. Those ratios, which are directly or even remotely related to ROE, are reported to cause changes in the ratio. Hence, investors could use this ratio to decide on whether to invest in financial institutions in Turkey and Brazil.

REFERENCES

Albertazzi, U., & Gambacorta, L. (2009). Bank profitability and the business cycle. *Journal of Financial Stability*, 5(4), 393-409.

Atici, F. M.(2008). Modeling with fractional difference equations. *Journal of Mathematical Analysis and Applications*, 369(1), 1-9.

Atici, G., & Gursoy, G. (2011). Financial crises and capital buffer: Evidence from the Turkish banking sector. *Banks and Bank Systems International Research Journal*, 6(1), 72-86.

Atici, F. M.(2011). Two-point boundary value problems for finite fractional difference equations. *Journal of Difference Equations and Applications*, 17(04), 445-456.

Johnson., R. Burke., & Anthony J., Onwuegbuzie.(2004). "Mixed methods Research A research paradigm whose time has come.

Claessens, S., Demirgüç-Kunt, A., & Huizinga, H. (2001). How does foreign entry affect domestic banking markets?. *Journal of Banking & Finance*, 25(5), 891-911.

Faysal A. Alkassim , The Profitability of Islamic and Conventional Banking in the GCC Countries: *A Comparative Study*, http://www.failaka.com/downloads/

Hassan, M. K., & Bashir, A. H. M. (2003, December). Determinants of Islamic
    banking profitability. *In 10th ERF Annual Conference*, Morocco (pp. 16-
    18).Chicago.

Kvint, V. (2010). The global emerging market: strategic management and
    economics Routledge.

Lazzarini. SG. (2011). Capitalismo de laços: os donos do Brasil e suas conexões.
    Campus/Elsevier: Rio de Janeiro.

Marois, T. (2012). States, Banks and Crisis: Emerging Finance Capitalism in
    Mexico and Turkey. *Edward Elgar Publishing*.

Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability:
    a note. *Journal of Banking & Finance,* 16(6), 1173-1178.

Robson, M.D. (1993). The qualitative content analysis process. *Journal of advanced
    nursing*, 62(1), 107-115.Chicago.

Schulman, C. , Callahan & W. T., Millar, J. A., (1996). An analysis of the effect of
    management participation in director selection on the long-term performance of
    the firm. *Journal of Corporate Finance*, 9(2), 169-181.

Sufian, F., & Habibullah, M. S. (2009). Bank specific and macroeconomic
    determinants of bank profitability: empirical evidence from the China banking
    sector. *Frontiers of Economics in China*, 4(2), 274-291.

Sahebjamei., Hassan., Parviz Abdolmaleki., & Faezeh Ghanati. (2007). "Effects of magnetic field on the antioxidant enzyme activities of suspension-cultured tobacco cells. *Bioelectromagnetics* 28.142-47.

Spathis, Ch, K. Kosmidou, & M. Doumpos.(2002). "Assessing profitability factors in the Greek banking system: A multicriteria methodology." *International Transactions in Operational Research* 9.5517-530.

Trochim & William MK.(2006). "Qualitative measures." *Research Measures Knowledge Base* 361-9433.

World Data Bank (2012), World Development Indicators. http://data.worldbank.org

Yin Xia, Y., Yang, P., Sun, Y., Wu, Y., Mayers, B., Gates, B & Yan, H. (2003). One-dimensional nanostructures: synthesis, characterization, and applications. *Advanced materials*, 15(5), 353-389.

APPENDIX

Table 15. Results on NIM in Turkey

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.470352	2.554595	0.575571	0.5703
CR	-0.000578	0.102379	-0.005650	0.9955
LIQ	-0.203914	0.108303	-1.882812	0.0719
LTA	-2.816411	1.268639	-2.220027	0.0361
MN	-0.395513	0.689700	-0.573457	0.5717
PLLTL	-0.326434	0.091223	-3.578397	0.0015
TETA	0.361742	0.280382	1.290176	0.2093

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.526903	Mean dependent var	-2.845030
Adjusted R-squared	0.270642	S.D. dependent var	0.344498
S.E. of regression	0.294210	Akaike info criterion	0.668262
Sum squared resid	2.077425	Schwarz criterion	1.271584
Log likelihood	1.303016	Hannan-Quinn criter.	0.882919
F-statistic	10.056121	Durbin-Watson stat	2.497489
Prob(F-statistic)	0.001058		

Table 18. Results of NIM in Brazil

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.858701	0.603715	-4.735183	0.0000
CR	-0.000360	0.002172	-0.165887	0.8690
LTA	0.378711	0.081856	4.626547	0.0000
LIQ	0.120142	0.079348	1.514106	0.1375
MN	-0.005734	0.027942	-0.205223	0.8384
TETA	0.453373	0.201117	2.254271	0.0295
PLLTL	0.525343	0.385528	1.362659	0.1803

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.669211	Mean dependent var	0.078535
Adjusted R-squared	0.575797	S.D. dependent var	0.052535
S.E. of regression	0.029913	Akaike info criterion	-3.937722
Sum squared resid	0.037581	Schwarz criterion	-3.309419
Log likelihood	136.1317	Hannan-Quinn criter.	-3.691958
F-statistic	8.234385	Durbin-Watson stat	1.719242
Prob(F-statistic)	0.000000		

Table 16. Results on ROA in Turkey

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.211632	0.073174	-2.892158	0.0058
CR	-0.000644	0.000237	-2.715500	0.0093
LIQ	-0.002410	0.032777	-0.073525	0.9417
LTA	0.031605	0.009608	3.289232	0.0019
MN	-0.006404	0.008825	-0.725650	0.4717
PLLTL	0.169850	0.096885	1.753112	0.0862
TETA	-0.003101	0.032119	-0.096541	0.9235

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.730785	Mean dependent var	0.018564
Adjusted R-squared	0.625439	S.D. dependent var	0.007599
S.E. of regression	0.004651	Akaike info criterion	-7.664661
Sum squared resid	0.000995	Schwarz criterion	-7.029070
Log likelihood	268.1015	Hannan-Quinn criter.	-7.413880
F-statistic	6.937046	Durbin-Watson stat	1.897469
Prob(F-statistic)	0.000000		

Table 17. Results on ROA in Brazil

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.502924	1.212933	1.239082	0.2211
CR	-0.512743	0.103301	-4.963572	0.0000
LIQ	0.323091	0.059246	5.453406	0.0000
LTA	-2.405343	0.569019	-4.227177	0.0001
MN	-0.047269	0.211157	-0.223855	0.8238
TETA	0.136407	0.133677	1.020425	0.3124
PLLTL	-0.100102	0.070143	-1.427110	0.1598

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.613961	Mean dependent var	-4.097319
Adjusted R-squared	0.567637	S.D. dependent var	0.577320
S.E. of regression	0.379613	Akaike info criterion	1.015255
Sum squared resid	7.205290	Schwarz criterion	1.266156
Log likelihood	-21.93478	Hannan-Quinn criter.	1.112764
F-statistic	13.25346	Durbin-Watson stat	1.601448
Prob(F-statistic)	0.000000		

Table 2118. Results on ROE in Turkey

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.752334	1.969799	1.397267	0.1677
CR	-0.934288	0.074177	-12.59536	0.0000
LIQ	0.082954	0.059562	1.392741	0.1691
LTA	-3.373434	1.000034	-3.373318	0.0013
MN	0.384604	0.432810	0.888620	0.3779
PLLTL	-0.107246	0.060104	-1.784327	0.0797
TETA	-1.215140	0.201222	-6.038796	0.0000

Effects Specification
Cross-section fixed (dummy variables)

R-squared	0.886272	Mean dependent var	-2.595035
Adjusted R-squared	0.874301	S.D. dependent var	0.919815
S.E. of regression	0.326112	Akaike info criterion	0.699766
Sum squared resid	6.061891	Schwarz criterion	0.935894
Log likelihood	-15.39250	Hannan-Quinn criter.	0.792788
F-statistic	74.03273	Durbin-Watson stat	2.079149
Prob(F-statistic)	0.000000		

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Table 192. Results on ROE in Brazil

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.885517	1.094030	0.809409	0.4221
TETA	-0.832635	0.120573	-6.905672	0.0000
PLLTL	-0.155400	0.063267	-2.456271	0.0176
MN	-0.064319	0.190458	-0.337709	0.7370
LTA	-2.173161	0.513238	-4.234218	0.0001
LIQ	0.336473	0.053438	6.296530	0.0000
CR	-0.474938	0.093175	-5.097291	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.818121	Mean dependent var	-2.525714
Adjusted R-squared	0.796296	S.D. dependent var	0.758635
S.E. of regression	0.342399	Akaike info criterion	0.808907
Sum squared resid	5.861864	Schwarz criterion	1.059809
Log likelihood	-16.05386	Hannan-Quinn criter.	0.906416
F-statistic	37.48472	Durbin-Watson stat	1.441238
Prob(F-statistic)	0.000000		
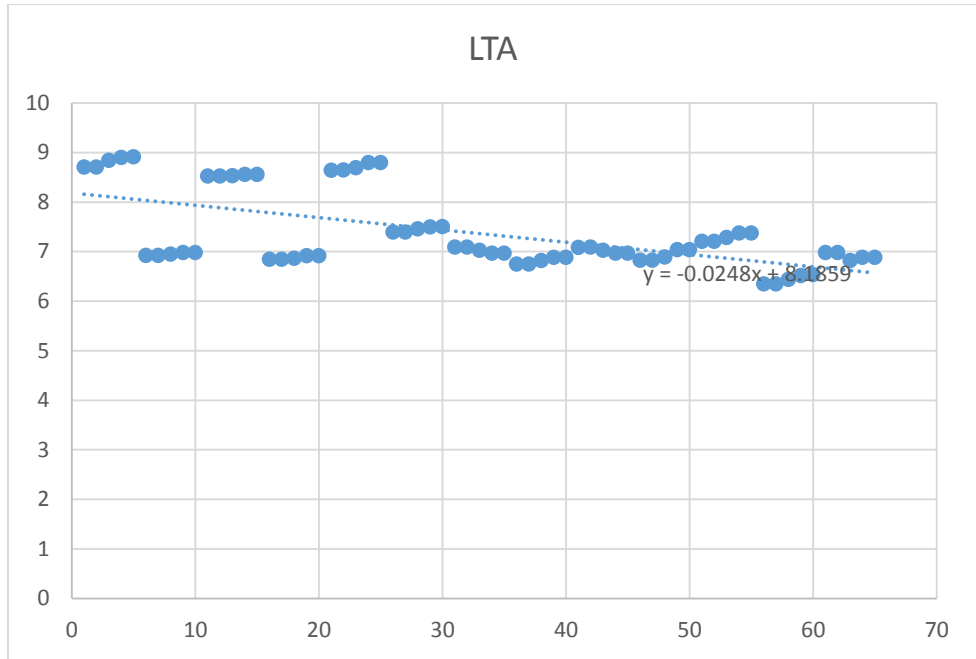
Figure 3. Scatter Plot LTA - Brazil
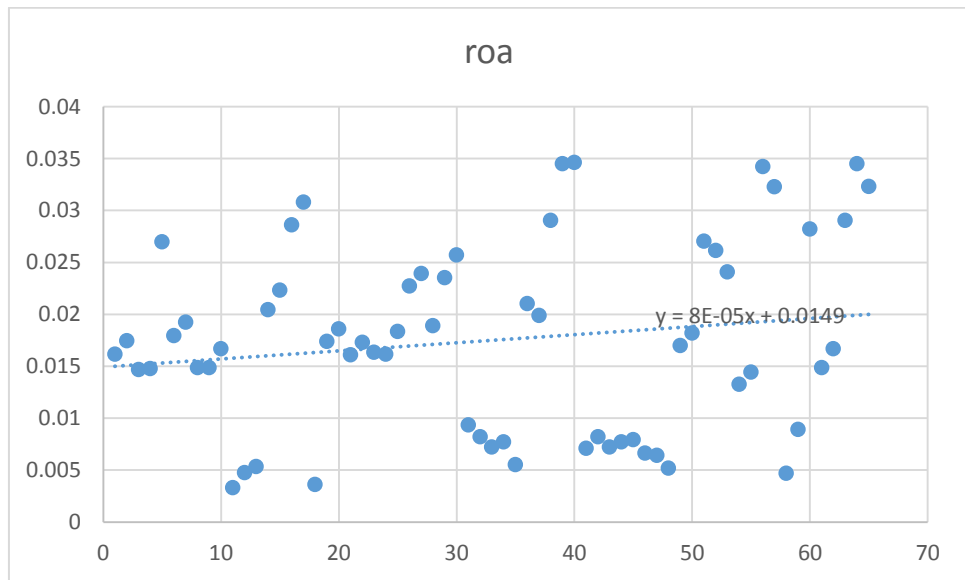
Figure 4. Scatter Plot ROA - Brazil
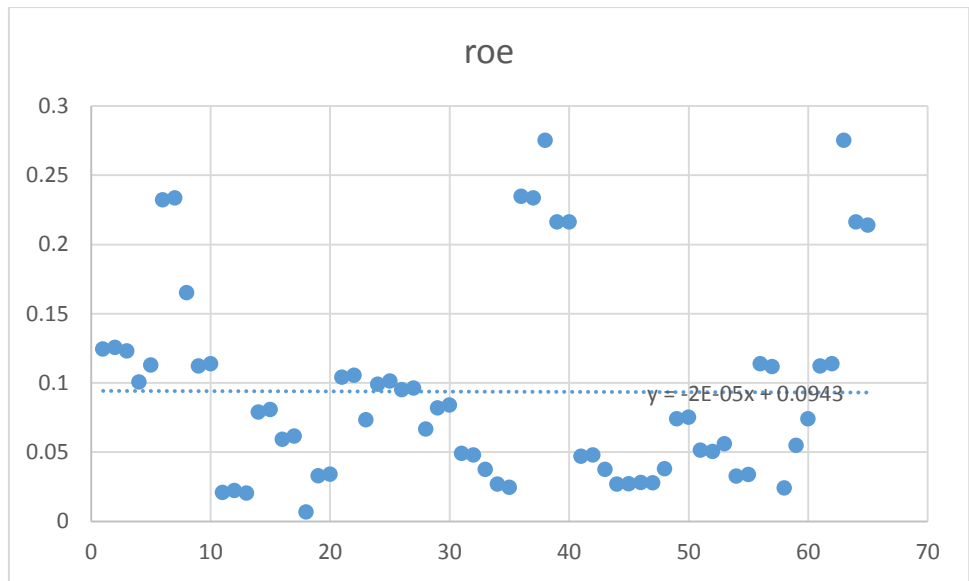
Figure 5. Scatter Plot ROE - Brazil
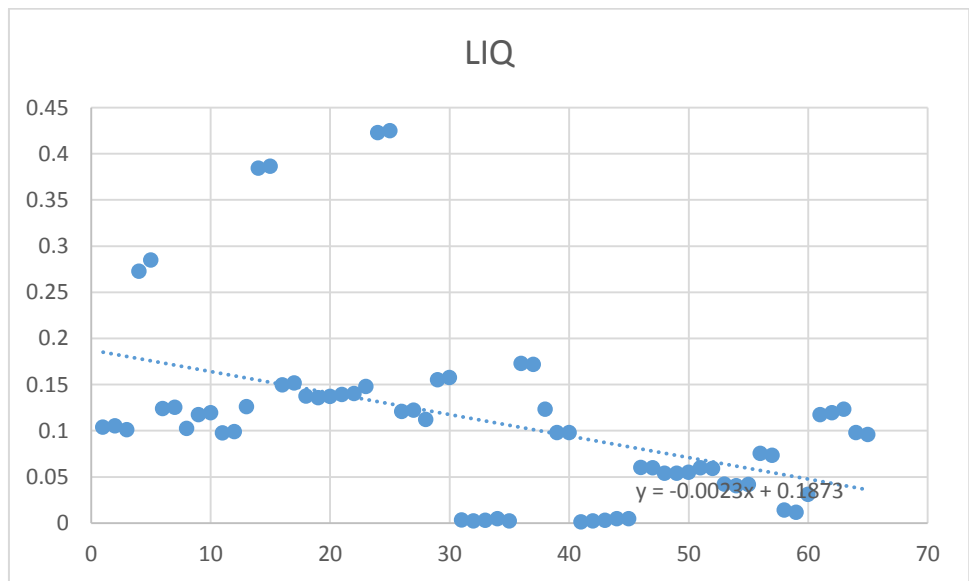
Figure 6. Scatter Plot LIQ - Brazil
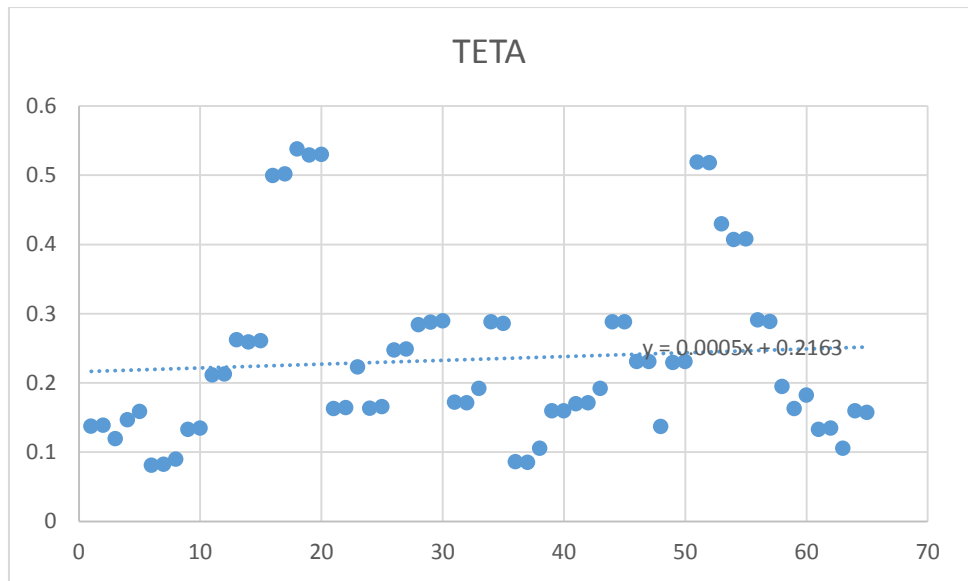
Figure 7. Scatter Plot TETA - Brazil
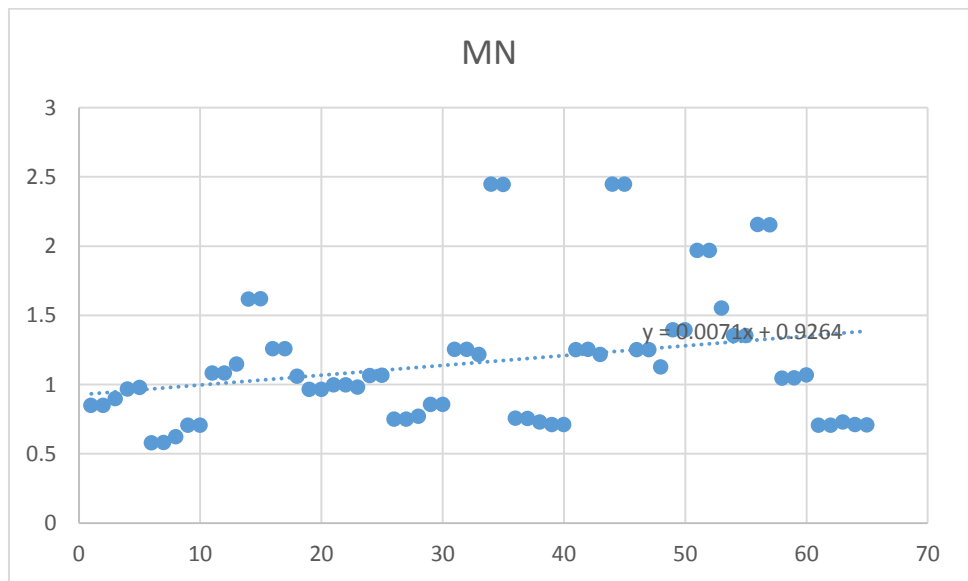
Figure 8. Scatter Plot MN - Brazil
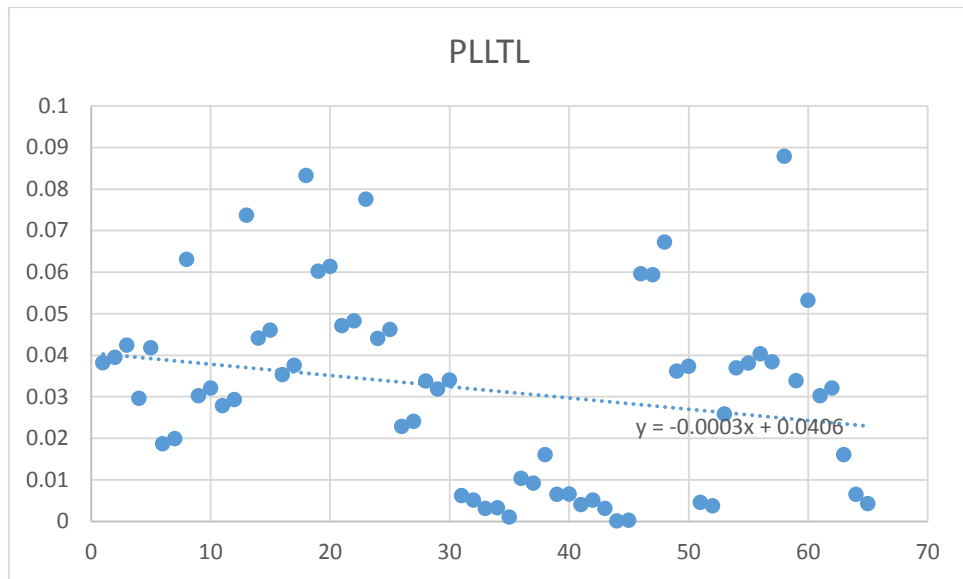
Figure 9. Scatter Plot PLLTL - Brazil
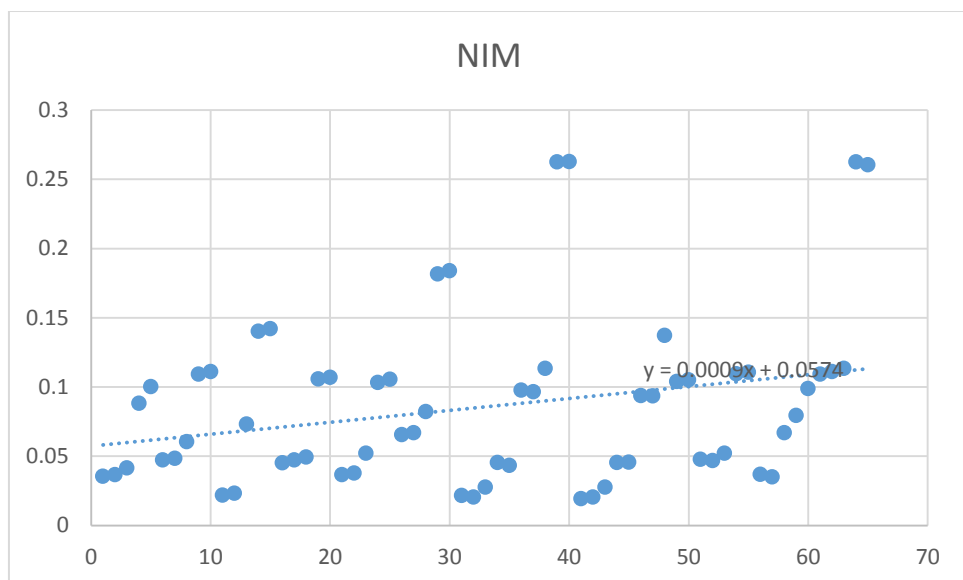
Figure 10. Scatter Plot NIM - Brazil
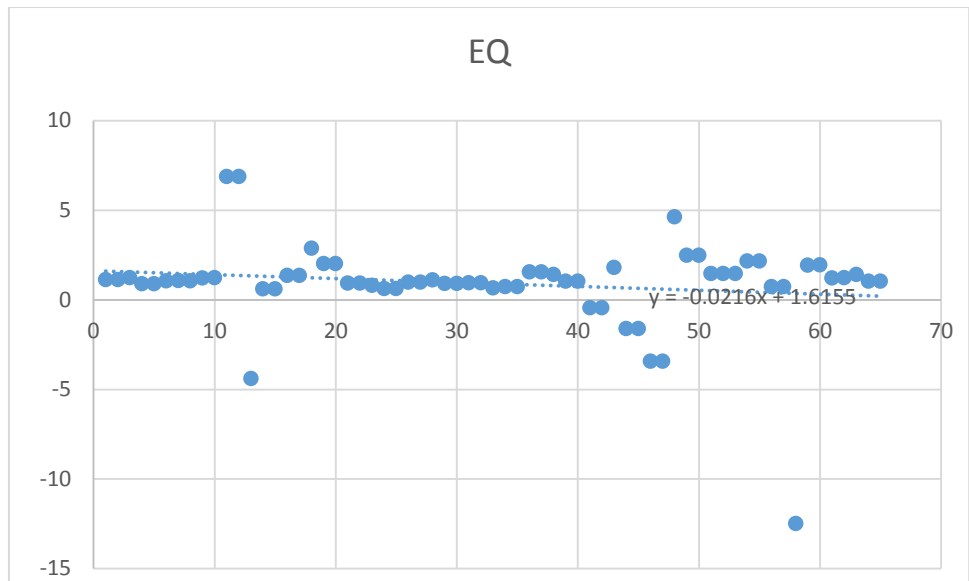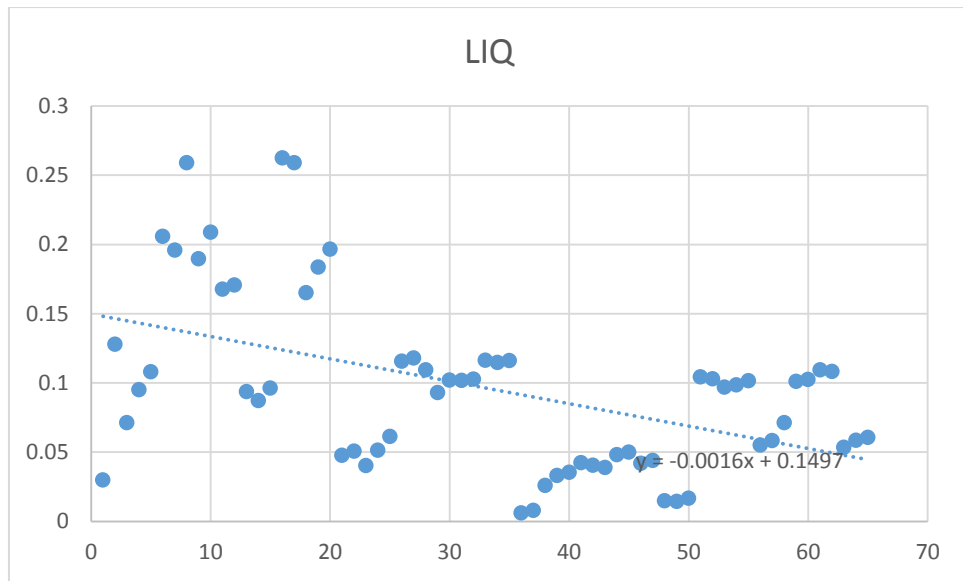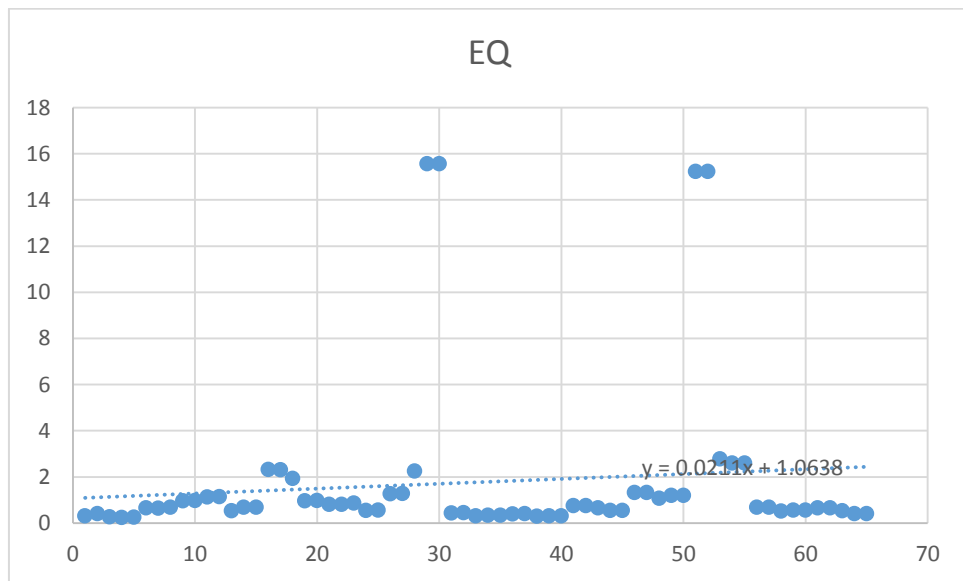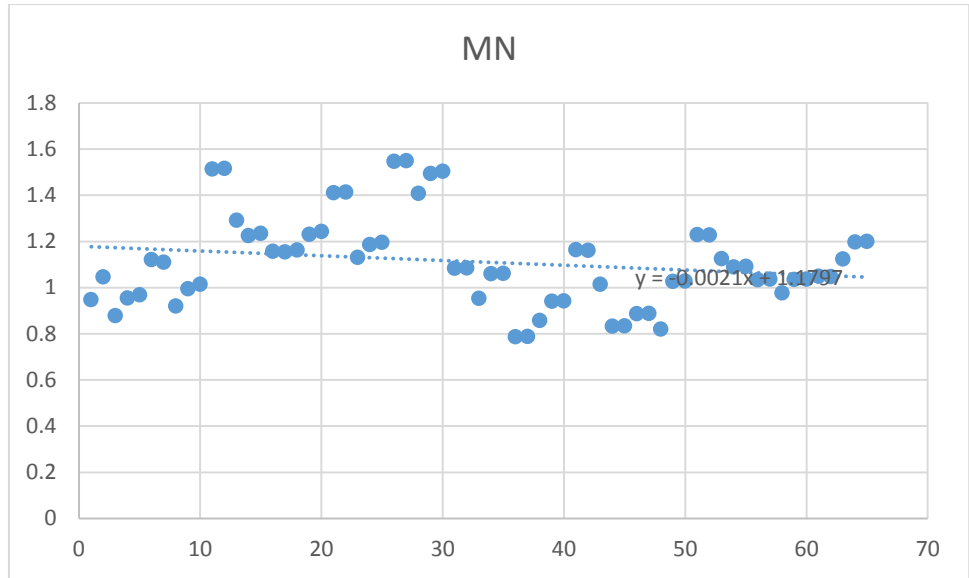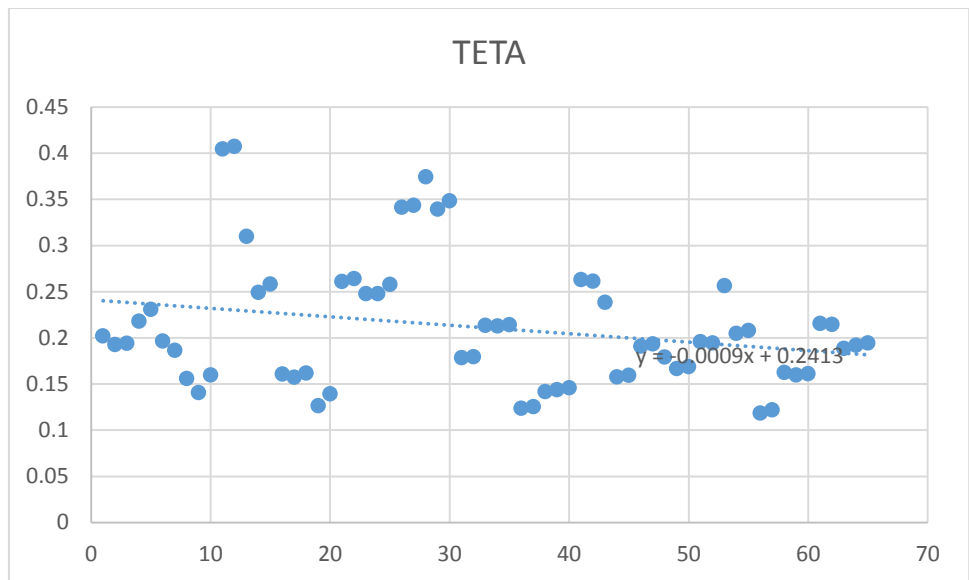
Figure 11. Scatter Plot EQ - Brazil
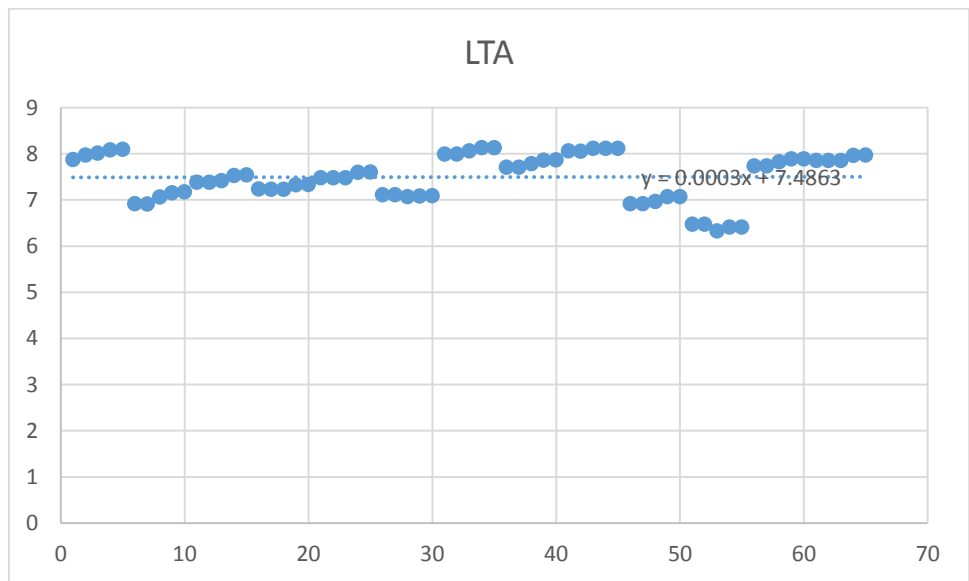
Figure 12. Scatter Plot LTA - Turkey
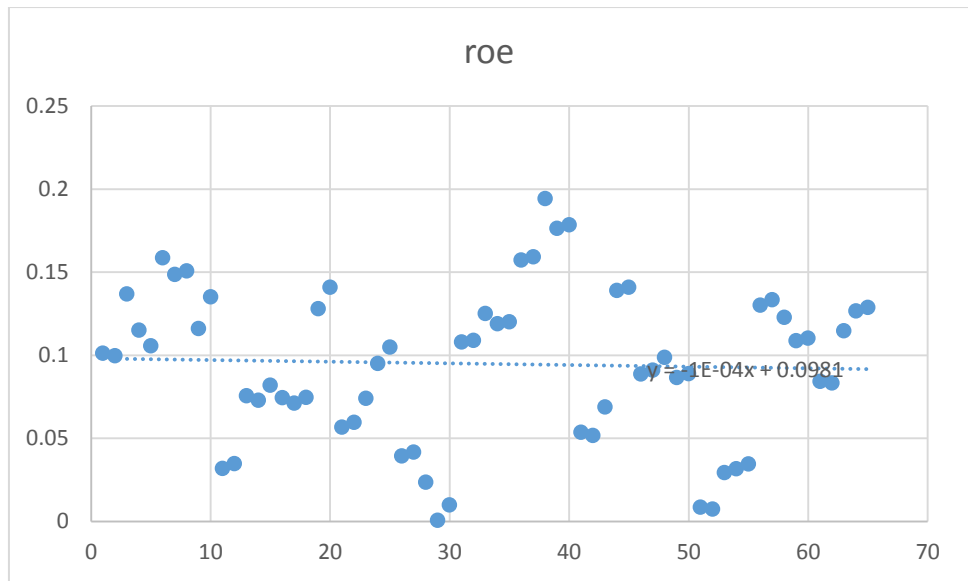
Figure 13. Scatter Plot ROE - Turkey
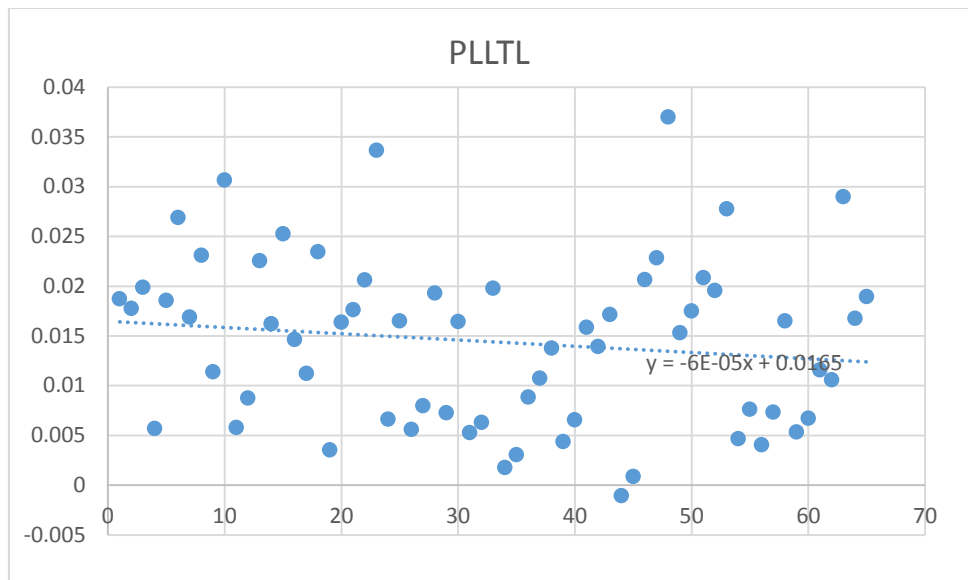
Figure 14. Scatter Plot PLLTL - Turkey

Figure 15. Scatter Plot LIQ - Turkey

Figure 16. Scatter Plot EQ - Turkey

Figure 17. Scatter Plot MN - Turkey

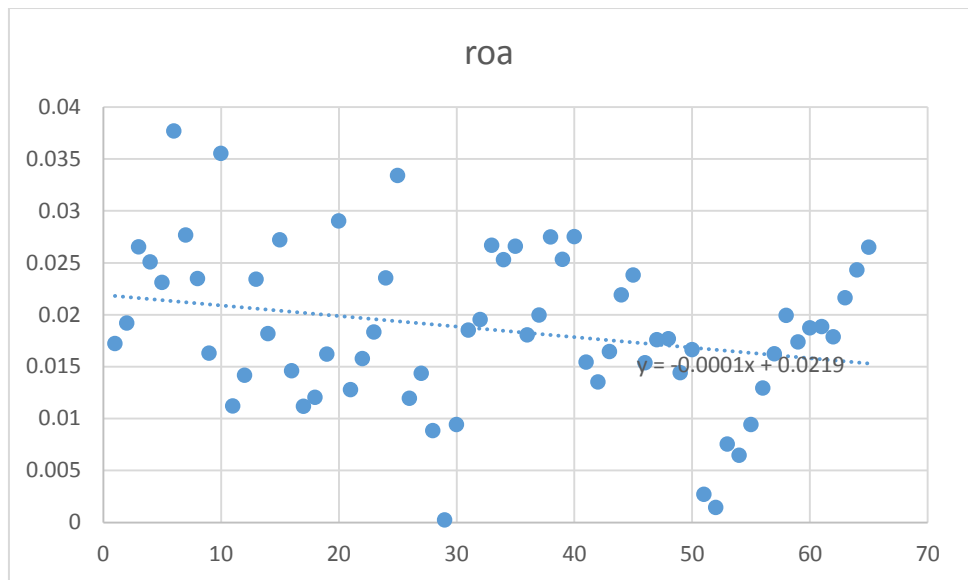Figure 18. Scatter Plot TETA - Turkey
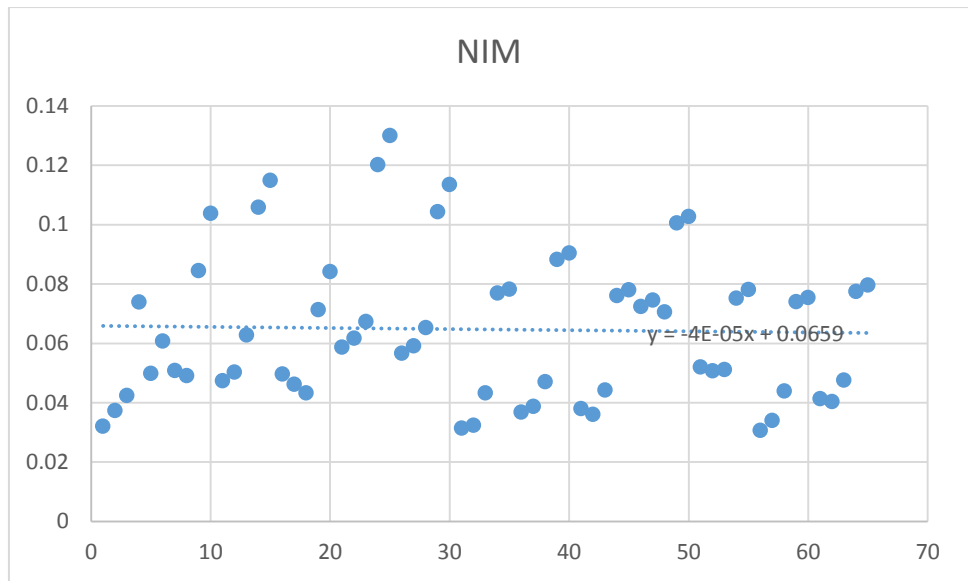
Figure 19. Scatter Plot NIM - Turkey

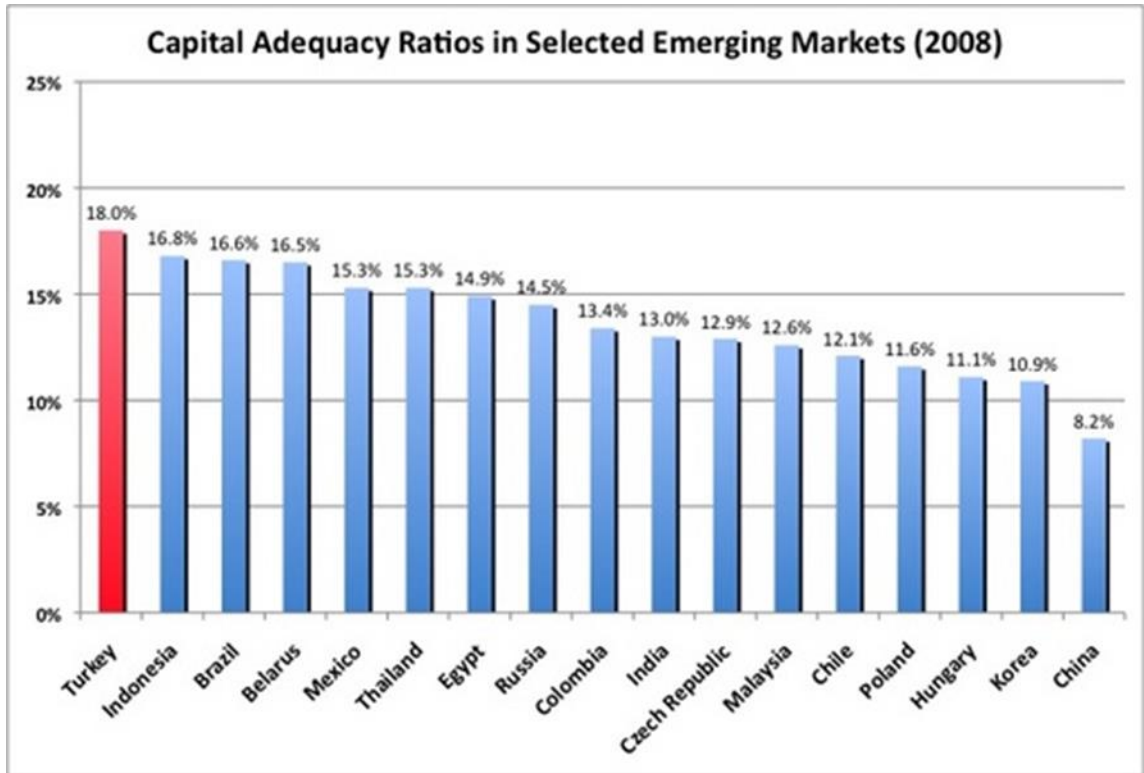Figure 20. Scatter Plot ROA - Turkey

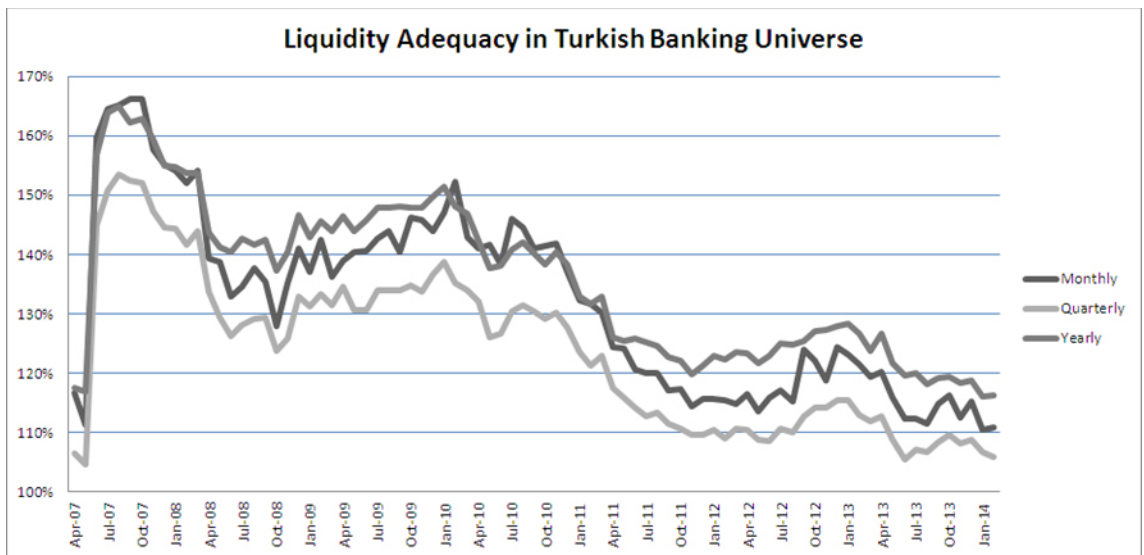Figure 21. Capital Adequacy Y Ratios in Selected Emerging Markets

Figure 22. Liquidity Adequacy in Turkish Banking Universe