# Evaluating Profitability and Efficiency of Bank Performance: The Case of Kazakhstan Banks

**Marzhan Tazhenova**

Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the Degree of

Master of Science
in
Banking and Finance

Eastern Mediterranean University
June 2013
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

Prof. Dr. Elvan Yılmaz
Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Banking and Finance.

Assoc. Prof. Dr. Salih Katircioğlu
Chair, Department of Banking and Finance

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Banking and Finance.

Assoc. Prof. Dr. Mustafa Besim
Supervisor

Examining Committee

1. Assoc. Prof. Dr. Eralp Bektaş
2. Assoc. Prof. Dr. Mustafa Besim
3. Assoc. Prof. Dr. Nesrin Özataç

# ABSTRACT

Using data from 2005 to 2010, this thesis investigated the overall bank performance of Kazakhstan banks. The performance of the sector has been determined by product of efficiency and profitability. The preferred methodology for efficiency measurement has been Data Envelopment Analysis (DEA). DEA is a special linear programming model for determining the comparative efficiency of Decision-Making Units. The profitability has been evaluated by exploring Return of Assets (ROA) and Return on Equity (ROE). Findings indicate that Kazakhstan banking sector is financially strong, which can persist during the Global Financial Crisis (GFC). In addition, a comparison has been made among the results of efficiency and profitability. The analysis has shown that there is no clear correlation between efficiency and profitability for Kazakhstan Banks.

**Keywords:** Data Envelopment Analysis, Profitability, Efficiency, Bank Performance

# ÖZ

Bu tez Kazakistan bankalarının 2005-2010 yılları arasında genel banka performansını incelemektedir. Sektörün performansı ürün verimliliği ve karlılıkla belirlenmiştir. Verimliliği ölçmek için tercih edilen yöntem veri zarflama analizidir. Veri Zarflama analizi karar verme birimlerinin karşılaştırmalı verimliliğini belirlemek için kullanılan özel doğrusal programlama modelidir. Karlılık, varlık getirisi ve öz kaynak karlılığı hesaplanarak değerlendirilmiştir. Sonuçlar Kazakistan bankacılık sektörünün finansal yönden güçlü bir yapıya sahip olduğunu ve küresel finansal kriz dönemlerinde de bu yapısını sürdüreceğini gösteriyor. Bunun yanında verimlilik ve karlılık sonuçları karşılaştırılmıştır ve yapılan analizler sonucunda iki performans belirleyicisinin bağımsız değişkenler olduğu saptanmıştır.

**Anahtar Kelimeler:** Veri Zarflama Analizi, Karlılık, Verimlilik, Banka Performansı

# ACKNOWLEDGMENTS

I would like to thank my supervisor Assoc. Prof. Dr. Mustafa Besim for his contribution, continuous support and guidance of this study. The study came to end only due to his timely and professional supervision. Without his support all my efforts simply could fail.

I owe my personal success to my family, who was supporting me during these years in North Cyprus. I would like to dedicate this study to my lovely mother and husband. I am the happiest person to have such a great family.

# TABLE OF CONTENTS

# LIST OF ABBREVIATIONS

ATF bank JSC: ATF

BTA bank JSC: BTA

Kaspi bank JSC: KASPI

Bank Center credit JSC: CCB

Eurasian bank JSC: EURB

Kazkommerts bank JSC: KKB

Halyk bank JSC: HALYK

Alliance bank JSC: ALB

Nurbank JSC: NUR

Temirbank JSC: TEMIR

Bankpozitive Kazakhstan JSC: POZB

KZI bank JSC: KZI

Gross Domestic Product: GDP

Global Financial Crisis: GFC

Return on Assets: ROA

Return on Equity: ROE

Regional Financial Center Rating Agency: RFCR

Data Envelopment Analysis: DEA

# LIST OF TABLES

# LIST OF FIGURE

# Chapter 1

# INTRODUCTION

Development of a country's banking system is one of the most significant factors affecting wealth of the economy. It plays a crucial role in the main operations of both private as well as public sectors. Many studies have shown that development of the banking sector has high positive correlation with the level of the economy development. Republic of Kazakhstan has a very well developed banking system. The banking sector contributes to the biggest part of Gross Domestic Product (GDP) and playing crucial role in the country's economy. Any changes in banking system will have crucial effect on the economy of the country.

Recent Global Financial Crisis (GFC), 2007-2009, had a tremendous negative effect on Kazakhstan's economy. The main hit was taken by the country's banking sector. There were several main reasons why the sector was so vulnerable to the crisis including:

1. The amount of foreign borrowings of the Kazakhstan's banks was so high that the banks were unable to meet their obligations when foreign investors suddenly started to claim their money.
2. There were a lot of shortcomings in the assessment of credit risk
3. The total quantity of non-performing loans increased tremendously

According to the report of Regional Financial Center Rating Agency (RFCRA) for 2012 the banking sector is largest and dominate segment in financial sector. However it has a tendency to decrease, as from 2010 it was 68 % of the GDP, from 2011 it was 62.3 of the GDP and in 2012 it is 55.1% of the GDP. The date shows a decline effect of the financial segment coverage.

## 1.1 Aim of the Study

As it was mentioned before the banking sector plays a crucial role in the economy of the Republic of Kazakhstan. The study is therefore concentrates in the banking sector of the country. The aim of the study is to analyze the productivity and efficiency of the banking performance in Kazakhstan for the period from 2005 till 2010. This will be done by using both the main accounting concepts as well as the economic approach. Also, the study will present correlation between results of both methods.

## 1.2 Method for the Study

The common assumption is that the successful financial performance of an operating resource is reflected by the high level of profitability. In this study we will evaluate the profitability by frequently used tools such as Return on Assets (ROA) and Return on Equity (ROE). The study examines twelve randomly chosen commercial banks of different scale with the purpose to receive the annual average values. The analysis would also conduct Data Envelopment Analysis (DEA) in order to determine the efficiency rate of these twelve banks performance. The efficiency rate would be estimated by using model exhibiting constant return to scale is called CCR (Charnes, Cooper, Rhodes)

model, the second module used to analyze the efficiency rate is BCC (Banker, Charnes and Cooper) model that analyses banking sector efficiency using variable returns to scale.

The inputs of the DEA such as interest income, non-interest income, interest expense and non-interest expense were used to evaluate profitability and efficiency level. The statistical variables were taken from annual financial statements of the banks.

## 1.3 Limitation of the Study

An unavailability of data has prevented this study to disaggregate banks according to the size of their assets, structure, or type. Particularly the data was missing for many banks for the period from year 2005 till year 2012. The current study analyses 12 banks that were chosen randomly in attempt to determine average performance of the banking sector. The financial area of the banking structure is analyzed using sample of five biggest banks, few small branches of the foreign banks, new banks that started to operate in recent years and one government bank.

Another limitation of this study was the fact that factors that to compare finding results with word result there was no available data for all countries, the data was collected and based from several publishing work for different year. Also, one of the indicator which usually using for DEA analysis is labor force, as it was difficulties to find this data that indicator was not added to application as an output.

## 1.4 Structure of the Thesis

The thesis consists of five chapters. Chapter 1 is introduction part which focuses on the objective of the study, method of the study, limitation of the study and structure of the thesis. Chapter 2 focuses on the literature review, which examines existent academic publications discussing efficiency and profitability of banking sector, methodology tools to measure efficiency and profitability level, factors which have internal effect and variables that have an influence on results. Also, this chapter includes the main findings of these academic publications. Chapter 3 is the biggest part of the thesis and consists of two main parts. The first part attempts to introduce Republic of Kazakhstan, economy of the country, structure and development of banking sector, and initial data for the analysis. The purpose of the second part is to explain methodology, the both models of DEA measurement tool in more details. The second part of the current study will also explain the software application for DEA. The last part of Chapter 3 discussing the measurements tools to determine a profitability level of bank's performance. Chapter 4 focuses on empirical results of the study. Chapter 4 consists of four parts. The first part presents and explains the results of the CCR and BCC models of DEA. It also investigates factors which had significant effect. The second part of this chapter examines profitability result which was measured by ROA and ROE. The third part compares the results of the two previous parts to show that efficiency and profitability rates are positively correlated to each other. The Chapter 5 summarizes the results and the main finding of this thesis.

# Chapter 2

# EXPERIENCE IN MEASURING BANK PROFITABILITY AND PERFORMANCE

In this part of the thesis, the literature on bank efficiency and bank profitability will be reviewed. Efficiency of the banking industry is a significantly important issue for both developed economies and economies that are in transition. This chapter focuses on theoretical and empirical studies indicating efficiency in banking sector in developed and developing countries. There are many researches referring to measurement and evaluation of the overall performance of banking sector in terms of both profitability and efficiency. For the last period both developed and developing transition counties have experienced banking crisis in different periods which affected economic growth. For example: Chile, Argentina, and Mexico in 1980s; Sweden in 1990s; Thailand, Malaysia, Korea, Philippines, and Indonesia in 1997; Paraguay in 1995-98; Russia in 1998; Turkey in 1994, 2000, and 2001; Argentina in 2001; Kazakhstan in 2007-10.

The financial sector has a crucial role in the economic growth of a country. Therefore, efficiency and profitability of banking sector have been linked with development of economies. There are some studies leading into the relation between financial institution and economy development (Levin and King, 1993; Levin, 2004). Due to the objective of the thesis the literature review will be concentrated on the profitability and the efficiency of banking sector in regards to determining performance.

## 2.1 Profitability in Banking Sector

The goal of any bank is to generate revenues that will be sufficient to cover their expenditures. Moreover banks just like any businesses aim for profit. The main source of income comes from interest charge on loans. Profitability is the primary goal of all business ventures, which is important for viability in the long-run. In this respect, it is extremely important to evaluate past, current and future profitability, in order to predict and avoid negative consequences. The factors which determine profitability are income and expenditure which significantly shown in financial statements during annual period.

Gul et al. (2011) examine the profitability of 15 Pakistani commercial banks using bank-specific and macro-economic determinants over the period of 2005-2009. Using Pooled Ordinary Least Squares (POLS), their results prove that the internal (bank size, capital, loan and deposits) and external factors (GDP, inflation and stock market capitalization) have strong influence on the profitability.

Davydenko (2011) studied profitability of bank performance in Ukrainian banking sector by implementing the internal and externals variables that play a huge role defining bank profitability. Using a panel data, he utilizes the frame time of 2005-2009.

According to Davidenko results, the Ukrainian banking sector suffered a big blow on the quality of loans and is not able at the end to reconstruct their profits based on the growing flow of deposits. According to Davidenko, credit risk, liquidity, deposits, inflation as well as foreign ownership all have negative effect on profitability of the ban which is regressed separately. Davydenko has not only found negative causes but also

positive factors such as of capital, bank size, concentration rate and exchange rate depreciation.

Sing and Chaudhary (2009) analyze the profitability of Indian's banking sector from three different perspectives: Private, Public and Foreign banks. The result of this analyze is that profitability of Indian banks has significantly increased over the past years. The grows of macroeconomics determinants as exports , income per capita and foreign exchange reserves have influence to profitability.

Anwar and Herwanay (2006) work on the subject of bank profitability of Indonesian Provincial Government's banks and Private Non-foreign Exchange banks for the period of 1993-2000. To determine the profitability of the Indonesian banking sector they used ROA and ROE as dependent variables. There are main finding that Total Asset and Loans to Deposits Ratio are the ones which affecting the profitability positively.

## 2.2 Efficiency of the Banking Sector

Efficiency is one of the central terms used in assessing and measuring the performance of organizations (Mouzas, 2006). Efficiency is concerned with minimizing the cost and deals with the distribution of assets across best alternative uses.

Efficiency determines the level of output achieved with a given amount of input, such as cost per unit. A more efficient unit means it obtains a higher level of output using the same amount of input, or it obtains the same level of output using a lower level of input.

An efficient bank can be defined as the one that can create a relatively high volume of income-generating assets and liabilities the same as the one that can create a relatively high level of income from service and intermediation operations with the given level of inputs.

Efficiency analysis is essential for the evaluation of bank performance. There are many tools to evaluate efficiency. Among them Stochastic Cost Frontier, CAMEL (Capital Adequacy, Asset Quality, Management, Earnings and Liquidity), and Data Envelopment Analysis. Most following researchers commonly used Data Envelopment Analysis (DEA) approach for evaluating efficiency of banks. The DEA is non-parametric approach, which is most popular for evaluating efficiency in the banking sector. There are two model of DEA method. The first method was developed by Charnes et al. (1978) which are based on Farrell's (1957) efficiency measures and is it call CCR (Charnes, Cooper and Rhodes) model. CCR model was developed under the assumption of constant returns to scale (CRS). On the other hand, the second model is BCC (Banker, Charnes and Cooper) model, introduced by Banker et al. (1984) as an extension of the CCR model. BCC model was developed under the assumption of variable returns to scale (VRS). The primary steps in constructing a DEA method is selecting decision-making units (DMU's) that computes a comparative ratio of outputs to inputs for each unit. Avkiran (1999) stated that: "DEA identifies a unit as either efficient or inefficient compared to other units in its reference set, where the reference set comprises efficient units most similar to that unit in their configuration of inputs and outputs" (p.999).

Previous researcher for evaluating the efficiency of bank performance used two approaches. The first approach is the intermediation approach where bank present oneself as a financial intermediaries. In this approach from perspective of cost-revenue management, where bank's major business activity is to borrow funds from depositors and lends those funds to other for spread. There are inputs and outputs on this approach (Al-Faraj et al., 2006). There are; 1) net interest expense; 2) non-interest expense; 3) net interest income; 4) non interest income.

The second approach is production approach where usually as inputs are labor and capital and outputs are loans and deposits. Avkiran (2000) argued that for analyzing bank efficiency it is better to use intermediation approach. The DEA methodology will be considering more detail on Chapter 3.

## 2.3 Measuring Performance of a Bank

Vassiloglou and Giokas (1990) assessed the relative efficiency of bank branches at the Commercial Bank of Greece through DEA method. As a result only nine from twenty branches had maximum efficiency score of 1. The other branches had less than 1. However, the authors did not evaluate average mean of efficiency score of all branches of Commercial Bank. One explanation of variation between efficiency ratings is distinguished among centers and province branches. There is a trend of a general increase in the inefficiency level moving from the central branches toward small branches located outside of the main cities. Another explanation is that branches processing a larger number of transactions are found to be more efficient than branches with fewer transactions. However, Vassiloglou and Giokas (1990) found that "this

explanation was rejected after examination of the distribution of inefficient branches among branches with varying volumes of production" (p.594). Vassiloglou and Giokas (1990) stated that "efficiency ratings are determined by the inputs each of them utilizes most efficiently" (p. 595).

In a similar manner, Golany and Storbeck (1999) analyzed the efficiencies of selected branches of a large US bank over six consecutive quarters, from second quarter 1992 to the third quarter of 1993. They were measured by DEA analysis to evaluate the relative efficiencies of selected Big Bank branches. The results showed that 92 branches were fully efficient in the third quarter of 1993, and only five fell below 70 percent efficiency. One of the important aspects of their study was to group branches into meaningful division with the objective of understanding the performance of each group.

Vujčić and Jemrić (2001) used DEA to in order to conduct a comprehensive analysis of the efficiency performance of the Croatian banking sector, by two major DEA models: (1) the CCR ratio model and (2) the BCC model. They used data on Croatian banks in a period from 1995 to 2000 separately for each year. They also divided data by according to the size of the analyzed banks, establishment date, structure of the board, and assets quality. According to Vujčić and Jemrić analysis, foreign owned banks were on average most efficient banks in Croatia. They also identified new banks to be more efficient than the old ones. Moreover, the study had discovered that small banks are characterized by higher global wise efficiency while large banks are more efficient in the local context. Another conclusion from the same study shows that those banks which have less non-performing loans are more efficient relative to the other.

The Russian Federation is a developing economy. Caner and Kontorovich (2004) compared efficiency level in the Russian Federation with international performance and also estimated the contributions of different factors which affect the level of efficiency of Russian banking sector. The authors used parametric method called the stochastic frontier model for measuring efficiency score over the 1999-2003 periods. The researchers have identified that the internal determinants of the banks efficiency include capital adequacy ratio, assets quality and earning performance. A range of risk factors including interest rate risk, exchange rate risk, inflation risk, and the real exchange rates fluctuations also play a significant role. The research found that real exchange rates had a negative relationship with bank efficiency and non performing loans significantly and negatively have influenced the bank efficiency. They also found that Russian banks have very low efficiency scores compared to the banks in selected developed and developing market. As authors stated "We find that equity to assets ratio, ratio of non-performing loans, interest rate volatility, inflation rate volatility and real effective exchange rate volatility significantly affect intermediation efficiency of banks in the Russia Federation".

Ozkan-Gunay and Tektas (2006) assessed the technical efficiency of non-public commercial banks covering 1997 to 2001period of Turkish banking sector. They used DEA method for evaluate the performance of bank. In their article authors focused more on pre-crisis and crisis period which resulted in changes in banking sector. The study found that the mean efficiency and number of efficient banks had a declining tendency during the analysis period. According to research study, the decline has been caused by the crises, as a result of declining income defined as output variable.

Al-Faraj, Bu-Bshait and Al-Muhammad (2006) investigated the performance of the Saudi commercial banking industry. They evaluated and compared world mean efficiency score with technical efficiency of Saudi banks for 2002 year. The Saudi Arabia has an oil-based economy with significant control by the government over main activities. The researchers used DEA method by Frontier Analyst Professional Software, especially the intermediation approach to measure the level of productivity of banks. They determined output variables as net interest income which is difference between interest income and interest expense. As a second variable non-interest income which includes fees from service, dividend income, trading income, exchange income and other operating income were used. On the other hand, input variables which were interest expense paid for borrowed money and non-interest expense including salaries and employees' benefits, rent, depreciation, and other administrative expenses. The mean efficiency score of Saudi banks under CRS (constant return to scale) assumption was 93.85 percent and 97.44 percent under VRC (variable return to scale) assumption. The mean efficiency score of Saudi banks were higher compare with world mean efficiency which value 86 percent according to research of Sathye (2003).

Wozniewska (2008) analyzed the biggest bank performance in Poland for the period 2000-2007. The Poland economy is one of the fastest growing economies in Europe. The main idea was to evaluate efficiency by two methods; one being the classical analysis of financial indicator and the other DEA methods. Both methods gave similar results which means the DEA method is valuable and worth applying in evaluating bank performance. Both methods showed decline trend in 2002-2003 and later until 2007 a recovery period.

Yang (2009) evaluated 240 branches of one big Canadian bank in Greater Toronto Area by using DEA approach. According to the study, the average efficiency score of the bank is 0.89. This means that the bank branches could use about 11 percent less labor and expenses to produce their outputs. The author noted that it is very important to evaluate the correlation between inputs and outputs for measuring performance, otherwise sensitivity analysis on the impact of including and excluding variables is need to be prepared.

Tsolas (2010) evaluated the overall performance of bank branches of a large commercial bank in Greece in terms of profitability efficiency and effectiveness through a two-stage DEA model. From the estimated model, they found that the overall efficiency level regulated mostly by profitability efficiency level, which means positive correlation between overall efficiency and profitability efficiency.

Rehman and Raoof (2010) compared overall efficiency score of Pakistan banks between public, private and foreign ones over the period from 1998 to 2007. It is necessary to underline a fact that Pakistan has a transition an economy. Because of financial reforms and privatization policy, number of private banks emerged during the last decade and amount of public banks declined significantly. According to data the results show not a consistent performance of banking sector. In 1998, the overall efficiency score was very well, being 0.81. This is just under world efficiency score. However, from 1999 and 2001 efficiency score declined to low levels compare with world efficiency standard. Due the remaining period the efficiency score of Pakistan banks is inconsistent. Moreover, in 2002 the mean efficiency is calculated as 0.80, which was again less than

world score. Also the result of 2004 showed the result 0.62 and in 2005 as 0.82. Rehman and Raoof (2010) also argued that financial reforms and privatization policy do not always have positive effect to bank performance. The effect of regulations and government regulators the performance of banking sector was unsatisfactory.

Tanko (2011) decomposed efficiency using the non parametric approach DEA. The author measured productivity growth using Malmquist Productivity Index (MPI) of Nigerian commercial banks for more than 5 years. In this article the author categorized banks into two groups according to ownership; one being state and the other being privately owned. According to data private banks perform better than the state owned bank.

## 2.4 Main findings of Literature Review

The aim of this part is to summarize literature review and to outline finding to highlights aspects which play important role in evaluation of efficiency of bank performance and to take into consideration factors which can influence to this analysis. From the review of previous studies, it has been observed that developed countries faced rather higher efficiency ratings than transition economies. In other words developed countries had the rates that are closer to the world efficiency rates as compared to the developing countries.

The other finding from the review is that very important for evaluating branches performance researchers have to divide branches into meaningful division and

specification. This is done for understanding the performance of each group to correct interpreting the result.

It is also important to determine and divide data according to the following criteria; a) a bank size, b) an ownership structure, c) a data of the establishment and d) quality of assets. Comparison between close to each other units is important to reach comprehensible result.

Banks that have a lower level of non-performing loans have a higher efficiency rate as compared to the banks that have relatively high level of non-performing loans.

Another conclusion is that volatility of interest rate; inflation rate and real effective exchange rate have significantly effect on bank performance. However, this research made by frontier stochastic approach and not takes into consideration DEA method.

In Turkish banking sector, declining trend was effect of increasing in output variables are defined as income. That means that income is one of the meaningful output variables and has to be included in evaluation.

The other result is positive correlation between overall efficiency and profitability efficiency, which means if profitability raise it automatically increases efficiency rate. But it does not mean that all inputs utilized in efficiently way.

As a result, according to article Rehman and Raoof (2010) regulations and more involvement of government regulators as a financial reforms and privatization policy have negative effect to bank performance.

Vassiloglou and Giokas (1990) stated that efficiency ratings are "determined by the inputs each of them utilizes most efficiently" (p. 595). This factor depends on proper management and distribution of assets, labor force and technology.

Finally, important result of literature review is that DEA method is valuable and worth applying in evaluation of bank performance both in economically developed economies countries and in developed countries.

# Chapter 3

# DATA AND METHODOLOGY

This chapter focuses on background of Republic of Kazakhstan including establishment of economic environment and developing of banking sector. Additionally considering methodology for evaluating efficiency rating of banking performance in Kazakhstan in comparison between different levels of the bank's in Kazakhstan's banking sector and additional to compare with other countries banking performance and data for evaluation efficiency level and investigation.

## 3.1 Republic of Kazakhstan

### 3.1.1 Background of Republic of Kazakhstan

The Republic of Kazakhstan was a part of the Soviet Union and declared her independence, on 16 December 1991. The Republic of Kazakhstan is a transcontinental country in Central Asia and Eastern Europe. The Republic of Kazakhstan is ranked as the ninth largest country in the world, it is landlocked territory of 2,727300 square kilometers, and bordered with Russian Federation, China, Kyrgyzstan, Uzbekistan, Turkmenistan, and also significant part of the Caspian Sea. The capital was moved from Almaty which is largest city and financial center to Astana in 1998. For the last few years the infrastructure of capital city significantly developed and economically grown. Officially estimated population of Kazakhstan is 16 500 000 as of April, 2011, of which 46% is rural and 54% urban population.

### 3.1.2 Economy of Kazakhstan

The Republic of Kazakhstan has made significant and simultaneous progress in it is economic transition after the collapse of the Soviet Union and increase for the small episode the countries competitiveness and expand the benefits of the economic growth. In the contemporary period of social development in the Republic of Kazakhstan is characterized by features of the transition period. This is primarily due to the deep qualitative changes in the whole system of social and economic relations based on the market performance.

The Republic of Kazakhstan possesses enormous fossil fuel reserves and plentiful supplies of other minerals and metals, such as uranium, copper, and zinc. It also has a large part of agricultural sector featuring livestock and grain. Energy is the leading economic sector and production of crude oil and natural gas condensate and present significant part of export income.

In 2000 Kazakhstan become the first former Soviet Republic to repay all of it is debt to the International Monetary Fund according to 7 years schedule. In March 2000 the U.S. Department of Commerce granted Kazakhstan market economy status under U.S. Trade Law. This change in status recognized substantive market economy reforms in the areas of currency convertibility, wage rate determination, openness to foreign investment, and government control over the means of production and allocation of resources. In accordance with World Bank data the Kazakhstan's economy grew by 7.3 percent in 2010 and by 7.1 percent in the first half of 2011. According to FDI indicators of last few

years, Kazakhstan stands on leading positions in CIS region. The main resources attracting foreign investors to Kazakhstan are energy.

In spite of the strong economy of Kazakhstan for most of the first decade of 21 century, the global financial crisis of 2008-2009 has exposed some central weaknesses in the overall sector of economy. This period was complicated phase for banking sector and had very serious examination for bank liquidity and capital adequacy.

Regarding RFCA Rating agency report for 2012 the total GDP for 2012 is 23 126.5 milliard tenge (Kazakhstan national currency).

### 3.1.3 Structure and Development of Banking Sector

The banking system of the Republic of Kazakhstan is important part of financial system and represents the set of different interrelated banks and other credit institution and existing under single financial mechanism.

In two-tier banking system in the first level is the Central bank, and on the second level are state-owned banks, commercial banks and other credit organization. The central bank is National Bank of Republic Kazakhstan and represents the upper level of the banking system of the Republic of Kazakhstan. Central bank is representing the relationship with banks in other countries, international banks and other financial institution; however it is not profit organization. The other bank is second level banks, except the Development Bank of Kazakhstan, which has specific legal status.

According to RFCA ratings despite substantial government assistance after GFC effect the most of the banks have shown negative returns as of 01.01.2011. Since the beginning of 2008 the loan portfolio of banks increased by 5%, but since July 2009 it decreased by 9%. Big banks of Kazakhstan have started to restructure their loan portfolios by reviewing the extension of time and the revision of interest rates. This allows them to accumulate liquidity. The liquidity, however is not directed toward new lending, instead they maintain conservative credit policies. The share of the liquid assets in the banks portfolios is increasing through reduction of the share of the loan portfolio; therefore, there is a reduction in the interest income and the interest margin. Liquidity accumulated for the purpose of coverage of further possible losses as well as for making provisions. Market participants also noted that asset quality will deteriorate due to bad loans and loans that lie in the risk zone.

## 3.2 Data for the Study

As discussed earlier, the research aims to measure the profitability and efficiency level of commercial banks in Kazakhstan. The research uses performance data of the commercial bank for the period of 2005-2010. In order to assess and compare banks profitability and performance efficiency, 11 banks were chosen randomly. There are total of 38 banks that operate in the banking sector of Kazakhstan. The total asset of banking sector in 2012 is 1.303 trillion tenge. The banking sector is dominated by five banks whose asset size exceeds 1 trillion of tenge. These five banks are included in this study. The detail financial statistics of the banks studied in this thesis is provided in Appendix C.

## 3.3 Methodology

Based on the literature review, in this thesis following method will be employed.

### 3.3.1 DEA

DEA is non-parametric approach that measures the relatively efficient production frontier, based on the Decision Making Units (DMUs) which involve multiple outputs that are produced with multiple inputs or undefined relation between inputs and outputs. Important to note that DEA method only evaluates the relative efficiency of the observation data and do not take into account absolute efficiency. DEA compares the input and output levels of every one of DMUs in the analysis set at value and determine the efficient frontier by the classifying the relatively best-practice DMUs. In DEA the best practice or efficient unit which rating equal to 100 percent or E=1, inefficient unit will be less than 100 percent or E<1. As mention on Chapter 2 first method was developed by Charnes et al. (1978) which is based on Farrell's (1957) efficiency measures and call CCR model. CCR model was developed under the assumption of constant returns to scale (CRS) later the second model is BBC model, introduced by Banker et al. (1984) as an extension of the CCR model. BBC model was developed under the assumption of variable returns to scale (VRS).

#### 3.3.1.1 CCR Model

"Charnes, Cooper and Rhodes (CCR) (1978a, 1979) introduced a ratio definition of efficiency, also called the CCR ratio definition of efficiency, which generalizes the single-output to single-input classical engineering-science ratio definition to multiple outputs and inputs without requiring reassigned weight."

Vujčić and Jemrić (2001) described CCR model of a linear program which compares the efficiency of each comparable unit by weighted output with weighted inputs.

$$\text{Max } h0 = \frac{\sum_{r=1}^{s} u_r y_{r0}}{\sum_{i=1}^{m} v_i x_{i0}} \tag{3.1}$$

$$\text{subject to } 1 \geq \frac{\sum_{r=1}^{s} u_r y_{rj}}{\sum_{i=1}^{m} v_i x_{ij}} \quad ,j=1,\ldots,n, \tag{3.2}$$

$$\text{with ur, vi}>01 \quad i=1,\ldots,m;\ r=1,\ldots s. \tag{3.3}$$

Where:

h0= relative efficiency of the DMU

s= number of output produced by the DMU

m= number of inputs employed by the DMU

yrj, >0 represent output data for DMU

xij>0 represent input data for DMU

ur= output weights

vi= input weights

Following the Charnes-Cooper transformation (1962) one can select a representative solution (u,v) for which

$$\sum_{i=1}^{m} v_i x_{io} = 1 \tag{3.4}$$

To obtain a linear programming problem that is equivalent to the linear fractional programming problem. Thus, denominator in the above efficiency measure h0 is set to equal one and the transformed linear problem for DMU0 can be written:

$$\max \; z_0 = \sum_{r=1}^{s} u_r y_{r0} \tag{3.5}$$

subject to

$$\sum_{r=1}^{s} u_r y_{rj} - \sum_{i=1}^{m} v_i x_{ij} \le 0;\ j = 1,2,...,n \tag{3.6}$$

$$\sum_{i=1}^{m} v_i x_{io} = 1 \tag{3.7}$$

ur =1,2,..,s (3.8)

vi 0, i=1,2,..,m. (3.9)

For the above linear programming problem, the dual can be written (for the given DMU0) as:

minλz0=θ0 (3.10)

subject to

$$\sum_{j=1}^{n} \lambda_j y_{rj} \ge y_{ro}, \quad \text{r=1,2,…,s} \tag{3.11}$$

$$\theta_0 x_{i0} - \sum_{j=1}^{n} \lambda_j x_{ij} \ge o, \quad \text{i=1,2,…,m} \tag{3.12}$$

$$\lambda_j \ge 0, \quad \text{j=1,2,…,n} \tag{3.13}$$

These two linear problems described above yield same optimal solution of 0. This is the efficiency score for any specific DMU0. The efficiency score for the whole range can be

obtained through repetition for each DMUj, j=1,2,…n. The value of optimal solution of 0 must be less than or equal unity. DMUs with θ*<1 can be described as a relatively inefficient while DMUs with θ*=1 can be said to be relatively efficient, with the virtual input-output combination points lying on the frontier. The linear facets that are spanned by the efficient data units in turn create a frontier and the corresponding frontier production function. This function is obtained under implicit constant return-to-scale assumption and has no parameters that are unknown.

#### 3.3.1.2 BCC Model

Vujčić and Jemrić (2001) also explained that constant returns-to –scale imply that there are zero constraints on the weights λj, except the positivity conditions explained above. In order to allow for the variable returns to scale it is required to impose the convexity condition for the λj i.e. to include in the model (3.10)-(3.13) the constraint:

$$\sum_{j=1}^{n} \lambda_j = 1 \tag{3.14}$$

The resulting DEA model will exhibit variable returns to scale and is called BCC model for the DMU0. These can be written as:

$$\min\lambda\ z0=\theta 0 \tag{3.15}$$

subject to

$$\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{ro}, \quad \text{r=1,2,…,s} \tag{3.16}$$

$$\theta_0 x_{i0} - \sum_{j=1}^{n} \lambda_j x_{ij} \geq o, \quad \text{i=1,2,…,m} \tag{3.17}$$

$$\sum_{j=1}^{n} \lambda_j = 1 \tag{3.18}$$

$$\lambda_j \geq 0, \quad j=1,2,\ldots,n \tag{3.19}$$

BCC-efficiency scores are obtained by running the above model for each DMU.

### 3.3.1.3 Application for DEA

The information and instruction regarding software was uploaded on web page. Frontier Analyst software will be used for measure the efficiency level of bank performance. Frontier Analyst is a performance measurement tool made by Banxia Software LTD, which is based on the DEA technique. Frontier Analyst is a software program which allowances the use of both CCR model and BBC model. Also, Frontier Analyst includes two plots that allow you to identify correlation between indicated input and output variables, and between the variables and the efficiency scores to identify factors that are effectively representing the same criteria and factors that are identical with efficiency. Frontier Analyst is determining the comparative efficiency of the inputs and outputs and creates an overall efficiency score for each unit by using linear programming. Those units doing best in any particular ratio are considered as “efficient”, for the rest of the units it tries to optimize their performance to compare with their “efficient peers”. The benefits of Frontier Analyst are: easy to use, integrates easily into existing systems, variety of reporting options, peer based analysis, established technique, objective and comparative analysis.

Application of DEA requires a number of units which a performing a similar process. Also necessary identify and determine properly basis of variables of inputs and outputs to efficient study and accurate assesse. Only those inputs and outputs should be included to this analysis which is most relevant to desired research. The selection of the input and output can be following controlled input, uncontrolled input and output. Controlled output or input is that which management of bank unit can control and as a result can amend the amount of fund resource used. Uncontrolled inputs or outputs are variables that management cannot control, therefore cannot predict the fund resource used. Output are the result of consumption of units which generating from inputs.

In case of this research the controlled inputs and outputs are considered Interest income and Interest expenses, uncontrolled inputs and outputs are considered Non-interest income and Non-interest expenses.

Additionally, Frontier Analysis allows assessing the relative efficiency by either model which are CCR model (constant returns to scale) or BCC model (variable return to scale). In the Constant returns outputs directly reflect to input level (i.e. doubling input produces exactly double outputs). On the other hand, in the Variable returns outputs fall off as input level rise (i.e. doubling input produces less than double outputs). In this research will be compared results of both models.

### 3.3.2 Profitability Measure Tools

The most common method to evaluate how profitable banks are Return on Book Assets (ROA) and Return on Book Equity (ROE) and Return on Sale (ROS).These ratios are universally applied in financial analysis and are appropriate for evaluating the profitability and the efficiency of bank performance under a given period of time and compare to other market participants. The main advantages of financial tools it is availability of data, simplicity and universality of applications.

ROA ratio is an indicator of how profitable an organization is relative to it is assets and shows how efficient they exercise their assets for earning profit. The ROA ratio measure by dividing a company's net income by it is total assets, and it displayed as a percentage.

ROE ratio measures a corporation's profitability by calculating how much profit a company generates in regards to the investment made by the shareholders. This shows how organizations effectively use shareholders money. The result is also expressed in terms of percentage, and calculated by dividing net income by it is total shareholders' equity.

The ROS or Profit Margin is a ratio of financial result to a bank income. This measure providing how much profit is being produced per dollar of sales. The result is also expressed in terms of percentage and calculated by dividing net income before interest and tax by it is total sales.

Another group of financial indicator of profitability is margin rates which are Net Interest Margin which is ratio of interest result to assets and Interest Spread which is interpretation of differences among the average interest assets and the average expenditure of interest-bearing liabilities. The Net income represents the amount of cash flow remaining after all operating expenditures, taxes, interest and preferred stock dividends have been deducted from total revenue of the company. However, this study will be not applying these tools for measurements.

# Chapter 4

# PROFITABILITY AND EFFICIENCY OF KAZAKHSTAN'S BANKS: EMPIRICAL RESULTS

This chapter outlines the main findings of the study. The methodology and data described in chapter three have been used to determine and measure profitability and efficiency level of the Kazakhstan's banking industry. The non-parametric approach, DEA was used to analyze revenue and cost efficiency of the 11 banks in Kazakhstan. The chapter is classified into three parts. The first part derives the results of the selected banks efficiency level analysis. The second part evaluates the profitability level of the selected banks. The last part compares annualized efficiency and profitability levels of the banks in attempt to determine existence/absence of the relation between these two variables.

## 4.1 Efficiency Results

The Frontier Analyst software was used to analyze the performance of the selected sample of banks through linear programming method. The CCR and BCC methods of the DEA were used to derive the results of the efficiency level of the selected banks in Kazakhstan. The data sample includes historical data for the period from 2005 till 2010. Both methods of the analysis revealed high efficiency level of the selected banks. The average efficiency range varied from 53.16 percent to 94.01 percent for the period from 2005 to 2010. The only exception occurs in year 2007, when average efficiency level

dropped to 60.15 and 63.32 percent using CCR and BCC models, and 2009, when average efficiency level dropped to 63.42 and 77.86 percent using CCR and BCC models, respectively. In general BCC model shows higher efficiency level than the CCR method. The result of BCC and CCR model can be different due to the scale effect since CCR model assumes constant returns to scale while the BCC model assumes variable returns to scale.

The average efficiency levels for the period of 5 years from 2005 to 2010 according to the banks size are presented in column 2 and column 3 of the table 1 below for the CCR and BCC model, respectively. The average efficiency level excluding the outstanding variable (year 2009) is presented in column 4 and column 5 of the table 1 below for the CCR and BCC model, respectively.

Table 1: Efficiency Level of the Selected Banks According to the Bank Size

| **Size of the Bank (1)** | **Efficiency Level (CCR Model) (2)** | **Efficiency Level (BCC Model) (3)** | **Efficiency Level Excluding year 2009 (CCR Model) (4)** | **Efficiency Level Excluding year 2009 (BCC Model) (5)** |
|---|---|---|---|---|
| **Big** | 0.6544 | 0.8881 | 0.6642 | 0.9132 |
| **Medium** | 0.5118 | 0.6468 | 0.4910 | 0.6345 |
| **Small** | 0.7277 | 0.8396 | 0.7439 | 0.8512 |

The results of the analysis using CCR method revealed that there is no correlation between the size of the bank and the efficiency level, hence the variables are

independent. The sample of the small banks results the highest efficiency level at 72.77 percent. The lowest performance resulted by the medium banks at 51.18 percent. An attempt was made to determine if year 2009 (outstanding variable due to effect of global financial crisis) breaks the correlation between variables. If year 2009 is excluding from the sample the best efficiency performance is again described by the small size banks with 74.39 percent efficiency level, followed by the big size banks with 66.42 percent. The middle size banks are again characterized by the lowest performance level at 49.10 percent.

The BCC model, however, derives different results of the analysis. The most efficient banks are the big banks with the average efficiency level of 88.81 percent, compared to the lowest performance of the middle size banks of 64.68 percent. When year 2009 is excluded from the analysis the big banks again show the best efficiency level at 91.32 percent followed by the small banks with the efficiency level of 85.12 percent. The middle size banks still show the weakest performance by 63.45 percent.

In general under CCR model small banks are described by higher efficiency level, while under BCC model the big banks are more effective. The same trend remains even if year 2009 is excluded from the data sample. The middle size banks are characterized by the weakest efficiency performance under both CCR and BCC models.

### 4.1.1 DEA: CCR Model

Under the constant return to scale assumption banking performance characterized with lower level of the efficiency compared to the variable returns to scale. Table 2 presents

the annual efficiency level for the period from 2005 to 2010 for each of the selected banks. It also contains the average annual efficiency rating result of total bank performance. Detail of the calculations can be followed in Appendix A. These annualized average efficiency levels will later be used to determine the relation between annual average efficiency levels and annual average profitability levels.

The findings indicate that the annual average levels of efficiency are significantly high showing positive result. The significant drop in year 2009 can be explained as a result of the GFC. According to the figures in Table 2 the GFC affected the efficiency of all the banks except KZI bank and ATF bank.

The Committee for the Control and Supervision of the Financial Market and Financial Organizations of the National Bank of the Republic of Kazakhstan during the GFC stated that BTA and ALB banks' assets did not cover their liabilities and that the capital adequacy ratio of the both banks were violated. These two banks were the biggest banks in the country and the effect of their crash could result on the overall collapse of the financial system and effect country's economy in great deal. The government took a decision to nationalize BTA and ALB banks in an attempt to prevent the bankruptcy of the banking sector. In the process of nationalization the government through the recapitalization of funds became the main shareholder of the banks. They restricted their debt to minimize and prolong the payments. This decision by the monetary authorities have affected the efficiency performance of these two banks; BTA and ALB positively (Table 2).

Table 2: CCR Model Results

| Size of the bank | **Efficiency CCR Model** | Years | | | | | |
|---|---|---|---|---|---|---|---|
| | Bank | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Big | BTA | 0.2678 | 0.2783 | 0.597 | 0.811 | 0.4637 | 0.482 |
| Big | KKB | 0.3254 | 0.2982 | 0.69 | 0.869 | 0.4384 | 0.4833 |
| Big | HALYK | 0.2649 | 0.9073 | 0.1875 | 0.198 | 0.8127 | 1 |
| Big | ALB | 0.2331 | 0.3622 | 0.481 | 0.715 | 0.3964 | 0.5435 |
| Middle | ATF | 1 | 0.9163 | 1 | 0.1723 | 1 | 0.991 |
| Middle | KASPI | 0.2541 | 0.969 | 0.602 | 0.874 | 0.7849 | 0.8487 |
| Middle | NUR | 0.2995 | 0.3641 | 0.774 | 0.554 | 0.1991 | 1 |
| Small | TEMIR | 0.2034 | 0.2841 | 0.573 | 0.751 | 0.6896 | 0.5598 |
| Small | EURB | 1 | 1 | 0.622 | 0.693 | 0.5179 | 0.5244 |
| Small | POZB | 1 | 1 | 0.4391 | 0.799 | 0.6736 | 0.4667 |
| Small | KZI | 1 | 1 | 1 | 1 | 1 | 1 |
| Average | | 0.531 | 0.671 | 0.643 | 0.676 | 0.634 | 0.718 |

Table 3: Comparison of the pre-GFC and post-GFC Banking Performance Using CCR Model

| **Size of the Bank (1)** | **Pre-GFC average efficiency (2)** | **Post-GFC average efficiency (3)** |
|---|---|---|
| **Big** | 0.62 | 0.65 |
| **Medium** | 0.44 | 0.68 |
| **Small** | 0.77 | 0.63 |

Table 3 above presents the average efficiency level of the banks according to the size of the banks in year 2008 (before the GFC) and year 2010 (after the GFC). The BTA and

ALB banks were excluded from the analysis due to the financial injection from the Kazakhstan's government.

The big banks have the positive gap between pre-GFC and post-GFC performance of approximately 3 percentage points. The medium banks were able to recover better compared to the small and big banks. The positive gap between pre-GFC and post-GFC is approximately 24 percentage points. In fact two out of three middle size banks were managed to improve their performance in year 2010 compared to year 2008. As for the small banks the results are opposite, having a negative gap of 14 percentage points. This indicates that recovery process for small banks have been harder relative to bigger banks.

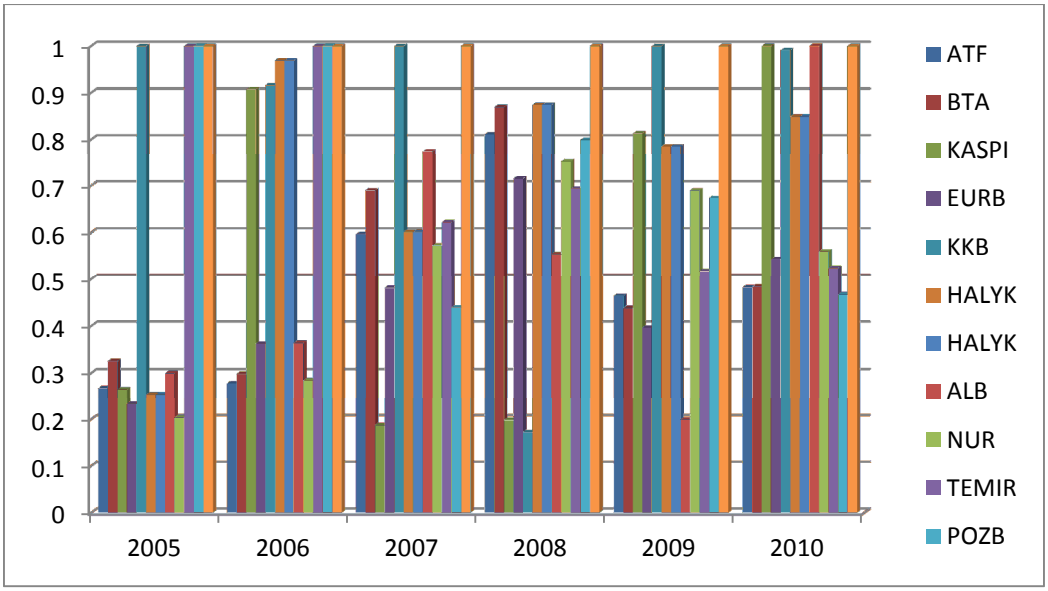


Figure 1: CCR Model Results

The result in Figure 1 shows that most of the banks have high level of efficiency level. It is only in 2005 and 2006 were low efficiency I observed. This can be explained by the

establishment period for economy and financial service overall. Also few banks such as ALB, NUR and KB had lower than 30 % GFC effect.

### 4.1.2 DEA: BCC Model

The results of BCC model in Table 4 are more positive than the results of CCR model in Table 2. The details are presented in Appendix B. In Table 4 there is not too much pressure after GFC and result are more optimistic for all banks. Negative effects are only in 2007 and 2009. The most significant effect is observed in 2007 which is the beginning of the GFC. Year 2010 is a recovery period for the efficiency performance in all cases. During the analyzed period ATF, NUR and KZI bank show highest level of efficiency, even during the GFC period their results are the same. After that HALYK, POZB, KZI banks taking leading position.

The average yearly result shows that banking sector performance has very high level of efficiency. This indicates that Kazakhstan has strong financial system.

Table 4: BCC Model Result

| Size of the bank | **Efficiency BCC Model** | Years | | | | | |
|---|---|---|---|---|---|---|---|
| | Bank | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Big | BTA | 0.682 | 0.7239 | 0.191 | 0.8107 | 0.7614 | 0.7223 |
| Big | KKB | 0.9083 | 1 | 0.3591 | 1 | 0.6374 | 0.7764 |
| Big | HALYK | 1 | 1 | 1 | 1 | 0.8489 | 1 |
| Big | ALB | 1 | 0.936 | 0.3343 | 0.756 | 0.5729 | 0.6221 |
| Middle | ATF | 1 | 1 | 1 | 1 | 1 | 1 |
| Middle | KASPI | 1 | 1 | 0.3119 | 0.9092 | 0.9041 | 1 |
| Middle | NUR | 1 | 1 | 1 | 1 | 1 | 1 |
| Small | EURB | 0.6589 | 0.6812 | 0.1246 | 0.9222 | 0.7773 | 0.6762 |
| Small | TEMIR | 1 | 1 | 0.2964 | 0.7846 | 0.5553 | 0.5762 |
| Small | POZB | 1 | 1 | 1 | 1 | 1 | 0.7188 |
| Small | KZI | 1 | 1 | 1 | 1 | 1 | 1 |
| Average | | 0.93174 | 0.9401 | 0.601573 | 0.9257 | 0.77867 | 0.826545 |

Table 5 below presents the average efficiency level of the banks according to the size of the banks in year 2008 (before the GFC) and year 2010 (after the GFC). The BTA and ALB banks were again excluded from the analysis due to aforementioned reason. The big banks have the negative gap between pre-GFC and post-GFC performance of approximately 1 percentage points. The negative gap for the medium sized banks is approximately 0 percentage points. In this case of the small bank performance is shown by the highest negative gap of 16 percentage points.

Table 5: Comparison of the pre-GFC and post-GFC Banking Performance Using BCC Model

| Size of the Bank (1) | Pre-GFC average efficiency (2) | Post-GFC average efficiency (3) |
|---|---|---|
| **Big** | 0.95 | 0.94 |
| **Medium** | 0.63 | 0.63 |
| **Small** | 0.88 | 0.72 |

In general the middle banks are performing better under the variable returns to scale assumption as compared to the big and small size banks. Two out of four small banks did not have any decrease in the efficiency level during the GFC.

Most of the derived results are in range between 0.50 and 1 of efficiency level before GFC, though the lower bound is 0.12.

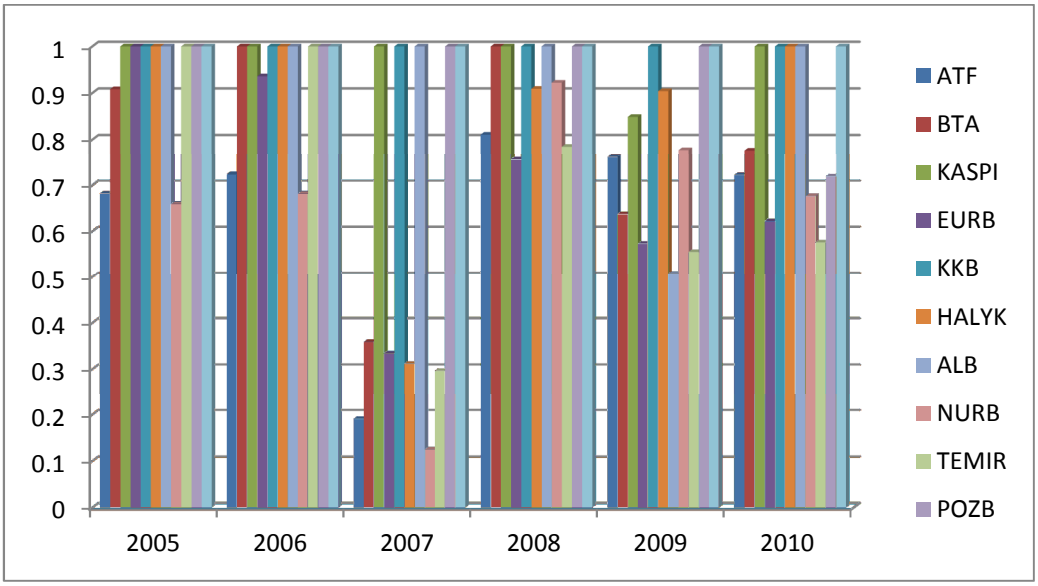


Figure 2: BCC Model Result

## 4.2 Profitability Results

This part observes the profitability result which was measured by ROA approach and ROE approach. The input used for evaluating profitability can be followed in detail Appendix C.

### 4.2.1 ROA

The table 6 below presents the annual results of ROA approach for period from 2005 to 2010. ROA approach is the most frequent uses tool to measure the profitability of all business entities including banks.

Table 6: ROA Results

| Size of the bank | **ROA** | Years | | | | | |
|---|---|---|---|---|---|---|---|
| | **Bank** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** |
| Big | **BTA** | 0.0147 | 0.0188 | 0.0211 | -0.5414 | -0.5661 | 0.5202 |
| Big | **KKB** | 0.0165 | 0.0121 | 0.0192 | 0.0077 | 0.0073 | 0.0081 |
| Big | **HALYK** | 0.0282 | 0.0273 | 0.0254 | 0.0088 | 0.0078 | 0.0172 |
| Big | **ALB** | 0.0047 | 0.0152 | 0.0367 | -0.4961 | -0.7124 | 0.7693 |
| Middle | **ATF** | 0.0106 | 0.0041 | 0.0073 | -0.0706 | -0.0504 | -0.0319 |
| Middle | **KASPI** | 0.0117 | 0.0290 | 0.0308 | 0.0146 | 0.0201 | 0.0061 |
| Middle | **NUR** | 0.0165 | 0.0080 | 0.0153 | 0.0046 | 0.0010 | 0.2419 |
| Small | **EURB** | 0.0358 | 0.0250 | 0.0266 | 0.0083 | -0.0444 | 0.0046 |
| Small | **TEMIR** | 0.0269 | 0.0154 | 0.0221 | -0.0123 | 0.4201 | 0.3314 |
| Small | **POZB** | 0.0166 | 0.0141 | 0.0240 | -0.0096 | -0.0720 | 0.0036 |
| Small | **KZI** | 0.0316 | 0.0369 | 0.0382 | -0.0053 | 0.0143 | 0.0321 |
| Average | | 0.0194 | 0.0187 | 0.0242 | -0.0992 | -0.0886 | 0.1730 |

According to table 6 which shows the main results, all banks till year 2008 period showed positive results. In year 2008 there are 6 banks (BTA, ALB, ATF, TEMIR, POZB, KZI) that have negative ROA. During the GFC (year 2009) there are 5 banks that

have negative ROA. The TEMIR bank managed to increase ROA from -0.0123 to 0.4201, which is actually the highest coefficient for the bank for the period from 2005 to 2010. KZI bank was also able to increase ROA form -0.0053 to 0.0143. However, ROA of EUBR bank decreased from 0.0083 to -0.0444. In average year 2008 was more financially stressful for the banks as compared to the year 2009. The average financial performance in 2008 was -0.0992 as compared to -0.0886 in 2009.

In 2010 only one bank has negative result which is ATF Bank. The main reason of that is high level of impairment losses, personal expenses and general administrative expenses. On the Figure 3 shows that the result of average rate of banks performance were mostly affected by BTA, ALB and ATF banks results. This happened because of decreasing level of interest income and non-interest indicators resulting on negative effects in 2008 and 2009. These banks recovered in 2010, partially due to the government support (in case of BTA and ALB banks). The ATF banks have the same picture during 2008 and 2009, but recovered slower and in 2010 ROA is still negative.

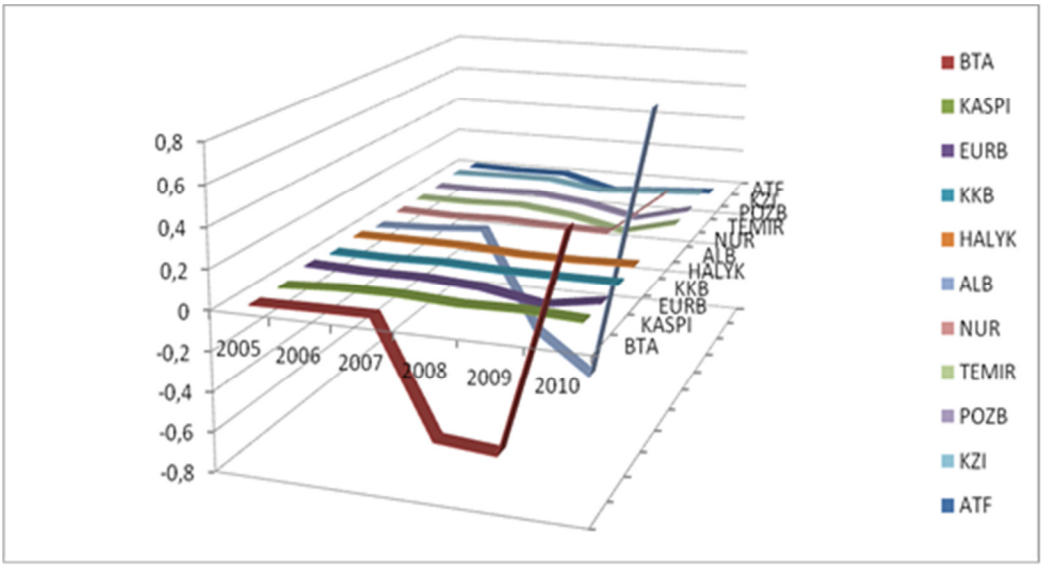


Figure 3: ROA Results

Table 7 below compares the average profitability level of the selected banks for the period from 2005 to 2010 and for the period from 2005 to 2010, exclusive of year 2009, according to the size of the banks.

Table 7: ROA by the Size of the Banks

| **Size of the Bank (1)** | **ROA (2)** | **ROA (exclusive of year 2009) (3)** |
|---|---|---|
| **Big** | -3.04% | 2.67% |
| **Medium** | 1.49% | 1.99% |
| **Small** | 4.10% | 3.33% |

The results of the analysis revealed that the best financial performance according to the size of the banks was shown by the small banks in both cases. This, perhaps, can be explained by the high level of efficiency of the small banks. The average ROA of the big

banks for the period from 2005 to 2010 is negative; however, if year 2009 is excluded from the sample the ROA is positive. This finding reveals that big banks are more vulnerable to significant level of stress in the financial markets, such as GFC. The performance of middle size banks is positive in both cases, although the big banks have better ROA if year 2009 is excluded from the sample.

Another interesting finding is that the efficiency level of all the banks in the sample was not significantly affected in pre-GFC year (2007), however, the profitability level was more affected in year 2008 as compared to year 2009. In addition profitability level of BTA and ALB banks dropped even further in year 2009 compared to year 2008, although both of the banks received significant financial support from the government.

### 4.2.2 ROE

Table 8 below presents the annual results of the profitability analysis using ROE approach for the period from 2005 to 2010. All of the analyzed banks have positive results during 2005-2007 periods; however, after this period the GFC resulted on decrease in profitability level for all analyzed banks.

The situation is almost the same in year 2009 except that figures such as additional paid in capital and shareholder of the parent also became negative. There is a reduction in the negative coefficients in 2010 showing an improvement in the overall situation. This is due to the fact that the accumulated deficit, treasures shares and quantity of investment securities available for sale in reserve went to negative level. The stable ROE result is show by four banks, HALYK, KKB, KASPI and NUR. Similarly ROA results of the

same banks are positive during the GFC does not drop below negative level. Based on these results, those four banks have shown to have the strongest financial structure and professional level of management during the GFC.

Table 8: ROE Results

| Size of the bank | **ROE** | **Year** | | | | | |
|---|---|---|---|---|---|---|---|
| | **Bank** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** |
| Big | **BTA** | 0.1688 | 0.2007 | 0.1431 | -1.5994 | -6.5980 | -9.4367 |
| Big | **KKB** | 0.2244 | 0.1121 | 0.1809 | 0.0642 | 0.0488 | 0.0531 |
| Big | **HALYK** | 0.2456 | 0.2251 | 0.2516 | 0.0761 | 0.0565 | 0.1139 |
| Big | **ALB** | 0.0569 | 0.1750 | 0.2684 | 1.6997 | -0.5679 | -3.1321 |
| Middle | **ATF** | 0.1397 | 0.0750 | 0.0967 | -0.7509 | -0.8764 | -0.8773 |
| Middle | **KASPI** | 0.1110 | 0.2117 | 0.2016 | 0.0886 | 0.1587 | 0.0528 |
| Middle | **NUR** | 0.1431 | 0.0662 | 0.0818 | 0.0332 | 0.0072 | 0.9942 |
| Small | **EURASION** | 0.2927 | 0.2016 | 0.1286 | 0.0476 | -0.5896 | 0.0642 |
| Small | **TEMIR** | 0.1936 | 0.1372 | 0.1530 | -0.0818 | -1.8834 | 1.4540 |
| Small | **POZITIVE** | 0.0888 | 0.1229 | 0.0725 | -0.0279 | -0.1964 | 0.0099 |
| Small | **KZI** | 0.0608 | 0.0773 | 0.1181 | -0.0115 | 0.0276 | 0.0565 |
| **Average** | | 0.1568 | 0.1459 | 0.1542 | -0.0420 | -0.9466 | -0.9679 |

The weakest performance is shown by the BTA bank. ROE coefficients during year 2009 and year 2010 are -6.6 and -9.44, respectively. Such a huge negative ROE in these two years is explained by both negatives equity, showing huge amounts of borrowing, and a negative income. The latest, however, partially can be explained by the takeover of the bank by the government of Kazakhstan. In February 2009 the government of Kazakhstan within the framework of anti-crisis measures through national fund "Samruk-Kazina" bought 75.1 percent of the total shares of the bank. In the same respect share of the bank equity hold by the "Samruk-Kazina" fund increased to 81.48 percent. By the end of 2009 the share of the government "Samruk-Kazina" fond

increased to 97.3 percent. The takeover of this giant bank by the government had a negative impact on the financial performance of the bank. BTA banks depositors were trying to withdraw maximum possible amount of their savings. Bank had a huge liquidity problem. Almost the same situation occurred with the ALB bank.

Table 9 below compares the average profitability level of the selected banks for the period from 2005 to 2010 and for the period from 2005 to 2010 exclusive of year 2009, according to the size of the banks.

Table 9: ROE by the Size of the Banks

| **Size of the Bank (1)** | **ROA (2)** | **ROA (exclusive of year 2009) (3)** |
|---|---|---|
| **Big** | -70.71% | -49.54% |
| **Medium** | -0.24% | 4.45% |
| **Small** | 2.15% | 15.79% |

The best performance in both cases (with and without year 2009) is again shown by the small banks. Moreover, average ROE of small banks was the only positive number if year 2009 was included in the sample. If year 2009 is excluded from the sample the profitability performance of the small banks is three times above the average ROE of the middle size banks 15.79 percent compared to 4.45 percent.

The average ROA of the big banks for the period from 2005 to 2010 is a quite high negative number in both cases. This finding again confirms that big banks are more vulnerable to significant level of stress in the financial markets. The performance of

middle sized banks is negative if year 2009 is included to the sample and equal to -0.24 percent. However, if year 2009 is excluded from the sample the ROE becomes positive at 4.45 percent.

To be more precise it is possible to exclude BTA and ALB banks from the sample due to the externalities created by the government interventions. Table 10 below presents the results of ROE analysis by the size of the banks if these two giant banks are excluded from the sample.

Table 10: ROE for the Period 2005 to 2010 (Inclusive and Exclusive year 2009) without BTA and ALB banks

| **Size of the Bank (1)** | **ROA (2)** | **ROA (exclusive of year 2009) (3)** |
|---|---|---|
| **Big** | 13.77% | 15.47% |
| **Medium** | -0.24% | 4.45% |
| **Small** | 2.15% | 15.79% |

When BTA and ALB banks are excluded from the sample the average ROE of the remaining two banks (KKB, HALYK) becomes positive for both scenarios. Moreover, if year 2009 is included to the sample, the big banks actually characterized by the best financial performance using ROE, 13.77 percent compared to -0.24 and 2.15 percent for the middle and small banks, respectively. If year 2009 is included to the sample the best profitability level is still shown by the small banks, however, big banks are closely following the small banks with 15.47 percent compared to 15.79 percent.

In general the exclusion of the BTA and ALB banks allows excluding negative impact of the government interventions from the sample and obtaining more solid figures. If this is done the most vulnerable to the financial stress (such as GFC) section of the banking sector is middle size banks. This conclusion is also confirmed by the ROA method of profitability estimation.

## 4.3 Profitability vs. Efficiency

In this part of Chapter 4 two performance measurement approaches, profitability and efficiency will be evaluated together and compared with each other. Also, as was mentioned before, the government influence may result in some outstanding variables involved into the analysis that should be removed to be more precise. Therefore, two samples of the data will be observed in this part; the results of the analysis with the full data sample and the results without BTA and ALB banks.

Table 11 shows average annual result of ROA, ROE, BCC and CCR methods that were used to derive the results of this study. Table 5 includes full sample of the banks.

Table 11: Comparison of the Average Annual Results

| | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** |
|---|---|---|---|---|---|---|
| **ROA** | 0,019494 | 0,018762 | 0,024285 | -0,09922 | -0,0886 | 0,173017 |
| **ROE** | 0,156888 | 0,145947 | 0,154253 | -0,04201 | -0,94662 | -0,96793 |
| **Efficiency BCC Model** | 0.931745 | 0.9401 | 0.601573 | 0.842702 | 0.778673 | 0.826545 |
| **Efficiency CCR Model** | 0.531655 | 0.618855 | 0.278227 | 0.179718 | 0.634209 | 0.718127 |

The Figure 4 demonstrates the pattern of the average results of ROA, ROE, BCC and CCR model for the historical data sample. The ROA and CCR coefficients have the same historical trend. ROE and BCC coefficient are the outstanding variable as it can be seen from the diagram, however, the movement of ROE coefficient may be explained by the behavior of the BTA and ALB banks. Through nationalization of two giant banks by government intervention may result in a significant change in the balance of the financial system of Kazakhstan. The movement of BCC can be explained by the fact that BCC method is more sensitive to the crisis effect in 2007 when was the first wave of GFC.

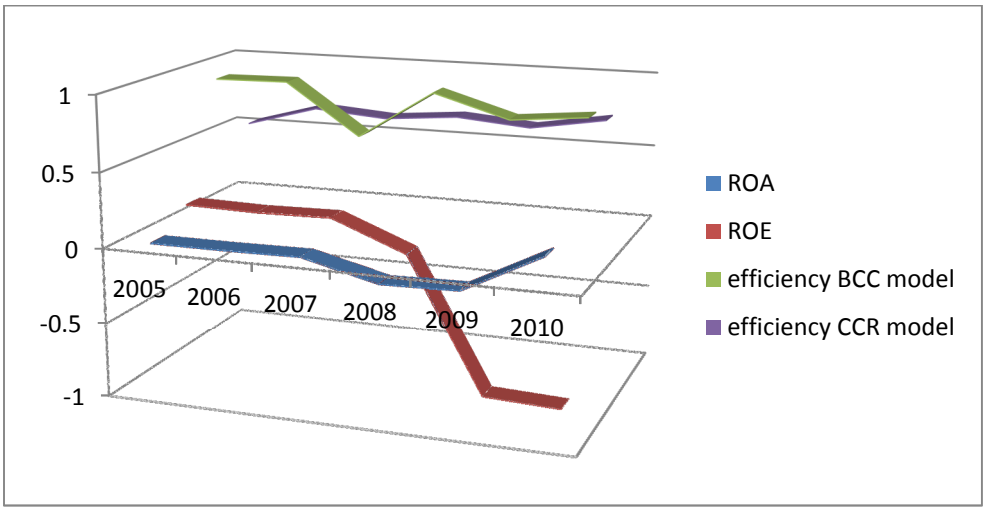


Figure 4: Comparison of Average Results

Table 12 presents average annual results of ROA, ROE, BCC and CCR Model excluding BTA and ALB banks. The government intervention had a huge negative effect on ROE of these two banks through restriction and recapitalization of the banks' assets in 2009.

Table 12: Comparison of Annual Average Results (Excluding BTA and ALB banks)

| | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** |
|---|---|---|---|---|---|---|
| **ROA** | 0,021655 | 0,019149 | 0,023251 | -0,00598 | 0,033773 | 0,06817 |
| **ROE** | 0,166667 | 0,13662 | 0,142795 | -0,06249 | -0,36077 | 0,213519 |
| **Efficiency BCC Model** | 0.926766 | 0.926788 | 0.5842444 | 0.909188 | 0.824433 | 0.812844 |
| **Efficiency CCR Model** | 0.58036 | 0.74635 | 0.61128 | 0.6681 | 0.70431 | 0.7129 |

The Figure 5 demonstrates the historical trend of these four methods. The analysis revealed that if BTA and ALB banks are excluded from the analysis the historical trend of the four coefficients is different and showing that efficiency and profitability again are independent from each other. Whereas one would expected to see a relationship between efficiency and profitability are clear.

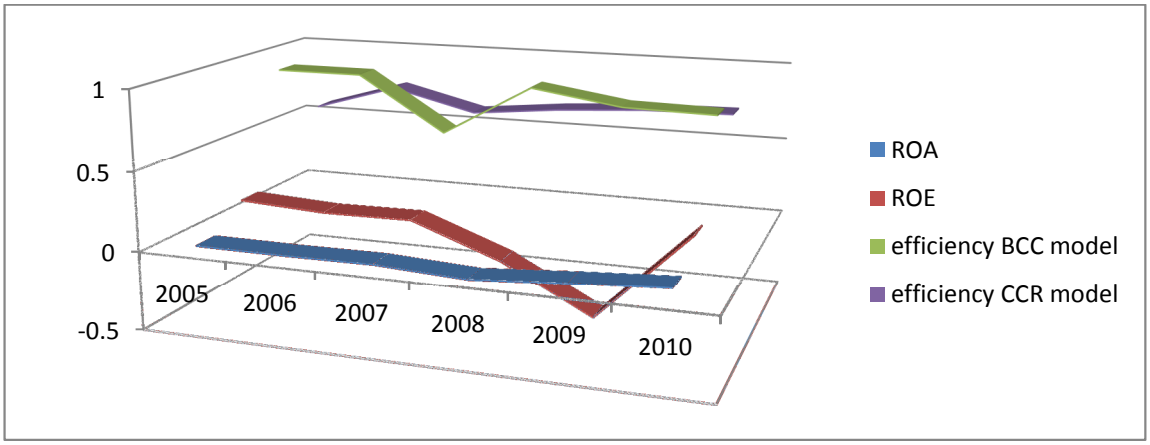


Figure 5: Comparison of Adjusted Average Results

All four measures have almost a straight line behavior till year 2007 when there is a negative trend by BCC in year 2007, followed by the recovery in year 2008 and again

falling in 2009. ROA, BCC and CCR model have more stable structure compared to the ROE coefficient. This finding again confirms that the government intervention and nationalization of the two major banks had a significant effect on the average performance of the banking industry in Kazakhstan. It also confirms that exclusion of such extreme variables, arising due to the externalities evolved in the financial sector of the country, should be excluded from the analysis to obtain a more reliable and precise conclusion.

# Chapter 5

# CONCLUSION

This study was directed to evaluate efficiency and profitability of Kazakhstan banking sector performance using sample of eleven banks, including four big banks, three medium size banks and four small banks. The result of the analysis revealed that the banking sector can be described by strong financial system with high level of efficiency. This fact is also supported by the profitability analysis result, which shows quite positive results even taking into consideration the effect of GFC and the time that was required by the banks to recover after GFC. The analysis also revealed that GFC had a very significant effect on the performance of the banking sector particular during year 2009.

The average results of CCR model revealed that the only middle banks are characterized by the negative gap between pre-GFC and post-GFC performance of approximately 2 percentage points. The small banks have positive gap between pre-GFC and post-GFC by approximately 1.62 percentage points. The big banks are also close to the small size banks with a positive gap of only 1 percent.

According to the average results of BCC model, the small banks have the positive gap between pre-GFC and post-GFC performance of approximately 1.16 percentage points. The negative gap for the medium sized banks is exactly the same as in the case of CCR model. However, in this case the best performance is shown by the big banks with only

2.5 percentage point of a positive gap. In general the big banks are performing better under the variable returns to scale assumption as compared to the small and medium size banks. All banks show results indicating that their efficiency level under BCC assumption has increased.

The profitability analysis of the banking sector performance using ROA analysis revealed that the best financial performance according to the size of the banks was shown by the small banks. Two cases were analyzed by the study. The first case includes the historical data for the period from 2005 to 2010. The second case includes the same historical sample with exclusion of year 2009. This was done in an attempt to exclude an extreme variable that arises due to the effect of the GFC. In both of these cases, small banks have shown the best financial performance using ROA method. This, perhaps, can be explained by the high efficiency level of the small banks.

The average ROA of the big banks for the period from 2005 to 2010 is negative; however, if year 2009 is excluded from the sample the ROA becomes positive. This finding reveals that big banks are more vulnerable to significant level of stress in the financial markets, such as GFC.

The performance of middle size banks is positive in both cases, although the big banks have better ROA if year 2009 is excluded from the sample. The additional interesting finding is that the efficiency level of all the banks in the sample was not significantly affected in pre-GFC year (2008); however, the profitability level was more affected in year 2008 as compared to year 2009.

Small banks in both of the scenarios, inclusive and exclusive of year 2009, are again characterized by the best performance using ROE approach. Moreover, average ROE of small banks was the only positive number if year 2009 was included in the sample. If year 2009 is excluded from the sample the profitability performance of the small banks is three times above the average ROE of the middle size banks being 15.79 percent compared to 4.45 percent.

The average ROE of the big banks for the period from 2005 to 2010 is quite a high negative number in both cases. This finding again confirms that big banks are more vulnerable to significant level of stress in the financial markets. After excluding BTA and ALB banks ROE averages became positive for both scenarios. This is due to the fact that the remaining two big banks, KKB and HALYK, had a positive financial performance during the whole analyzed historical period. The performance of middle sized banks is negative if year 2009 is included to the sample and equal to -0.24 percent, however, if year 2009 is excluded from the sample the ROE becomes positive at 4.45 percent.

The overall results of the analysis revealed that the ROA, BCC and CCR coefficients have the same historical trend. ROE coefficient is the only measure that, deviates from the other. However, the study also revealed that the movement of ROE coefficient is significantly affected by the financial performance of BTA and ALB banks. These two giants in the banking sector of Kazakhstan were nationalized by the government, which in turn may affect the performance of the banks, particularly during the first years after nationalization is over. All of the four coefficients have steeper recovery effect

compared to the ROE have almost a straight line behavior till year 2008, there is a negative trend in year 2009, followed by the recovery in year 2010. ROA, BCC and CCR model have a steeper recovery relative to the ROE coefficient. Also, the fact that government positive intervention due to GFC and supported banking had positive effect on the overall efficiency rate, whereas it had negative effect to profitability rating as total equity of the banks directed to negative numbers. In summary the efficiency and profitability results of the banking sector performance have not proved to have clear dependency or correlation between each other for the case of Kazakhstan.

# REFERENCES


[1] Abbasoglu, Osman Furkan; Ayasan, Ahmet Faruk and Gunes, Ali (2007). Concentration, competition, efficiency & profitability of the Turkish Banking Sector in the Post-Crises Period pp. 1-19.

[2] Charnes, W.W. Cooper and E. Rhodes (1979). Palgrave Macmillan. Short communication: measuring the efficiency of decision making units.

[3] Ana Canhoto & Jean Dermine (2000). Forthcoming Journal of Banking & Finance. A note on Banking efficiency in Portugal, New vs. Old Banks pp.1-16

[4] Anthony N. Rezitis (2006) Journal of Applied Economics, pp. 119-138

[5] ATSUSHI IIMI. (2003) Pakistan Development Review, 42:1, pp. 41-57.

[6] Dr. Sushil Kumar Mehta, Dr. Hari Govind Mishra & Mr. Amrinder Singh, Asstt. Professor, (2011). International Conference on Economics and Finance Research IPEDR vol.4 (2011) IACSIT Press, Singapore

[7] European Journal of Operational Research 98 (1997) 395-407. Efficiency analysis in banking firms: An international comparison 396-406

[8] Grazyna Wozniewska. ISSN 1392-1258. Ekonomika 2008. Methods of measuring the efficiency of commercial banks: an example of Polish Banks pp. 81-91

[9] Jemric Igor, Vijcic Boris, Dubrovnik, June 2001. Efficiency of Banks in Transition: A DEA Approach 1-26.

[10] "Interfaces" (May-June 1999), the inform Journal on the practice of Information research, vol.29, No 3.

[11] Holly S. Lewis, Feature Editor, May 2000. Pensilvania State University. DEA: Models and Extensions Decision Line.

[12] http://www.banker.kz/index.php/topic/38839-reiting-bankov-kazahstana-po-dohodnosti-aktiv/ (2011)

[13] http:///www.elsevier.com/locate/econbase (2005) Journal of Banking and Finance 29 (2005) 31-53

[14] http:/// www.eurojournals.com/finance.htm (2010). Efficiencies of Pakistan Sector: A Corporative Study. International Research Journal of Finance and Economics. ISSN 1450-2887. Issue 46.

[15] http:///www.jstor.org Journal of the Operational Research Society Vol. 41, No.7, pp. 591-596.

[16] http:///www.rfcaratings.kz (2010) Rating Agency RFCA Ratings.

[17] http:///www.rfcaratings.kz (2011) Rating Agency RFCA Ratings.

[18] http:///www.rfcaratings.kz (2012) Rating Agency RFCA Ratings.

[19] King, R. G., and R. Levine (1993). "Finance and Growth: Schumpeter Might Be Right". Quarterly Journal of Economics, 108(3), 717—737.

[20] Mouzas, S (2006) "Efficiency versus Effectiveness in Business Network". Journal of Business Research, vol.59: 1124-1132.

[21] Munich Personal RePEc Archive (2011). MPRA paper No: 33560.

[22] N.K. Avkiran. (1999) Journal of Banking and Finance 23 991-1013 (999 p).

[23] Ozkan-Gunay & Tektas: Turkish banking sector efficiency analysis: A DEA APPROACH p.418-431

[24] Robert King, Ross Levine (1993). Finance, entrepreneurship and growth: Theory and evidence. Journal of Monetary Economics 1993, vol.32, issue 3, pages 513-542.

[25] The Pakistan Development Review 42:1 (2003) pp. 41-57

[26] Zijang Yang. Proceedings of the International MultiConference of Engineers & Computer Scientists 2009 Vol II IMECS 2009, Hong Kong. Bank Branch Operating Efficiency: A DEA Approach

# APPENDICES

## Appendix A: The software report of CCR Model Result for 2005

90.83% BTA BANK Peers: 2

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 45699000000.00 | 45699000000.00 | 0.00 % |
| INTEREST INCOME | 78286000000.00 | 86192113590.71 | 10.10 % |
| NON-INTEREST EXPENCES | 18894000000.00 | 1384524740.81 | -92.67 % |
| NON-INTEREST INCOME | 5487000000.00 | 13241919007.74 | 141.33 % |

***Peer Contributions***

| | | |
|---|---|---|
| HALYK BANK | INTEREST EXPENCES | 0.29 % |
| HALYK BANK | INTEREST INCOME | 0.38 % |
| HALYK BANK | NON-INTEREST EXPENCES | 8.92 % |
| HALYK BANK | NON-INTEREST INCOME | 0.21 % |
| KKB BANK | INTEREST EXPENCES | 99.71 % |
| KKB BANK | INTEREST INCOME | 99.62 % |
| KKB BANK | NON-INTEREST EXPENCES | 91.08 % |
| KKB BANK | NON-INTEREST INCOME | 99.79 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 100.00 % | Input |
| NON-INTEREST EXPENCES | 0.00 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

HALYK BANK

KKB BANK

---

100.00% HALYK BANK

Peers: 0

References: 3

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 21155947000.00 | 21155947000.00 | 0.00 % |
| INTEREST INCOME | 52384623000.00 | 52384623000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 19559716000.00 | 19559716000.00 | 0.00 % |
| NON-INTEREST INCOME | 4418850000.00 | 4418850000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| HALYK BANK | INTEREST EXPENCES | 100.00 % |
| HALYK BANK | INTEREST INCOME | 100.00 % |
| HALYK BANK | NON-INTEREST EXPENCES | 100.00 % |
| HALYK BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 100.00 % | Input |
| NON-INTEREST EXPENCES | 0.00 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

HALYK BANK

---

100.00% ALB BANK

Peers: 0

References: 1

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 11604000000.00 | 11604000000.00 | 0.00 % |
| INTEREST INCOME | 17858000000.00 | 17858000000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 4630000000.00 | 4630000000.00 | 0.00 % |
| NON-INTEREST INCOME | 10243000000.00 | 10243000000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| ALB BANK | INTEREST EXPENCES | 100.00 % |
| ALB BANK | INTEREST INCOME | 100.00 % |
| ALB BANK | NON-INTEREST EXPENCES | 100.00 % |
| ALB BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 31.39 % | Input |
| NON-INTEREST EXPENCES | 68.61 % | Input |
| INTEREST INCOME | 0.00 % | Output |
| NON-INTEREST INCOME | 100.00 % | Output |

***Peers***

ALB BANK

---

100.00% KZI BANK

Peers: 0

References: 1

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 3645000.00 | 3645000.00 | 0.00 % |
| INTEREST INCOME | 221338000.00 | 221338000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 227199000.00 | 227199000.00 | 0.00 % |
| NON-INTEREST INCOME | 189437000.00 | 189437000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| KZI BANK | INTEREST EXPENCES | 100.00 % |
| KZI BANK | INTEREST INCOME | 100.00 % |
| KZI BANK | NON-INTEREST EXPENCES | 100.00 % |
| KZI BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 100.00 % | Input |
| NON-INTEREST EXPENCES | 0.00 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KZI BANK

---

100.00% POZV BANK

Peers: 0

References: 2

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 28993000.00 | 28993000.00 | 0.00 % |
| INTEREST INCOME | 350376000.00 | 350376000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 34551000.00 | 34551000.00 | 0.00 % |
| NON-INTEREST INCOME | 387960000.00 | 387960000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| POZV BANK | INTEREST EXPENCES | 100.00 % |
| POZV BANK | INTEREST INCOME | 100.00 % |
| POZV BANK | NON-INTEREST EXPENCES | 100.00 % |
| POZV BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 0.00 % | Input |
| NON-INTEREST EXPENCES | 100.00 % | Input |
| INTEREST INCOME | 0.00 % | Output |
| NON-INTEREST INCOME | 100.00 % | Output |

***Peers***

POZV BANK

---

100.00% TEMIR BANK

Peers: 0

References: 1

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 3929952000.00 | 3929952000.00 | 0.00 % |
| INTEREST INCOME | 6127998000.00 | 6127998000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 106572000.00 | 106572000.00 | 0.00 % |
| NON-INTEREST INCOME | 3982974000.00 | 3982974000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| TEMIR BANK | INTEREST EXPENCES | 100.00 % |
| TEMIR BANK | INTEREST INCOME | 100.00 % |
| TEMIR BANK | NON-INTEREST EXPENCES | 100.00 % |
| TEMIR BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 0.00 % | Input |
| NON-INTEREST EXPENCES | 100.00 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

TEMIR BANK

---

65.89% NUR BANK

Peers: 3

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 6284040000.00 | 6284040000.00 | 0.00 % |
| INTEREST INCOME | 10443871000.00 | 15849878573.14 | 51.76 % |
| NON-INTEREST EXPENCES | 4681668000.00 | 4681668000.00 | 0.00 % |
| NON-INTEREST INCOME | 1914037000.00 | 3370215371.72 | 76.08 % |

***Peer Contributions***

| | | |
|---|---|---|
| KASPI BANK | INTEREST EXPENCES | 74.67 % |
| KASPI BANK | INTEREST INCOME | 80.71 % |
| KASPI BANK | NON-INTEREST EXPENCES | 98.92 % |
| KASPI BANK | NON-INTEREST INCOME | 84.08 % |
| KKB BANK | INTEREST EXPENCES | 25.24 % |
| KKB BANK | INTEREST INCOME | 18.86 % |

| | | |
|---|---|---|
| KKB BANK | NON-INTEREST EXPENCES | 0.94 % |
| KKB BANK | NON-INTEREST INCOME | 13.65 % |
| POZV BANK | INTEREST EXPENCES | 0.09 % |
| POZV BANK | INTEREST INCOME | 0.44 % |
| POZV BANK | NON-INTEREST EXPENCES | 0.15 % |
| POZV BANK | NON-INTEREST INCOME | 2.28 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 74.82 % | Input |
| NON-INTEREST EXPENCES | 25.18 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KASPI BANK

KKB BANK

POZV BANK

---

100.00% KKB BANK

Peers: 0

References: 4

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 45855000000.00 | 45855000000.00 | 0.00 % |
| INTEREST INCOME | 86407000000.00 | 86407000000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 1269000000.00 | 1269000000.00 | 0.00 % |

| | | | |
|---|---|---|---|
| NON-INTEREST INCOME | 13298000000.00 | 13298000000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 100.00 % |
| KKB BANK | INTEREST INCOME | 100.00 % |
| KKB BANK | NON-INTEREST EXPENCES | 100.00 % |
| KKB BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 93.91 % | Input |
| NON-INTEREST EXPENCES | 6.09 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

---

100.00% EURB BANK

Peers: 0

References: 1

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 2585731000.00 | 2585731000.00 | 0.00 % |
| INTEREST INCOME | 6877091000.00 | 6877091000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 2881614000.00 | 2881614000.00 | 0.00 % |
| NON-INTEREST INCOME | 2920447000.00 | 2920447000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| EURB BANK | INTEREST EXPENCES | 100.00 % |
| EURB BANK | INTEREST INCOME | 100.00 % |
| EURB BANK | NON-INTEREST EXPENCES | 100.00 % |
| EURB BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 98.71 % | Input |
| NON-INTEREST EXPENCES | 1.29 % | Input |
| INTEREST INCOME | 0.00 % | Output |
| NON-INTEREST INCOME | 100.00 % | Output |

***Peers***

EURB BANK

---

68.20% ATF BANK

Peers: 3

References: 0

***Potential Improvements***

| **Variable** | **Actual** | **Target** | **Potential Improvement** |
|---|---|---|---|
| INTEREST EXPENCES | 16137346000.00 | 16137346000.00 | 0.00 % |
| INTEREST INCOME | 24421411000.00 | 35808420229.50 | 46.63 % |
| NON-INTEREST EXPENCES | 7384165000.00 | 7384165000.00 | 0.00 % |
| NON-INTEREST INCOME | 2888186000.00 | 5629766849.01 | 94.92 % |

***Peer Contributions***

| | | |
|---|---|---|
| HALYK BANK | INTEREST EXPENCES | 21.84 % |
| HALYK BANK | INTEREST INCOME | 24.37 % |
| HALYK BANK | NON-INTEREST EXPENCES | 44.12 % |
| HALYK BANK | NON-INTEREST INCOME | 13.07 % |
| KASPI BANK | INTEREST EXPENCES | 24.40 % |
| KASPI BANK | INTEREST INCOME | 29.98 % |
| KASPI BANK | NON-INTEREST EXPENCES | 52.62 % |
| KASPI BANK | NON-INTEREST INCOME | 42.23 % |
| KKB BANK | INTEREST EXPENCES | 53.76 % |
| KKB BANK | INTEREST INCOME | 45.66 % |
| KKB BANK | NON-INTEREST EXPENCES | 3.25 % |
| KKB BANK | NON-INTEREST INCOME | 44.69 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 86.79 % | Input |
| NON-INTEREST EXPENCES | 13.21 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

HALYK BANK

KASPI BANK

KKB BANK

100.00% KASPI BANK

Peers: 0

References: 3

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 6111666000.00 | 6111666000.00 | 0.00 % |
| INTEREST INCOME | 16661546000.00 | 16661546000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 6031854000.00 | 6031854000.00 | 0.00 % |
| NON-INTEREST INCOME | 3690745000.00 | 3690745000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| KASPI BANK | INTEREST EXPENCES | 100.00 % |
| KASPI BANK | INTEREST INCOME | 100.00 % |
| KASPI BANK | NON-INTEREST EXPENCES | 100.00 % |
| KASPI BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 100.00 % | Input |
| NON-INTEREST EXPENCES | 0.00 % | Input |
| INTEREST INCOME | 94.01 % | Output |
| NON-INTEREST INCOME | 5.99 % | Output |

***Peers***

KASPI BANK

## Appendix B: The software report of BCC Model Result for 2005

32.54% BTA BANK Peers: 2

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 45699000000.00 | 45699000000.00 | 0.00 % |
| INTEREST INCOME | 78286000000.00 | 240600631121.52 | 207.34 % |
| NON-INTEREST EXPENCES | 18894000000.00 | 18894000000.00 | 0.00 % |
| NON-INTEREST INCOME | 5487000000.00 | 211519775260.00 | 3754.93 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 66.86 % |
| KKB BANK | INTEREST INCOME | 23.93 % |
| KKB BANK | NON-INTEREST EXPENCES | 4.48 % |
| KKB BANK | NON-INTEREST INCOME | 4.19 % |
| POZV BANK | INTEREST EXPENCES | 33.14 % |
| POZV BANK | INTEREST INCOME | 76.07 % |
| POZV BANK | NON-INTEREST EXPENCES | 95.52 % |
| POZV BANK | NON-INTEREST INCOME | 95.81 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 31.18 % | Input |
| NON-INTEREST EXPENCES | 68.82 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

POZV BANK

---

25.41% HALYK BANK

Peers: 2

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 21155947000.00 | 21155947000.00 | 0.00 % |
| INTEREST INCOME | 52384623000.00 | 206138581768.73 | 293.51 % |
| NON-INTEREST EXPENCES | 19559716000.00 | 19559716000.00 | 0.00 % |
| NON-INTEREST INCOME | 4418850000.00 | 219527879574.52 | 4867.99 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 22.95 % |
| KKB BANK | INTEREST INCOME | 4.44 % |
| KKB BANK | NON-INTEREST EXPENCES | 0.69 % |
| KKB BANK | NON-INTEREST INCOME | 0.64 % |
| POZV BANK | INTEREST EXPENCES | 77.05 % |

| | | |
|---|---|---|
| POZV BANK | INTEREST INCOME | 95.56 % |
| POZV BANK | NON-INTEREST EXPENCES | 99.31 % |
| POZV BANK | NON-INTEREST INCOME | 99.36 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 16.85 % | Input |
| NON-INTEREST EXPENCES | 83.15 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

POZV BANK

---

29.95% ALB BANK

Peers: 2

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 11604000000.00 | 11604000000.00 | 0.00 % |
| INTEREST INCOME | 17858000000.00 | 59625107282.26 | 233.88 % |
| NON-INTEREST EXPENCES | 4630000000.00 | 4630000000.00 | 0.00 % |
| NON-INTEREST INCOME | 10243000000.00 | 51824595532.47 | 405.95 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 68.10 % |
| KKB BANK | INTEREST INCOME | 24.97 % |
| KKB BANK | NON-INTEREST EXPENCES | 4.72 % |
| KKB BANK | NON-INTEREST INCOME | 4.42 % |
| POZV BANK | INTEREST EXPENCES | 31.90 % |
| POZV BANK | INTEREST INCOME | 75.03 % |
| POZV BANK | NON-INTEREST EXPENCES | 95.28 % |
| POZV BANK | NON-INTEREST INCOME | 95.58 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 31.95 % | Input |
| NON-INTEREST EXPENCES | 68.05 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

POZV BANK

---

100.00% KZI BANK

Peers: 0

References: 1

***Potential Improvements***

| **Variable** | **Actual** | **Target** | **Potential Improvement** |
|---|---|---|---|
| INTEREST EXPENCES | 3645000.00 | 3645000.00 | 0.00 % |

| | | | |
|---|---|---|---|
| INTEREST INCOME | 221338000.00 | 221338000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 227199000.00 | 227199000.00 | 0.00 % |
| NON-INTEREST INCOME | 189437000.00 | 189437000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| KZI BANK | INTEREST EXPENCES | 100.00 % |
| KZI BANK | INTEREST INCOME | 100.00 % |
| KZI BANK | NON-INTEREST EXPENCES | 100.00 % |
| KZI BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 100.00 % | Input |
| NON-INTEREST EXPENCES | 0.00 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KZI BANK

---

100.00% POZV BANK

Peers: 0

References: 8

***Potential Improvements***

| **Variable** | **Actual** | **Target** | **Potential Improvement** |
|---|---|---|---|
| INTEREST EXPENCES | 28993000.00 | 28993000.00 | 0.00 % |
| INTEREST INCOME | 350376000.00 | 350376000.00 | 0.00 % |

| | | | |
|---|---|---|---|
| NON-INTEREST EXPENCES | 34551000.00 | 34551000.00 | 0.00 % |
| NON-INTEREST INCOME | 387960000.00 | 387960000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| POZV BANK | INTEREST EXPENCES | 100.00 % |
| POZV BANK | INTEREST INCOME | 100.00 % |
| POZV BANK | NON-INTEREST EXPENCES | 100.00 % |
| POZV BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 13.59 % | Input |
| NON-INTEREST EXPENCES | 86.41 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

POZV BANK

---

100.00% TEMIR BANK

Peers: 0

References: 1

***Potential Improvements***

| **Variable** | **Actual** | **Target** | **Potential Improvement** |
|---|---|---|---|
| INTEREST EXPENCES | 3929952000.00 | 3929952000.00 | 0.00 % |
| INTEREST INCOME | 6127998000.00 | 6127998000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 106572000.00 | 106572000.00 | 0.00 % |

| | | | |
|---|---|---|---|
| NON-INTEREST INCOME | 3982974000.00 | 3982974000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| TEMIR BANK | INTEREST EXPENCES | 100.00 % |
| TEMIR BANK | INTEREST INCOME | 100.00 % |
| TEMIR BANK | NON-INTEREST EXPENCES | 100.00 % |
| TEMIR BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 0.00 % | Input |
| NON-INTEREST EXPENCES | 100.00 % | Input |
| INTEREST INCOME | 79.62 % | Output |
| NON-INTEREST INCOME | 20.38 % | Output |

***Peers***

TEMIR BANK

---

20.34% NUR BANK

Peers: 2

References: 0

***Potential Improvements***

| **Variable** | **Actual** | **Target** | **Potential Improvement** |
|---|---|---|---|
| INTEREST EXPENCES | 6284040000.00 | 6284040000.00 | 0.00 % |
| INTEREST INCOME | 10443871000.00 | 51343351232.69 | 391.61 % |
| NON-INTEREST EXPENCES | 4681668000.00 | 4681668000.00 | 0.00 % |
| NON-INTEREST INCOME | 1914037000.00 | 52518645633.07 | 2643.87 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 38.37 % |
| KKB BANK | INTEREST INCOME | 8.85 % |
| KKB BANK | NON-INTEREST EXPENCES | 1.43 % |
| KKB BANK | NON-INTEREST INCOME | 1.33 % |
| POZV BANK | INTEREST EXPENCES | 61.63 % |
| POZV BANK | INTEREST INCOME | 91.15 % |
| POZV BANK | NON-INTEREST EXPENCES | 98.57 % |
| POZV BANK | NON-INTEREST INCOME | 98.67 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 20.09 % | Input |
| NON-INTEREST EXPENCES | 79.91 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

POZV BANK

---

100.00% KKB BANK

Peers: 0

References: 8

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 45855000000.00 | 45855000000.00 | 0.00 % |

| | | | |
|---|---|---|---|
| INTEREST INCOME | 86407000000.00 | 86407000000.00 | 0.00 % |
| NON-INTEREST EXPENCES | 1269000000.00 | 1269000000.00 | 0.00 % |
| NON-INTEREST INCOME | 13298000000.00 | 13298000000.00 | 0.00 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 100.00 % |
| KKB BANK | INTEREST INCOME | 100.00 % |
| KKB BANK | NON-INTEREST EXPENCES | 100.00 % |
| KKB BANK | NON-INTEREST INCOME | 100.00 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 87.13 % | Input |
| NON-INTEREST EXPENCES | 12.87 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

---

## 23.31% EURB BANK

Peers: 2

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 2585731000.00 | 2585731000.00 | 0.00 % |
| INTEREST INCOME | 6877091000.00 | 29497250473.17 | 328.92 % |

| | | |
|---|---|---|
| NON-INTEREST EXPENCES | 2881614000.00 | 2881614000.00 0.00 % |
| NON-INTEREST INCOME | 2920447000.00 | 32352984116.26 1007.81 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 6.64 % |
| KKB BANK | INTEREST INCOME | 1.10 % |
| KKB BANK | NON-INTEREST EXPENCES | 0.16 % |
| KKB BANK | NON-INTEREST INCOME | 0.15 % |
| POZV BANK | INTEREST EXPENCES | 93.36 % |
| POZV BANK | INTEREST INCOME | 98.90 % |
| POZV BANK | NON-INTEREST EXPENCES | 99.84 % |
| POZV BANK | NON-INTEREST INCOME | 99.85 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 14.39 % | Input |
| NON-INTEREST EXPENCES | 85.61 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

POZV BANK

---

26.78% ATF BANK

Peers: 2

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 16137346000.00 | 16137346000.00 | 0.00 % |
| INTEREST INCOME | 24421411000.00 | 91203182638.92 | 273.46 % |
| NON-INTEREST EXPENCES | 7384165000.00 | 7384165000.00 | 0.00 % |
| NON-INTEREST INCOME | 2888186000.00 | 82702874887.90 | 2763.49 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 63.07 % |
| KKB BANK | INTEREST INCOME | 21.03 % |
| KKB BANK | NON-INTEREST EXPENCES | 3.81 % |
| KKB BANK | NON-INTEREST INCOME | 3.57 % |
| POZV BANK | INTEREST EXPENCES | 36.93 % |
| POZV BANK | INTEREST INCOME | 78.97 % |
| POZV BANK | NON-INTEREST EXPENCES | 96.19 % |
| POZV BANK | NON-INTEREST INCOME | 96.43 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 29.05 % | Input |
| NON-INTEREST EXPENCES | 70.95 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

POZV BANK

26.49% KASPI BANK

Peers: 2

References: 0

***Potential Improvements***

| Variable | Actual | Target | Potential Improvement |
|---|---|---|---|
| INTEREST EXPENCES | 6111666000.00 | 6111666000.00 | 0.00 % |
| INTEREST INCOME | 16661546000.00 | 62892164729.93 | 277.47 % |
| NON-INTEREST EXPENCES | 6031854000.00 | 6031854000.00 | 0.00 % |
| NON-INTEREST INCOME | 3690745000.00 | 67707088579.03 | 1734.51 % |

***Peer Contributions***

| | | |
|---|---|---|
| KKB BANK | INTEREST EXPENCES | 17.59 % |
| KKB BANK | INTEREST INCOME | 3.22 % |
| KKB BANK | NON-INTEREST EXPENCES | 0.49 % |
| KKB BANK | NON-INTEREST INCOME | 0.46 % |
| POZV BANK | INTEREST EXPENCES | 82.41 % |
| POZV BANK | INTEREST INCOME | 96.78 % |
| POZV BANK | NON-INTEREST EXPENCES | 99.51 % |
| POZV BANK | NON-INTEREST INCOME | 99.54 % |

***Input / Output Contributions***

| | | |
|---|---|---|
| INTEREST EXPENCES | 15.95 % | Input |
| NON-INTEREST EXPENCES | 84.05 % | Input |
| INTEREST INCOME | 100.00 % | Output |
| NON-INTEREST INCOME | 0.00 % | Output |

***Peers***

KKB BANK

POZV BANK

# Appendix C: The table of Financial Parameters

**profitability and efficiency table of parametrs** BTA BANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 14706000000 | 997805000000 | 87108000000 | 78286000000 | 5487000000 | 45699000000 | 18894000000 |
| 2006 | 39078000000 | 2075142000000 | 194618000000 | 132689000000 | 31987000000 | 81225000000 | 31103000000 |
| 2007 | 64705000000 | 3064617000000 | 452031000000 | 323448000000 | 32388000000 | 179279000000 | 61642000000 |
| 2008 | -1188050000000 | 2194201000000 | -742779000000 | 396467000000 | -133217000000 | 208381000000 | 177841000000 |
| 2009 | -1114534000000 | 1968659000000 | -168920000000 | 237725000000 | -302666000000 | 257663000000 | 37050000000 |
| 2010 | 986265000000 | 1895710000000 | -104513000000 | 196867000000 | 61650000000 | 209382000000 | 26746000000 |

**profitability and efficiency table of parametrs** HALYK BANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 15827900000 | 559664708000 | 64444045000 | 52384623000 | 4418850000 | 21155947000 | 19559716000 |
| 2006 | 27159274000 | 991359240000 | 120627621000 | 80646842000 | 5304630000 | 34183341000 | 28970665000 |
| 2007 | 40525000000 | 1595075000000 | 161025000000 | 132566000000 | 17141000000 | 61532000000 | 38997000000 |
| 2008 | 14554000000 | 1651349000000 | 191055000000 | 192660000000 | 16231000000 | 100753000000 | 57472000000 |
| 2009 | 15876000000 | 2023009000000 | 280952000000 | 194005000000 | 24168000000 | 103277000000 | 49812000000 |
| 2010 | 36216000000 | 2097935000000 | 317884000000 | 178415000000 | 23372000000 | 86379000000 | 52048000000 |

**profitability and efficiency table of parametrs** ALYANC BANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 1596000000 | 332758000000 | 28032000000 | 17858000000 | 10243000000 | 11604000000 | 4630000000 |
| 2006 | 14010000000 | 920750000000 | 80038000000 | 80193000000 | 40117000000 | 40350000000 | 14691000000 |
| 2007 | 42683000000 | 1160931000000 | 158975000000 | 181768000000 | 114071000000 | 92889000000 | 41958000000 |
| 2008 | -386155000000 | 778308000000 | -227180000000 | 166086000000 | 33811000000 | 100677000000 | 485776000000 |
| 2009 | -298591000000 | 419094000000 | -525771000000 | 85189000000 | 11419000000 | 80627000000 | 314396000000 |
| 2010 | 328981000000 | 427584000000 | -105035000000 | 44381000000 | 350035000000 | 39990000000 | 24469000000 |

**profitability and efficiency table of parametrs** KZI BANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 140435000 | 4438015000 | 2306907000 | 221338000 | 189437000 | 3645000 | 227199000 |
| 2006 | 201672000 | 5458766000 | 2606869000 | 336270000 | 257128000 | 6950000 | 299870000 |
| 2007 | 349284000 | 9126161000 | 2956153000 | 560992000 | 350257000 | 15608000 | 9970000 |
| 2008 | -33689000 | 6266885000 | 2922464000 | 641266000 | 366716000 | 29305000 | 10078000 |
| 2009 | 156669000 | 10955549000 | 5657881000 | 608366000 | 334729000 | 58717000 | 577036000 |
| 2010 | 361341000 | 11248930000 | 6384187000 | 590318000 | 451534000 | 9101000 | 618113000 |

**profitability and efficiency table of parametrs** Bank Positiv

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 118505000 | 7102939000 | 1334434000 | 350376000 | 387960000 | 28993000 | 34551000 |
| 2006 | 186993000 | 13236741000 | 1520921000 | 675538000 | 1252979000 | 125400000 | 36640000 |
| 2007 | 351665000 | 14641572000 | 4848679000 | 896385000 | 1222048000 | 124027000 | 1588680000 |
| 2008 | -131958000 | 13716126000 | 4717555000 | 1373250000 | 921662000 | 921662000 | 2212133000 |
| 2009 | -922303000 | 12799052000 | 4695252000 | 1037886000 | 666771000 | 173640000 | 2646287000 |
| 2010 | 56720000 | 15364714000 | 5701972000 | 572867000 | 831927000 | 146454000 | 1185191000 |

**profitability and efficiency table of parametrs** Temir Bank

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 2045591000 | 75945363000 | 10565342000 | 6127998000 | 3982974000 | 3929952000 | 106572000 |
| 2006 | 3071810000 | 198362162000 | 22375577000 | 14977283000 | 3600504000 | 8235308000 | 91203000 |
| 2007 | 7391176000 | 333783003000 | 48295655000 | 44328070000 | 6576769000 | 23226489000 | 11158194000 |
| 2008 | -3653479000 | 294933908000 | 44642176000 | 41095263000 | 5288570000 | 27113447000 | 12777702000 |
| 2009 | 95173172000 | 226505811000 | -50530996000 | 35026054000 | -20422600000 | 30129117000 | 9289980000 |
| 2010 | 80862935000 | 243998561000 | 55612645000 | 27977437000 | 659109000 | 24119785000 | 8769649000 |

**profitability and efficiency table of parametrs** NURBANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 2009099000 | 121482387000 | 14039573000 | 10443871000 | 1914037000 | 6284040000 | 4681668000 |
| 2006 | 1624983000 | 202685358000 | 24540541000 | 15037716000 | 3722502000 | 9336153000 | 5363599000 |
| 2007 | 3042057000 | 198694564000 | 37150146000 | 23434285000 | 784704000 | 13434908000 | 6355838000 |
| 2008 | 1392362000 | 298758566000 | 41905513000 | 26752961000 | 3696544000 | 16277397000 | 8718761000 |
| 2009 | 314256000 | 297079155000 | 43117967000 | 34218602000 | 3991452000 | 20926890000 | 9552613000 |
| 2010 | 69234306000 | 286103398000 | 69636406000 | 27085030000 | -547681000 | 19175841000 | 13408123000 |

**profitability and efficiency table of parametrs** KAZKOMMERTSBANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 19815000000 | 1194869000000 | 88271000000 | 86407000000 | 13298000000 | 45855000000 | 1269000000 |
| 2006 | 29586000000 | 2444302000000 | 263926000000 | 147250000000 | 27295000000 | 83115000000 | 1672000000 |
| 2007 | 57751000000 | 2997232000000 | 319219000000 | 3164580000000 | 15029000000 | 171762000000 | 19177000000 |
| 2008 | 20164000000 | 2614805000000 | 313862000000 | 380777000000 | 36890000000 | 181265000000 | 34735000000 |
| 2009 | 19023000000 | 2587873000000 | 389588000000 | 372939000000 | 78462000000 | 179737000000 | 19592000000 |
| 2010 | 21988000000 | 2688108000000 | 413746000000 | 291515000000 | 30316000000 | 152091000000 | 9726000000 |

**profitability and efficiency table of parametrs** EURASIAN BANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 3797986000 | 105862273000 | 12975558000 | 6877091000 | 2920447000 | 2585731000 | 2881614000 |
| 2006 | 3818147000 | 152320926000 | 18930480000 | 10416198000 | 3495299000 | 4733927000 | 4629117000 |
| 2007 | 5603329000 | 210612230000 | 43556401000 | 18047157000 | 3844137000 | 10440658000 | 9261677000 |
| 2008 | 2373320000 | 285726876000 | 49858784000 | 19375947000 | 3344440000 | 12378309000 | 11024974000 |
| 2009 | -14286168000 | 321280617000 | 24230234000 | 24784533000 | 4709931000 | 20562033000 | 25524634000 |
| 2010 | 1662642000 | 355551849000 | 25892876000 | 28391885000 | 6491358000 | 22545268000 | 10750190000 |

**profitability and efficiency table of parametrs** CASPIAN BANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 1777662000 | 151524878000 | 16004122000 | 16661546000 | 3690745000 | 6111666000 | 6031854000 |
| 2006 | 5786498000 | 198886959000 | 27325092000 | 29342153000 | 4215733000 | 11771116000 | 991492000 |
| 2007 | 8313603000 | 269246980000 | 41238202000 | 36003099000 | 6284166000 | 14635297000 | 1780092000 |
| 2008 | 3916494000 | 267071409000 | 44178002000 | 37804742000 | 7687118000 | 18734148000 | 3001078000 |
| 2009 | 6281656000 | 311135306000 | 39581227000 | 39394888000 | 9455352000 | 24517785000 | 4392581000 |
| 2010 | 2215993000 | 361776315000 | 41899568000 | 51451790000 | 7168438000 | 26669870000 | 1566183000 |

**profitability and efficiency table of parametrs** ATF BANK

| Name | net income | total assets | total equity | interest income | non-int income | interest exp | noninterest exp |
|---|---|---|---|---|---|---|---|
| 2005 | 3815548000 | 359172089000 | 27303878000 | 24421411000 | 2888186000 | 16137346000 | 7384165000 |
| 2006 | 4295410000 | 1047338196000 | 57225161000 | 52523712000 | 2778397000 | 34883093000 | 10985724000 |
| 2007 | 7244026000 | 984654421000 | 74900464000 | 103734083000 | 9645838000 | 72308447000 | 20288377000 |
| 2008 | -72012026000 | 1019577514000 | 95892749000 | 116625129000 | 14607612000 | 75068035000 | 22601070000 |
| 2009 | -53045393000 | 1051560940000 | 60520453000 | 117751359000 | 20919338000 | 74339719000 | 125028483000 |
| 2010 | -30926553000 | 968604195000 | 35251475000 | 86156261000 | 15471345000 | 57966077000 | 75572919000 |