Factors Affecting the Profitability of Banking System in Kyrgyzstan

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ABSTRACT

The main goal of this work is to identify the key factors that have a positive effect on the profitability of banks in Kyrgyzstan. In this study, the banks are selected according to their asset sizes. I selected 10 largest banks in Kyrgyzstan. The main factors were chosen according the method of supervisory rating CAMELS. Internal and external factors were considered separately. As internal factors, which are bank-specific factors, wechose the size, liquidity ratio, asset quality ratio and others. As external factors GDP per personin the country was used.In this research, the panel data was used to make the empirical analysis on key profit ability factors of commercial banks in Kyrgyzstan. All data was taken from financial statements that come from official bank's websites over period of 2006 – 2011. In this study, four significant variables were found. Capital adequacy and management ratios are positively related to profitability determinants.

Keywords: Profitability, Kyrgyzstan, Banks, Financial Statement, Panel Data

ÖZ

Bu çalışmanın temel amacı, Kırgızistan'daki bankaların kârlılığı üzerinde olumlu bir etkiye sahip anahtar faktörleri tespit etmektir. Bu çalışmada, bankaların aktif büyüklüklerine göre seçilmistir. Ben Kırgızistan'nın 10 büyük bankası incelenmistir. Temel faktörler denetleme derecelendirme CAMELS yöntemine gore seçilmiştir. İç ve dış faktörler ayrı ayrı kabul edilmiştir. Banka özgü faktörler iç faktörler, olarak, büyüklük, likidite oranı, aktif kalitesi oranı ve diğerleri. Kişi başına ve ülkenin dış faktörlerin GSYİH kullanılmıştır. Bu araştırmada, panel verileri Kırgızistan'da ticari bankaların önemli karı etkileyen faktörler ampirik analiz yapılarak kullanıldı. 2006 - 2011 yılları arasındaki veriler resmi banka web sitelerinden elde edilen finansal tablolard analınmıştır.Bu çalışmada, dört önemli değişken bulunmuştur. Sermaye yeterliliği ve yönetim oranları olumlu kârlılık belirleyicileri olmuştur.

AnahtarKelimeler: Karlılık, Kırgızistan, TicariBankalar, FinansalPerformans, Panel Veri

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NIM – Net Interest Margin

ROE – Return on Equity

ROA – Return on Assets

ASQ – Asset Quality ratio

TETA – Total Equity to Total Assets ratio

LQR – Liquidity ratio

CR – Costs to Revenue ratio

EFF – Management Quality ratio

NBKR – National Bank of Kyrgyz Republic

SIZE – Total Assets

GDP – Gross Domestic Product per person

Chapter 1

INTRODUCTION

After many events that took place in Kyrgyzstan in the last 20 years, the banking system of this country at the moment is just beginning to grow and form as areal financial institution of the Republic. Therefore, the main goal of my work is to identify the key factors that have a positive effect on the financial performance of banks. Today, it is very important because now the banking system of Kyrgyzstan is on the stage of development. Therefore, it is necessary to invest and develop this sector. In this regard, I decided to consider this theme.

After the collapse of the Soviet Union, Kyrgyzstan has decided to choose a way of transition from centrally planned to market economies. This transition has become fatal for the economy as a whole. After independence, the country had to change the entire system. This has affected all sectors of the economy, including the banking system. The fact isthat none of the countries of the former Soviet Union was not prepared to be developed so quickly to a market economy. This factor is largely reflected in the current state of the economy in general and also for the banking sector. Although the disintegration of the Soviet Union was one of the negative factors that affect the economic situation of the country, the main reasons of economic crisis were the structural and systemic internal problems. Centralized economy proved to be

unsustainable in terms of the effective use of financial resources. For these reasons, Kyrgyzstan faced a number of economic problems.[1]

The economy of the country has its own specific characteristics due to its history and national mentality. In this regard, the banking sector in Kyrgyzstan cannot be compared with U.S. Europe banking sector.

The negative processes required the development of new ways to implement economic reforms. One of the most difficult problems is the financial problem. Kyrgyz banking system had to rebuild a new level of the economy.

Today there is the two-tier banking system in Kyrgyzstan, which consists of the National Bank of the Kyrgyz Republic (National Bank) and 22 commercial banks. The banking system of the Kyrgyz Republic in recent years is a dynamically developing sector of the economy.[2]

Today we can say that the banking sector of the Kyrgyz Republic, in spite of significant losses in the past, has made some progress. Despite the fact that the level of banking intermediation, which is necessary for efficient accumulation and reinvestment of capital is low, the banking system of Kyrgyzstan has now achieved some successes. At the same time the level of creditworthiness of banks in Kyrgyzstan is still at a low level. I also want to add in my study, is the fact that the banking system of the country has suffered over the past 5 years due to the great political events. Revolution that occurred in the country in recent years negatively affected on the condition of the banks of the republic.

[1] http://referat-kursovaya.repetitor.info
[2] http://nbkr.kg

After all, the banking system is one of the most important sectors of financial system. Basically, at the moment, every person uses banking services. Nowadays society is highly dependent on the banking system, because almost all financial transactions are directly performed only through banks and Kyrgyzstan is no exception. Today, non-cash payments are becoming one of the hottest forms of payment for goods and services. And how people will be able to make any financial transaction without intermediation of banks? And these examples are only a small part of a large iceberg.

My work is dedicated to the research of the banking system in Kyrgyzstan. My aim is to determine the most effective factors affecting on profitability of banks. There is a change in the total income of the bank because of several internal and external factors. The internal factors consist of the amount of capital, loans, liquidity, interest rates on loans and deposits, domestic policies and personnel management, etc. The external or macro-economic factors include inflation, unemployment, international treaties and agreements with foreign banks, etc.

Thus, the identification of the key success factors can construct policies of rapid rise in the profitability of the banking sector. The urgency of my theme is that through this research, I will be able to identify the strengths and weaknesses of the banks in the process of making a profit. In the future, the identified aspects is to maximize profits in the banking structure, and therefore on the economy as a whole.

The purpose of this research is to find the influence of various factors on the profitability of the largest banks in Kyrgyzstan. The solutions to these problems will lead the creation of conditions for progressive growth of the banking sector and its role in the economy of the Kyrgyz Republic. The main direction for the future - is to strengthen the stability of the banking sector, the increasing role of the banking sector in

the economy of the Kyrgyz Republic, maintaining efficiency, safety and reliability of banking activity, creating conditions for increasing access to banking services and their availability, further growth the level of financial intermediation.

In this study, the banks are selected according to their asset sizes. I selected 10 largest banks in Kyrgyzstan. Factors will be chosen according on the method of supervisory rating CAMELS. Internal and external factors will be considered separately. As internal factors, which are bank-specific factors, I will take the bank's size, liquidity ratio, capital adequacy ratio and others. As external factors GDP per person of country will be used. The current study aims to test the following hypotheses:

There is a direct relationship between internal factors and profitability of the bank. Moreover, the internal factors are the most crucial for banks.

H 1a: There is a direct link between size and profitability of the bank.

H 1b: There is a direct relation between liquidity and efficiency of the bank.

H 1c: There is a connection between the Capital Adequacy and the bank profitability.

H 1d: There is a direct link between Asset Quality and bank profitability.

H 1e: There is a direct relation between Earnings Quality and efficiency of the bank.

H 1f: There is a direct relationship between Management Quality and performance of the bank.

The condition and performance of the bank is influenced by various external factors, regardless of the internal indicators and also there is a direct link between environmental factors and the profitability of the bank.

H 2a: There is a direct relationship between GDP and the bank's profitability.

As the dependent variables for regression and correlation analysis I will take NIM, ROE and ROA.

The thesis organized as follows: Section 1 provides an introduction, the second part consist of theory part of the basis and structure of the banking system in Kyrgyzstan. In Section 3, there is an overview of the literature. Data will be available and the methodology will be explained in chapter 4. Section 5 presents the regression and correlation analyzes and identifies certain results. In the last section conclusion will be given.

Chapter 2

BACKGROUND REVIEW

2.1 History of Banking System in Kyrgyzstan

The Kyrgyz banking system has gone through several stages in its history of development.«The first phase covers 1992-94 years. During this time, national and commercial banks were established, which have formed a two-tier banking system. Due to a number of objective and subjective reasons, the state of commercial banks was deteriorated by the end of the first stage. In the second phase (1995-97) the program FIN SAC was developed with the aim of reforming the banking system, which operated in 1996-98».[3]

Since June 1992 the Kyrgyz Republic joined the European Bank for Reconstruction and Development (EBRD), which provides assistance to our country in the implementation of structural reforms in supporting of private and public sector. The total amount of funds that have been invested in banks of Kyrgyzstan is $ 165 million. It is a direct investment plus technical assistance at $ 17 million. The Central Bank of Cooperation and Development was established by the decision of the heads of Kazakhstan, Kyrgyzstan and Uzbekistan were based in Almati to provide financial support for economic reforms in these countries in 1995. The formation of the banking

[3]http://www.welcome.kg/ru/economics/finance/kjhuy/

system was carried out both by converting existing state banks into joint-stock, and by the creation of new commercial banks. The transition to new working conditions demanded, as the old banks, and from the newly established commercial banks increasing the staff's educational level, which they need to study the experience of the commercial banks in developed countries. Therefore, the National Bank organized educational courses with experts from leading Western countries.

«However, the banking system was highly profitable during general fall in production. The share of income received by the banking sector as a result of the whole national economy was in 1993 - 49.9%, in 1994 - 45.2%. These high profits caused foreign investment in the banking sector. »[4]

Banks have been established with the assistance of capital from the UK, Germany, Hong Kong, Kazakhstan, and Russia.Credit lines of international financial institutions were opened to support private enterprise.The result of the efforts aimed to improve the banking system with the formation of an important component of the financial market which is the credit market.

Commercial banks are the institutions who accept risk with financial assets of others.They are fully responsible for the obligations of the clients and, of course, banks can focus a great risk to attract and allocation of resources. For this reason, the banking system is tightly regulated by the National Bank. It is the main bank to monetary policy. The National Bank of Kyrgyz Republic began to introduce the requirements of the International Basel Accord on banking to bring the level of commercial banks up to international standards.

[4]http://www.bankir.kg/ru/bankclient

2.2 Current Status of Banking System in Kyrgyzstan

The banking system of the Kyrgyz Republic consists of two levels: the first level - is the National Bank of the Kyrgyz Republic, the second - the commercial banks. The National Bank - is the central bank, which conducting oversight policies to promote stability of the banking sector in the Kyrgyz Republic. The mission of the National Bank of the Kyrgyz Republic (hereinafter - the National Bank) is to maintain the stability of the banking sector through appropriate supervisory policies, according to the legislation. The regulatory basis for the functioning and development of the banking system is the Law of the Kyrgyz Republic. According to the official website of National Banks there are such laws as: "About National Bank of the Kyrgyz Republic" dated 07.29.1997, "About Banks and Banking Activity" dated 07.29.1997. Also there are some regulations that cover all aspects of banking and regulations of commercial banks. In 2006, according to international organization in the country, the Law of the Kyrgyz Republic which is "About Prevention of Laundering of money obtained illegally" was acted.[5]

‘‘Nowadays, we can say that the banking sector of the Kyrgyz Republic, in spite of the significant risks, has made some progress. With the combined effective work of the Central Bank with the commercial banks, the banking system of the country achieved great results. There are positive structural changes, but most of the changes are cyclical in nature and determined favorable economic, political, and industry conditions. Despite the fact that the level of banking intermediation necessary for the efficient accumulation and reinvestment of capital, the banking system of the country so far has had some

[5]http://www.nbkr.kg/index1.jsp?item=42&lang=RUS

successes. At the same time, the level of creditworthiness of banks in Kyrgyzstan is still constrained by such factors as the lack of transparency of the ownership structure. There is a need for a small increase in retail lending, the high degree of concentration of loans by industry and individual borrowers, and a large degree of "dollarization" of the economy."[6]

"According to data of the National Bank, as of 31 December 2010 there were 22 commercial banks (including the Bishkek branch of National Bank of Pakistan) and 211 branches of commercial banks on the territory of Kyrgyzstan. By results of 2010, the banking system of Kyrgyzstan reported a profit in size 741.8 million soms. In 2009, the activity was carried out by 22 commercial banks, the net profit for the activity of which was 1 billion 592 million soms."[7]

In 2010, starting from April 7, because of political events commercial banks operated during instability period in the country. That is why the key indicators of the banking sector decreased in comparison with 2009. Also the activities of commercial banks were negatively affected by the events of June 2010 in the south of the country. There was a reduction of borrowers' solvency of banks and credit quality deterioration. The main efforts of the National Bank, in 2010, were aimed at maintaining the stability, safety and soundness of the banking activity by operational application of regulatory measures against problem banks, according to the National Bank information.

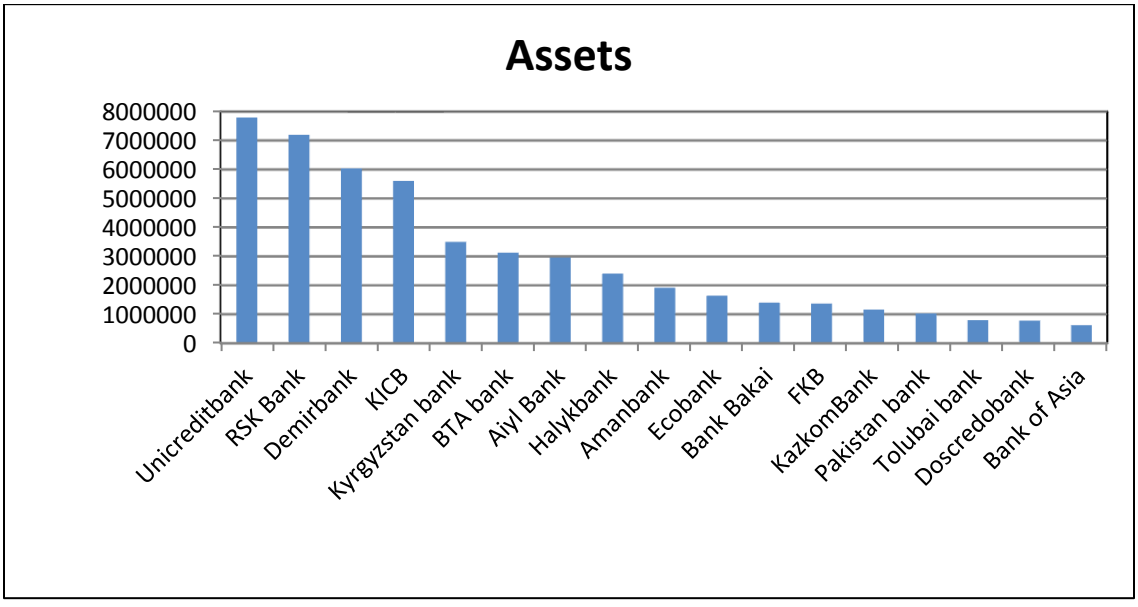
"Total assets of commercial banks rated by the end of 2010 amounted to 49 billion 346 million soms, in 2008, the assets of the banks involved in the rating, made

[6] "Economic magazine of Central Asia", №4-2007, pages 118-125, BahtiyarBakasUulu.

[7] http://www.publicpolicy.kg/index.php

54 billion 274 million soms. In 2009, the rating assessment was not carried out due to the global economic crisis would impact the performance of the banking system of the Kyrgyz Republic."[8]

UniCredit Bank is the leader in the ranking of the largest total assets (Graph 2.1). In all four rankings in absolute figures the first position was taken by UniCredit Bank". The second highest value of total assets with assets of 7 billion 196 million soms is RSK Bank, in third position Demirbank - 6 billion 37 million soms. There are 14 banks billionaires, while in 2008 there were 15. The five largest banks in terms of assets, other than those listed, included "The Kyrgyz Investment and Credit Bank" - 5 billion 604 million soms, "Commercial Bank Kyrgyzstan" – 3 billion 502.8 million soms. Bank Tolubai had 798.6 million soms, "Dos Kredobank" - 780.6 million soms, "Bank of Asia" - 623.3 million soms.

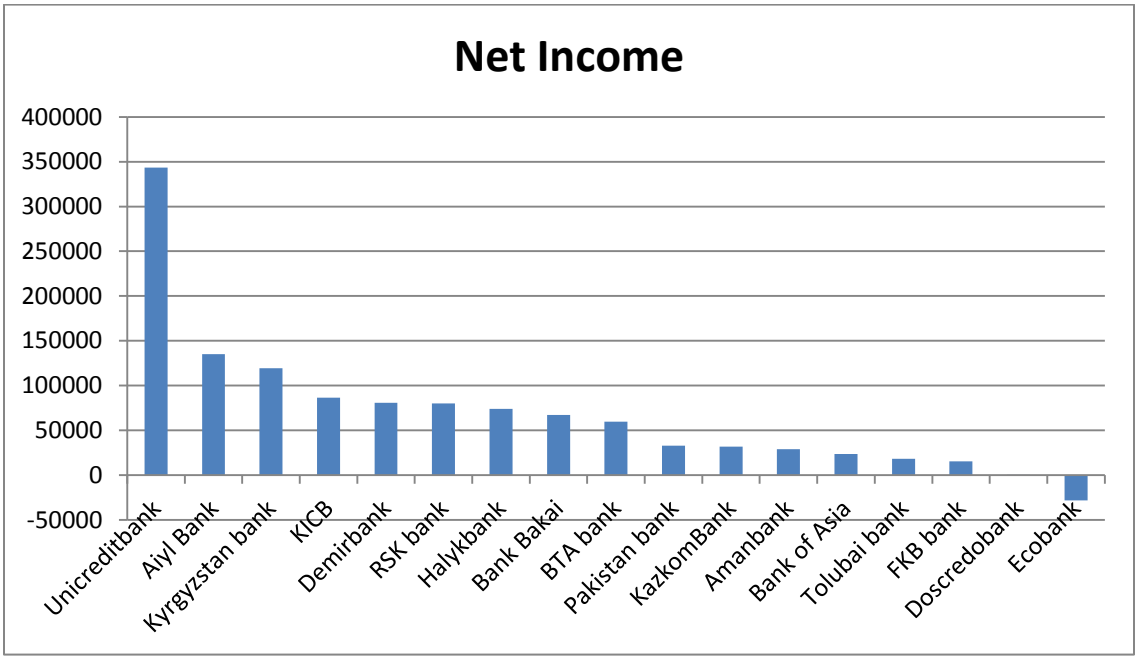


Graph 2.1: Ranking of banks by total assetsin soms (thousands).[6]

[8]http://www.publicpolicy.kg/index.php

According to the information from National Bank, on March 31, 2011 the total assets of the banking system from the beginning of the year increased by 1.6% and became $ 58.88 billion soms. As of 2010, commercial banks had a net profit of 1 billion 170 million soms.

On the ranking on net profit, the top five banks include UniCredit Bank - 343.5 million soms, Aiyl Bank, converted into a bank in 2006, took second place - 135.1 million soms, the third is Commercial Bank Kyrgyzstan with 119, 4,000,000 soms. Kyrgyz Investment and Credit Bank had 86.5 million soms, fifth Demirbank - 81 million soms. Ranking on this indicator closes "FinanceCreditBank" - 15.3 million soms, "Dos Kredobank" - 552 thousand soms, "Ecobank" received damages in 28 million soms.

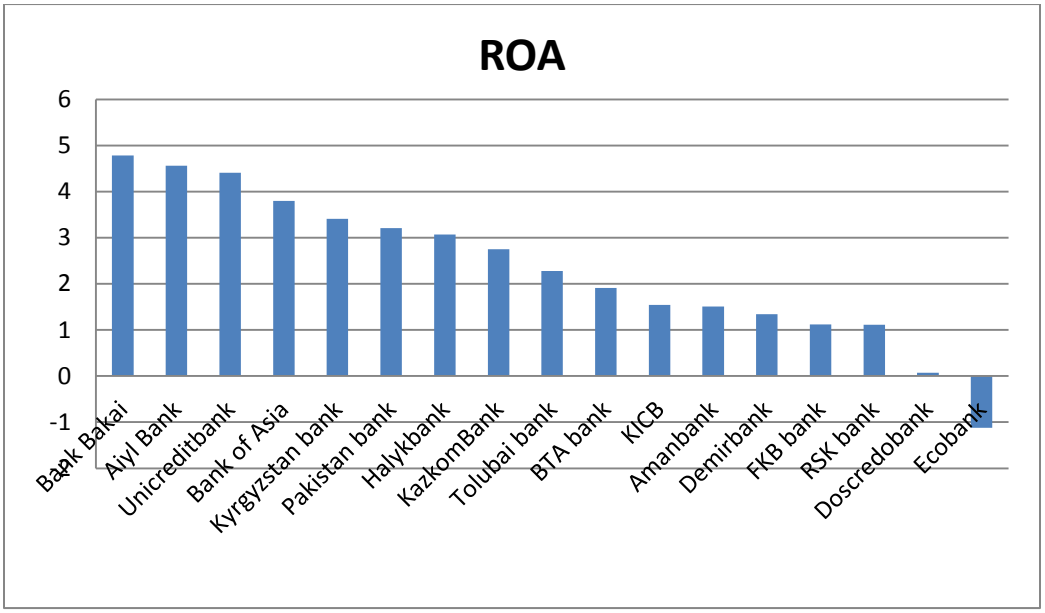


Graph 2.2: Ranking of banks by net income in soms (thousands).[9]

[9]http://www.publicpolicy.kg/index.php

Total equity of rated banks in 2010 amounted to 10 billion 459 million soms. In the ranking on this indicator first position was taken by "UniCredit Bank" with a capital of 1 billion 286.3 million soms, its registered capital is 700 million soms, retained earnings - 586.1 million soms. The second position was owned by BTA Bank - 1 billion 190.2 million soms, including share capital - 1 billion soms, fixed asset revaluation reserve - 124.6 million soms, retained earnings - 65.6 million soms. The third position was taken by Kyrgyz Investment and Credit Bank and had 1 billion 140.5 million soms including registered capital 471 million soms, retained earnings - 646 200 000 soms, and Aiyl Bank - 1 billion 130.5 million soms including share capital - 560 million soms, reserves for future needs - 401 100 000 soms. Then RSK Bank - 924 200 000 soms, including share capital 844 million soms, retained earnings - 80.1 million soms.

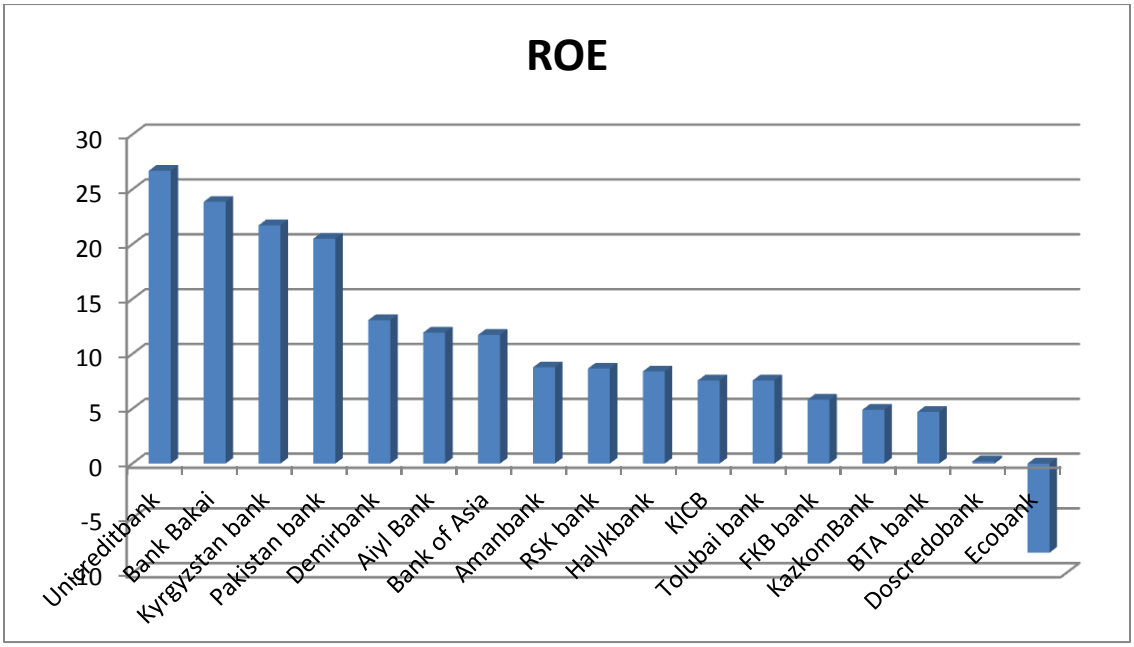
Return on assets, return on equity are indicators reflecting the effectiveness of the bank, close to the traditional banking indicators of profitability. Return on assets is defined as net income to total assets; return on equity is the ratio of net profit to equity. Bank Bakai leaded on the ranking of ROA - 4.78%, the second place - Aiyl Bank (4.56%), the third - UniCredit Bank (4.41%), the fourth - Bank of Asia (3.8%), fifth - Commercial bank Kyrgyzstan (3.41%).



Graph 2.3: Ranking of banks by ROA in percentage.[10]

According to the information of National Bank, as at 31 March 2011, the yield of the banking system assets (ROA) of 2.5% (in 2010 - 1.1%) and return on capital (ROE) was 13.3% (in 2010 – 7.1%). This calculation for return on assets means the ratio of net profit after tax to average assets (respectively, the average size of Tier I capital) of the banking system in the current period, with a reduction to the annual value. UniCredit Bank take the first place in ranking on ROE and get 26.7%, the second is the Bank Bakai (23.87%), the third is the Commercial bank Kyrgyzstan (21.73%). The fourth place was taken by Demirbank and the fifth is Aiyl Bank.

[10]http://www.publicpolicy.kg/index.php



Graph 2.4: Ranking of banks by ROE in percentage.[11]

2.3 Financial Performance of the Banking System

In the current market economy, profits and providing cost-effective activities are essential of existence of any business entity. Profit is persistent with credit institution. It is necessary to create adequate reserves, incentives for staff and management, to expand and improve operations, reduce costs and improve the quality of services provided, and, ultimately, to the success of these issues and, accordingly, the capital increase, which allows you to expand the volume and improve the quality of services rendered. "Capital is a key indicator of the financial condition of the bank. But it is impossible for a long time to maintain stable state of capital without income. Income and equity are mutually reinforcing. Increasing the value of profit makes it possible to increase the profitability of capital, as the bank may use all of the net income to replenish its capital base, or it can use part of that income to pay dividends to shareholders. In turn, a strong capital

[11]http://www.publicpolicy.kg/index.php

position helps increase profit in two ways. First, capital is a source of interest-free financing for the bank. Second, creditors are willing to deal with a well capitalized bank. Therefore, well-capitalized banks pay lower interest rates on its obligations by the same reducing its interest expenses. Well-capitalized banks can also work with less liquid assets, because they can easily receive credit resources if they need to. They can place more in profitable assets."[12]

Losses can rapidly reduce or destroy the bank's capital. It is therefore important to carry out continuous monitoring of all costs of banks.

The profit is important for all participants in the economy and depends on such factors as received and paid interest on bank transactions, the share of non-interest income, current expenditures and the structure of assets and liabilities. Provisions growth yield are usually can be provided by increasing the proportion of earning assets and reduce the proportion of non-income assets. It is easy to understand, that highly profitable banking system based on three major steps:

1) maximize the income (from loans and securities operations, and support flexible asset structure, which is adapted to changes in interest rates);

2) minimize costs (by optimizing the structure of liabilities, reduce losses from bad loans, strict control of overheads;

3) correct and efficient management.

Consequently, profit is one of the strategic goals of management and financial analysis and one of the most important object of the bank. Economic gains - the difference between revenue and expenditure of the bank. The net financial result is the

[12]V.V.Dolme (2012), "The Profitability Analysis in Banking System".

bank's profit, which is formed as a result of cash flows that characterize the income and expenses of the bank.

Consequently, income and expenses of the banks are the factors that concern the formation of profit. In summary, the profit is the difference between the income received by the Bank in the same period as a result of its activities and expenditures made during the same period for this activity. Regarding V.V. Dolme (2012) the difference between income and expenditure for the year is called the result. In its structure, revenues, expenses and profit correspond to the direction of its activities. For the bank, it is important to know not only the overall performance for a given period, but also to have information about the sources of this result. Therefore, there are some kinds of financial results as: the financial results of the operating and non-operating activities of the bank, the financial results the implementation of the credit operations, operations with securities, foreign currency transactions and others. Research of financial results for the sources of their formation makes it possible to fully assess the income of the bank for its constituents and form factors.

The main aim of the analysis on profitability is to determine the main center of bank performance and factors that affect increase in profits and profitability of the bank based on the effective management of revenues and expenditures. Thus, we have a direct dependence of profit from income of the bank. It means that increasing in amount of income leads to higher profits, a reduction of income associated with reduced profits, and there is an inverse effect of costs.

The profit generated factors are not limited only by income and expenses. There are a lot of factors that determine the amounts of profit such as the amount of capital of

the bank, the level of efficiency of the bank's assets, multiplier effect of capital and others. All these factors have influence on bank profitability in a high or low degree.

Chapter 3

LITERATURE REVIEW

Nowadays all people can definitely say that banks are very helpful in contribution to the growth of the whole economy of country. Banking system is one of the major sectors in economy, and only because of these institutions we can use easily a lot of kinds of services, which provided by banks. There are a lot of studies, which show the profitability indicators of the bank. Different researches employed different characteristics, external variables of bank level data across countries. Those researches which are shown in this part done by Demirguc-Kunt and Huizinga (1999), Toni UhomoibhiAburime (2008), Imran Naseem&AmbreenSaleem (2012), Rubi Ahmad &ShahrinSaaidShaharuddin (2011), AldrinHerwany (2006), Shelagh Heffernan (2008), Samy Ben Naceur (2005).

AsliDemirgüç-Kunt and Harry Huizinga (1999), in their research, they used Regression Analysis to determine the relationship between some bank ratios and measure of profitability. According the data of banks for 80 countries, they found that differences in interest margins and bank profitability reflect various determinants: macroeconomic conditions, bank characteristics, regulation for insurance of deposit and general financial system. Regarding their research they find that the bank ratio of concentration also influence to the bank profitability, as bigger banks tend to have bigger profit. Well-capitalized commercial banks have higher amount of net interest

margins and are more profitable. This approach connected with the trend that banks with higher capital have lower expenses. Also, they researched that banks with high noninterest-earning assets produce less profit. And banks with big amount of borrowed funds are less effective. There are some facts about international factors affecting on profitability. They found that inflation positively affected on interest margins and create more profit. Bank income becomes higher with inflation than bank costs do.

Another research of banking system in Nigeria was introduced by study of Toni UhomoibhiAburime (2008). In their paper, they researched 154 banks over the 1980-2006 periods. It should be noted that major of this work is the analysis of external factors. According to their results,they show that theinflation, real interest rates, the exchange rate and monetary policy are significant macroeconomic indexes of bank performance in Nigeria. In this work, we show a strong relationship between macroeconomic performance and profitability of the bank. But they also reported that stock market development, banking sector development and financial structure are not statistically significant; and the relationship between bank profitability and tax policy in Nigeria is inconclusive.

According to study of Imran Naseem and AmbreenSaleem (2012), who aimed to identify profitability of determinants of bank sector in Pakistan. 40 banks are analyzed in the period of 2006-2010. They examined the relationship between macroeconomics and bank specific characteristics. In their paper they use ROE (return on equity), ROA (return on assets), ROCE (return on capital employed) and NIM (net interest margin) as profitability indicators. To analyze the impact of equity, deposits, loans, economic growth, inflation and market capitalization on determinants of profitability measures by using POLS (Pooled ordinary least square). The paper found both internal and external

factors have strong impact on profitability. In their paper, they found that size of bank directly linked with ROCE, which means that as bank size grows the profitability also increases. Also the results of other diagnostics suggest that the SIZE, CD, LOANS, MC, INF, NIM have significant positive relation with ROCE. And if loan increases, the ROCE increases too.

The paper of Rubi Ahmad &ShahrinSaaidShaharuddin (2011) identifies the bank profitability measures and net interest margins using a balanced panel of 167 banks for the period of 2003-2008. Among 167 banks, 78 banks represent East Asia, and 89 banks represent Latin America. By this regression model,it can be seen that gross domestic product and inflation have weak influence on bank profitability. However, bank size, capital adequacy, liquidity ratio, cost-income ratio and loan loss reserves are statistically significant. It means that macroeconomic factors have weak influence on profitability, while internal factors are highly related with profitability of banking system in East Asia and Latin America.

AldrinHerwany (2006) in his study aimed to estimate factors that determine bank's financial performance. He decided to find differences betweenGovernment Banks and private banks in Indonesia. He used return on assets and return on equity as the major determinants of profitability.This research studies some financial ratios and some external factors which impact on the profitability. There are also some macroeconomic factors, which introduce therelationship between variables and their fluctuations. In his research, he found that Capital to Assets and Credit to Deposits Ratiodirectly affected on ROA and ROE. Finally, he concluded that, capital adequacy ratio is the most important factors that influence the bank's performance. This means that there is a positive relationship between internal factors and bank profitability.

Shelagh Heffernan (2008) in his work he analyzes different kinds of Chinese banks over period of 1999 - 2006. In this research the independent variables consists of some financial ratios that affectmore the bank’s performance. Also he included some macroeconomic variables. He found that the net interest margin represents financial performance better than the measures of profitability as ROE and ROA. Also he published that bank size does not reflect on profitability of banks in China.

The research of Ben Naceur (2005) determines the influence of banks' characteristics and external indicators on banks' performance in Tunisia for the 1980-2000 periods. According this research, he made some conclusions about banking system in Tunisia. First, he found that net interest margin and profitability linked with well-capitalized banks. Also, he concludes that the inflation positivelyrelated with banks' performance while economic growth has no impact. Also he found that competition has more influence onthe Tunisian banks than concentration.

Chapter 4

DATA METHODOLOGY

4.1 Data

In this research, the panel data was used to make the empirical analysis on key profit ability factors of commercial banks in Kyrgyzstan. The most 10 largest banks were chosen according to their asset sizes. All data was taken from financial statements that come from official bank's websites over period of 2006 – 2011. The number of observation is 60.

Table 4.1 List of banks selected[13]

№	Banks
1	Open JSC «UniCreditBank»
2	Open JSC "RSK Bank"
3	Close JSC "Demir Kyrgyz
4	Open JSC "Commercial bank KYRGYZSTAN "
5	Close JSC " BTA Bank "
6	Open JSC "Aiyl Bank"
7	Open JSC "Halyk Bank KYrgyzstan "
8	Open JSC "EcoBank"
9	Open JSC "Bank Bakai"
10	Close JSC "Bank of Asia "

4.2 Methodology

[13]http://www.issykkulinvest.kg/en/why-kyrgyz-republic/macroeconomic-performance/commercial-banks1

Panel Unit Root test have been conducted on the variables in order to determine whether data is stationary or not. The data reject the null hypothesis in all level of significance according to Levin, Lin and Chu's (LLC) methodology, which means that variables could be used in our model.The table 4.2 represents the stationary of all dependent and independent variables. Then correlation analysis was conducted to see the existence of multicollinearity. In our model the correlation between all variables are very low.

The regression model consists of dependent and independent variables. As dependent variables, I chose Net Interest Margin, Return On Equity and Return On Assets. Explanatory variables are Total Equity over Total Assets, Provision for Loan losses over Total Loans, Interest Income over Interest Expenses, Cost To Revenue, Liquidity to Total Assets, Size of bank and GDR per person.

CAMELS approach was used to determine the performance of the banks. This approach consists of six components. These are Capital Adequacy, Asset Quality, Management Quality, Earnings, Liquidity and Sensitivity.

The Regression analysis was conducted in accordance with "Cross Section Fixed Effects". Data for this research does not represent population data for whole period. It means that we can use Fixed Effects specification in panel options. In the study, regression model using Eviews software program was conducted.

$$NIM_{i,t}=\alpha_1+\beta_1(TE/TA)_{i,t}+\beta_2(ASQ)_{i,t}+\beta_3(EFF)_{i,t}+\beta_4(CR)_{i,t}+\beta_5(LQR)_{i,t}+\beta_6(SIZE)_{i,t}+$$

$$+\beta 7(GDP)_{i,t}+\varepsilon$$

$$ROE_{i,t}=\alpha_1+\beta_1(TE/TA)_{i,t}+\beta_2(ASQ)_{i,t}+\beta_3(EFF)_{i,t}+\beta_4(CR)_{i,t}+\beta_5(LQR)_{i,t}+\beta_6(SIZE)_{i,t}+$$

$$+\beta 7(GDP)_{i,t}+\varepsilon$$

$ROA_{i,t}=\alpha_1+\beta_1(TE/TA)_{i,t}+\beta_2(ASQ)_{i,t}+\beta_3(EFF)_{i,t}+\beta_4(CR)_{i,t}+\beta_5(LQR)_{i,t}+\beta_6(SIZE)_{i,t}+$

$+\beta 7(GDP)_{i,t}+\varepsilon$

Where:

ROA is the Return on Assets

ROE is return on Equity

NIM is Net Interest Margin

α represents constant

β represents the coefficients of the regression model

TETA is Total Equity to Total Assets

ASQ is Provision for Loan Losses to Total Loans

EFF is Interest Income to Interest Expenses

CR is Costs to Revenues

LQR is Liquidity to Total Assets

SIZE is amount of Total Assets

GDP is Gross Domestic Product per person

ε is error term

4.2.1 Dependent Variables

The dependent variables that are used in the study are ROE, ROA and NIM. They are explained below.

ROE

Return on Equity is profitability ratio which shows the rate of return on shareholder's equity. This ratio is one of the best indicators of profitability, because it shows the amount of gain from the assets that had been invested by owners. In another words, it is a percentage return of own funds.

ROA

Return on Assets shows the rate of return on total size of bank.This ratio determines the profit which can be produced according to size of bank. It explains the amount of gain generated by all funds. We can find it as Net Income to Total Assets.

NIM

Net Interest Margin represent how successful a firm's performance and it can calculate as Net Income over Total Assets. NIM is a profitability measurement. It shows spread between interest – sensitive assets and interest - sensitive liabilities, by which bank produces interest income. According to Islamic principles, instead NIM I used Net Non Interest margin.

4.2.2Independent Variables

The independent variables are TETA, ASQ, CR, LQR, EFF, SIZE and GDP. They are explained below.

Capital Adequacy

Capital Adequacy shows the financial strength and position of the Bank in accordance with the proportions of equity and debt. In other words, this ratio introduces bank's capacity. In this case, Total Equity to Total Assets ratio was chosen to show capital adequacy.TETA represents Capital Adequacy.

Asset Quality

The quality of assets associated with the left side of the balance sheet. This indicator is linked to the quality of credits, as loans provide greater part of the income for the bank.ASQ represents Asset Quality in our model.

Management Quality

In our model EFF represents the degree of Management Quality. Interest Income over Interest Expenses shows the efficiency of management according their interest bearing assets and liabilities.

Earning Quality

This measurement represents us the relationship between all costs and revenues. Most of costs are operational or administrative expenses. It means that if this ratio increase, profitability measures decrease. In our case, CR represents Earning Quality.

Liquidity Quality

In my model, I chose liquidity ratio to show the liquidity quality. The sum of cash, due to National Bank and due to other banks over Total Assets is the index of liquidity. LQR presents Liquidity Quality.

Other

There is one more variable in my model. It is logarithmic of Total Assets. SIZE represents the total amount of assets. Total Assets are absolute number and because of this logarithmic of assets is taken in our model.

Macroeconomic variable

GDP is Gross Domestic Product per capita. This variable is one of the best measurements to determine the economic performance of the country. In our regression model, GDP is chosen as external or macroeconomic variable in order to show relationship between GDP and profitability indexes.

Table 4.2: Panel Unit Root Tests for banks in Kyrgyzstan

Variables		**LLC**	**IPS**	**M-W**
ROE	Intercept and trend	-4.30629*	0.84971	13.8906
	Intercept	-2.88642*	0.43066	14.5657
	None	-0.45947	-	27.783
ROA	Intercept and trend	-5.28407*	0.74767	21.1289
	Intercept	-4.96974*	-0.53766	33.8229**
	None	-1.5788***	23.5958	31.7059**
NIM	Intercept and trend	-22.2647*	-0.49683	33.1128**
	Intercept	-27.5217*	-4.52783*	40.2322*
	None	-1.91332**	39.3983***	43.32I***
ASQ	Intercept and trend	-16.2681*	-1.1227	57.3811*
	Intercept	-8.2322*	-2.0391**	47.5106*
	None	-3.2323**	26.9433	25.0532
CR	Intercept and trend	-84.3302*	-4.2333*	29.777***
	Intercept	-5.4223*	0.1213	25.7744
	None	1.2489	11.1629	12.3983
EFF	Intercept and trend	-3.58677*	1.05349	28.867***
	Intercept	-2.53397*	0.9334	30.568***
	None	-3.51078*	38.6131*	42.5483*
TETA	Intercept and trend	-84.7436*	-4.8855*	31.9553**
	Intercept	-49.3322*	-8.8943*	32.6373**
	None	-2.0382**	35.0567**	42.548*
LQR	Intercept and trend	-16.0211*	-0.43808	351856**
	Intercept	-4.2013*	-0.1145	-
	None	0.23883	12.3444	11.5776
SIZE	Intercept and trend	-18.3802*	-0.66795	49.4033*
	Intercept	-4.3573*	0.69414	27.16
	None	5.07323	-	4.27018
GDP	Intercept and trend	-5.31943*	0.73858	15.7064
	Intercept	-4.57910*	0.5001	29.7851
	None	8.73413	-	0.05165

Note:

LLC is a methodology of Levin Lei and Chu; IPS – methodology of IM Pesaran Shin; M-W – methodology of Wu. ** denotes rejection of the null hypothesis at the 5% level. *** denotes rejection of the null hypothesis at the 10% level. Test for unit roots was carried out in E-VIEWS 6.0.

Chapter 5

EMPIRICAL ANALYSIS AND RESULTS

5.1 Correlation Analysis

The Correlation analysis was done in order to show connections between all the variables. The Correlation matrix is represented in [Table 5.1]. According the correlation analysis we can determine the relationship between variables among themselves. According to the table of correlation, we can say that there are no strong correlations between variables. In other words, we can note if there is a multicollinearity problem with our used variables. We can see that only SIZE and TETA are correlated with a little above normal ratios and in inverse direction. Only these two independent variables have the highest value at level of – 0.59502. The correlations between the explanatory variables are scrutinized, and it means, that there is no high positive relation and we have no multicollinearity problem.

The Earning Quality of banks is inversely correlated to all Dependent Variables. It means that Cost to revenue ratio will decrease with changes in profitability ratios. It seems thatthe increase in costs leads a decrease in profitability. However, LASQ and Liquidity Quality of banks are positively correlated to ROE and ROA which is consistent with Faysal (2005) and AlimshanFaizulaev (2011). The high amount of these two independent variables conducts higher profitability ratios. But at the same time, they are negatively related with the NIM, and coefficients of correlation and they are

very low. Then, negative relationships between size of banks and profitability determinants can be observed.Also, Management Quality ratio, which represented by EFF, has negative relationship with ROE and ROA.It can be explained by amount of loan losses. The high amount of uncollectible accounts leads losses in profit. Capital Adequacy is positively related to ROA and NIM. AlimshanFaizulaev (2011) found the same outputs of his correlation analysis for all and conventional banks.

Table 5.1: Correlation Analysis of variables

	LROE	LROA	LNIM	LASQ	LEFF
LROE	1.000000	0.790037	0.074334	0.025723	-0.072763
LROA	0.790037	1.000000	0.233340	0.179838	-0.076094
LNIM	0.074334	0.233340	1.000000	-0.145476	0.198336
LASQ	0.025723	0.179838	-0.145476	1.000000	-0.332662
LEFF	-0.072763	-0.076094	0.198336	-0.332662	1.000000
LTETA	-0.212464	0.318237	0.243593	0.151099	-0.008359
LCR	-0.503641	-0.560302	-0.425793	-0.140366	0.033542
LLQR	0.331171	0.070129	-0.546637	-0.084093	0.174109
LSIZE	-0.181083	-0.496973	0.046100	-0.008481	0.021473
LGDP	-0.159053	-0.213783	-0.188316	0.083289	0.017641
	LTETA	LCR	LLQR	LSIZE	LGDP
LROE	-0.212464	-0.503641	0.331171	-0.181083	-0.159053
LROA	0.318237	-0.560302	0.070129	-0.496973	-0.213783
LNIM	0.243593	-0.425793	-0.546637	0.046100	-0.188316
LASQ	0.151099	-0.140366	-0.084093	-0.008481	0.083289
LEFF	-0.008359	0.033542	0.174109	0.021473	0.017641
LTETA	1.000000	-0.067913	-0.308435	-0.595022	-0.179372
LCR	-0.067913	1.000000	0.153597	0.026771	0.213397
LLQR	-0.308435	0.153597	1.000000	-0.115906	0.130630
LSIZE	-0.595022	0.026771	-0.115906	1.000000	0.407085
LGDP	-0.179372	0.213397	0.130630	0.407085	1.000000

Source: The table is formed by using the results of Eviews software.

5.2 Regression Analysis

In this part we will introduce empirical results which are created to explain how the changes in explanatory variables influence the dependent variables. We estimated

three regression analyses for the determinants of profitability. In this research, I have estimated only General Model, because only Gross Domestic Product per person was chosen as explanatory macroeconomic variable.

Firstly, we should estimate the regression model for Net Interest Margin. General Model of analysis is introduced bellow in [Table 5.2]. According to this model, there are four statistically significant variables, which are Cost to Revenue ratio, Equity to Total assets ratio, Management Quality ratio and interceptions. All other variables are not significant, that is why we are not able to use them in our model. CR is negatively associated with NIM. This conclusion consists with research of Shelagh Heffernan and Maggie Fu (2008) and Boubakri et al (2005). In other words, we can conclude that increase in this independent variable which leads a decrease index of NIM. This is because the costs negatively affect the rate of return. General amount of gain inversely related to Earning Quality. But TETAand NIM are positively signed with each other. Well capitalized banks with own funds have advantages over banks with low ratio of own equity. This conclusion is also similarly with Shelagh Heffernan and Maggie Fu (2008). Also,Kosmidou (2008), Berger (1995), Demirguc-Kunt and Huizinga (1999) and Brock & Suarez (2000) found positive link between TETA and Net Interest Margin. Furthermore, we can say that Management quality, which is represented as Interest Income over Interest expenses, statistically significant at level of 10 %. So, there is a direct link between EFF and determinant of profitability. Interest Incomes are the largest ratio of all revenues in banking system. According to our model, any change in this variable entail increase in Net Interest Margin.But there are also four insignificant dependent variables such as Asset Quality ratio, liquidity ratio, logarithmic of assets and GDP per capita, so we cannot explain those coefficients.The Durbin-Watson test is a

widely used method of testing for autocorrelation.According to this estimation, the value of Durbin – Watson stat is 1.7363, and because of this high amount, there is no autocorrelation problem. Also, our whole model is statistically significant, because F – statistic is 0.0000. R – Squared value of NIM is 0.7675. It means, that 77% variation of explanatory variable is explained by ASQ, CR, TETA, EFF, LQR, SIZE and GDP.

Now, we start to analyze second regression model of ROA. In this case, there are only two significant variables in our model. They are ASQ and CR and represented in [Table 5.3]. Interception is also significant and has negative coefficient, so if there are no any change in all independent variables, ROA will decrease. The impact of Asset Quality ratio on Return on Assets is negative and significant. In our, model Asset Quality is represented by ratio of provision for loan losses to total loans. The high amount of uncollectible accounts leads losses in profit. That is why there is a negative relationship between those variables. This conclusion is consistent with studies of Low Mui Tin and Rubi Ahmad (2010), Kosmidou (2008). Certainly, we can say that a higher level of loan losses leads to bad credit portfolio. Cost to Revenue ratio is also significant and inversely connected to return on assets. High level of this ratio shows inefficiency in controlling their general expenses. The negative and high coefficientindicates a poor cost – benefit ratio.Other independent variables are not available to use in interpretation of determinants of ROA, because they are statistically insignificant. In second model there is no autocorrelation problem too. The value of Durbin – Watson stat is 1.728005. R – squared is 0.9182, and it is very high amount, so we can explain the changes in ROA by independent variables. So, only 8% variation in dependent variable remains unexplained by independent variables. This model works, because the whole model statistically significant.

In accordance with regression model of ROE, which represented in [Table 5.4] the simple regression analysis conducted 2 significant variables, which are CR and TETA. CR is significant at a 1% level of significance, and negatively affects dependent variable. This is exactly like in previous model. These results are consistent with results of Low Mui Tin and Rubi Ahmad (2010), AlimshanFaizulaev (2011). Generally, Cost to Revenue ratio is negatively related to all dependent variables. This ratio is inversely correlated with profitability ratios. The ratio of total equity to total assets is significant at a 5% level of significance, but in this case this ratio has negative coefficient. This means that any changes in TETA will lead decreasing in return on equity. This conclusion is contrary to another researches such as studies of Brock and Suarez (2000), Demirguc-Kunt and Huizinga (1999). In this model I found that interception is not statistically significant, that is why I decided to remove SIZEfrom this model to interpret coefficients [Table 5.5]. After removing that variable, we can see that interception became significant and so as the whole model. In a new model without SIZE, same independent variables became statistically significant, and now those variables can interpret changes in ROE. Like in a previous model, the impact of CR on ROE is also negative. There is also negative or inverse relationship between TETA and return on equity. However, this ratio is one of the major indexes for capital strengths. It seems to be a positive link between these two variables. In Kyrgyzstan, there are very little ratios of equity to assets. And because of that factor, in our model there is a negative coefficient of TETA. It means that bad capitalized banks have more risks than well-capitalized commercial banks. We can report that there is no autocorrelation problem in this model, because of the value of Durbin – Watson which is 1.8486. Also whole our regression model is statistically significant and has high amount of R-

squared. In this case, R – squared is 0.7826. It means that only 21% variation of ROE cannot be explained by independent variables as ASQ, EFF, LQR, TETA, CR and GDP.

The macroeconomic variable was insignificant in all our models. So, we cannot determine the relationship between external variables and profitability ratios, because there are complicated political situation in Kyrgyzstan. For these reasons commercial banks in Kyrgyzstan began to rely on a lesser degree of external factors.

Table 5.2: Regression Analysis for banks

Dependent Variable: NIM

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-5.134450	1.353516	-3.793416	0.0005
LASQ	0.007824	0.036649	0.213484	0.8320
LCR	-0.566178	0.215126	-2.631836	0.0117
LTETA	0.440964	0.130682	3.374331	0.0016
LEFF	0.142875	0.071831	1.989035	0.0531
LLQR	-0.176144	0.115917	-1.519568	0.1359
LSIZE	0.174577	0.135858	1.284994	0.2057
LGDP	-0.057684	0.208134	-0.277151	0.7830

R-squared	0.767598
Adjusted R-squared	0.681122
S.E. of regression	0.410277
F-statistic	8.876493
Prob(F-statistic)	0.000000
Durbin-Watson stat	1.736317

Source: The table is formed by using the results of Eviews software.

Table 5.3: Regression Analysis for banks

Dependent Variable: ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.750058	0.980504	-2.804741	0.0075
LASQ	-0.053929	0.020932	-2.576415	0.0135
LCR	-0.000281	0.090667	-0.003095	0.9975
LTETA	-1.528344	0.238235	-6.415271	0.0000
LEFF	-0.055745	0.091652	-0.608225	0.5462
LLQR	0.083377	0.053877	1.547550	0.1291
LSIZE	-0.133048	0.101539	-1.310314	0.1970
LGDP	0.031912	0.164743	0.193708	0.8473
R-squared				0.918220
Adjusted R-squared				0.887791
S.E. of regression				0.327099
F-statistic				30.17519
Prob(F-statistic)				0.000000
Durbin-Watson stat				1.728005

Source: The table is formed by using the results of Eviews software.

Table 5.4: Regression Analysis for banks

Dependent Variable: ROE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.755644	1.886893	-0.400470	0.6908
LASQ	-0.046394	0.040370	-1.149216	0.2568
LCR	0.023654	0.119061	0.198672	0.8435
LTETA	-1.821201	0.296134	-6.149929	0.0000
LEFF	-0.471704	0.190932	-2.470533	0.0175
LLQR	-0.049221	0.064588	-0.762083	0.4502
LSIZE	-0.246001	0.184730	-1.331681	0.1900
LGDP	0.216201	0.232354	0.930483	0.3573
Weighted Statistics				
R-squared				0.791958
Adjusted R-squared				0.714546
S.E. of regression				0.366057
F-statistic				10.23053
Prob(F-statistic)				0.000000
Durbin-Watson stat				1.793556

Source: The table is formed by using the results of Eviews software.

Table 5.5: Regression Analysis for banks

Dependent Variable: ROE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.123847	0.621906	-5.023020	0.0000
LASQ	-0.046873	0.040790	-1.149142	0.2567
LCR	-0.019749	0.061326	-0.322033	0.7490
LTETA	0.040877	0.119828	0.341126	0.7346
LEFF	-0.257069	0.103242	-2.489953	0.0166
LLQR	-1.740313	0.292342	-5.952994	0.0000
LGDP	-0.035976	0.138424	-0.259898	0.7962
Weighted Statistics				
R-squared				0.782620
Adjusted R-squared				0.708513
S.E. of regression				0.368464
F-statistic				10.56071
Prob(F-statistic)				0.000000
Durbin-Watson stat				1.848611

Source: The table is formed by using the results of Eviews software.

Chapter 6

CONCLUSION

Recently, the current market financial and credit system requires banks to improve performance to get more profit. Profit is a key parameter for evaluating the financial performance of banks. In this regard, I conducted an analysis of the influence of certain factors on the banks' profitability. In this paper, the regression analyses of the banking system in Kyrgyzstan were done for a period of 2006-2011. So the study is relevant and also of high importance. As it is the first study on this topic.

During this study, four regression analyses have been done on the dependent variables. The Regression analysis is determined with the impact on the explanatory parameters by changes of a factor. This analysis conducted the relationship between dependent and independent variables. Note that the correlation analysis evaluates whether there is a relationship between the analyzed traits.

These studies identified the main factors that have the greatest influence on profit. Due to the constructed model we determined which factors impact on bank profitability. For the analysis of this work, numbers of banks were selected. As a consequence of the fact that my work is based on a study of the profitability of the banking system, I have used the rating of banks according their asset size. The rating analyzes absolute indicators, such as total assets, shareholders' equity, net income, and the relative values calculated by the previously established method. The most used and well-known figures

were selected as a relative indicators in the banking practice. It is based on the method of supervisory rating CAMELS. The calculation of relative performance is mostly a percentage.

According to the results we can say that in all models CR adversely affectson the profitability of the bank which is consistent with Faysal (2005) and ShelaghHefferman (2008). This means with an increase of this index value of profit decreases. Therefore, it is necessary to review the policy of expenditure management. Nowadays, for banks in Kyrgyzstan ratio of the cost to income is very high. And for the more efficient operation, banks need to cut costs down.

We can also say that ASQ is negatively related to ROA. This means that banks have to pay attention to the Provision for Loan Losses. The number of bad debts negatively affects the profits of the bank. Also, there is a positive relationship between TETA and NIM. This conclusion is also similarly with Berger (1995) and Brock &Suarez (2000). This suggests that the amount of own funds directly linked to an indicator of profitability. The greater proportion of equity leads the better performance of the banks.

According to the model of NIM, EFF is positively correlated with profits. This means that the increase in the Management Quality, also increases the profitability of banks in Kyrgyzstan. As an indicator of Management Quality we have used Interest Income to Interest Expenses. Therefore, profit increases due to the increase in interest income. Hence, it is necessary to strengthen the effectiveness of the interest income to increase the overall rate of profit. As the loans are the main source of interest income in the banking system, it is necessary to increase the amount of loans in order to enlarge the profit.

Thus, the management of the bank should pay particular attention to such factors as interest income, PLL, the cost structure, the ratio of own and borrowed funds and the amount of loans. Since the management of these factors could have a significant impact on the increase in bank profits. Knowledge of these factors can influence the change in performance of the bank.

Perspectives of development of the banking sector in our country in the years seem to look optimistic. This will contribute to overall macroeconomic stability and strengthening entrepreneurship in Kyrgyzstan. Indeed, the increase of business activity will lead increase in the number of loans. As a consequence of all these factors, the banking system in Kyrgyzstan can be developed in recent years.

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APPENDICES

Appendix 1: Regression model of NIM

Dependent Variable: LNIM
Method: Panel EGLS (Cross-section weights)
Date: 12/27/12 Time: 19:37
Sample: 2006 2011
Periods included: 6
Cross-sections included: 10
Total panel (balanced) observations: 60
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.134450	1.353516	-3.793416	0.0005
LASQ	0.007824	0.036649	0.213484	0.8320
LCR	-0.566178	0.215126	-2.631836	0.0117
LTETA	0.440964	0.130682	3.374331	0.0016
LEFF	0.142875	0.071831	1.989035	0.0531
LLQR	-0.176144	0.115917	-1.519568	0.1359
LSIZE	0.174577	0.135858	1.284994	0.2057
LGDP	-0.057684	0.208134	-0.277151	0.7830

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.767598	Mean dependent var	-4.156060
Adjusted R-squared	0.681122	S.D. dependent var	2.189008
S.E. of regression	0.410277	Sum squared resid	7.238053
F-statistic	8.876493	Durbin-Watson stat	1.736317
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.705757	Mean dependent var	-2.771378
Sum squared resid	11.25061	Durbin-Watson stat	1.304912

Appendix 2: Regression model of ROA

Dependent Variable: LROA
Method: Panel EGLS (Cross-section weights)
Date: 12/27/12 Time: 19:32
Sample: 2006 2011
Periods included: 6
Cross-sections included: 10
Total panel (balanced) observations: 60
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.750058	0.980504	-2.804741	0.0075
LASQ	-0.053929	0.020932	-2.576415	0.0135
LLQR	-0.000281	0.090667	-0.003095	0.9975
LCR	-1.528344	0.238235	-6.415271	0.0000
LTETA	-0.055745	0.091652	-0.608225	0.5462
LEFF	0.083377	0.053877	1.547550	0.1291
LSIZE	-0.133048	0.101539	-1.310314	0.1970
LGDP	0.031912	0.164743	0.193708	0.8473

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.918220	Mean dependent var	-5.232725
Adjusted R-squared	0.887791	S.D. dependent var	3.233782
S.E. of regression	0.327099	Sum squared resid	4.600731
F-statistic	30.17519	Durbin-Watson stat	1.728005
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.717635	Mean dependent var	-3.437197
Sum squared resid	5.992988	Durbin-Watson stat	1.578207

Appendix 3: Regression model of ROE

Dependent Variable: LROE
Method: Panel EGLS (Cross-section weights)
Date: 12/27/12 Time: 19:47
Sample: 2006 2011
Periods included: 6
Cross-sections included: 10
Total panel (balanced) observations: 60
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.755644	1.886893	-0.400470	0.6908
LASQ	-0.046394	0.040370	-1.149216	0.2568
LLQR	0.023654	0.119061	0.198672	0.8435
LCR	-1.821201	0.296134	-6.149929	0.0000
LTETA	-0.471704	0.190932	-2.470533	0.0175
LEFF	-0.049221	0.064588	-0.762083	0.4502
LSIZE	-0.246001	0.184730	-1.331681	0.1900
LGDP	0.216201	0.232354	0.930483	0.3573

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.791958	Mean dependent var	-2.402901
Adjusted R-squared	0.714546	S.D. dependent var	1.128308
S.E. of regression	0.366057	Sum squared resid	5.761887
F-statistic	10.23053	Durbin-Watson stat	1.793556
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.664118	Mean dependent var	-1.967805
Sum squared resid	6.880751	Durbin-Watson stat	1.659569

Appendix 4: Regression model of ROE

Dependent Variable: LROE
Method: Panel EGLS (Cross-section weights)
Date: 12/27/12 Time: 19:40
Sample: 2006 2011
Periods included: 6
Cross-sections included: 10
Total panel (balanced) observations: 60
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.123847	0.621906	-5.023020	0.0000
LASQ	-0.046873	0.040790	-1.149142	0.2567
LEFF	-0.019749	0.061326	-0.322033	0.7490
LLQR	0.040877	0.119828	0.341126	0.7346
LTETA	-0.257069	0.103242	-2.489953	0.0166
LCR	-1.740313	0.292342	-5.952994	0.0000
LGDP	-0.035976	0.138424	-0.259898	0.7962

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.782620	Mean dependent var	-2.391741
Adjusted R-squared	0.708513	S.D. dependent var	1.115079
S.E. of regression	0.368464	Sum squared resid	5.973685
F-statistic	10.56071	Durbin-Watson stat	1.848611
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.669424	Mean dependent var	-1.967805
Sum squared resid	6.772052	Durbin-Watson stat	1.713571