

# **Determinants of Foreign Bank Entry to the Central Asia**

**Mugabil Isaev**

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  
February 2016  
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

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Prof. Dr. Cem Tanova  
Acting Director

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

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Assoc. Prof. Dr. Nesrin Özataç  
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.

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Prof.Dr. Eralp Bektaş  
Supervisor

---

Examining Committee

1. Prof. Dr. Eralp Bektaş

---

2. Assoc. Prof. Dr. Bilge Öney

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3. Asst. Prof. Dr. Korhan Gökmenoğlu

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## ABSTRACT

In the last twenty years foreign banks have expanded their presence expressively in almost all developing economies, especially transition countries. Most researches on this subject have focused on foreign entry impact on domestic banks' performance. But we examined the determinants from foreign banks' perspective of view.

This thesis investigates determinants of foreign bank entry to the Central Asian countries. The internal and external aspects were reviewed, and the relationship between these factors and foreign bank participation in Central Asian countries were hypothesized. The current performance of the banking sector these countries were taken into account and described in details. The previous researches related to foreign entry from various countries were also taken into consideration. The macroeconomic, macro-banking and bank specific factors were identified for analyze determinants of foreign bank entry by taking into consideration the Net Interest Margin, Return on Assets, Capital Risk, Credit Risk, Inflation rate, GDP growth, FDI net inflows, Rule of Law and Domestic Credit to Private Sector by Banks . The modification of the dependent and independent variables of the regression model were displayed by using the Panel Data Analysis Method. The empirical analysis and the results produced by panel data were employed to find the factors influencing the foreign bank entry. The results showed that Rule of Law and Net Interest Margin have significant impact on foreign bank entry, whereas other variables have different results depending on models which we constructed.

**Keywords:** Central Asia, Foreign bank entry, Banking sector

## ÖZ

Son 20 yılda yabancı bankalar kalkınmakta olan ve özellikle ekonomik geçiş yaşıyan ülke bankacılık piyasasına önemli oranda giriş yapmaktadırlar. Bu bağlamda, bir çok araştırmacı bu bankaların giriş nedenlerini ve performanslarını araştırmağa çalışmaktadırlar. Bizim çalışmamız Orta Asiyada fealiyyet gösteren yabancı bankaların giriş nedenlerini araştırmakla ilgili olacaktır.

Çalışmamız yabancı banka girişlerini özelde banka faktörleri, genelde ise makroekonomik faktörleri göz önünde bulundurarak anlamayı anlamaktadır. Çalışmamızda konu ile ilgili yayılmış literatür taramasını yaptıktan sonra, çalışma konusu olan Orta Asiya ülkelerinin bankacılık sektörüyle ilgili bilgi vermektir. Bunun sonrasında çalışmada kullanılan konu, veri metodoloji ve ilgili değişkenler anlatılmaktadır. Çalışmada bankalarla ilgili olarak Net Faiz Marjı, Aktif Getiri Oranı, Sermaye Riski ve Kredi Riskini gösteren değişkenler kullanılmıştır. Makroekonomik faktörler içerisinde İnflyasyon oranı, Qayri Safi Yurtiçi Hasılatı Büyüme oranı, doğrudan yabancı yatırımlar ve bankalar tarafından özel sektöre verilen qayri safi yurtiçi kredilerin hasılatı olan oranı kullanılmıştır. Bu ülkelerdeki yasal çerçevelerinde yabancı banka girişinde rol oynayacağını düşündüğümüzden bu ülkelere ait yasal çerçeve endekside kullanılmıştır. Yapılan analizler sonucu yasal çerçevenin ve Net Faiz Marjının daha etkili, diğer değişkenlerin ise modele göre değiştiyi malum oldu.

**Anahtar kelimeler:** Orta Asya, Yabancı banka girişi, Bankacılık sektörü

*To woman whom I owed everything that I have in my life.*

*To My Mom*

## **ACKNOWLEDGMENT**

I would like to acknowledge and extend my heartfelt gratitude to the following persons, who helped me during my working on this thesis.

It is great pleasure for me to highlight my gratitude to Prof. Dr. Eralp Bektaş for his supervision, advice, and guidance from the very early stage of this thesis as well as giving me extraordinary experiences throughout the work. Above all and the most needed, he provided me constant encouragement and support in various ways. His ideas, experiences, and passions have truly inspired and enrich my growth as a student. I am indebted to him more than he knows.

Besides that I extend my heartfelt thanks to Assoc. Prof. Dr. Bilge Öney, Asst. Prof. Dr. Korhan Gökmenoğlu, Nigar Taspınar and to all other instructors in Banking and Finance department and my friends for their great support and help during my stay in Eastern Mediterranean University.

I owe quite a lot to my family in particular to my dad Mikayıl İsaev, my mom Qızıtamam Mammadova, my sister Guler İsaeva, my brother Mahammad İsaev and my fiancée Sevinc Mikayılova who allowed me to travel all the way from Azerbaijan to Cyprus and supported me all throughout my studies. I would like to dedicate this study to them as an indication of their significance in this study as well as in my life.

One of the main things that I want to do is to express my gratitude to my ALLAH, who made all things possible.

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## **LIST OF ABBREVIATIONS**

ADF	Augmented Dickey Fuller
AZN	Azerbaijan New Manat
CA	Capital Adequacy
CAPR	Capital Risk
CBAR	Central Bank of Azerbaijan Republic
CBU	Central Bank of Uzbekistan
CR	Credit Risk
EMEs	Emerging Market Economies
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IMF	International Monetary Fund
KGS	Kyrgyzstan Soms
KZT	Kazakhstan Tenge
LLC	Levin Linn Chu
NIM	Net Interest Margin
NBKR	National Bank of Kazakhstan Republic
NBKR	National Bank of Kyrgyzstan Republic
NBU	National Bank of Uzbekistan
NPL	Non-Performing Loans
OECD	Organization for Economic Cooperation and Development
PP	Phillip Pheron
ROA	Return on Assets
ROE	Return on Equity

ROL	Rule of Law
SMEs	Small and medium-sized enterprises
TJS	Tajikistan Soms
USSR	Union of Soviet Socialist Republics

# Chapter 1

## INTRODUCTION

After removal of entry barriers, increased financial integration and technological advances of modern world, relative importance of foreign banks has increased significantly in most countries. Especially in recent years, significant increase in foreign banks entry to several developing countries can be seen, particularly in emerging market economies (EMEs). Nevertheless, after global crisis of 2008 international banks have somewhat reduced the number of subsidiaries and branches they hold abroad (IMF, 2015).

Foreign bank entry, mainly in EMEs, is the consequence of the flexibility of the legal rules regarding the treatment involved in penetration of foreign banks. The possible benefits are the main motivation for foreign bank penetration in terms of modernization and strengthening of the financial system of the domestic country. We should highlight that liberalization and globalization of banking sector in 1980s made domestic markets beneficial for foreign banks entry. Moreover, internalization triggered rapid growth of global trade in financial services and commodities, therefore integrating financial markets all over the world. The globalization that leads domestic markets to international competition has obviously been different country to country over decades. Researchers who support domestic market liberalization propose that presence of foreign bank helps domestic market to develop through several advantages. Here includes effectiveness through overhead

costs' reduction and increased competition, public-sector banks' privatization for making them more profitable, in other words, making them to have more improved and deepened financial services. Moreover, they highlighted that foreign bank presence reduce possibilities of financial crisis, and mainly, promote long-term economic development.

## **1.1 An Overview of Foreign Bank Entry**

Banks all over the world are aiming to expand their operations in terms of products and services, and to enhance their minimum balance of activities to remain competitive and to increase their capacity to make high profits. Different motives can be reason for banks to go abroad. On the other hand, internationalization and also different reasons can make countries to allow foreign banks to enter to their economies. Firstly, we should mention that there are 'push' factors of home country and 'pull' factors of host country market which affects banks while making decision to go abroad (Kraft, 2002). Banks may look to foreign markets for making profits higher if their income in the domestic market is low because of high levels of competition, regulatory burdens and restrictions or macroeconomic weakness. On the other hand, from "pull" factors perspective, there are several advantages of foreign markets that seem particularly attractive. New client base is one of the main factors. This is especially important in countries which have fast GDP growth and is expected to be fast in the following years. Low competition in foreign market is another factor. Moreover, foreign banks are generally attracted by the countries with lower restrictions on entry and bank activities (Focarelli & Pozzolo, 2000). We can add presence of home country clients in the foreign market to 'pull' factors, as well.

Besides these factors while banks go abroad they have to choose either branch or subsidiary structure of organization. There are several conditions which determine whether a banking group operates via a subsidiary or a branch structure abroad. Attitudes of the host authorities play crucial role, which includes cross-country's national regulation and taxation differences. Moreover, a bank's business model may also be suitable for a particular structure of regulation. Global retail banks usually choose more decentralized structure of operation which is subsidiary model. The main reason for that is over-concentration on raising deposits from retail customers in the host country. In contrast, branch structure is preferable for the banks which have engaged mostly in wholesale market operations, because of the greater flexibility to move funds across the banking group. Although there is an obvious legal difference between a branch and subsidiary, in practice, the regulatory treatment sometimes overlaps (Hooley, Hoggarth & Korniyenko, 2014). If it comes to developed or transition countries, subsidiaries might appear to be the preferred organizational form for emerging economies. Because, in comparing with branches they are permitted to deal with a wide range of financial services. On the other hand, branches have advantage of more direct access to the parent bank's capital than subsidiaries. We should emphasize that there are also representative office and agency type of organizational form as well. But neither the agency nor the representative office represent full immersion in the host country. Because of that banks make choice of establishing structural form between branches and subsidiaries.

From the advantages and disadvantages point of view there are several arguments about foreign banks presence. According to some researchers who are against foreign bank entry, claim that foreign banks presence have negative effects for the host country. The possibility that foreign banks may not provide funds especially in times

of trouble, weaker domestic banking sector and lower asset quality of local banking sector because of increased competition which foreign bank entry inspired, causing instability in the local market (Mathieson et al., 2000; Jeon et al., 2006) are among the negative risks.

In contrast to above factors, it is commonly accepted by most researchers that foreign banks entry has advantages for the host country in several ways. According to Claessens & Van Horen (2013) firstly, presence of foreign banks reduce the cost of financial institutions and tends to increase its quality. Secondly, it increases access to financial services for certain type of firms and households. Third, from borrowers' point of view it enhances their economic and financial performance. All these benefits are the result of increased competition, technology and products and domestic reform acceleration. Moreover, diversified international banks can easily deal with any possible shocks occurring in the host country markets and it shows they can be more stable source of capital. Of course we shouldn't forget that the magnitudes of these benefits depend on both foreign banks themselves and local market characteristics. While in some cases benefits are marginal, in others it can be large.

## **1.2 The Goals and Objectives of the Study**

The region of Central Asia with its five transition economies as Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Azerbaijan have not been searched in-depth, thus our paper tries to concentrate on the progress that Central Asian countries made in attracting foreign banks into their banking sector.



In our study, we are going to investigate the determinants of foreign bank entry to the Central Asia. Besides the factors which explain profit opportunities of the host country we will also take into account macroeconomic and macro banking indicators.

We can divide the determinants of the foreign bank entry into 2 groups: macroeconomic factors and bank-specific factors. As macroeconomic factors, we can mention Gross Domestic Product (GDP), Inflation (INF), Rule of Law and FDI net inflows, trade volume, exchange rate and etc. Whereas bank-specific factors include capital risk, bank size, credit risk, deposits, net interest margin and other factors. Moreover, we take into account Domestic Credit to Private sector by Banks as macro-banking factor.

### **1.3 The Methodological Basis of the Study**

In this thesis, we collected the secondary data from the official websites of Kazakhstan, Azerbaijan, Tajikistan, Uzbekistan and Kyrgyzstan commercial banks over the last 10 years. Because of lack of data we couldn't include Turkmenistan to our analysis. The scope of the research includes 46 banks with foreign capital of Central Asian countries. By using the secondary data, correlation analysis was made to check multicollinearity problem and for availability of data for regression analysis. And its stationarity was done by employing panel unit root test. Levin, Lin and Chu method (LLC), Dickey and Fuller (ADF) and Phillips Perron (PP) approaches were used to confirm the stationarity of the data.

After the data was tested, for each model the regression models were established and examined. The empirical results gotten from the regression analysis of the models

were analyzed. After that, the association between the foreign bank entry and the bank-specific and macroeconomic and macro banking factors was identified.

#### **1.4 Structure of the Study**

This study is consists of 6 chapters and starts with the introduction which is the first chapter and includes the goals, objectives and methodology. The second chapter includes literature review on the determinants foreign bank entry to the banking sector. The current status of the banking sector of Central Asian countries is covered in the third chapter. Data description and methodology, dependent and independent variables are presented in the fourth chapter. Chapter five covers empirical analyses and their results. And finally, chapter six includes the conclusion of all empirical analysis.

## **Chapter 2**

### **LITERATURE REVIEW**

Researchers showed that the impact of foreign bank entry on the local banks of the domestic countries has been empirically different in countries individually and in cross-country studies. The studies which examine foreign bank entry impact on domestic banking sector mostly concentrates on the variations in the effectiveness and profitability of the domestic banking system that the foreign banks would bring by their entrance. Previous studies mention various arguments about foreign bank presence influence on local banks' performance. One of the popular hypothesis is foreign banks internationalize for local profit opportunities in the host countries. But empirical studies that make effort to test profit opportunities are somewhat limited. Focarelli & Pozzolo (2005) concentrated on measuring local business opportunities. They examined 260 huge banks through 29 OECD countries and included the inflation rate, schooling level, the efficiency of banks in domestic countries and the size of the local credit market. For this study, probit model is used and the factors showed that both profit opportunities and trade have significantly positive correlation with foreign banks entry. Bumin (2007) investigated the factors of the increasing share of foreign banks in the banking sector of Turkey. The period between January 2003 and June 2006 were selected. As determinants of foreign investments economic integration between home country of foreign banks and Turkey, profit opportunities in the Turkish banking sector were tested. Moreover, several macroeconomic factors of the Turkish economy were taken into account as well. The empirical analysis

showed that the profit opportunities in the banking system of Turkey are the prominent factor that makes foreign banks' shares to increase for the selected period. Overall, the prospective development of the Turkish economy, possible high claim for the banking and financial services and higher profit ratios of the banking sector are the main factors that encourages foreign banks to invest in the banking sector of Turkey. Hryckiewicz & Kowalewski (2010) found similar results with aforementioned studies. They examined the motives of banks of OECD countries expanding to Central Europe for the period 1995-2008 and used different macroeconomic indicators to estimate host country's local profit opportunities. The results showed these determinants of foreign bank entry are positive and statistically significant. More recent study Molyneux, Nguyen & Ru Xie (2012) examined the foreign bank entry determinants in South East Asian countries. They used 1997-1998 regional financial crisis period including significant policy changes. The findings showed that local profit opportunities seems more significant factor for foreign banks entry while bilateral trade and manufacturing FDI exert weak impacts on the decision of foreign banks' penetration to South East Asian countries.

In terms of credit access, we can show Gormley (2007) research which made estimations in order to examine the impact of foreign bank presence on domestic firm performance and credit access in India. His study analyzed variation in both locations of the foreign banks entry and their timing during the 1990s. The expectations were like all firms' credit access will be improved by foreign banks entry, but estimations showed that foreign banks financed merely a small number of firms. This study observed decline in credit and loans among smaller firms and firms with less tangible assets. Additionally, he tried location of pre-existing foreign firms by means of a mechanism for foreign bank locations but almost the same results he

got. All in all, this evidence showed that foreign bank entry exacerbated the current situation. In contrast, one of the previous studies Kraft (2002) found that foreign bank entry improved overall lending. In his study the influences of foreign bank entry on the Croatian banking system was reviewed. He used balance sheet data and the results of written and oral interviews. Balance sheet data indicated that in comparing with domestic banks, foreign banks have been more cost-effective, had lower operating costs, and kept better asset quality. The other principal findings were that foreign bank entry has increased competition, quality of banking products and services and bank efficiency. Moreover, regression analysis showed that foreign banks have significantly better asset quality than other commercial banks. Total lending along with lending to households and enterprises increased more quickly than other types of banks by foreign bank entry. Beck et al. (2004) and Berger, Hasan & Klapper (2004) also found that a significant presence of foreign banks associated with greater accessibility of credit to SMEs. Moreover, most recent study Brown et al. (2011) conclude that when there is an increased number of foreign banks in a country, it leads to better access to finance for more apparent firms, as well.

One of the major assumptions is that, foreign banks' performance is better in developing countries in comparing with developed countries. The logic is that, in emerging economies local banking services are close to be immature and foreign banks especially from developed countries come with better technology, improved banking skills and advanced banking practices and services which can impact domestic banks significantly. But for developed countries this advantages may not be appropriate because they already have high level of competition, advanced banking systems among its banks. There are some empirical evidences about this argument.

Claessens & Van Horen (2012) compared the performance of foreign banks and domestic banks. They found that foreign banks performance from high income countries is better than local banks because of weaker regulatory environments. Moreover, their performance is also better when larger and having a more market share. We can show from previous studies Bonin, Hasan & Wachtel (2005) and Havrylchyk (2005) who also found similar results about this assumption.

Some researchers argue that foreign bank presence is necessary during any possible crisis. Detragiache & Gupta (2004) compared the performance of a deep-rooted group of foreign banks and domestic banks during the latest crisis in Malaysia. They find that the performance of foreign banks which are not specialized in Asia was better than banks mainly active in Asia during the crisis. Likewise, it should be highlighted that foreign banks did not abandon the domestic market during the crisis, but instead they received less government support in comparing with local institutions. In contrast, some authors claim that increased number of foreign banks can stimulate instability in local financial markets. We can show Claessens, Demirguc & Huizinga (2001) as an example. By examining 7900 banks from 80 countries they found that foreign banks experience higher profits, net interest margin(NIM) and overhead expenses than domestic banks in developing economies, but the opposite occurs in developed economies. Their estimation results conclude that an increased foreign banks presence leads to a decline in margins and profitability for domestic banks. De Haas & Van Horen (2013) ,as more recent study, used data on the 48 largest global banking groups in their study. They compared the lending of 199 foreign subsidiaries of the selected banking groups with 202 domestic banks during 2007-2008 financial crises and found that while international banks may contribute to financial stability during local crisis, on the other hand by letting

foreign banks come in they also increase the risk of bringing instability from abroad, in other words, the host countries may face themselves with an economic rise and fall in the home countries of foreign entrants.

We should mention that, there are also empirical studies which estimated the performance of foreign banks versus domestic banks from cost efficiency and profit efficiency perspective. These studies examined either foreign banks perform better than domestic banks or domestic banks outdo foreign banks. Majnoni et al. (2003) made cost and profit efficiency analyses for Hungary and Berger et al. (2009) for China and both found that foreign banks perform better than local banks. The research of Kraft et al. (2006) for Croatia for the period of 1994-2000 gave similar results as well, but only in terms of cost efficiency. In contrast, Berger et al. (2000) estimated banking efficiency for Spain, Germany, France, United Kingdom and U.S during the 1990s. They found that, on average, domestic banks had higher proficiency than foreign banks. Miller et al. (2002) also found same results by choosing profit efficiency as measure of performance for 20 countries between 1989-1996 years. Moreover, there are several researches which stated different results from aforementioned studies related to this assumption. Nikiel et al. (2002) made a research for Poland during the period 1997-2000. They estimated banking efficiency and found that foreign banks outdo domestic banks in cost efficiency, but the opposite happened from profit efficiency perspective. In other words, domestic banks's performance was better in terms of profit efficiency compared to foreign banks. Yildirim et al. (2007) mentioned similar conclusion in their study as well. Period 1993-2000 was selected for 12 transition countries and they found that domestic banks performed better than foreign banks from profit efficiency perspective and vice versa.

High economic growth potential of the country is also important factor for attracting foreign banks. De Haas & Van Lelyveld (2010) showed that the countries with high economic growth potential are more useful for foreign banks to use greenfield operations in. In this situation, they are likely to transfer capital from the parent markets into the host countries. Furthermore, they tend to provide financial support for their foreign affiliated companies. Accordingly, in this study relying mainly on external funds is superior form than other forms of bank internalization for foreign subsidiaries. The consequences of findings indicated that the financial situation of the parent banks determines credit growth of greenfield operations and these parent banks are mainly from the countries with highly developed and powerful economies.



## **Chapter 3**

### **CURRENT STATUS OF THE CENTRAL ASIAN BANKING SECTOR**

When the research topic comes to Central Asia, the impact of Russia should be mentioned both economically and politically. After the collapse of the USSR (late in 1991), the role of Central Asian countries increased on the political and economic area and these countries became well known to the general international community. The collapse of the Soviet regime opened new doors for the development in the Post-Soviet world. As we know, Post-Soviet Russia has had the aim to dominate its neighbors almost over 70-80 years. But she no longer has the capability for that in the current period. Its Central Asian neighbors are much stronger and more confident about their independence because they are not depending on Russia as before. Moreover, Russia's influence is being effectually confronted there by the West, China, and the democratic and powerful economies of modern Asian countries (Martin et al. 2012). Generally, it is obvious that there are internal and external factors affecting Central Asian banking sector. But we should highlight 'Russian' factor influencing the banking system of these countries. In other words, traditional ties and the magnitudes of military action with economically powerful Russian Federation have significant impact as well. Additionally, Central Asian countries have neighboring financial and political relations with Russia on its way to the establishment of a market economy at a rapid pace. The mentioned factor makes

advantageous conditions for the practice of the experience of the Russia with the purpose of escape from some of the faults on the stringent path to market.

### 3.1 Azerbaijan

According to Central Bank of Azerbaijan, the banking sector kept developing, with ongoing positive dynamics of macro indicators, characterizing the role of banks in the economy in 2014. For the reporting period, total assets of Azerbaijan banks increased by 4,797 mln. AZN to 25,183 mln. AZN.

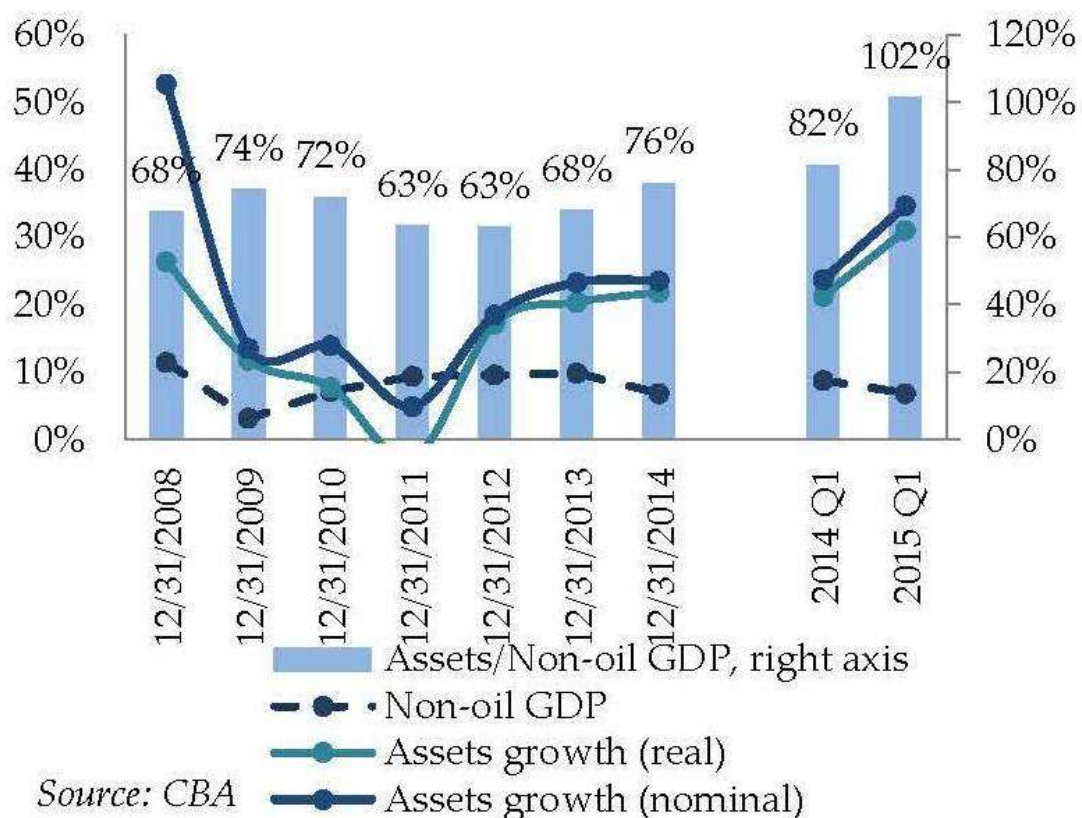


Figure 3.1: Dynamics of banking sector. Source: CBAR

One of the indicators characterizing banking sector's financial intermediation, assets to GDP ratio increased from 68% to 76% over the period (Figure 3.1). Assets' long-term dynamics reflect that banking sector's rapid growth phase is replaced by more reserved growth.

In 2014, banks' liabilities increased by 24% which was 22% in 2013, for a total of AZN 21,023 million as of 2015. The banking sector credit portfolio rose 21.2% in 2014 and reached 17,175 million AZN as of the end period (the credit portfolio increased 32.7% in 2013).



Figure 3.2: Dynamics of the foreign debt. *Source: CBAR*

Funds attracted by Azerbaijani banks from non-resident banks and global financial organizations increased by 47% and reached 4,781 million AZN (such funds rose 44% in 2013 and was AZN 3259 mln. as of 01.01.2014). The volume of foreign debt accounts for 19.0% of assets of the banking sector (Figure 3.2).

Net profit of the banking sector constituted 370.5 mln. AZN as of the end of 2014, roughly 38% higher compared with the previous year. Over the years 2011-2014, the number of profitable banks and their share in the banking sector increased frequently. So, profitable banks' number increased from 30 to 35, and their share in the banking sector rose from 47% to 96%. Total loss of banks operating with loss dropped to a

substantial extent and aggregated only 4.79 mln. AZN (it was 322.5 mln. AZN in 2011).

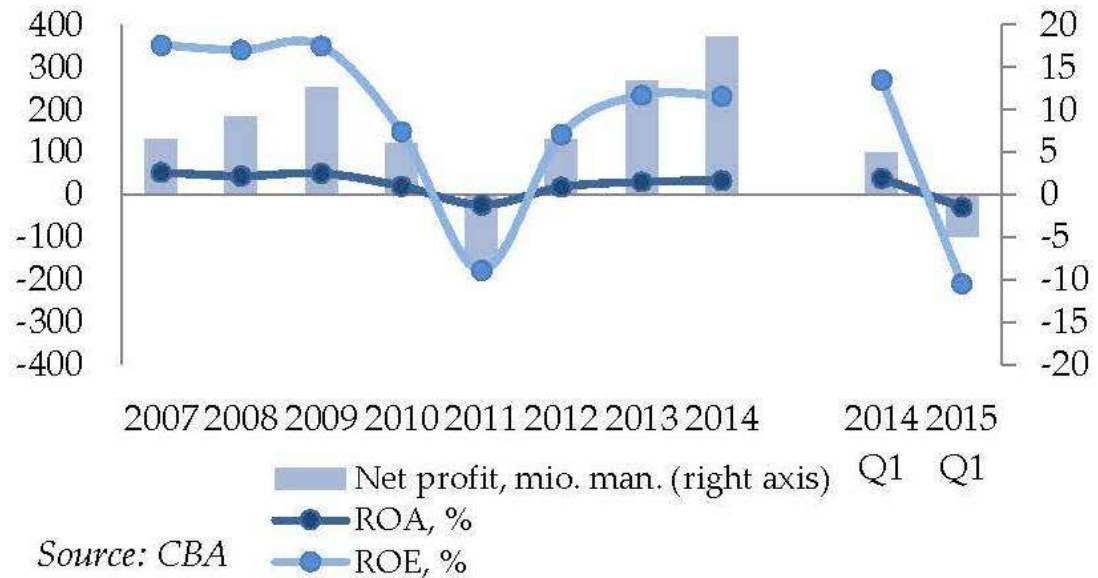


Figure 3.3: Profitability of the banking sector

Profitability indicators of banks also showed positive trends. Hence, Return on Assets made 1.7%, having increased 0.2%, and Return on Equity remained 11.6% with a 0.1 % increase in 2014 (Figure 3.3)

Capital requirement of AZN 50 million was required for almost all banks by Central Bank of Azerbaijan. Nonperforming loans was at 5.2% of the lending portfolio, just about rose from 5.1% in 2013, which indicates banking risks were moderate.

It can be seen from the figure 3.4 foreign bank assets among total banking assets in Azerbaijan had a sharp increase between the years 2007 and 2008. Then it had a stable movement till the end of 2010 at 5% level. After having a slow decrease between 2011 and 2012, it stayed at 4% level till 2014.

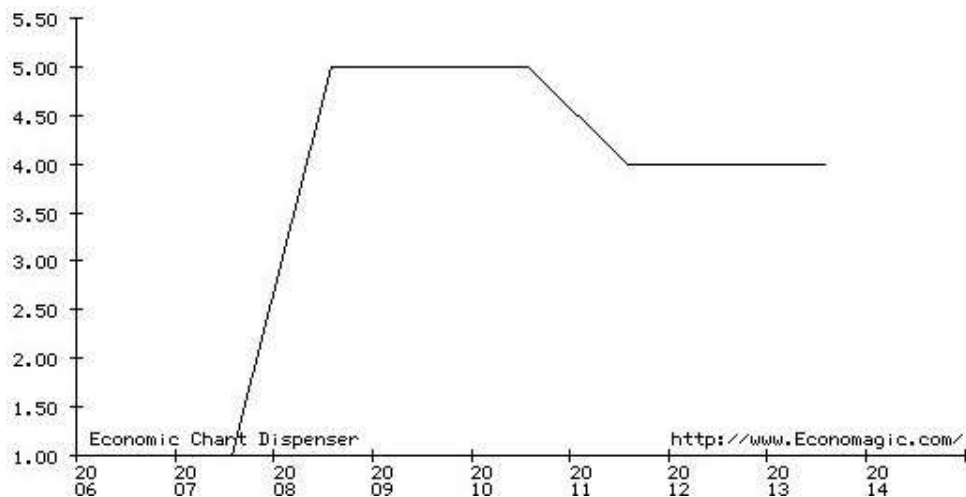


Figure 3.4: Percentage of Foreign Bank Assets Among Total Bank Assets for Azerbaijan (%) Source : *Economagic.com*

### 3.2 Kazakhstan

According to NBKR the banking sector is represented by 38 banks, of which 16 banks with foreign participation. 14 of these foreign banks operate via subsidiaries. In table 3.1 the banks are categorized in terms of their asset size. It can be seen from this table that top 5 banks in assets of the banking sector accounts for 52.4%, medium-sized banks continue to actively increase their market shares. At the end of 2014, the share of medium-sized banks accounted for 39.9% versus 37.7% in 2013.

IMF Country Report 2014 states for Kazakhstan that the crisis has had a lasting affection on the configuration and solvency of the banking sector. The reduction in wholesale funding exacerbated by the crisis forced banks to revise their lending strategies in order to avoid duration and currency mismatches. As a result, the system has been reorganized and reduced less vulnerable to external developments, including the February 2014 deflation. Nonetheless, deep-seated weaknesses remain,

as high NPLs continue to burden banks, and little progress has been made until now in resolving the nationalized banks.

Table 3.1: Characteristics of the Kazakhstan Banking sector

	Number	Share
<b>at 01.01.2015</b>		
Top 5	5	52,4%
Medium-sized banks	13	39,9%
Small banks, Regional banks	20	7,6%
Banks with foreign participation	<b>16</b>	<b>24,7%</b>
Top 5 + medium-size banks	18	92,4%
<b>by 01.01.2014</b>		
Top 5	5	55,4%
Medium-sized banks	13	37,7%
Small banks, Regional banks	20	6,9%
Banks with foreign participation	<b>17</b>	<b>25,5%</b>
Top 5 + medium-size banks	18	93,1%
<b>by 01.01.2013</b>		
Top 5	5	60,0%
Medium-sized banks	11	32,2%
Small banks, Regional banks	22	7,8%
Banks with foreign participation	<b>19</b>	<b>30,2%</b>
Top 5 + medium-size banks	18	92,2%

Source: NBKR Financial Stability Report of Kazakhstan, December 2014

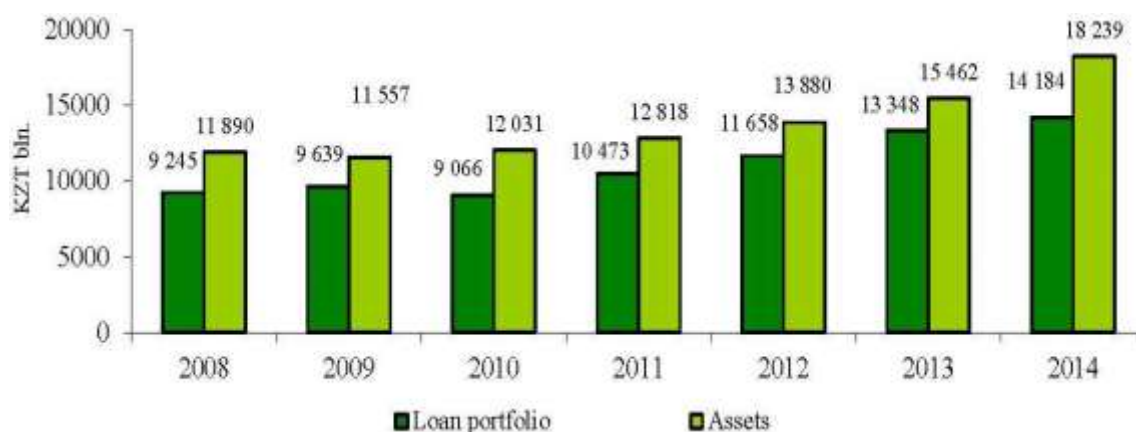


Figure 3.5: Dynamics of banks' assets and loan portfolio  
Source: NBKR Annual report 2014

During 2014, assets of the banking sector increased by 2.8 trln. KZT or by 18.0% and amounted to 18.2 trln. KZT (Figure 3.5) as of January 1, 2015.

As of January 1, 2015, the banking sector's loan portfolio amounted to 14.2 trln. KZT, having increased on a year-to-date basis by 6.3% or by KZT 0.8 trln. During 2014, banks' liabilities increased by KZT 2.5 trln. or by 18.6% and amounted to KZT 15.9 trln. as of January 1, 2015. During 2014, foreign liabilities increased by KZT 0.1 trln. or by 7.7% and amounted to KZT 1.5 trln. as of January 1, 2015; their share in total liabilities decreased from 10.6% to 9.7% (Figure 3.6).

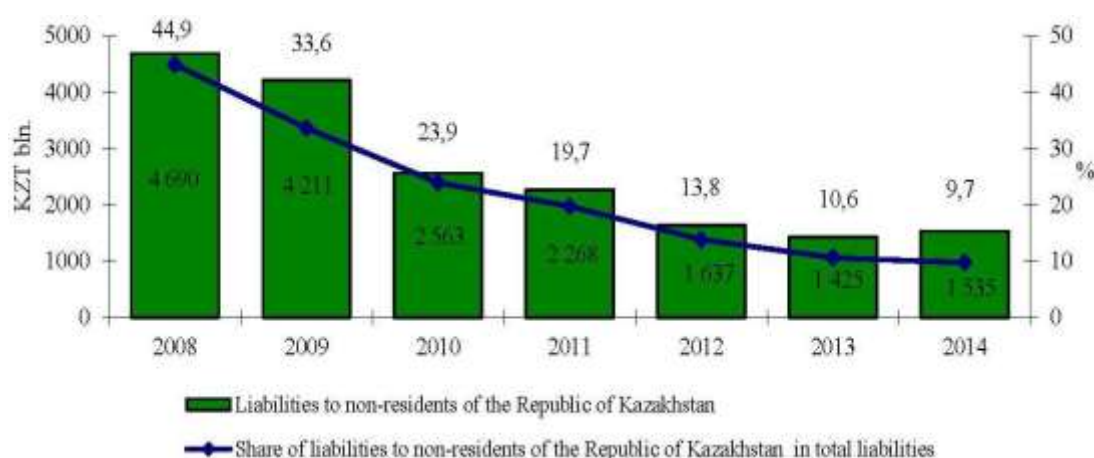


Figure 3.6: Banks' liabilities to non-residents of the Republic of Kazakhstan  
*Source: NBKR Annual report 2014*

There is a significant presence of foreign capital in Kazakhstan. Almost a quarter of the Kazakh banking system is covered by banks with foreign equity participation – 24.7%. At the same time, the share of foreign equity in Kazakhstan from the far abroad is going down. This may be caused by the loss of strategic interest on the part of a parent company, including by inability to realize the potential required to generate earnings (Figure 3.7). The share of banks with a 100% foreign equity participation in Kazakhstan decreased from 14.7% in 2013 to 14% in 2014.

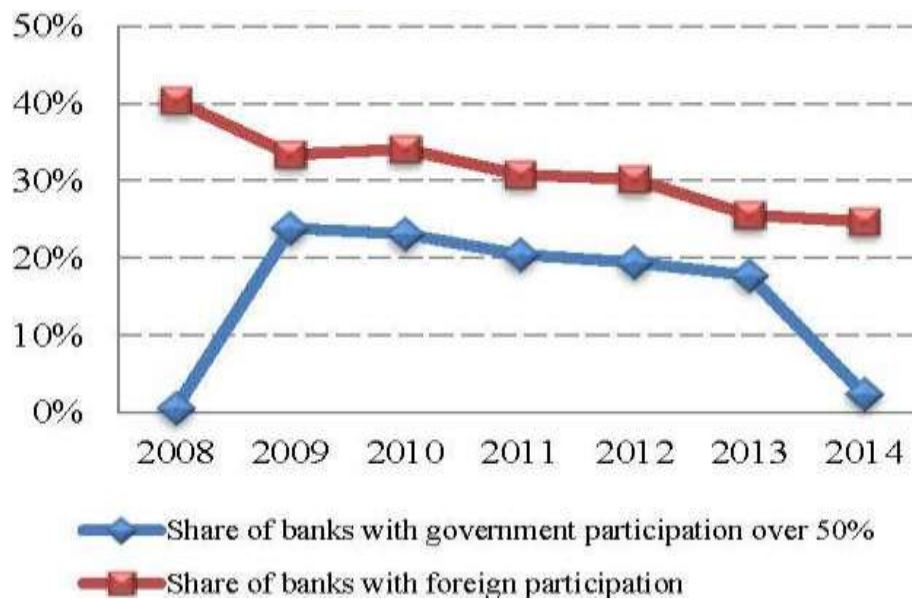


Figure 3.7: Dynamics in the share of banks with the government and foreign participation in total assets

Source: NBKR Financial Stability Report of Kazakhstan, December 2014

Net income of the banking sector amounted to 120 bln. KZT. Return on Assets (ROA) of the Kazakhstan banking sector is 0.86% (8.91% at the same date last year); Return on equity (ROE) is 6.90% (69.90% at the same date last year).

### 3.3 Kyrgyzstan

Referring to annual report for the year 2014 of the NBKR, by the end of the year, growth of basic indicators of the banking sector was observed. Particularly, growth of assets, deposits, loans portfolio and net profit are among these indicators. By the end of 2014, in the Kyrgyz republic 24 commercial banks with 292 branches of commercial banks operated. 16 banks from the total banks are with foreign participation in capital among the operating commercial banks. Additionally, 10 of foreign participated banks are with the amount of more than 50 percent. At the end of 2014, the proportion of foreign capital amounted for 35.8 percent of banks' capital which was 36.5% in 2013.



During the reporting year 2014, the total assets of the banking sector amounted to 137.6 billion Kyrgyz Soms (Figure 3.8). In other words, it increased by 23.9 percent. Generally, at the end of the reporting period, progress in the volume of all types of the banking sector assets was observed.

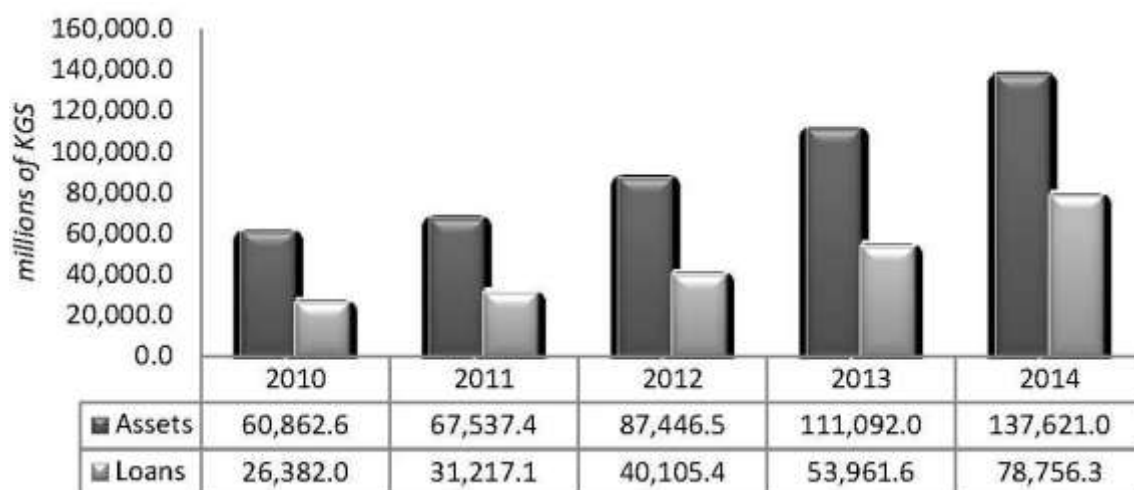


Figure 3.8: Patterns of assets and loan portfolio of banks  
 Source: Annual Report of the NBKR, 2014

Loans issue accounted 56.7% of the main proportion of the banks' assets. By the end of 2014, the amount of the loans to customers of the banking sector increased by 67% and made 78.8 billion of KGS. An increase was observed in the aggregate assets of Kyrgyz banking system as well. It has increased from 60 billion of KGS to 137.6 billion of KGS over the period 2010-2014. This much increase is really significant for the banking sector. For the mentioned period, loans to clients of Kyrgyz banking sector has also increased 26.4 billion KGS. The volume of increase is nearly 67% during this time. By this period the total assets increased 56%.

By the end of 2014, the amount of the total liabilities of Kyrgyz commercial banks increased by 26.5%, 116.8 billion of KGS. Deposit base proportion in the total

volume of liabilities grew at the rate of 66.8%. Increase in the deposit base of the banking sector made 22.3% for the reporting period. (Figure 3.9)

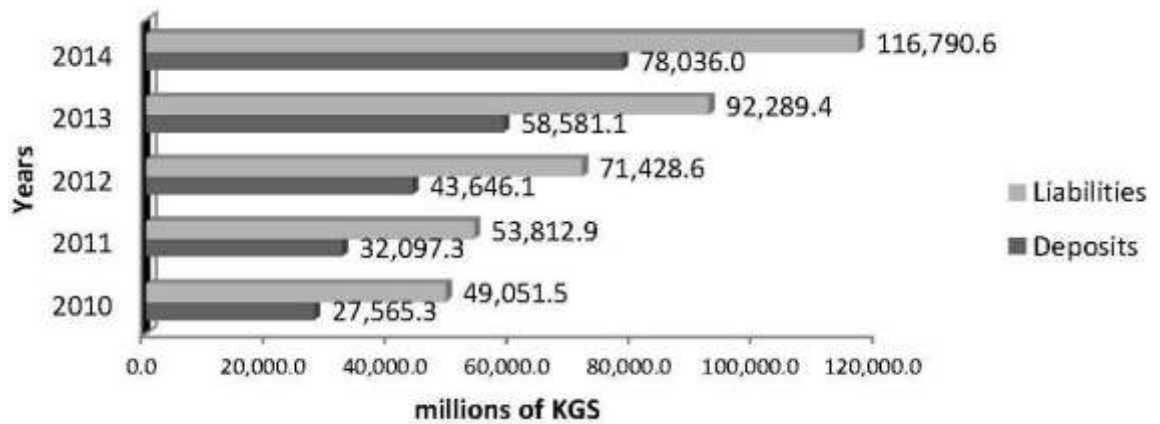


Figure 3.9 Patterns of Liabilities and Deposit Base of Banks  
Source: Annual Report of the NBKR, 2014

Generally, minor changes of profitability indicators were observed at the end of 2014 compared to 2013 in Kyrgyz banking sector (Figure 3.10).

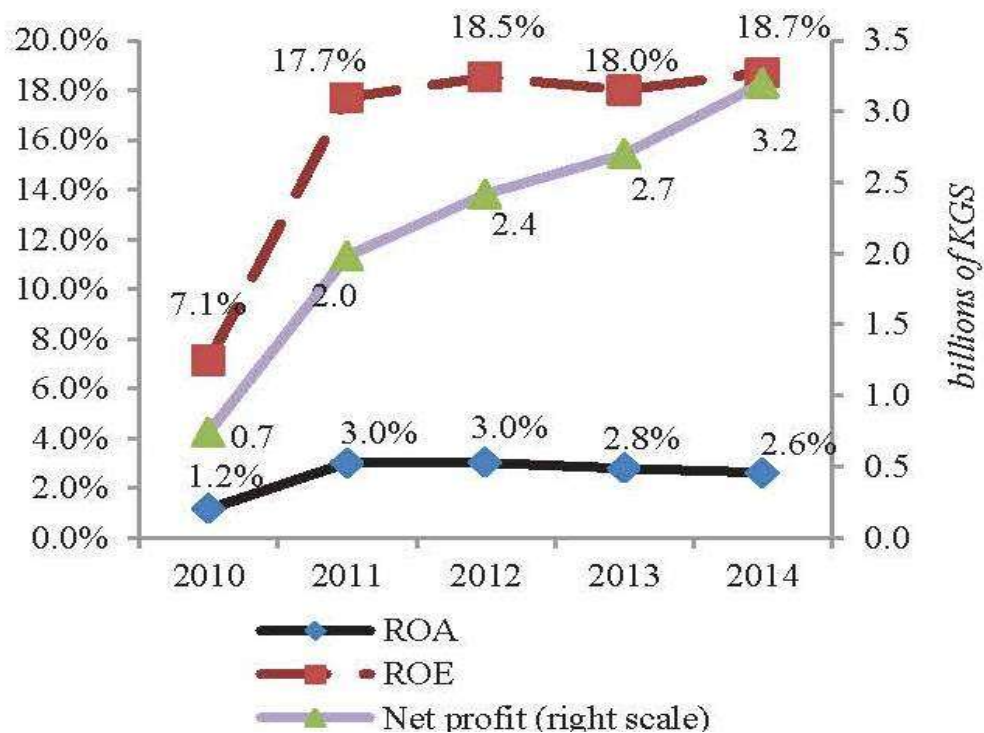


Figure 3.10: Profitability indicators.

Source: Financial stability report of NBKR, 2015

It can be seen from the figure above, ROA declined by 0.2% and constituted 2.6 % while ROE increased by 0.7 % and constituted 18.7 percent. For the meantime, net profit of the Kyrgyz banking sector grew by 18.6 percent, compared to 2013, and amounted to 3.2 billion KGS.

### 3.4 Tajikistan

According to National Bank of Tajikistan, as of December 31, 2014 there are 138 credit institutions, including 17 banks in Tajikistan Republic. For the reporting period banks' number of branches has increased and having made 344 units.

Table 3.2: Banking sector indicators

	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Total Assets</b>	5,665	6,169	5,412	6,833	9,134	10,530	12,349	12,369
<b>Growth rate</b>		8.9%	-12.3%	26.4%	33.7%	15.3%	17.2%	13.1%
<b>Total Capital</b>	660	1,087	1,246	1,412	1,956	2,298	2,599	1,626
<b>Growth rate</b>		64.7%	14.6%	13.3%	38.5%	17.5%	13.1%	-21.9%
<b>Deposits</b>	2,411	1,924	2,641	3,308	4,421	4,926	5,320	6,446
<b>Growth rate</b>		-20.2%	37.3%	25.2%	33.7%	11.4%	8.0%	20.2%

Source: Development of the banking sector of Tajikistan NBT, 2013

We can see an upward movement in the total assets of Tajikistan banking sector except year 2009. In 2013 total assets of banking sector made 12 349.3 million TJS and grew for TJS 1 814.3 million or to 17.2% compared to the end of 2012 year. At the end of the 2014 total assets of the banks were 12 362.9 million TJS and compared to the previous year grew by 1 428.2 million TJS, in other words, by 13.1%. The given rise occurred taking into consideration increase in amount of credit portfolio, liquid assets and other assets.

It can be seen from the table above total capital of the Tajik banks fluctuated over the period 2007-2014. In 2013 the total balance capital of banking system has reached TJS 2 599.2 million and have increased on TJS 301.4 million or by 13.1% compared to the end of 2012 year. Paid authorized capital of banking system as of 2013 as a whole has made TJS 1,760.4 million and increased by TJS 102.2 million or by 6.2% in compared to the end of 2012 year. Compared to 2013, at the end of the 2014 capital balance of the banks has made TJS 1 626.2 million that it is less than 21.9%. Paid nominal capital of the banks at the end of the 2014 has made TJS 1 634.6 million.

From the table 3.2 we can see that like total capital total deposits of the Tajikistan banking system has fluctuated between same periods. And in the more recent year 2013 total deposits made 5,320 million TJS and increased for 393.6 million TJS or 8.0% compared to the end of 2012 year. It kept increasing in 2014 as well and made 6 446.5 million TJS and compared to the end of the 2013 have increased by 1 081.2 million TJS, in other words, by 20.2%.

Total liabilities of the banks at the end of the 2014 year the total liabilities of the Tajik banks were 10 736.7 million TJS and compared to the end of the 2013 increased by 1 884.8 million TJS or by 21.3% (Review of Banking System of the Republic of Tajikistan,2014).

Table 3.3: The profitability indicators of Tajikistan Banks'

<i>Indicator</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>
<i>Return on assets (ROA)</i>	0.7%	-0.4%	0.2%	0.7%	-4.4%
<i>Return on equity (ROE)</i>	3.6%	-2.2%	0.7%	3.7%	-29.4%

*Source: National Bank of Tajikistan*

We can see from the table 3.3 both profitability indicators have unstable trend. They fluctuated between the period 2010-2014. Return on assets (ROA) of the banks' in 2013 has made 0.7% while in 2014 it decreased to minus 4.41%. Return on equity (ROE) decreased in 2014 as well. It has made -29.4% which is much more less than 2013.

### **3.5 Uzbekistan**

According to CBU Uzbekistan has a two-tier banking system supervised and controlled by the Central Bank of the Uzbekistan Republic. On December 1995, its major functions and tasks were set in the Law on the Central Bank were approved. The National Bank for Foreign Economic Activity (NBU) which is one of the commercial banks in Uzbekistan is among the best in the Central Asia and is the prominent financial institution in Uzbekistan. According to CBU Uzbekistan its banking system is currently represented by 26 commercial banks, including 3 state-owned, 11 joint-stock, 7 private and 5 banks operating with the participation of foreign capital i.e. Savdogar, Hamkorbank, Uzbekistan-Turkish Bank and KDB Bank Uzbekistan and the subsidiary of the Iran's Saderat bank. International banking situation has been weak and unstable for so many years. But as a result of rigorous financial and banking reforms in the country, Uzbekistan banking system has been estimated as "stable".

According to the central bank of Uzbekistan's latest report (May, 2015), the total assets of the commercial banks in Uzbekistan in first quarter of 2015 stood at 56.6 trln. soums. In 2014, the total assets of Uzbekistan commercial banks were 56.2 trln. soums, and their total capital stood at 6.9 trln. soums. In the first quarter of 2015, the total assets of the Uzbekistan banks rose by 0.7 percent, compared to last year's results. Additionally, the total loan portfolio of the Uzbekistan banks increased by 0.6 percent up to 35 trln. soums.

For the reporting period, the total volume of deposits involved by the country's banks amounted to 28.6 trln soums in early April 2015. It increased up to 28.5 trln. soums i.e. growth of 0.4 percent. The total bank capital also increased and stayed at 6.9 trln. soums.

As we mentioned before, in 2014, the total assets of Uzbek banks grew by 28.3 percent up to 56.2 trln. Soums. Total loan portfolio of the banks increase by 31.3 percent up to 34.8 trln. Soums. Additionally, the total equity bank capital rose over the year by 25.5 percent up to 6.9 trln. soums. In 2013, the total volume of assets of commercial banks of Uzbekistan Republic grew by 30 percent, whereas this indicator has multiplied 3.6 times for the last five years.

By directing public investment to strategic industries the banking sector of Uzbekistan has promoted industrial progress. In addition, they increased total bank lending, by keeping almost all banks sound. At the end of 2013, the banking sector's CA (capital adequacy) ratio has made 24.3 percent. The banking sector total capital increased by 25 percent, contributing to enlarge total credit by 31 percent.

Financial and banking system of the Uzbekistan Republic is progressive. It is strong and stable outlook. It has been riotously contributing good inputs for the future development of its macro-economy and banking system. Moreover, soft monetary policy makes the process of industrialization and credit easy and smooth. The future outlook is positive and stable which would pay its dividends in the days to come.

## Chapter 4

### DATA AND METHODOLOGY

#### 4.1 Data description

In our study panel data analysis was the most appropriate instrument because it includes both time series and cross-sectional data. 46 commercial banks were selected from 5 Central Asian countries. Data of bank specific variables was taken from balance sheet and income statement of the selected bank's which are accessible in their official websites for the period 2005-2014. Data for our macroeconomic and macro banking variables was collected from official website of World Bank to make the research. The number of observation is 460.

#### 4.2 Methodology

In our study, a panel data regression model is used as method of investigation. The panel data divides into two models: fixed effect and random effect models. Integral part of the regression model are the dependent and independent variables.

##### 4.2.1 Dependent Variables of the Regression Model

In this research, our dependent variable is foreign bank presence which is defined by the foreign ownership shares held in domestic banks. We selected foreign banks with a 5% or larger and 100% share owned by partners of foreign banks. Because, our aim is to observe only the motivations of banks with foreign participation. We considered foreign bank presence throughout two measures. First we take into account the foreign bank participation by their percentage of equity to total banking assets and secondly their percentage of assets to total banking assets in the host country.



Table 4.1: Dependent variables description.

Variable	Abbreviation	Definition
Foreign bank presence	FBPE <sub>i,t</sub>	percentage of stock (equity) of bank <i>i</i> held by foreign bank to total banking assets at time <i>t</i>
	FBPA <sub>i,t</sub>	percentage of assets of bank <i>i</i> held by foreign bank to total banking assets at time <i>t</i>

#### 4.2.2 Independent Variables of the Regression Model

In this study, the independent variables include bank specific, macro-banking and macroeconomic indicators. As bank-specific variables we chose:

**Return on Assets (ROA)** is an indicator which presents how profitable the assets of bank are in generating the revenue. If ROA's percentage is high, it means that the bank is more profit efficiency. Bashir, Abbas, & Hussain (2014) in their study found that foreign bank presence positively related with ROA. Our expectation is positive relationship between ROA and foreign bank presence, as well. ROA is calculated by the following formula:

$$\text{ROA} = \text{Net Income (Net Profit)} / \text{Total Assets}$$

**Net Interest Margin (NIM)** indicates the performance of bank throughout the level of the investment decisions' effectiveness. If the NIM has a positive value, it indicates that the bank makes its best decision, since interest income exceeds interest expense. Aforementioned study Bashir, Abbas, & Hussain (2014) also found that

foreign bank share is positively related to net interest margin. We also expect positive relationship between NIM and foreign bank entry. NIM is calculated by the next formula:

$$\text{NIM} = (\text{Interest Income} - \text{Interest Expense}) / \text{Total Assets} = \\ = \text{Net Interest Income} / \text{Total Assets}$$

**Credit risk** the ratio that indicates the bank's loans' quality. The higher the ratio means the loans are more problematic. We expect a negative relationship between credit risk and foreign bank entry. Because higher credit risk means management has more available funds to control bad loans. In other words, higher credit risk leads lower foreign bank participation. Credit risk formula is given below:

$$\text{Credit Risk} = \text{Provision for Loan Loss} / \text{Total Loans}$$

**Capital risk-** we take into account this ratio to see whether the bank can hold equity capital in adequate amount. In other words, if the bank is able to pay depositors money whenever they need and have sufficient funds to improve the assets of the bank by means of the additional crediting yet again. Our expectation is positive relationship between foreign bank entry and capital risk. The logic behind that is if Capital risk increases it means investment risk will be reduced and it will encourage foreign entry. The formula for Capital Risk is shown below:

$$\text{Capital Risk} = \text{Total Equity} / \text{Total Assets}$$

The macroeconomic indicators of our regression model are given below with their definitions:

**Inflation, GDP deflator (annual %)** - is defined by the annual growth rate of the GDP implicit deflator and presents the rate of price variation in the economy in total. Our expected sign from inflation rate is negative. Because higher inflation damages the economy and makes the market uncompetitive. Although, Hryckiewicz & Kowalewski (2008) surprisingly found positive relationship between inflation rate and foreign bank presence.

**GDP growth (annual %)** - Annual percentage growth rate of GDP at market prices based on constant local currency. Cull and Peria (2007) found GDP growth is significant and positive impact on foreign bank entry in their study. We also expect from GDP growth to be positively related to foreign bank presence. Because GDP growth shows the buying power of a country and higher GDP growth means higher standard of living.

**Foreign direct investment, net inflows (% of GDP)** – is referred as investment net inflows which is the sum of reinvestment of earnings, equity capital, other short-term and long-term capital. This variable is divided by GDP and shows net inflows in the reporting economy from foreign investors. As we know, more FDI inflows will make the economy more powerful, thus the expected sign for FDI net inflows is “+”.

**Rule of Law** – the index which presents the level of ruling in a country. Moreover, it shows in what level the country obeys its regulatory requirements. Referring to Focarelli and Pozzolo (2005) the sign of rule of law changes depending on whether foreign bank operates abroad via subsidiary or branch. If foreign banks operates

through subsidiary the rule of law is positively correlated with foreign bank presence. For branch structure it is vice versa.

Except bank specific and macroeconomic variables, we tested one macro banking indicator as well which is given below:

**Domestic credit to private sector by banks (% of GDP)** – is financial resources supplied to the private sector by other depository organizations except central banks. For example, through loans, trade credits and other accounts receivable, those create a due for repayment. There is a statistically significant and positive association between foreign bank entry and domestic credit to private sector provided by banks (World Bank Outlook, 2008). Our expectation is positive sign from this variable as well.

#### 4.2.3 Model Estimation Process

We create 4 different models in order to investigate the foreign bank entry determinants. Throughout the STATA software, the succeeding regression models were estimated:

$$\text{FBPA}_{i,t} = \alpha + \beta_1(\text{ROA})_{i,t} + \beta_2(\text{NIM})_{i,t} + \beta_3(\text{CR})_{i,t} + \beta_4(\text{ROL})_t + \beta_5(\text{GDP})_t + \beta_6(\text{DCRPS})_t + \varepsilon$$

$$\text{FBPA}_{i,t} = \alpha + \beta_1(\text{NIM})_{i,t} + \beta_2(\text{CR})_{i,t} + \beta_3(\text{FDI})_t + \beta_4(\text{INF})_t + \beta_5(\text{ROL})_t + \beta_6(\text{DCRPS})_t + \varepsilon$$

$$\text{FBPE}_{i,t} = \alpha + \beta_1(\text{NIM})_{i,t} + \beta_2(\text{CAPR})_{i,t} + \beta_3(\text{CR})_{i,t} + \beta_4(\text{ROA})_t + \beta_5(\text{GDP})_t + \beta_6(\text{DCRPS})_t + \varepsilon$$

$$\text{FBPE}_{i,t} = \alpha + \beta_1(\text{ROA})_{i,t} + \beta_2(\text{NIM})_{i,t} + \beta_3(\text{CAPR})_{i,t} + \beta_4(\text{CR})_t + \beta_5(\text{INF})_t + \beta_6(\text{ROL})_t + \varepsilon$$

Where:  $i$  denotes bank;  $t$  represents time;  $\alpha$  denotes constant;  $\beta_{1-6}$  are coefficients of regression model; FBPA is foreign bank presence (percentage of assets to total assets); FBPE is foreign bank presence (percentage of equity to total assets); ROA is the Return on Assets; NIM is Net Interest Margin; CR is Credit risk; CAPR is Capital Risk; GDPG is gross domestic product growth; FDI is foreign direct inflow; INF is inflation rate; ROL is rule of law; DCRPS is domestic credit to private sector by banks;  $\varepsilon$  is error term.

## Chapter 5

### EMPIRICAL ANALYSIS AND RESULTS

#### 5.1 Panel unit root testing

Firstly, a unit root test should be carried out of a model before any estimation. In other words, the stationarity of the variables at their level forms should be checked. This is due to a standard empirical analysis may be produce misleading results if the variables are not stationary. With the aim of monitor the series, the panel unit root tests were applied. The result of the different models of unit root tests presented in a table below. The tests of the stationarity of the dependent and independent variables implemented were LLC (Levin, Lin & Chu, 2002), ADF (Dickey & Fuller, 1981) and PP (Phillips & Perron, 1988) . The summary of the unit root test can be seen in Table 5.1 below. Test findings conclude that all the series are stationary at their level forms. The null and alternative hypotheses for Panel Unit Root Test are given below:

**H0:** Series contains a unit root / Series are not stationary

**H1:** Series don't have a unit root / Series are stationary

Table 5.1: Panel unit root test results

Variables	LLC	ADF	PP
FBPA			
$\tau_T$	24.09	71.48	120.7*
$\tau_\mu$	-3.14*	85.64	108.5*
$\tau$	7.15	97.33	105.5

Table 5.1: Panel unit root test results (cont'd)

<b>FBPE</b>			
$\tau_T$	-1.18	58.63	110.9*
$\tau_\mu$	-5.56*	94.34	106.9*
$\tau$	-10.28*	138.9	133.3*
<b>ROA</b>			
$\tau_T$	-2328.2*	111.9*	188.3*
$\tau_\mu$	-7118.2*	121.4*	156.9*
$\tau$	-492.8*	183.5*	173.7*
<b>NIM</b>			
$\tau_T$	-13960.6*	102.57*	120.7*
$\tau_\mu$	-4412.8*	122.59*	121.1*
$\tau$	-489.26*	94.26	97.67
<b>CAPR</b>			
$\tau_T$	-18340.6*	93.08	126.26*
$\tau_\mu$	-21115.7*	141.241*	142.54*
$\tau$	-171.868*	141.227*	168.382*
<b>CR</b>			
$\tau_T$	-13.09*	97.83*	110.49*
$\tau_\mu$	-11.62*	126.53*	110.14*
$\tau$	-	-	-
<b>INF</b>			
$\tau_T$	-19.82*	181.91*	328.93*
$\tau_\mu$	-12.72*	177.20*	189.17*
$\tau$	-7.23*	189.03*	205.50*
<b>GDP</b>			
$\tau_T$	-20.92*	132.52*	193.91*
$\tau_\mu$	-16.09*	187.35*	186.39*
$\tau$	-4.55*	146.93*	181.89*
<b>FDI</b>			
$\tau_T$	-0.085	126.66*	293.01*
$\tau_\mu$	-23.09*	264.67*	297.29*
$\tau$	-19.84*	292.13*	310.35*
<b>ROL</b>			
$\tau_T$	-5.36*	73.69	81.86
$\tau_\mu$	-3.75*	112.59*	123.0*
$\tau$	-5.27*	118.68*	117.66*
<b>DCRPS</b>			
$\tau_T$	-16.06*	98.09*	133.86*
$\tau_\mu$	-14.86*	106.15*	129.89*
$\tau$	0.879	99.74*	63.06*

*Note:* FBPA is foreign bank presence (percentage of equity to total assets); FbPE is foreign bank presence (percentage of asset to total assets); ROA is the Return on Assets; NIM is Net Interest Margin; AQ is Asset Quality; CA is Capital Adequacy; GDP is gross domestic product; FDI is foreign direct inflow; INF is inflation rate; ROL is rule of law; DCRPS is domestic credit to private sector by banks;  $\tau_T$  represents the most general model with a drift and trend;  $\tau_\mu$  is the model with a drift and without trend;  $\tau$  is the most restricted model without a drift and trend. Optimum lag lengths are selected based on Schwartz Criterion. \* denotes rejection of the null

hypothesis at the 10% level. Tests for unit roots have been carried out in E-VIEWS 7.

Accordance with Levin, Lin and Chu, it can be seen from the table we can reject the null hypothesis of the unit root at 10% significance level at the level forms of dependent and independent variables without differencing. This shows that the data collected for research is stationary and it is appropriate for running the regression analysis. It can be seen from the table, according to ADF tests, the null hypothesis can be rejected at 10% significance level by the majority of the variables which means that they are stationary and useful for regression analysis. In PP method, the null hypothesis is mostly again rejected at 10% significance level, which presents that the stationarity of the variables is appropriate for the regression models as well.

According to unit root test results all series appears stable and this means all the variables were taken into account are stationary and appropriate for use in the following estimations.

## **5.2 Correlation Analysis**

During regression analysis multicollinearity can be one of the main problems which is a result of high correlation among regressors. (Wooldridge, 2009). The correlation coefficient as an indicator shows the linear relationship between two explanatory variables. The values of the correlation coefficient range from ‘-1’ to ‘+1’. If a correlation coefficient is ‘+1’ it means there is positive linear relationship between 2 variables and if correlation coefficient is ‘-1’ it shows that there is negative linear relationship between 2 variables. A correlation coefficient of ‘0’ shows there is no linear relationship between 2 regressors.



In order to check the problem of multicollinearity, the correlation analysis was done to show relationship between the explanatory variables altogether.

The correlation coefficients in the matrix form that has been prepared for dependent and independent variables is presented in the table below:

Table 5.2: Correlation matrix with dependent variable of FBPA

	<i>FBPA</i>	<i>ROA</i>	<i>NIM</i>	<i>CAPR</i>	<i>CR</i>	<i>INF</i>	<i>GDP</i>	<i>FDI</i>	<i>ROL</i>	<i>DCRPS</i>
<i>FBPA</i>	1.00									
<i>ROA</i>	-0.03	1.00								
<i>NIM</i>	-0.10	0.19	1.00							
<i>CAPR</i>	-0.03	0.03	0.02	1.00						
<i>CR</i>	-0.01	-0.18	-0.13	-0.05	1.00					
<i>INF</i>	-0.03	0.01	-0.09	-0.04	-0.06	1.00				
<i>GDP</i>	-0.03	0.10	-0.07	-0.01	-0.09	0.18	1.00			
<i>FDI</i>	-0.02	-0.02	-0.06	-0.06	-0.04	0.19	0.70	1.00		
<i>ROL</i>	0.10	-0.04	-0.02	-0.03	0.24	-0.10	0.10	0.19	1.00	
<i>DCRPS</i>	0.04	-0.14	-0.11	-0.03	0.20	0.02	-0.27	-0.09	0.54	1.00

Table 5.3: Correlation matrix with dependent variable of FBPE

	<i>FBPE</i>	<i>ROA</i>	<i>NIM</i>	<i>CAPR</i>	<i>CR</i>	<i>INF</i>	<i>GDP</i>	<i>FDI</i>	<i>ROL</i>	<i>DCRPS</i>
<i>FBPE</i>	1.00									
<i>ROA</i>	0.11	1.00								
<i>NIM</i>	0.14	0.19	1.00							
<i>CAPR</i>	-0.02	0.03	0.02	1.00						
<i>CR</i>	-0.03	-0.18	-0.13	-0.05	1.00					
<i>INF</i>	-0.03	0.01	-0.09	-0.04	-0.06	1.00				
<i>GDP</i>	-0.10	0.10	-0.07	-0.01	-0.09	0.18	1.00			
<i>FDI</i>	-0.08	-0.02	-0.06	-0.06	-0.04	0.19	0.70	1.00		
<i>ROL</i>	0.11	-0.04	-0.02	-0.03	0.24	-0.10	0.10	0.19	1.00	
<i>DCRPS</i>	0.12	-0.14	-0.11	-0.03	0.20	0.02	-0.27	-0.09	0.54	1.00

### 5.3 Regression analysis

This part of the study introduces the empirical results which have been composed to interpret how the variations in explanatory variables affect dependent variables. The four regression analyses for the factors of foreign entry were estimated.

Accordance with the estimation of the models, all models got rid of the problem of heteroscedasticity and autocorrelation by applying the standard error type Clustered robust. After determining the appropriate regression models the analysis was run. There are two commonly used regression models of panel data:

-Fixed Effect Model;

-Random Effect Model.

To make decision between fixed or random effects, it should be run a Hausman test through STATA. The null hypothesis is preferred model is random effects and the alternative hypothesis is the fixed effects is appropriate one (Green, 2008, chapter 9). In other words, it mainly tests whether the unique errors ( $\varepsilon_i$ ) are correlated with the explanatory variables, the null hypothesis is that they are not.

Our first dependent variable FBPA:

$$\mathbf{FBPA}_{i,t} = \alpha + \beta_1(\mathbf{ROA})_{i,t} + \beta_2(\mathbf{NIM})_{i,t} + \beta_3(\mathbf{CR})_{i,t} + \beta_4(\mathbf{ROL})_t + \beta_5(\mathbf{GDP})_t + \beta_6(\mathbf{DCRPS})_t + \varepsilon$$

For the first model, Hausman test results was  $\text{chi}^2 = 4.77$ ;  $\text{prob chi}^2 = 0.5743$ .

According to decision criteria, prob.value of  $\text{chi}^2(0.5743)$  is not significant at 5% level and we cannot reject null hypothesis which is random effects are appropriate.

We should apply random effects for the first model.

$$\mathbf{FBPA}_{i,t} = \alpha + \beta_1(\text{NIM})_{i,t} + \beta_2(\text{CR})_{i,t} + \beta_3(\text{FDI})_t + \beta_4(\text{INF})_t + \beta_5(\text{ROL})_t + \beta_6(\text{DCRPS})_t + \varepsilon$$

For the second model, Hausman test results was  $\chi^2 = 5.38$  ;  $\text{prob } \chi^2 = 0.4960$ . According to decision criteria,  $\text{prob.value}$  of  $\chi^2(0.4960)$  is not significant at 5% level and we can not reject null hypothesis which is random effects are appropriate. We should apply random effects for the second model.

Our second dependent variable FBPE:

$$\mathbf{FBPE}_{i,t} = \alpha + \beta_1(\text{NIM})_{i,t} + \beta_2(\text{ROA})_{i,t} + \beta_3(\text{CAPR})_{i,t} + \beta_4(\text{CR})_t + \beta_5(\text{GDP})_t + \beta_6(\text{DCRPS})_t + \varepsilon$$

For the first model of our second dependent variable, Hausman test results was  $\chi^2 = 46.31$  ;  $\text{prob } \chi^2 = 0.0000$ . According to decision criteria,  $\text{prob.value}$  of  $\chi^2(0.0000)$  is significant at 5% level and the null hypothesis can be rejected which is random effects are appropriate and confirm the alternative hypothesis which is fixed effects is appropriate. We should apply fixed effects for the first model.

$$\mathbf{FBPE}_{i,t} = \alpha + \beta_1(\text{ROA})_{i,t} + \beta_2(\text{NIM})_{i,t} + \beta_3(\text{CAPR})_{i,t} + \beta_4(\text{CR})_t + \beta_5(\text{INF})_t + \beta_5(\text{ROL})_t + \varepsilon$$

For the second model of our second dependent variable, Hausman test results was  $\chi^2 = 36.81$  ;  $\text{prob } \chi^2 = 0.0000$ . According to decision criteria,  $\text{prob.value}$  of  $\chi^2(0.0000)$  is significant at 5% level and we can reject null hypothesis which is random effects are appropriate and accept alternative hypothesis which is fixed effects is appropriate. We should apply fixed effects for the second model.

First regression model for our first dependent variable FBPA which is measured as percentage of foreign bank assets to total banking assets. Estimations were done and introduced in Table 5.5. Accordance with this table, our explanatory variables NIM, ROL,GDP,DCRPS and intercept are statistically significant. But 2 of our independent variables are not statistically significant that is ROA and CR. Therefore, the relationship between FBPA and ROA, and FBPA and CR are not able to be measured in this regression model.

Table 5.4: Regression analysis for FBPA

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>z-Statistic</b>	<b>Prob.</b>
<b>C</b>	0.0884667	0.0266226	3.32	0.001
<b>ROA</b>	-0.0071609	0.006382	-1.12	0.262
<b>NIM</b>	-0.0635832	0.0367651	-1.73	0.084
<b>CR</b>	-0.0222195	0.018525	-1.20	0.230
<b>ROL</b>	0.0406768	0.0189906	2.14	0.032
<b>GDP</b>	-0.0227323	0.0124094	-1.83	0.067
<b>DCRPS</b>	-0.0661699	0.0253293	-2.61	0.009
<b>R-square(overall)</b>	0.0129			
<b>Wald chi2(6)</b>	15.26			
<b>Prob &gt; chi2</b>	0.0184			

Coming back to variables that are significant, it should be mentioned that DCRPS and intercept are significant at the 1% level, ROL at 5% level, NIM and GDP at 10% level. It means that the stationarity of the data is applicable and is able to explain the relationship with FBPA. NIM has a negative coefficient as we expected, which means Net Interest Income to Total Assets ratio negatively affects foreign bank assets in the total banking sector assets. The logic behind that is banks with foreign participation tend to concentrate on non-interest income in order to avoid risks coming from interest income. Another significant variable is GDP, whose coefficient is surprisingly negative. Although, our expectation was positive relationship between GDP and foreign bank presence. The negative coefficient implies that the growth domestic product is directly and negatively connected to FBPA. The reason might be because of developed economy. As we know, higher GDP growth indicates the economy is improving and this will cause high level of competition among banks in the host country. Thus, it will discourage foreign entry. The next significant independent variable DCRPS which we include as macro banking variable is negatively related to FBPA as well. This means that the change in Domestic Credit to Private sector by banks will decrease the dependent variable FBPA. Rule of Law is also significant variable and the only variable which has a positive impact on FBPA. As we mentioned in the previous chapter, the positive sign of ROL shows foreign banks tend to operate better in safe legal environment in which they feel comfort in terms of laws and regulations.

In the second regression model for our first dependent variable FBPA we exclude ROA and GDP, instead we include INF and FDI. Estimations are introduced in Table 5.6. Accordance with this table, our regressors NIM, FDI, ROL, DCRPS and intercept are statistically significant. But 2 of our independent variables are not statistically significant that is INF and CR. Therefore, the relationship between FBPA and INF, and FBPA and CR are not able to be measured in this regression model.

Table 5.5: Regression analysis for FBPA

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>z-Statistic</b>	<b>Prob.</b>
<b>C</b>	0.0870008	0.0265762	3.27	0.001
<b>NIM</b>	-0.0628441	0.0343381	-1.83	0.067
<b>CR</b>	-0.0194279	0.018833	-1.03	0.302
<b>INF</b>	-0.0101137	0.0082621	-1.22	0.221
<b>FDI</b>	-0.0240215	0.0136956	-1.75	0.079
<b>ROL</b>	0.0387041	0.0189855	2.04	0.041
<b>DCRPS</b>	-0.063582	0.0239603	-2.65	0.008
<b>R-square (overall)</b>	0.0105			
<b>Wald chi2(6)</b>	15.25			
<b>Prob &gt; chi2</b>	0.0184			

Coming to interpretations of significant explanatory variables, we should mention that DCRPS and intercept are significant at the 1% level, ROL at 5% level, NIM and FDI at 10% level. The intercept of our model, that is significant and its coefficient is positively associated with FBPA as in our first model. This means foreign participation will increase in case of zero change in the explanatory variables. NIM has a negative coefficient in the second model yet again. Another significant variable is FDI which we newly added and its coefficient is also negative. It implies that there is a direct connection between the FDI net inflows and FBPA. We can explain this negative relationship as giant companies in the world usually captures more profitable sectors in the host country and it can cause a monopoly. Thus, foreign bank presence might be discouraged due to this factor. The following significant independent variable DCRPS is negatively related to FBPA as in the first model. Rule of Law is also significant variable and again the only variable which has a positive impact on foreign bank presence.

The first regression model that we established for our second dependent variable FBPE which is measured as percentage of foreign bank equity to total banking assets is given in Table 5.7. We can see from the table, all our independent variables are significant with exception of ROA (Return on Assets), Thus, the relationship between FBPA and ROA is not able to be measured in this regression model. Because this relationship is statistically insignificant and doesn't affect the foreign bank entry. The intercept of the model are not statistically significant as well.



Table 5.6: Regression analysis for FBPE

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>C</b>	-0.0067713	0.0123757	-0.55	0.588
<b>NIM</b>	-0.0572838	0.0292114	-1.96	0.058
<b>ROA</b>	-0.0105398	0.0129373	-0.81	0.421
<b>CAPR</b>	0.0318957	0.0184209	1.73	0.092
<b>CR</b>	-0.0075294	0.0033055	-2.28	0.029
<b>GDP</b>	-0.0153729	0.0083837	-1.83	0.075
<b>DCRPS</b>	-0.0329026	0.0192334	-1.71	0.096
<b>R-squared</b>	0.8484			
<b>Adj. R-squared</b>	0.8203			
<b>F-statistic</b>	30.17			
<b>Prob(F-statistic)</b>	0.0000			

Now by considering the variables one by one, aside from CR all the rest of variables are significant at 10% level. CR is significant at 5% level. It shows that the stationarity of our data is relevant and can explain the association with FBPE. NIM has a negative coefficient as in previous models. In this model GDP is significant but its coefficient is surprisingly negative yet again. The following significant independent variable DCRPS is adversely related to FBPE as well. As bank specific indicators CAPR and CR are also significant variables. Capital Risk is positively related to FBPE while Credit Risk has negative impact on foreign bank entry.

In the second regression model that we constructed for our second dependent variable FBPE we exclude DCRPS and GDP and we include INF and ROL. Estimations are given in Table 5.8. Along with this table, our explanatory variables NIM, CAPR, CR and ROL are statistically significant. ROA and INF are statistically insignificant in this model. That's why these variables cannot express the relation with the FBPE. The intercept of the model is not significant as well.

Table 5.7: Regression analysis for FBPE

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>C</b>	-0.0047239	.0104263	3.416795	0.653
<b>ROA</b>	-0.0086344	.0126183	-0.68	0.498
<b>NIM</b>	-0.0662565	.0330007	-2.01	0.051
<b>CAPR</b>	.0337394	.0194398	1.74	0.090
<b>CR</b>	-0.0086407	.0040851	-2.12	0.041
<b>INF</b>	-0.0055532	.003999	-1.39	0.172
<b>ROL</b>	.0093259	.0053528	1.74	0.089
<b>R-squared</b>	0.8357			
<b>Adj. R-squared</b>	0.8060			
<b>F-statistic</b>	28.14			
<b>Prob(F-statistic)</b>	0.0000			

We can see from the table above, NIM has a negative coefficient and is significant at 10% level. CAPR and CR are also significant variables. Capital Risk is positively related to FBPE as we expected. Because higher Capital Risk is an indicator of less investment risk because of increased equity which can be seen from the formula.

Credit Risk has negative impact on foreign bank entry. Another significant variable is ROL, whose coefficient is positive and significant at 10% level. Rule of Law is also significant variable and the only variable which has a positive impact on FBPA. As we mentioned before, a country with safe laws and regulations is more attractive to foreign banks.

## **Chapter 6**

### **CONCLUSION**

The Banking System of Central Asian countries has improved for many years. Currently, the total sum of financial institutions and its size were increased in these countries comparing with the previous years. In turn, the number of foreign banks and their stake in domestic banks is also increased.

Our study examined the relationship between the determinants of foreign banks entry and the factors affect these determinants. As we mentioned in previous chapters, we take into account macroeconomic, macro banking and bank specific factors for our estimations. We mentioned expected sign for each variable before we did analysis. Moreover, for our research we preferred the Panel Data Analysis.

In this thesis, 46 Central Asian banks were tested over the period 2005-2014. Generally, there are about 460 observations. The data that used for empirical analysis were collected from the World Bank Database and official websites of selected banks. We run analysis by EVIEWS and STATA software.

Throughout the STATA, the four regression models were constructed with its dependent and independent variables. The explanatory variables of our study were Net Interest Margin, Return on Assets, Capital Risk, Credit Risk, Inflation rate, GDP growth, FDI net inflows, Rule of Law and Domestic Credit to Private sector by

Banks, whereas the dependent variables were defined as percentage of Foreign Bank equity to total assets and foreign bank assets to total banking assets. By using LLC, ADF and PP methods, the dependent and independent variables were examined for Unit Root. The results showed us that the variables which selected for our research are stationary and are able to be used in the regression model which we constructed.

Throughout the correlation matrix, the dependent and independent variables were examined in order to check problem of multicollinearity. Overall the results indicated that there is no existence of multicollinearity problem among the dependent and independent variables. Only identified correlation between GDP growth and FDI net inflows was the strong one. We did not put these highly correlated variables in the same equation during regression analysis.

Throughout the regression analysis, four forms of models have been progressive. By doing Hausman test through STATA software we saw that for 2 of our models the fixed effects model was appropriate and other 2 random effects model was engaged for the study. The following step was to establishment of the four regression models. Moreover, consistent with the empirical results the association among the independent and dependent variables of the model have been enlightened.

Accordance with the empirical results, our study concluded that, Return on Assets and Credit Risk of the banks in Central Asian countries don't have significant impact on foreign bank entry from assets perspective of view, but Net Interest Margin negatively correlated with percentage of foreign banks to total banking sector assets. Coming to macroeconomic indicators, Rule of Law had significant and positive impact on foreign bank entry in both models that we established for FBPA, while

DCRPS had negative and significant effect. Inflation rate has no significant effect on foreign bank presence, whereas GDP growth and FDI net inflows are negatively related to FBPA.

For our second dependent variable the results were almost same with the estimations of first dependent variable. NIM, GDP, DCRPS and Rule of Law had same results for percentage of foreign bank equity to total banking sector assets as FBPA. ROA and INF were not significant yet again. In comparing with FBPA, Credit Risk had significant and negative coefficient for the second dependent variable FBPE. Another bank specific risk measure Capital Risk positively related to foreign bank presence.

All in all, the empirical results showed that Rule of Law and Net Interest Margin were significant in all models but other variables changed depending on the model. Moreover, we can highlight that low competition of banking sector suggests high profit opportunities for foreign bank entry to the Central Asian countries. Moreover, these countries should improve Rule of Law indicator which will lead more foreign bank participation.

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